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# OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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## PATENT OFFICE NOTICES

### Trial Voluntary Protest Program

After reviewing the comments received as a result of the Notice of Proposed Rule Making entitled, "Protests to the Grant of a Patent," dated May 15, 1973, published at 911 O.G. 760, the Patent Office has decided to institute a Trial Voluntary Protest Program limited to 2,000 applications.

The underlying purpose of protest proceedings is to assist the Patent Office by bringing the best prior art and information relevant to the patentability of a patent application to the examiner's attention. Occasionally patents are held invalid by the courts because of prior art or other information which was not available or known to the examiner. Protest proceedings are intended to elicit from the public such prior art or other information not cited by the examiner which bears upon the question of patentability.

Several benefits are expected to accrue from protest proceedings. First, patents would have a more meaningful presumption of validity because of appropriate consideration by the examiner of additional evidence submitted by the public. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Patent Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. Further, the protest proceedings may be helpful in minimizing the more expensive conventional procedure of litigating the question of validity at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent protest proceedings and the strengthening of the patent system for its intended purposes.

Since legislation is pending in Congress which would make opposition or protest proceedings mandatory in all allowed applications, it appears appropriate and desirable to gain some experience at this time with a Trial Voluntary Protest Program. The Patent Office would welcome any comments, from those who elect to participate in the program, relative to their experience concerning the effectiveness, costs, etc.

Since the trial program is voluntary and limited to a selected number of applications, no rule changes are contemplated or considered necessary at this time.

#### APPLICATIONS INVOLVED

The 2,000 applications involved in the Trial Voluntary Protest Program will include 135 applications allowed in each of the 14 examining groups excluding Group 220, and 110 applications allowed in Group 220, after July 1, 1974. No other applications will be made part of the trial program. The applications in the trial will be limited to the 1970 filing date series and will exclude all reissue, plant, and design applications. Also, applications which have been involved in proceedings before the Board of Appeals, the Board of Patent Interferences, or the courts will be excluded from the trial program.

#### WAIVER OF CONFIDENTIALITY

A form letter will be sent to the applicant of each of the 2,000 applications involved in the trial. The letter will indicate that the application is one of the selected applications and will afford to applicant the opportunity to participate in the program by filing a voluntary waiver of confidentiality thereby making his application available for protest.

#### RESPONSE TO REQUEST FOR WAIVER OF CONFIDENTIALITY

The applicant will have two months after the mailing of the form letter concerning waiver of confidentiality to either (1) file the waiver of his right to keep the application confidential, signed by the applicant, assignee of record, or attorney or agent of record, or (2) indicate that he does not desire to participate in the trial program. A response from the applicant to the form letter will be requested. Such response is considered desirable to allow prompt processing of all 2,000 applications selected for the Trial Voluntary Protest Program. No extension of the two month period will be granted.

If the applicant declines to participate in the program, his application will be forwarded to the Patent Issue Division for

mailing of the Notice of Allowance. In these situations no record of the correspondence will be made in the application file. Also, the Patent Office will not keep any records concerning the identity of the particular applications where the opportunity to participate in the program was declined.

If a proper waiver of the right to confidentiality is submitted within two months of the date of the form letter regarding voluntary waiver, the application will be placed in the Trial Voluntary Protest Program.

Following an affirmative response a notice, identifying the application, will be published in the OFFICIAL GAZETTE similar to that used for patents. The notice will include necessary identifying information, including the examining group to which the application is assigned, an illustrative figure, a representative claim or claims, and a listing of references cited by the Patent Office.

On the date the notice is published in the OFFICIAL GAZETTE, the application file will also be made available for public inspection for the duration of the protest period in the examining group and the application will be available in printed form similar to a patent. The printed application will include all the figures and the specification, including claims. All printed applications will be classified and placed in the Patent Office search files. Copies of the printed applications will be available to the public at the prices set by statute for patent copies.

#### PERIOD FOR FILING PROTEST

Protesters will have a period of three months running from date of publication of the notice in the OFFICIAL GAZETTE in which to file their protest in the Patent Office. Each protest must be filed in duplicate, and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the grounds are based on prior art, the protest should include a copy of the prior art together with an explanation of the relevance of such prior art to the allowed claims. In addition or alternatively, the protester will have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which may affect the patentability of the claimed invention. In cases where prima facie evidence is presented as to prior public use or sale of the invention, the public use proceedings set forth in Rule 292 will be used to provide the protester presenting such evidence with an opportunity to be heard. No extension of the three month period will be granted.

#### PROTESTER INVOLVEMENT

A protester may elect to either (1) have his identity kept secret and have no further participation in the proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application.

In both instances the protester must initially identify himself and give his address; however, if he elects to forego future involvement, he may identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be destroyed upon completion of prosecution when the application is forwarded to either Patent Issue Division or the abandoned files.

#### CONSIDERATION OF PROTEST

The published allowed application files will be retained during the protest period in the examining groups. The examining groups will receive all protests filed, acknowledge receipt thereof, and make them of record in the application files. At the end of the period for filing protests, three months after publication in the OFFICIAL GAZETTE, those applications in which no protests have been filed will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance, while those applications in which protests have been filed will be referred to the group director for decision as to whether prosecution should be reopened.

If the group director decides that the evidence submitted does not constitute a prima facie showing of non-patentability of any allowed claim, the application will be forwarded to the Patent Issue Division for mailing of the Notice of Allow-

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ance. The protesters who elected to participate in subsequent prosecution will be notified that the prosecution has not been reopened, and the applicant will be sent the duplicate copy of all protests. The group director's decision will be final and not subject to petition by any protester.

If the group director decides that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim believed unpatentable. The duplicate copy of all protests will be mailed to the applicant with the Office action. Protesters who elected to participate in later prosecution and submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters who elected to participate in later prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

#### RESPONSE TO SUBSEQUENT OFFICE ACTIONS BY THE APPLICANT

As a result of re-examination of the application, the applicant will be permitted to respond, such as by presenting amended or new claims which will be subject to further con-

sideration by the primary examiner. In order to allow protesters, who submitted evidence on which a rejection in the Office action is based and who elected to participate in later prosecution, to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response, including appeal brief, filed. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

#### COMMENT ON APPLICANT'S RESPONSE BY THE PROTESTER

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

#### CONCLUSION OF PROSECUTION

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

C. MARSHALL DANN,  
Commissioner of Patents.

May 7, 1974.



## Certificates of Correction for the Week of July 2, 1974

P.P. 3,481	3,753,795	3,780,036	3,792,629
P.P. 3,491	3,753,994	3,780,052	3,792,831
Re. 27,015	3,755,451	3,780,399	3,793,089
Re. 27,836	3,755,584	3,781,629	3,793,244
Re. 27,905	3,757,388	3,781,711	3,793,263
D. 230,085	3,758,164	3,781,784	3,793,280
D. 230,353	3,758,432	3,781,913	3,793,426
3,470,142	3,758,603	3,782,041	3,793,463
3,600,122	3,760,145	3,782,498	3,793,502
3,602,442	3,761,114	3,782,537	3,793,508
3,626,125	3,761,164	3,782,627	3,793,522
3,632,297	3,761,825	3,783,368	3,793,563
3,637,991	3,762,689	3,783,711	3,793,676
3,652,611	3,762,827	3,784,441	3,794,038
3,654,289	3,763,783	3,784,602	3,794,056
3,655,451	3,763,849	3,785,039	3,794,111
3,663,556	3,764,538	3,785,172	3,794,220
3,673,013	3,764,768	3,785,764	3,794,318
3,683,939	3,765,146	3,786,108	3,794,437
3,684,908	3,766,160	3,786,154	3,794,483
3,686,350	3,766,527	3,786,292	3,794,826
3,687,588	3,766,754	3,786,799	3,794,862
3,691,179	3,767,432	3,787,332	3,795,030
3,692,885	3,767,511	3,787,572	3,795,180
3,695,186	3,767,628	3,787,573	3,795,259
3,706,834	3,767,802	3,788,260	3,795,304
3,712,210	3,769,488	3,788,420	3,795,335
3,714,832	3,769,905	3,788,522	3,795,503
3,717,679	3,770,012	3,790,302	3,795,546
3,718,412	3,770,238	3,790,459	3,795,687
3,720,817	3,770,742	3,791,371	3,795,710
3,723,012	3,771,135	3,791,461	3,795,993
3,725,040	3,771,840	3,791,512	3,796,736
3,725,593	3,772,410	3,791,693	3,797,038
3,728,003	3,772,851	3,791,753	3,797,323
3,732,478	3,772,974	3,791,914	3,797,389
3,738,885	3,773,058	3,791,979	3,797,474
3,739,553	3,775,350	3,792,018	3,797,534
3,740,584	3,776,465	3,792,110	3,797,595
3,743,708	3,776,782	3,792,251	3,798,143
3,743,801	3,778,431	3,792,356	3,798,163
3,746,367	3,778,888	3,792,370	3,798,179
3,749,928	3,778,957	3,792,393	3,798,646
3,752,369	3,779,200	3,792,515	3,799,455
3,753,522	3,779,307	3,792,559	3,800,085

## Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents final decisions have been

rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,160,671, S. I. Feigelman and E. Aristoff, METHOD FOR INCREASING THE YIELD OF RECOVERABLE MONOCYCLIC AROMATIC HYDROCARBONS IN THERMAL HYDRODEALKYLATION PROCESSES, Interference No. 95,417, decided June 14, 1973, claim 1.

Patent No. 3,345,828, D. J. Klee and R. L. Berreth, PARALLEL FLOW CRYOGENIC FREEZER, Interference No. 96,311, decided July 26, 1973, claim 9.

Patent No. 3,401,830, H. A. Mathews, VENDING MACHINE FOR CREDIT CARD PURCHASING, Interference No. 97,706, decided Jan. 24, 1974, claims 1, 3, 5, 6, 7, 8, 9 and 10.

Patent No. 3,430,350, W. N. Bennett, HIGH FREQUENCY DRYING OF SEPARATE PIECES, Interference No. 98,417, decided Mar. 29, 1974, claims 1, 5, 6 and 7.

Patent No. 3,534,125, K. O. Knollmueller, BIS(PHOSPHINYL)PHOSPHINATES, Interference No. 97,778, decided Nov. 1, 1973, claims 1, 5 and 6.

Patent No. 3,564,782, V. A. Nieberlein, METHOD FOR DEPOSITING CARBIDE COMPOUND, Interference No. 98,013, decided Jan. 18, 1974, claims 1, 2, 3 and 4.

Patent No. 3,561,995, S. H. L. Wu and E. J. Sey Jr., METHOD OF ACTIVATING A POLYMER SURFACE AND RESULTANT ARTICLE, Interference No. 97,890, decided Mar. 21, 1974, claims 1 and 4.

Patent No. 3,577,393, A. Schrage and J. E. Schoenberg, ETHYLENE-PROPYLENE-DIENE TERPOLYMER RUBBERS AND PROCESSES THEREFOR, Interference No. 98,251, decided Mar. 13, 1974, claims 1 and 2.

Patent No. 3,612,482, L. Eck, PORTABLE APPARATUS FOR APPLYING A PULLING FORCE TO STRUCTURES, Interference No. 98,275, decided Mar. 28, 1974, claims 1, 5 and 8.

Patent No. 3,663,785, E. P. Hausermann, METHOD OF EROSIIVELY SHAPING A MASTER DIE, Interference No. 98,389, decided Mar. 28, 1974, claims 1, 2, 4 and 5.

Patent No. 3,671,707, W. G. Cunningham, UNDERWATER WELDING DEVICE, Interference No. 98,222, decided Mar. 20, 1974, claims 1, 2, 3, 6, 7, 8 and 9.

Patent No. 3,692,571, D. R. Colton, Y. C. Cheng and R. J. Kriegler, METHOD OF REDUCING THE MOBILE ION CONTAMINATION IN THERMALLY GROWN SILICON DIOXIDE, Interference No. 98,402, decided Mar. 5, 1974, claims 1 and 2.

Patent No. 3,692,571, D. R. Colton, Y. C. Cheng and R. J. Kriegler, METHOD OF REDUCING THE MOBILE ION CONTAMINATION IN THERMALLY GROWN SILICON DIOXIDE, Interference No. 98,403, decided Mar. 5, 1974, claim 7.

## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JUNE 8, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-2-73
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	3-26-73
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carbonylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director.....	7-3-73
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director.....	6-15-73
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—E. FRIEDMAN, Director.....	4-6-73
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	11-1-73
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	1-19-73
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	7-9-73
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.....	2-14-73
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	5-9-73
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—C. D. QUARFORTH, Director.....	9-29-72
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director.....	9-14-73
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	7-10-73
Manufacturing Processes; Assembling; Combined Machines; Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders; Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director.....	5-21-73
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director.....	9-7-73
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director.....	6-13-73
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during June 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1964 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,794,186 to 2,797,412, inclusive  
Plant Patents..... Numbers 1,606 to 1,611, inclusive



# DEFENSIVE PUBLICATIONS

PUBLISHED JULY 2, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 80 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T924,001

## SORT PROCESS

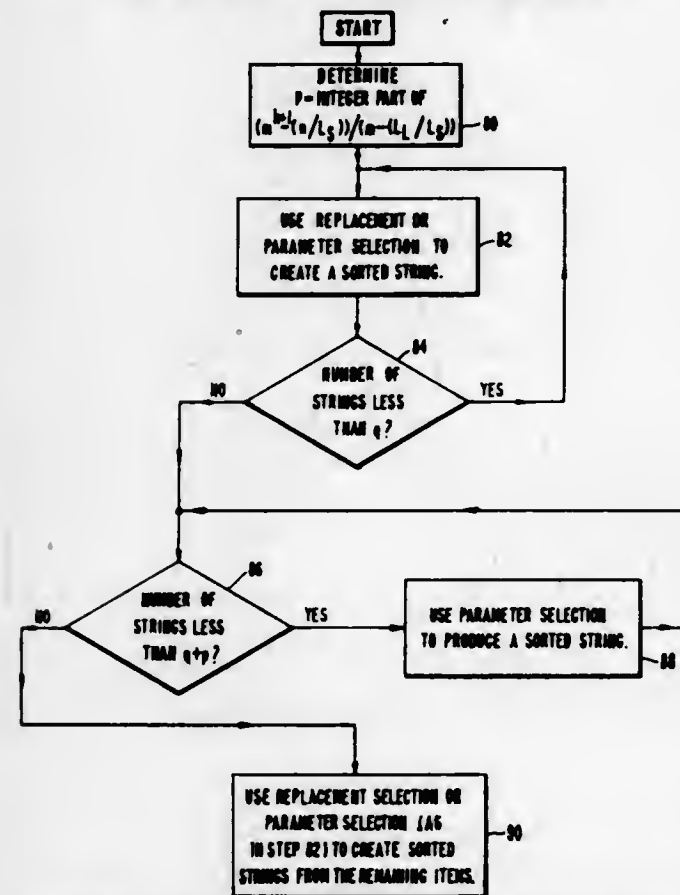
Brian T. Bennett, Peekskill, and William D. Frazer, Briarcliff Manor, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 106,762, Jan. 15, 1971. This application Feb. 16, 1973, Ser. No. 333,076

Int. Cl. G06F 7/24

U.S. Cl. 340-172.5

5 Sheets Drawing, 26 Pages Specification



A method is disclosed for providing a general purpose sort. In this method, an input sequence of records is sorted into two sets of strings, the expected lengths of each of the strings within a set being substantially equal, the expected length of the strings of one set being longer than that of the strings of the other set. A merge is first carried out of the shorter length strings to provide a set of merged strings. This latter set of merged strings is then merged with the aforementioned set of long strings. The number  $p$  of longer strings to be generated can be determined by the expression  $p = \text{integer part of } (m^{k+1} - (n/L_0)) / (m - (L_0/L_0))$ .

$$(m^{k+1} - (n/L_0)) / (m - (L_0/L_0))$$

In this expression  $(L_0/L_0)$  is the ratio of the expected length of a longer string to that of a shorter string,  $m$  is the merge order,  $k$  is an integer such that  $m^k \leq n/L_0 < m^{k+1}$  and  $n$  is the number of records to be sorted. The expression for  $p$  is used in the situation where  $L_0/L_0 < m-1$ . The case in which  $L_0/L_0$  is greater than  $m-1$  can be handled by an analogous analysis in accordance with the

inventive principle, that a gain in performance results whenever a long string replaces a short string which is merged less than a maximal number of times.

T924,002

## METHOD OF DECODING A VARIABLE LENGTH PREFIX FREE COMPACTION CODE

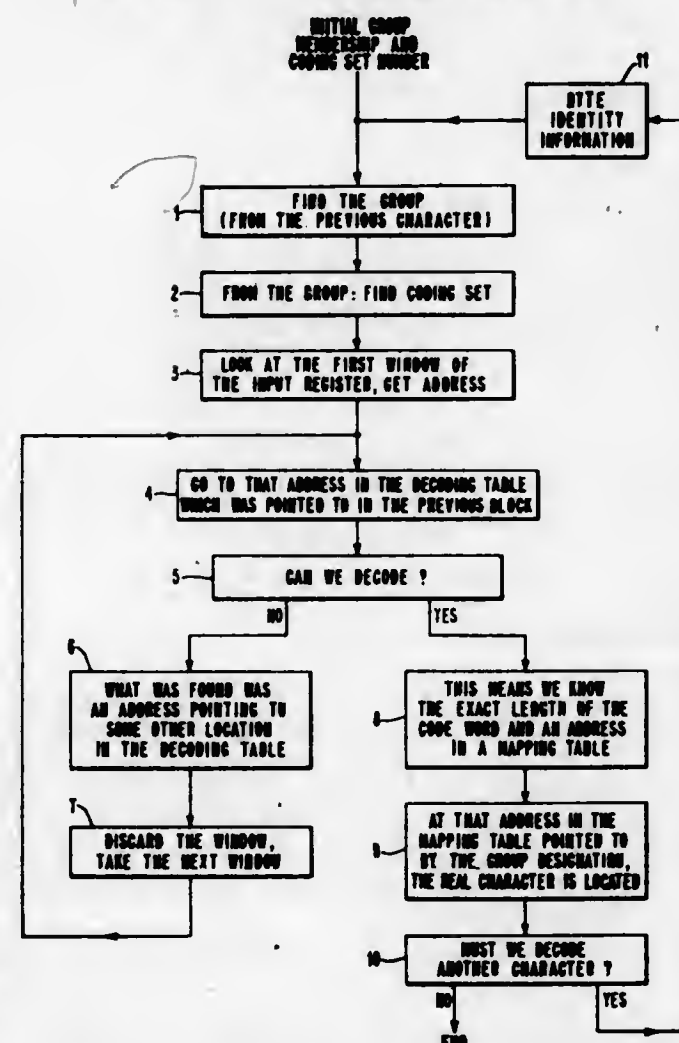
Louis S. Loh, Mohegan Lake, Jacques H. Mommsen, Briarcliff Manor, and Josef Ravi, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 119,275, Feb. 26, 1971. This application June 8, 1973, Ser. No. 368,375

Int. Cl. G06F 7/00

U.S. Cl. 340-172.5

6 Sheets Drawing, 33 Pages Specification



A method for decoding variable length prefix free code words into fixed length code words using a general purpose electronic computer. The method as shown in FIG. 2 comprises placing the decoding table for a variable length code designation of each character of said decoding table is located at an address which is directly derivable from the variable length coded data. The method further comprises the steps of analyzing a continuous

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U. S. PATENT OFFICE

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stream of binary digits being fed into the decoder program utilizing variable length windows wherein the next window is used if a former window fails to contain enough information to produce a successful decoding operation. The method may equally well be used with variable length codes wherein the code length is based on the independent probability of occurrence of a particular character or for a dependent variable length code wherein the code assignment is based on the probability of occurrence of a particular character after some one or more preceding characters. U.S. Pat. No. 3,694,813, issued Sept. 26, 1972, of the present applicants, entitled "Method of Achieving Data Compaction Utilizing Variable Length Dependent Coding" discloses a suitable method for deriving the code per se and thus the code assignment tables and the state, group and coding set membership and mapping tables which keep track of the reordering operations which must of necessity take place with a dependent coding schedule.

T924,003

## POWDER COATING COMPOSITIONS

Roy G. Fouik, 3620 Woodland Lane, and Homer R. Light, Jr., Rte. 5, 6324 Murrell Road, both of Kingsport, Tenn. 37660

Filed Sept. 24, 1973, Ser. No. 400,101

Int. Cl. C08B 21/06

U.S. Cl. 260-17 R

No Drawing, 8 Pages Specification

Powder coating compositions which can be deposited on heatable substrates and thereafter coalesced to form a strongly adherent, continuous coating are produced from between about 45% and about 80% by weight of a polymer selected from the group consisting of acrylics, polyvinyl acetate and polyvinyl chloride, between about 10% and about 30% by weight of cellulose acetate butyrate and between about 0.3% and about 5% by weight of a compound of silicone.

T924,004

## PROCESS FOR TREATING ESSENTIALLY AMORPHOUS POLYESTER COATING COMPOSITIONS

Peter M. Grant, Rte. 16 37663, and Michael L. Whitt, P.O. Box 3029 37664, both of Kingsport, Tenn.

Filed Sept. 27, 1973, Ser. No. 401,326

Int. Cl. B29F 3/08

U.S. Cl. 264-234

No Drawing, 6 Pages Specification

The invention disclosed herein comprises treating an essentially amorphous polyester to render it more grindable and comprising the steps of extruding an essentially amorphous polyester at a temperature no greater than 400° F. and heat treating the extruded polyester at a temperature of 150° F. to 250° F. for about 1 minute to about 6 hours. The polyester should be an amorphous polymer containing not more than 10% crystallinity in which the acid component is terephthalic and/or isophthalic acid and the glycol component is selected from ethylene glycol, butylene glycol, neopentyl glycol, and cyclohexanedimethanol. The essentially amorphous polymer may contain plasticizers, flow aids, stabilizers and pigments useful in compounding powder coating compositions.

T924,005

## FILE ORGANIZATION ON DIRECT ACCESS DISK DEVICE

Leslie S. Coleman, Jr., Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 199,692, Nov. 17, 1971. This application Oct. 2, 1973, Ser. No. 402,694

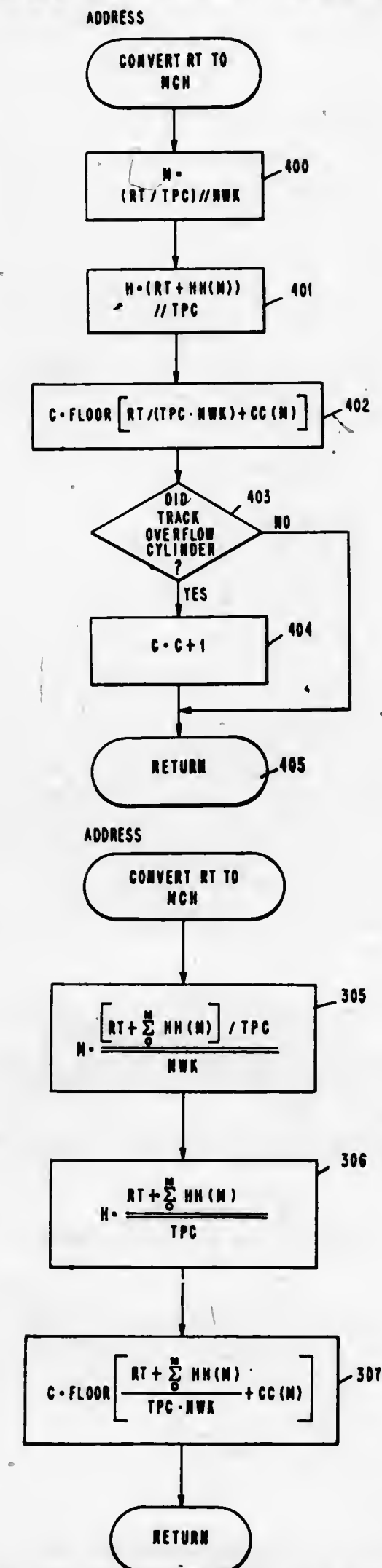
Int. Cl. G06F 9/06, 13/04

U.S. Cl. 340-172.5

5 Sheets Drawing, 20 Pages Specification

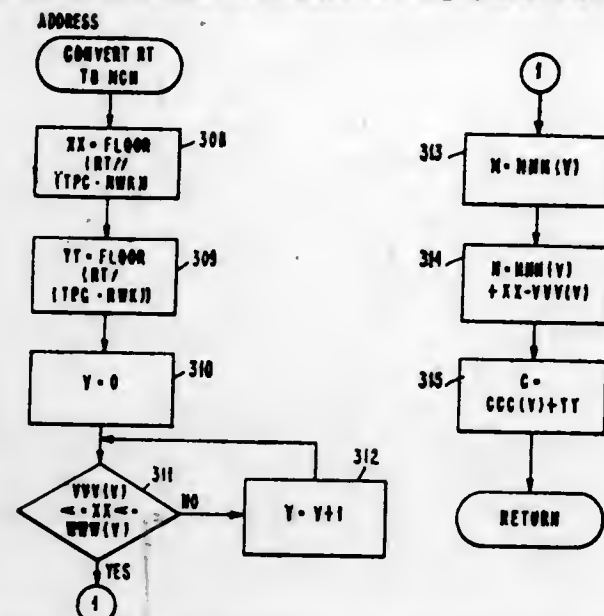
A technique is disclosed for utilizing all available work space on direct access disk devices without regard to the

actual physical location of the work space by providing



a logical address naming convention for available work

space and an automatic translation of physical address to in physical sequential logic circuits built for use in digital equipment by providing a method for finding feedback loops and identifying an appropriate line in the loop to



logical address. The translation is automatically machine calculated according to

$$\begin{aligned} M &= \text{MMM}(V) \\ H &= \text{HHH}(V) + XX - VVV(V) \\ C &= \text{CCC}(V) + YY \\ XX &= \text{FLOOR}(\text{RT} / (\text{TPC} \cdot \text{NWK})) \\ YY &= \text{FLOOR}(\text{RT} / (\text{TPC} \cdot \text{NWK})) \end{aligned}$$

where M is the physical module number, H is the physical track (head) number, C is the physical cylinder number, MMM, HHH, and CCC are physical module, head and cylinder numbers at predetermined break points selected by the user, XX and YY are parameters, and X is a parameter equal to the lowest possible value of V at which  $VVV(V) \leq XX \leq WWW(V)$  where VVV is equal to the first logical track of a group and WWW is equal to the last logical track of that group; a group comprising all logical tracks between two of the predetermined break points, and where a break point is the transfer from one physical cylinder to another physical cylinder.

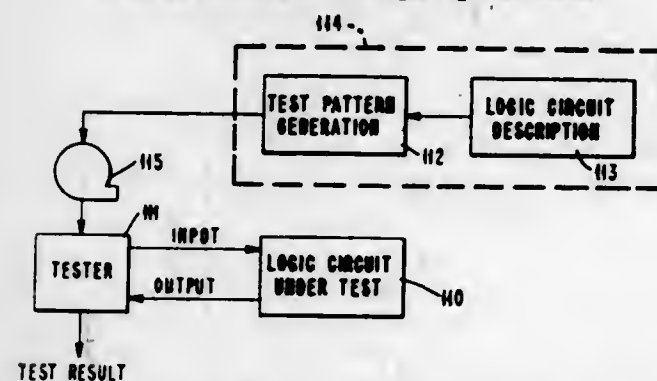
A track interleaving technique is also disclosed for combination with the work space technique to achieve rapid comparison of parallel files.

#### T924,006 FUNCTIONAL TEST METHOD FOR ASYNCHRO- NOUS SEQUENTIAL CIRCUITS

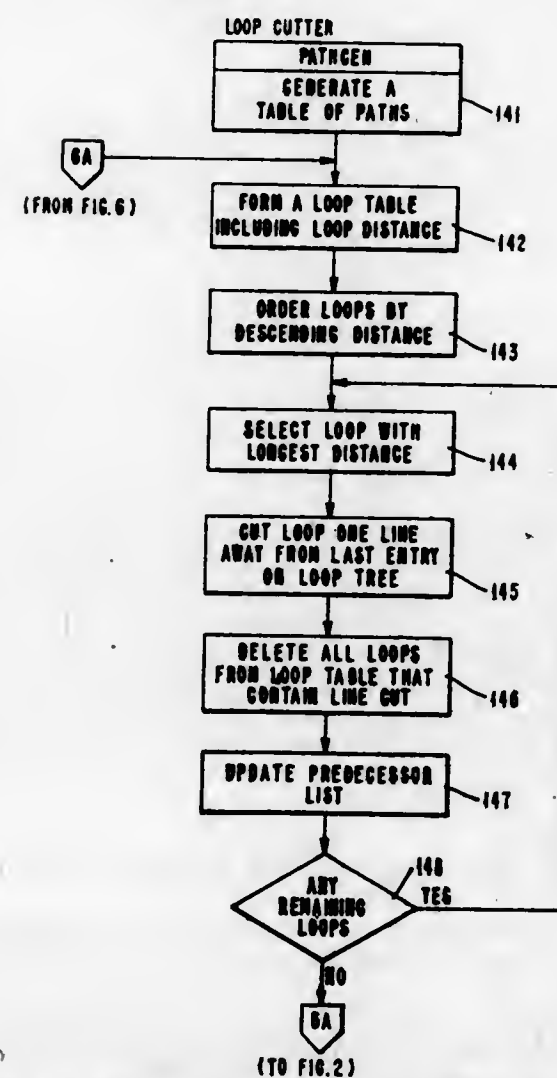
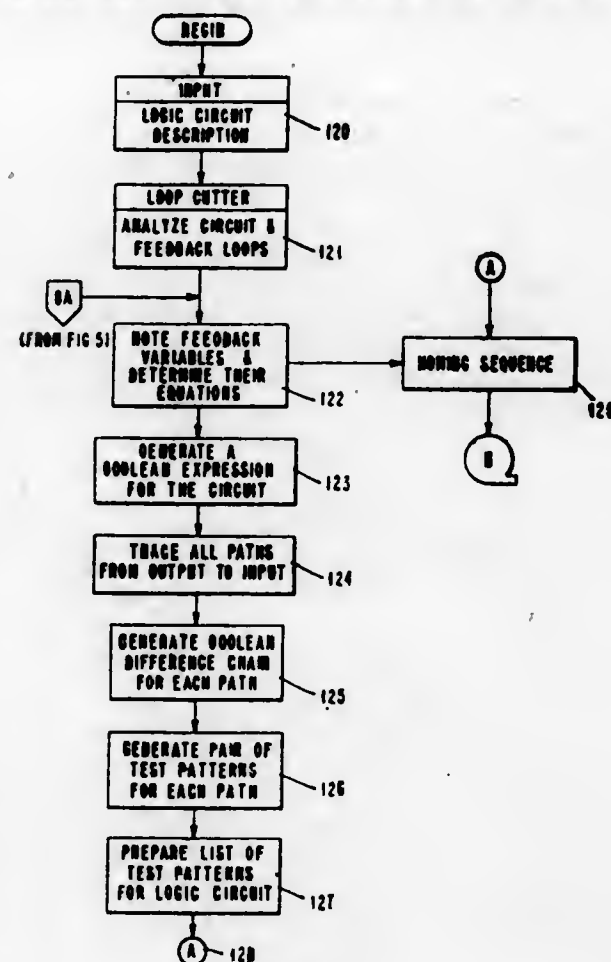
Dennis K. Chia, Wappingers Falls, and So-June Hong, Ma-Yao Hsiao, and Darryl S. Jones, Poughkeepsie, N.Y., and Jung W. Cho, 8820 Root St., Apt. 4, Niles, Ill. 60448

Continuation of abandoned application Ser. No. 256,554, May 24, 1972. This application Oct. 3, 1973, Ser. No. 403,144

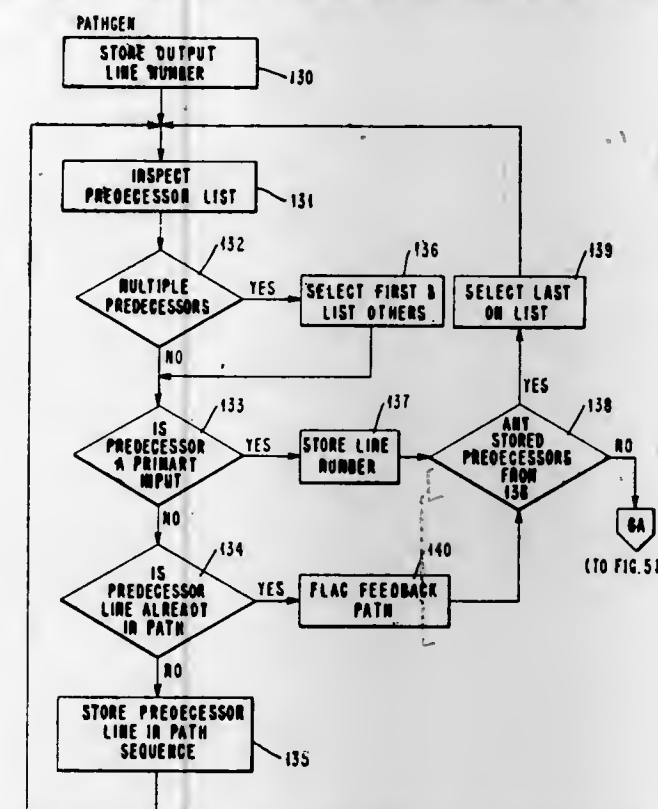
Int. Cl. G06F 11/00  
U.S. Cl. 235-153 AC  
5 Sheets Drawing, 24 Pages Specification



A method for testing physical sequential logic circuits including a program step for controlling a computer to generate test patterns for use in locating permanent faults cut, at least figuratively, in order to convert a representation of the physical sequential circuit to a representation of an equivalent combinational circuit, analyzing the re-



sultant combinational circuit representation according to specific boolean rules to obtain a complete set of test pat-



terns, and applying the test patterns to the physical sequential circuit.

T924,007  
SHUTTER MECHANISM  
Robert L. Couture, 545 Holmes Road, Rochester, N.Y. 14626, and Joseph P. Palmer, 135 Oak St., Batavia, N.Y. 14020

Filed Nov. 5, 1973, Ser. No. 412,995

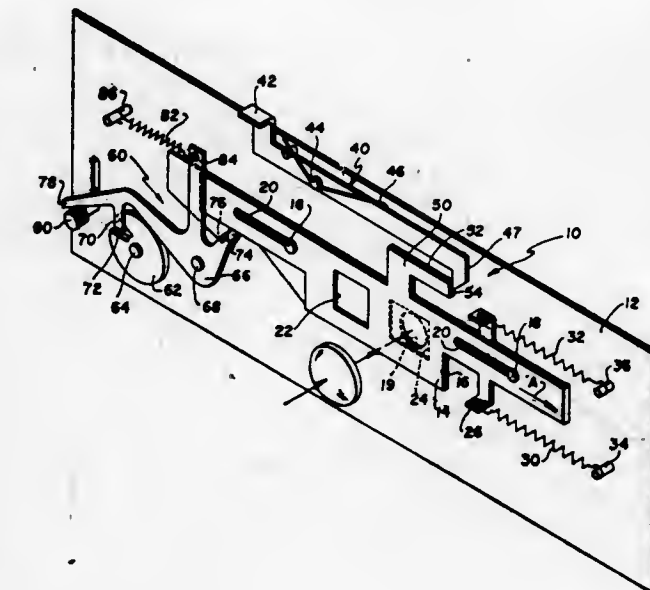
Int. Cl. G03b 9/40

U.S. Cl. 354-246

1 Sheet Drawing, 8 Pages Specification

A shutter having a first blade movable to open an exposure aperture and a second blade movable to close the

exposure aperture, but being held in an open position of the exposure aperture by the combination of the first blade and inertial delay apparatus. Upon movement of the first blade to open the exposure aperture the second blade is released to move to close the exposure aperture after a time interval which is related to a blade movement retarding effect of the inertial delay apparatus. The retarding effect of the inertial delay apparatus is provided by



a rotatable weighted member and a pivotal control element which engages the weighted element and engages the second blade. The control element rotates the weighted element and remains in contact with the second blade until the weight element rotates through a preselected distance to permit the second blade to escape from the control element to move uninhibited. The position of the control element is adjustable relative to the weighted element to vary the time that the second blade is delayed.



# REISSUES

JULY 2, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

## 28,057 SAW CHAIN GRINDING MACHINE

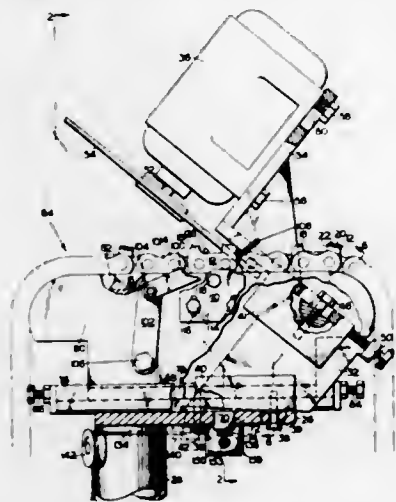
Elmer Ray Slivey, Rte. 1, Box 138,  
Eagle Point, Oreg. 97524

Original No. 3,695,123, dated Oct. 3, 1972, Ser. No. 187,422, Oct. 7, 1971, which is a continuation of application Ser. No. 41,783, June 5, 1971, which is a continuation of application Ser. No. 704,789, Feb. 12, 1968, both now abandoned. Application for reissue Jan. 2, 1973, Ser. No. 320,262

Int. Cl. B23d 63/16

U.S. Cl. 76—43

19 Claims



A grinding wheel is mounted on a machine base, and a pair of saw chain holders disposed on opposite sides of the grinding wheel are also mounted on the base. The holders are urged toward the grinding wheel by a spring and are moved away from the grinding wheel by pull cables operated by foot pedals. A turn screw assembly is rotatably supported on the base and has right and left hand threads on opposite ends thereof on which are threadably mounted stop fingers arranged such that by adjustment of one of the stop fingers for selectively locating its respective holder with relation to the grinding wheel, the other stop finger is simultaneously adjusted so that the other holder is positioned in precisely the same spaced position as the first mentioned holder but on the opposite side of the grinding wheel. A releasable solenoid operated hold-down lever for the saw chain is provided on each holder, and these levers are released when the foot pedals are depressed, such being accomplished by means of switches in the circuit to the solenoids and arranged for engagement by the foot pedals.

## 28,058 AUTOMATIC GAS CHROMATOGRAPHIC SAMPLE INJECTION DEVICE

Edwin W. Smith, Climax Township, Kalamazoo County, and Ernest J. Kubick, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.  
Original No. 3,604,269, dated Sept. 14, 1971, Ser. No. 835,081, June 20, 1969. Application for reissue Dec. 4, 1972, Ser. No. 311,787

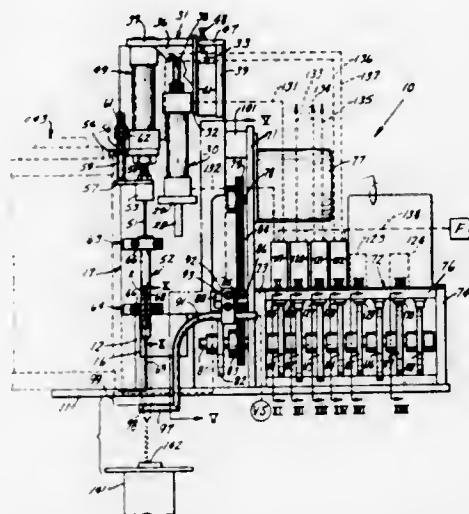
Int. Cl. G01n 1/02

U.S. Cl. 73—422 GC

13 Claims

An apparatus for periodically injecting samples of fluid into a receptacle. The apparatus includes a movable frame

which supports a syringe having a passageway adapted to be moved through an opening in the receptacle. The syringe controls the collection of a predetermined fluid



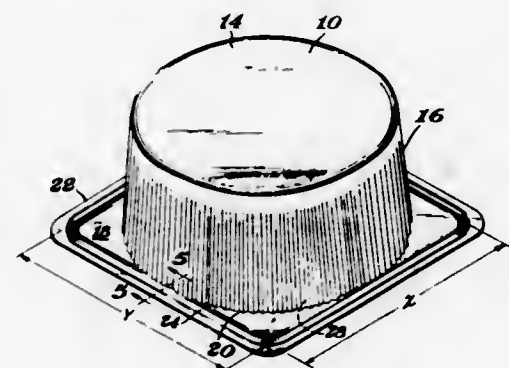
sample and it is flushed after each use. The syringe is moved by the apparatus to inject the predetermined sample through the passageway into the receptacle.

28,059  
INTERCHANGEABLE CONTAINER PARTS  
Lewis S. Mounts, Midland, and Ruben A. Tigner, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.  
Original No. 3,595,428, dated July 27, 1971, Ser. No. 807,844, Mar. 17, 1969. Application for reissue July 26, 1973, Ser. No. 382,989

Int. Cl. B65d 41/00, 85/00

U.S. Cl. 220—42 F

20 Claims



A plurality of container parts including tubs of circular, rectangular, oval, and like various configurations is disclosed. Such tubs are made to fit interchangeably with a single lid design by employing a mating element, as for example, a marginally disposed tongue, of a design and size common to the various tubs so included in such container parts.

JULY 2, 1974

U. S. PATENT OFFICE

11

## 28,060 WATER-IN-OIL EMULSION TYPE BLASTING AGENT

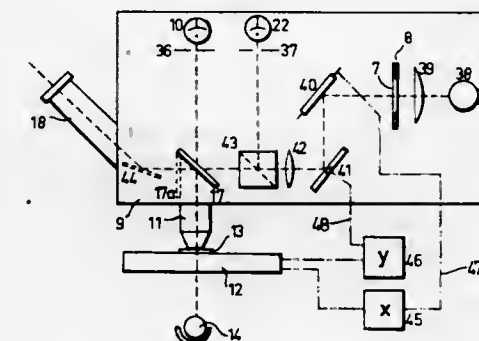
George R. Cattermole, Ballwin, Mo., Austin M. Cummings, Martinsburg, W. Va., and William M. Lyerly, Hagerstown, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Original No. 3,674,578, dated July 4, 1972, Ser. No. 12,126, Feb. 17, 1970. Application for reissue Oct. 5, 1973, Ser. No. 403,866

Int. Cl. C06b 1/04

U.S. Cl. 149—2

10 Claims

A water-in-oil emulsion type blasting agent containing inorganic oxidizing salt, nitrogen-base salt, water, water-insoluble organic fuel that forms a continuous oil phase, lipophilic emulsifier and gas bubbles.



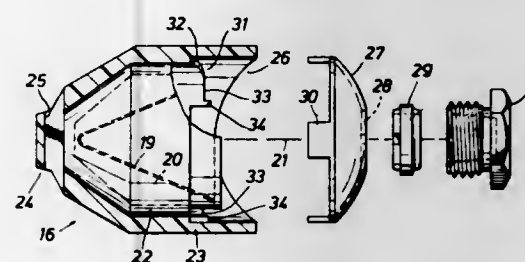
## 28,061 PERFORATING APPARATUS

James B. Shore, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.  
Original No. 3,717,207, dated Feb. 20, 1973, Ser. No. 155,963, June 23, 1971. Application for reissue Apr. 9, 1973, Ser. No. 349,591

Int. Cl. E21b 43/117

U.S. Cl. 175—4.6

19 Claims



In the representative embodiment of the present invention disclosed herein, shaped charges adapted for installation in a typical end-loaded carrier are respectively provided with a rigid annular retainer member which is movably disposed on the forward end of each charge. Inclined camming [Camming] surfaces are cooperatively arranged for shifting the retainer member forwardly in relation to the shaped charge once it is installed in the carrier facing and aligned with a lateral port therein. To reliably secure the retainer in its forward position, the camming surfaces are terminated by flat or transverse surfaces cooperatively arranged to prevent the rearward movement of the retainer under shaking or vibration of the carrier. In this manner, when the port plug is installed in the port, it will engage the retainer and tightly anchor the shaped charge in position.

## 28,062 APPARATUS FOR PHOTOMETRIC ANALYSIS INCLUDING MEANS FOR SCANNING

Torbjörn Oskar Caspersson, Stockholm, and Gösta Mattias Lomakka, Sollentuna, Sweden, by Incentive Research and Development AB, Bromma, Sweden, assignee

Original No. 3,711,209, dated Jan. 16, 1973, Ser. No. 121,814, Mar. 8, 1971. Application for reissue June 4, 1973, Ser. No. 366,867

Claims priority, application Sweden, Mar. 9, 1970, 3,114/70

Int. Cl. G01n 21/30

U.S. Cl. 356—203

4 Claims

A photometric analysis of a specimen is carried out by means of a scanning and integrating apparatus which comprises a main phototube, a specimen holder, driving means for producing relative movement between the main phototube and the specimen holder in accordance with a predetermined scanning path, and an

integrator for integrating the electrical output signal from the main phototube. A diaphragm has an aperture which represents a predetermined measuring field. Lamp and lens means are provided for producing an image of the aperture. An auxiliary phototube is provided for registering said image. The driving means are arranged to actu-

ate members for producing a relative movement between said image and said auxiliary phototube, and said relative movement is in accordance with the predetermined scanning path. The auxiliary phototube actuates an electronic gate which switches off the signal from the main phototube to the integrator when the auxiliary phototube does not receive any light from the image of the aperture.

## 28,063 METHOD AND APPARATUS FOR MAKING A BLOWN ARTICLE

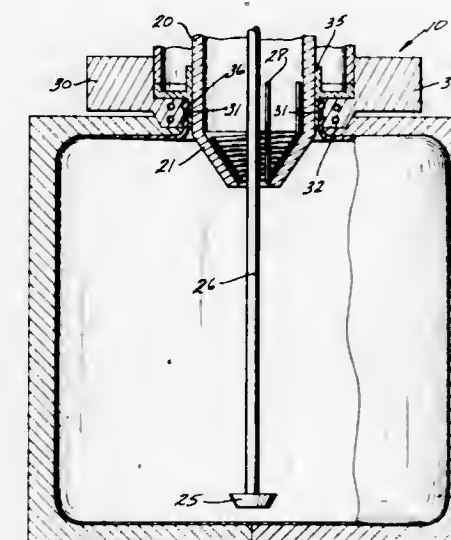
Anthony J. Scalora, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original No. 3,470,282, dated Sept. 30, 1969, Ser. No. 659,968, Aug. 11, 1967, which is a continuation-in-part of abandoned application Ser. No. 275,735, Apr. 25, 1963. Application for reissue Sept. 27, 1971, Ser. No. 184,310

Int. Cl. B29c 17/04; B29d 23/03

U.S. Cl. 264—97

6 Claims



This invention comprises the preparation of a biaxially oriented, thermoplastic, container-shaped article by injection molding a homogeneous melt to form a hollow body or parison, cooling the body to a temperature range wherein the thermoplastic can be biaxially oriented by stretching and inflating, said range being below the homogeneous melt temperature, and then stretching the cooled body along its longitudinal axis and inflating it radially with respect to such longitudinal axis so as to obtain uniform biaxial orientation of the thermoplastic body. The preferred thermoplastic is polyvinyl chloride.

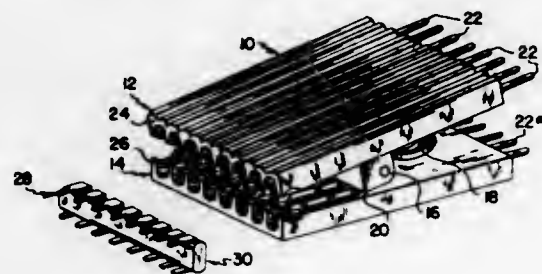
### 28,064 ELECTRICAL CONNECTOR CLIP DEVICE

John T. Vannock, 6273 Melshore Drive, and Robert J. Gabor, 6281 Melshore Drive, both of Mentor, Ohio 44060  
Original No. 3,506,949, dated Apr. 14, 1970, Ser. No. 694,694, Dec. 29, 1967. Application for release Apr. 13, 1972, Ser. No. 243,589

Int. Cl. H01r 11/22, 23/10

U.S. Cl. 339-174

21 Claims



An electrical connector clip device including a pair of finger members having opposed clamping jaws mounted

for movement with respect to one another. A plurality of conductor elements carried by each of the finger members to electrically engage an electrical component at one end and/or to electrically engage an electrical test unit at the other end, and a resilient element coacting between the finger members for resiliently urging the same toward one another.

### 28,065 METHOD FOR REDUCING RESIDUAL VINYL ACETATE MONOMER

Aleksander Berendewicz and William Haworth Todd, Wilmington, Del., assigns to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Original No. 3,534,069, dated Oct. 13, 1970, Ser. No. 795,057, Jan. 29, 1969. Application for release Oct. 13, 1972, Ser. No. 297,037

Int. Cl. C08f 1/96

U.S. Cl. 260-87.3

17 Claims

In the process of copolymerizing vinyl acetate and ethylene under low pressures of 100-3000 p.s.i., the residual vinyl acetate monomer after the main copolymerization is lowered to less than 0.35 percent by reducing the pressure (to atmospheric) and providing free radicals to the system containing the residual monomer. The free radicals are preferably provided from a chemical initiator such as a peroxide.

## PATENTS

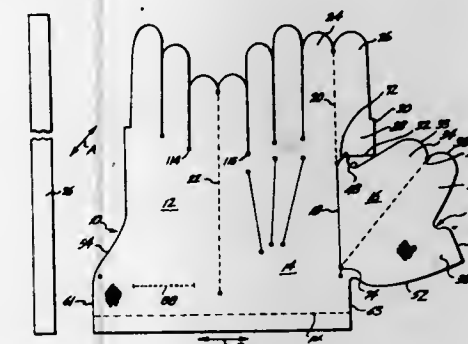
GRANTED JULY 2, 1974

### GENERAL AND MECHANICAL

3,821,817  
GLOVE CONSTRUCTION  
Ione Towner Jorgensen, Rt. 3 Box 520, Bend, Oreg. 97701  
Filed Nov. 8, 1971, Ser. No. 196,552  
Int. Cl. A41d 19/02

U.S. Cl. 2-169

6 Claims

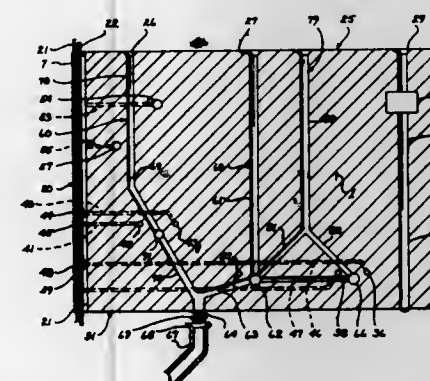


A construction and pattern for fingered gloves, particularly dress gloves, especially designed for use with knit and stretch fabrics. The trunk includes back and palm portions folded at the little finger edge of the hand for wrap around comfort. The back portion of the trunk includes the back portions of the little, ring and middle finger stalls and the back and palm portions of the forefinger stall to provide a wrap-around effect at the forefinger edge fold. The thumb stall is part of the back portion of the trunk when knit or stretch material is used, in which case special seams and stitching are utilized to impart a fashionable set-in appearance, or the thumb stall is cut separately for non-knit materials. A sidefinger fourchette is installed by continuous seams from the forefinger tip to the little finger tip and is cut to taper toward the tips of each finger stall before final stitching.

3,821,818  
PREFABRICATED BATHROOM WALLS  
Anthony C. Alosi, 7450 E. Bonita, Scottsdale, Ariz. 85053  
Filed Sept. 13, 1972, Ser. No. 288,673  
Int. Cl. E03c 1/00

U.S. Cl. 4-191

5 Claims

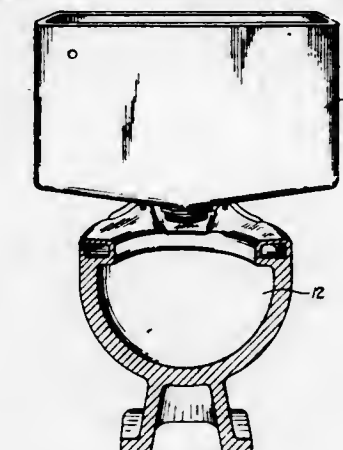


A unitary building wall, having a plurality of sets of passageways disposed therein and serving as a conduit for introducing the necessary utilities to a dwelling unit, is disclosed. A plurality of sets of tree-like passageways, which passageways include a trunk and one or more tributaries, are disposed within an otherwise solid building wall. The trunks of

the passageways extend into and out of the building wall and communicate with similar trunks disposed in adjacent vertically aligned walls. A plurality of orifices are disposed in the lateral side of the building wall and communicate with one of the trunk or tributaries of one of the sets of passageways. The various fixtures within a dwelling unit, such as a tub, toilet, sink and lights, are connected to the orifices. Thereby, the fixtures are connected to the various utilities disposed within one or another of the sets of passageways. A method is also disclosed for forming the unitary building wall, which method includes the construction of a plurality of disposable or hollow trees, each tree defining one set of passageways. The trees are positioned within a form, which form defines the exterior dimensions of the building wall. A flowable hardenable material is poured within the form and allowed to set and cure. After curing, the trees, if made of ice and therefore disposable, are melted and will leave tree-like passageways within the building wall. If the trees are not disposable but hollow, they form a plurality of tree-like passageways within the building wall.

3,821,819  
DRIP-PROOF WATER CLOSET TANK  
Elmer H. Minch, 4252 62nd St., Cleveland, Ohio 45216  
Filed Sept. 23, 1971, Ser. No. 183,204  
Int. Cl. A47k 17/00; E03d 1/00, 1/01  
U.S. Cl. 4-252 A

3 Claims



A water closet having a flush-tank with sloping down walls and a water closet there beneath which has a channel in the top thereof for receiving a condensation drip from the outer wall of the tank and conducting the same into the bowl of the water closet.

3,821,820  
GASKET FOR SEALING OUTLET CONNECTION OF A TOILET BOWL  
Melvin G. Thompson, 13050 N. De Vries Rd., Lodi, Calif. 95240

Filed Dec. 7, 1972, Ser. No. 312,915  
Int. Cl. E03d 11/00; F16f

U.S. Cl. 4-252

8 Claims

A gasket for sealing the connection between the outlet of a toilet bowl and the collar connected to the toilet bowl outlet which includes a ring of wax-like material that engages the horn of the outlet of the toilet bowl and a plastic tube that extends downwardly from the wax-like ring into engagement



with the inner wall of a connecting pipe that has its inlet surrounded by the collar for sealing contact therewith. A plastic



annular is seated on the wax-like ring to form an annular ridge thereon for sealing engagement with the outer wall of the outlet of the toilet bowl.

3,821,821

**ELECTRICALLY OPERABLE HOSPITAL BED**

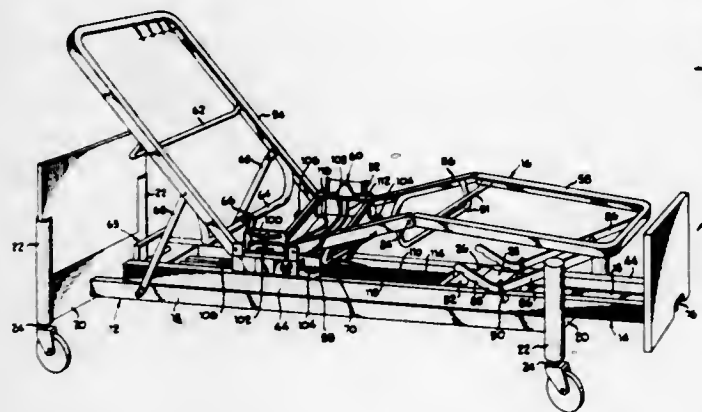
Francis J. Burst, Batesville; Daniel R. Tekulve, Oldenburg, and James S. Adams, Batesville, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Aug. 21, 1972, Ser. No. 282,177

Int. Cl. A61g 7/10; A47c 3/32

U.S. Cl. 5—68

13 Claims



An electrically operable hospital bed having a stationary frame, a relatively movable frame supported on the stationary frame and an articulated mattress support frame secured to the movable frame. The mattress support frame is positionable in a plurality of body supporting positions including elevation of the head end and elevation of the thigh section. Movement of the head end section to inclined body supporting positions causes simultaneous movement of the movable frame and mattress supporting frame toward the head end of the bed.

The stationary frame is supported upon the floor by telescoping legs operable through cable mechanism to adjust bed height. A Trendelenburg mechanism is provided to selectively restrain cables associated with head end or foot end legs to accomplish Trendelenburg and reverse Trendelenburg positioning of the bed.

An automatic knee-break mechanism selectively provides automatic elevation of the thigh section of the mattress support frame upon elevation of the head section. Selectively activated camming means coact between the stationary frame and the thigh section to provide automatic thigh elevation.

3,821,822

**COMBINATION CRADLE, CRIB AND YOUTH BED**

Joseph L. Borreggine, 3001 Main St., Upland, Pa. 18704

Filed Nov. 21, 1972, Ser. No. 308,579

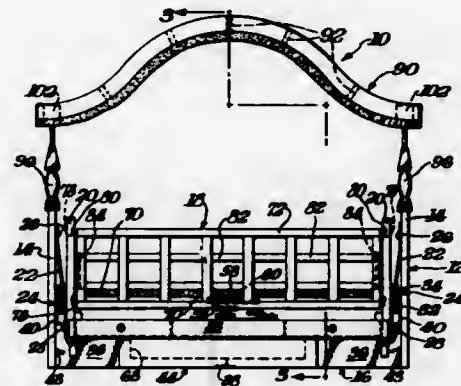
Int. Cl. A47d 9/02, 9/04

U.S. Cl. 5—109

9 Claims

Combination cradle, crib and youth bed comprises longitudinally oriented base frame including pair of spaced apart upstanding head members facing one another and longitudinal

base member connected between upstanding head members. Body supporting unit has opposite headboards releasably supported by base frame, and parallel bars associated with each head member of base frame are pivotally connected between upper portion of each head member and lower portion of each headboard of body supporting unit. Structural relationship



between base frame, body supporting unit and parallel bars enable unit to swing in to-and-fro transverse direction relative to base frame. Separate stabilizer is connected between at least one of headboards and its adjacent head member for preventing longitudinal play of body supporting unit when it swings in to-and-fro transverse direction relative to base frame.

3,821,823

**UPHOLSTERED BODY AND METHOD OF MAKING SAME**

Phillip Krier, Stuttgart-Schoenberg, and Lothar Fendler, Stuttgart, both of Germany, assignors to Mirabed AG, Zug, Switzerland

Division of Ser. No. 753,391, Aug. 19, 1968, Pat. No.

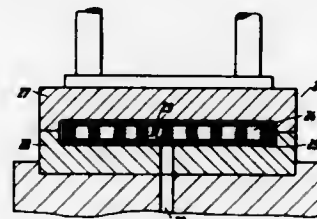
3,660,876. This application May 4, 1972, Ser. No. 250,328

Claims priority, application Germany, Aug. 19, 1967, G 50909

Int. Cl. A47c 23/04, 25/00

U.S. Cl. 5—351

5 Claims



An upholstered body, especially mattress and seat for automobiles, and method of making the same, according to which a core body of coil springs has a seamless cover of foamed material, for instance, of polyester, or polyether, around said core body.

3,821,824

**WELDER'S HAMMER TOOL**

John Randolph Plicher, 2638 Adams St. No. 42, Salt Lake City, Utah 84115

Filed Jan. 26, 1973, Ser. No. 327,075

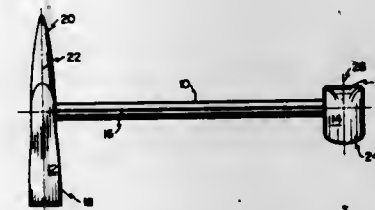
Int. Cl. B25I 1/02

U.S. Cl. 7—8

9 Claims

A welder's hammer tool is disclosed which comprises an elongated slender handle with a conventional welder's slag-

hammer head attached to one end of the handle and other hammer head means attached to the other end of the handle.



The two hammer heads are rotationally displaced with respect to each other for ease in gripping and convenience in use.

3,821,825

**BOAT SEAT MOUNTING**

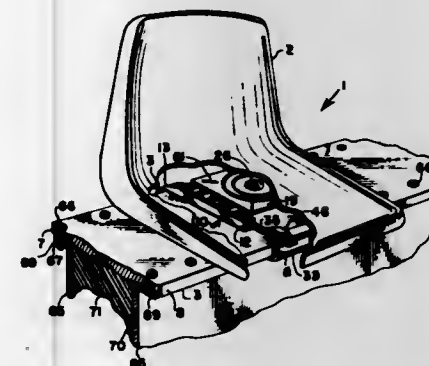
Manuel M. Bailey, 807 Redwood Dr., Independence, Mo. 64056

Filed Aug. 29, 1973, Ser. No. 392,769

Int. Cl. B63b 29/04

U.S. Cl. 9—7

9 Claims



A removable boat seat attachment having a seat rotatably mounted on a base member which is selectively extendable in length to accommodate different widths of thwarts. The base member has thwart or seat board engaging members which co-operate with an adjustable clamp having thwart or seat board engaging portions wherein the base member and the clamp co-operate to engage opposite edges of the thwart or seat board for securing the base member thereto. Quick release locking type fasteners have portions secured to the base member and the clamp operable for urging and normally maintaining the thwart engaging portions in clamping engagement and removably securing the boat seat attachment thereto.

3,821,826

**TAPPING ATTACHMENT**

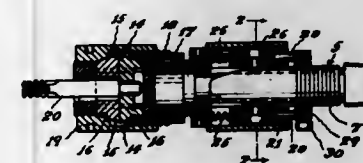
John Khachigian, 42 Capitol Ave., Hartford, Conn. 06113

Filed July 11, 1972, Ser. No. 270,655

Int. Cl. B23g 1/00

U.S. Cl. 10—134

3 Claims



A tapping or threading attachment device for lathes and other machines. Said device having spring means for initially urging a tap or other threading tool into engagement with a work piece for starting a tapping or threading operation. Said

spring means also acting to condition the device by reverse rotation of the work piece to cause withdrawal of the threading tool from the work piece upon completion of the threading operation.

3,821,827

**STITCHDOWN FOOTWEAR AND METHOD OF MANUFACTURE**

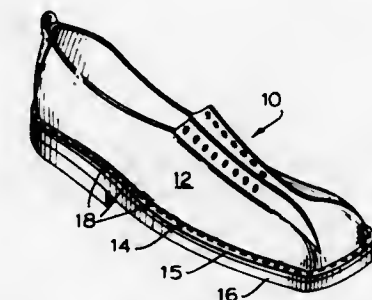
Martin S. Nadler, 208 Alpine Dr., Paramus, N.J. 07652

Filed Aug. 25, 1972, Ser. No. 283,711

Int. Cl. A43d 9/00

U.S. Cl. 12—142 C

4 Claims



A stitchdown shoe and a method of manufacturing a stitchdown shoe is described. The footwear upper is first prefitted so that it is coextensive with the sole or midsole to which the upper is being attached. The outwardly turned bottom portion of the prefitted upper is cemented to the sole or midsole and then stitched to the sole or midsole using a simple stitching machine.

3,821,828

**PUTTY APPLICATION TOOL**

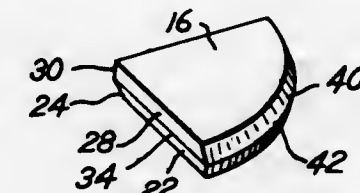
Roy L. Pearson, 811 Armstrong, Marseilles, Ill. 61341

Filed June 19, 1973, Ser. No. 371,481

Int. Cl. E04f 21/32

U.S. Cl. 15—104 S

7 Claims



The disclosure describes a tool for applying putty either to a window in which putty must be formed on all sides of the window frame or to a window in which putty is excluded from one or more sides of the window frame. The tool includes intersecting chamfered surfaces which form putty onto adjacent sides of a window frame corner and includes additional intersecting surfaces which form putty along one side and exclude putty from an adjacent side of a window frame corner.

3,821,829

**DISPOSABLE PAINT APPLICATOR**

Robert P. Finnerty, 891 Prospect Heights, Santa Cruz, Calif. 95060

Continuation-in-part of Ser. No. 177,191, Sept. 21, 1971,

abandoned. This application June 18, 1973, Ser. No. 370,979

Int. Cl. A47I 13/16; B05c 1/00

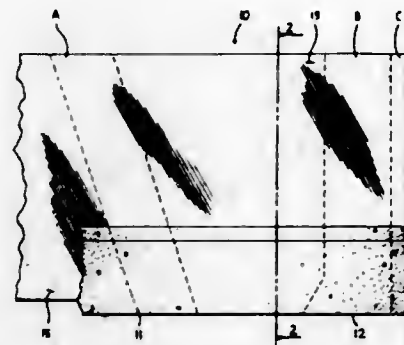
U.S. Cl. 15—244 R

1 Claim

A paint applicator in the form of separate sheets of rigid and absorbent materials bonded together and having the same length but differing widths. The narrower absorbent material projects in one direction from the bond area for immersion in



a paint to be applied and the wider rigid material projects in the other direction from the bond area, serving as a handle.



The materials may be in the form of long strips when bonded, for subsequent cutting to particular lengths for specific applications.

3,821,830

## CLEANER FOR CARPETS AND THE LIKE

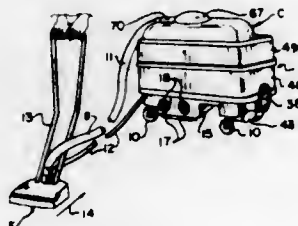
John J. Sundheim, Englewood, Colo., assignor to Windsor Industries, Inc., Denver, Colo.

Filed Aug. 3, 1972, Ser. No. 277,741

Int. Cl. A471 7/00

U.S. Cl. 15-321

10 Claims



A tank type cleaning machine used with a floor tool and having a transparent cover connected to the suction hose from the floor tool and a space beneath the cover for a pail or bucket for collecting dirty cleaning solution removed from the carpet. The cover has a depending flange which extends into the upper end of the pail which, with the upper end of the pail, causes a separation of dirty water droplets from the air, which then passes around the bucket. A suction blower is connected to the bucket receiving space, adjacent the bottom thereof, and discharges through a lower housing which contains the water pump for supplying the floor tool. A tank for cleaning solution surrounds an upright wall, which in turn surrounds the space for receiving the pail, while an annular air filter may be placed around the depending flange and engage the top of the bucket, for operation of the suction blower only and use of the floor tool as a vacuum cleaner. The machine will hold a variety of liquids in the cleaning solution tank and will separate any liquids, which do not dissolve the plastic parts, in the vacuum separator, and will also separate many solids from the air used as the vehicle.

3,821,831

## MULTI-POSITION BRUSH NOZZLE FOR VACUUM CLEANER

Donald P. Grover, Naperville, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,997

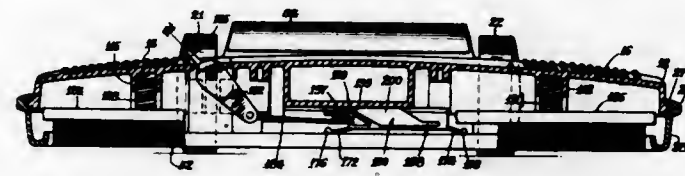
Int. Cl. A471 9/00, 5/34

U.S. Cl. 15-339

3 Claims

A vacuum cleaner nozzle including a brush which is spring biased in the housing of the nozzle and which is adjustable to

three separate positions for cleaning high pile carpets, bare floors and low pile carpets is disclosed. An adjustment lever



adjusts the position of a sliding cam member longitudinally along the housing of the nozzle in a manner which selects one of the three operation positions of the brush.

3,821,832

## DETACHABLE HANDLE TO FIT A CERTAIN SIZE AND APPROPRIATE CONTAINER

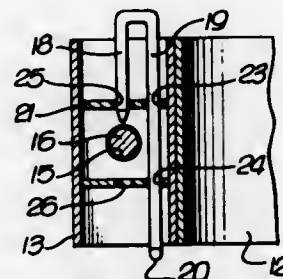
Emmett M. Smith, 11648 2nd St., Yucaipa, Calif. 92408

Filed June 2, 1971, Ser. No. 96,891

Int. Cl. A47b 95/02

U.S. Cl. 16-114 A

2 Claims



A flexible band fitting around an upper portion of a container just below a bead conventionally provided at the upper end of the latter, primary and secondary box structures extending radially from the respective juxtaposed end portions of said band, a handle being mounted in said primary box structure, the latter also mounting an arcuate rod which is slidable in aligned holes formed in said secondary box structure. The rod is apertured vertically to receive a locking pin manually disengageable, which normally holds said band in container gripping position.

3,821,833

## APPARATUS FOR SUPPLYING CARDS BY MEANS OF A PNEUMATIC FLOCK TRANSPORTING SYSTEM

Rudolf Wildbolz, and Christoph Grandler, both of Winterthur, Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

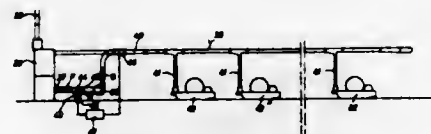
Filed May 26, 1971, Ser. No. 146,971

Claims priority, application Switzerland, Apr. 15, 1968, 5785/68; Sept. 27, 1968, 14639/68; Nov. 20, 1968, 17483/68

Int. Cl. D01b 3/04

U.S. Cl. 19-66 R

16 Claims



Apparatus for supplying at least one card by means of a pneumatic flock transporting system, wherein loosened fiber flocks are conveyed by means of a carrier air stream through a transport duct and are separated at the region of the card from the carrier air stream which is at overpressure into a filling chute of the card connected with the transport duct. The in-

vention contemplates adjusting the moisture content within the transport duct so as to be below condensation, and which relies upon monitoring the moisture content of the carrier air stream within the transport duct, and adding a quantity of steam which is free of water droplets to the carrier air stream charged with the fiber flocks in an amount necessary to adjust the moisture content of the carrier air stream so as to be below the point of condensation.

3,821,834

## METHOD OF MAKING AN ULTRASONIC SEARCH UNIT

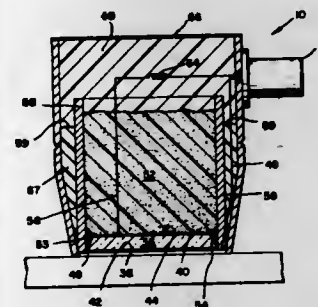
Jerry T. McElroy, Boulder, Colo., assignor to Automation Industries, Inc., Century City, Calif.

Filed July 18, 1972, Ser. No. 272,807

Int. Cl. B01j 17/00

U.S. Cl. 29-25.35

6 Claims



An ultrasonic nondestructive testing system and a search unit for use in such a system are disclosed herein. A method of manufacturing such a search unit is also disclosed. The search unit 10 includes a transducer crystal 36 for transmitting and receiving ultrasonic energy and a backing structure 60 behind the transducer crystal for dampening the crystal 36 against ringing and for attenuating any spurious ultrasonic energy radiated from the backside of the transducer crystal.

3,821,835

## MACHINE TOOL

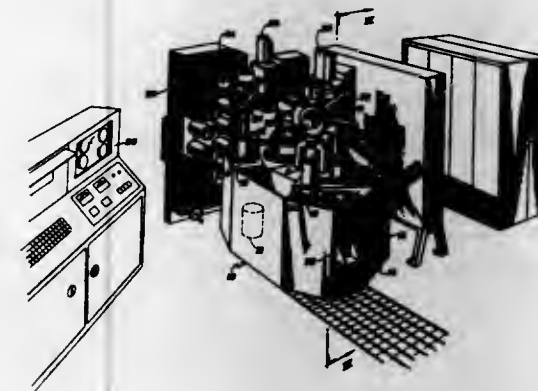
Arthur Francis St. Andre, Marlboro, and David Hamilton Youden, Shrewsbury, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Aug. 17, 1972, Ser. No. 281,526

Int. Cl. B23b 15/00

U.S. Cl. 29-36

10 Claims



A machine tool having a turret which carries both a tool and a workpiece grasping device; the movement of the turret allows the grasping device to take a workpiece from a storage location and place it in the workhead for the performance of a machining operation by the tool.

3,821,836

## THROW AWAY CUTTER INSERT

Yasuo Ohtsu, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

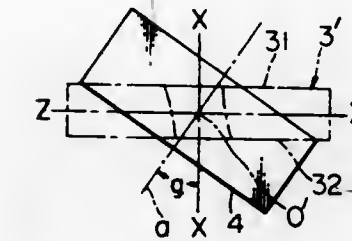
Filed Feb. 8, 1973, Ser. No. 330,506

Claims priority, application Japan, Feb. 17, 1972, 47-15985

Int. Cl. B26d 1/00

U.S. Cl. 29-95

5 Claims



A reversible throw away polygonal insert for use in a milling cutter head having two parallel opposite major surfaces and a plurality of sides intersecting said major surfaces at right angles thereto in which the corner at the juncture between each adjacent sides of said plurality of sides is formed in a curved surface along a cylindrical surface which intersects the opposite major surfaces at a preselected angle thereto to provide two convexly and oppositely directed curved cutting edges thereat.

3,821,837

## CUTTING INSERT AND CUTTING TOOL

Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

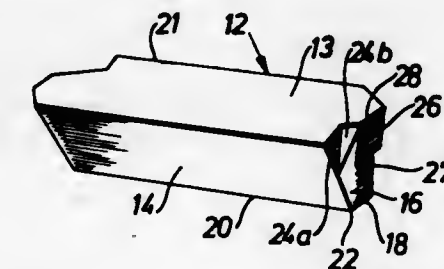
Filed July 5, 1973, Ser. No. 376,296

Claims priority, application Switzerland, July 7, 1972, 9084/72

Int. Cl. B26d 1/00, 1/12

U.S. Cl. 29-95

9 Claims



In a chip-forming cutting tool, the novel insert is provided, at one base surface (at a distance from the cutting corner at each primary bevel face) with a recess for receiving a clamping element. Each pair of bevel faces are separated from each other by a second pair of bevel faces each of which intersects with an associated side surface at an edge of less than 90°. This edge defines a back cutting edge.

3,821,838

## APPARATUS FOR REMOVING AND REPLACING BLOWOUT PREVENTER SEALS IN SITU

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Division of Ser. No. 127,881, March 25, 1971, Pat. No.

3,737,974. This application Jan. 30, 1973, Ser. No. 327,929

Int. Cl. B23p 19/00

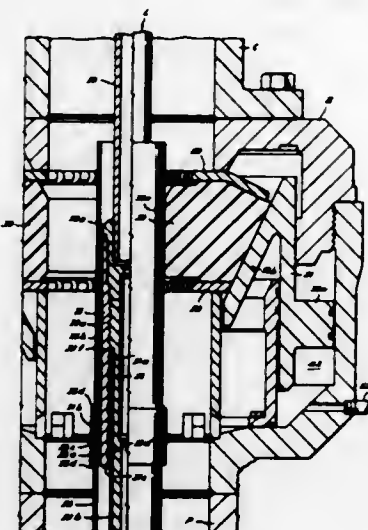
U.S. Cl. 29-200 D

15 Claims

Apparatus for removing and replacing blowout preventer ram seals without removing the rams or opening the blowout preventers, wherein means are lowered in a well pipe for removing one or both of the retrievable ram seals from the



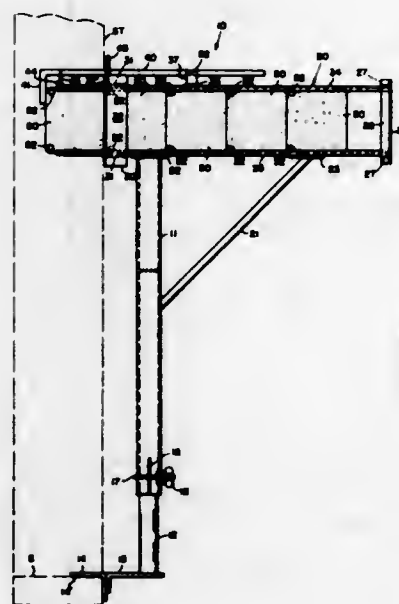
rams by working on the inside of the well pipe, and wherein additional means are provided for inserting from inside of the well pipe one or more of the retrievable ram seals as a replace-



ment for the one or more seals removed, such means being preferably on a single tool but being usable on several separate tools.

**3,821,839**  
**DEVICE FOR LOCATING OUTLET BOXES ON STUDS**  
Clifford L. Mathias, 51 Raeburn Ave., Rochester, N.Y. 14619  
Filed May 4, 1973, Ser. No. 357,490  
Int. Cl. H05k 13/00; B23q 7/10  
U.S. Cl. 29-203 P

10 Claims



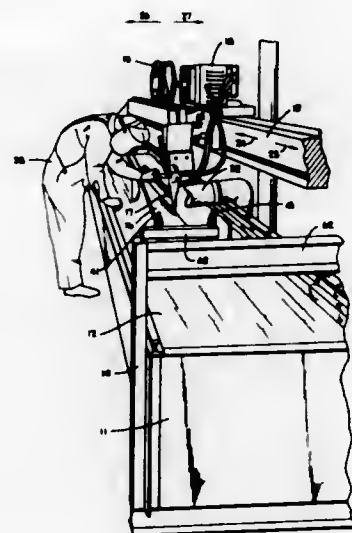
A magazine for slidably housing a row of rectangularly shaped electrical outlet boxes is mounted on the upper end of a telescopic stand, which can be adjusted to position the magazine selectively at different heights. A stop pivotally mounted on the magazine normally projects across its outlet end to limit the extent which the foremost box in the magazine projects out of the magazine. A foot on the bottom of the stand is engageable with a sill to support the stand vertically adjacent a stud; and a flange on the magazine is engageable with the outer face of the stud to position the foremost box along the side of the stud. Two nails that are embedded part-way into the box can then be hammered into the stud; after which the stop member is tripped to release the nailed box and allow its withdrawal from the magazine.

**3,821,840**  
**RAILWAY FROG REPAIR METHOD AND APPARATUS**  
John Knox Kershaw, Columbus, Ind., assignor to Paul A. Teegarden, Columbus, Ind.

Filed Nov. 29, 1972, Ser. No. 310,656  
Int. Cl. B23p 7/00

U.S. Cl. 29-401

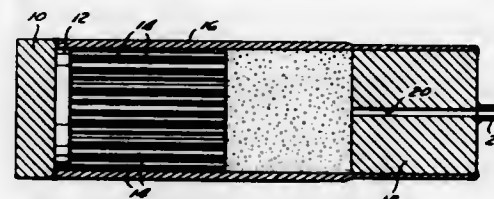
15 Claims



A railway frog is cleaned, and unsound metal removed therefrom. It is secured on a temperature controlled jig, using clamps and shims to provide a convex camber therein. The jig is in a water tank with the water surface slightly below the lowermost surface or defects of the frog to be repaired. Defects are repaired first, and then a continuous overlay build-up of weld metal is obtained with an automatic welder, until the build-up is sufficient that, after release of the clamps and removal of shims the repaired frog then returns to a straight position and then the built-up tread can be readily ground to provide the exact precision surface required throughout the length of the frog.

**3,821,841**  
**METHOD FOR FABRICATING A BERYLLIUM FIBER REINFORCED COMPOSITE HAVING A TITANIUM MATRIX**  
Vernon L. Goodwin, Willowick, Ohio, assignor to Brush Wellman Inc., Cleveland, Ohio  
Filed Aug. 18, 1972, Ser. No. 281,620  
Int. Cl. B22f 3/24; B23p 17/00  
U.S. Cl. 29-419

20 Claims



A process for forming fibrous beryllium/titanium composites from separate beryllium and titanium materials wherein the resultant composite consists of continuous Be fibers of selective size, array, placement, and geometry in a matrix of continuous Ti or Ti alloy phase. The process is characterized by surrounding discrete preformed Be shapes or fiber precursor bodies with either powdered or preformed Ti material and extruding a cannister containing this assembled body at a temperature of from 1,350° to 1,525°F. to a reduction ratio of from 6/1 to 100/1 or greater to form a consolidated Be/Ti composite having a very limited but discernible intermetallic reaction zone of titanium beryllide formed in

situ. After extrusion and cooling, the yield strength of the composite can, if desired, be substantially improved by cold working at 70% to 80% of the ultimate tensile strength. Composite beryllium titanium bodies so fabricated have tensile properties superior to those of Be/Ti composites fabricated up to 1,300°F. and superior ductility, toughness and strength to those of Be/Ti composites made from blended Be and Ti powders hot extruded at 1,350°F. to 1,525°F. Furthermore, because of the capability of controlling the geometry of the array of fibers in composite sections, it is possible to "design" properties to specific applications. These materials may be fabricated by known techniques into aircraft engine parts, e.g., gas turbine compressor blades, vanes and shafts. They would also be useful in other shaft applications requiring high modulus and low weight such as high speed machinery.

**3,821,842**  
**METHOD OF JOINING WIRE OF COMPOUND MATERIAL**  
Carl Bergman, and Erik Enroth, both of Vasteras, Sweden, assignors to Allmanns Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed Sept. 6, 1972, Ser. No. 286,833  
Claims priority, application Sweden, Sept. 15, 1971, 11682/71

Int. Cl. B23p 3/00

U.S. Cl. 29-460

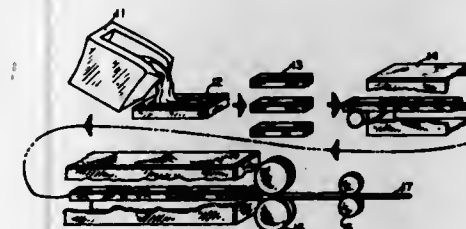
6 Claims



In drawing wire of compound material with a core of aluminum and a casing of copper, in order to join two wire ends for continuous drawing, the copper close to the end of the wires is removed, and the adjacent portion is tapered downwardly. The two ends are then butt-pressure welded and the burr is cut off. The exposed area of aluminum at the burr and the adjacent parts of the wire are then provided by sputtering with a metallic material of good malleability and good electrical conductivity such as silver or gold.

**3,821,843**  
**METHOD OF MAKING ALUMINUM ALLOY CONDUCTOR**  
Donald S. Medrick, Woodbury, Conn.; Clermont J. Snyder, New York, N.Y., and James E. Teague, Sycamore, Ill., assignors to The Anaconda Company, New York, N.Y.  
Division of Ser. No. 146,219, May 24, 1971. This application July 5, 1973, Ser. No. 376,480  
Int. Cl. B23p 17/00  
U.S. Cl. 29-527.7

1 Claim



An electrical conductor with improved toughness and workability is made by adding about 0.01 percent tin to high-iron content, zinc bearing aluminum to be hot-rolled from cast bars. Insulated cables are made comprising the improved conductors.

**3,821,844**  
**LATHES WITH AUTOMATIC TOOL CHANGE FACILITIES**

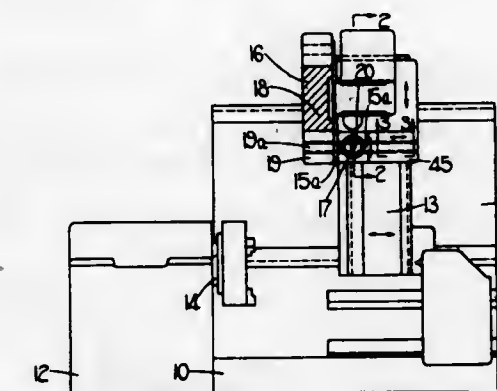
Julius Harman, Baginton, and Michael Eric Norman, Hinckley, both of England, assignors to Alfred Herbert Limited, Coventry, England

Filed Oct. 9, 1970, Ser. No. 79,617  
Claims priority, application Great Britain, Oct. 9, 1969, 49569/69

Int. Cl. B23q 3/157

U.S. Cl. 29-568

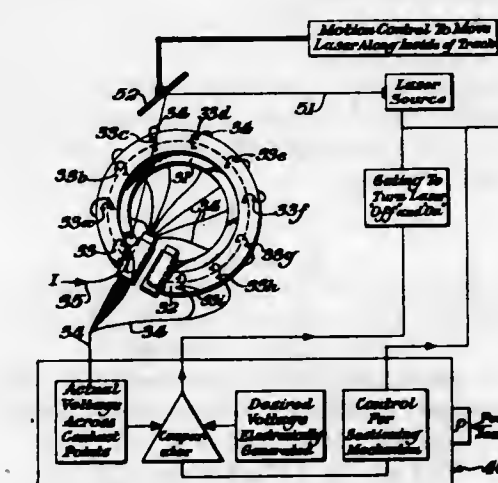
16 Claims



In a tool change lathe, tools are located on a slide structure by means of inter-meshing toothed locating rings. A piston incorporated in the tool mount is interlockingly engageable with a tool and draws the tool onto the tool mount to interengage the toothed locating rings. The piston is rotatable about its axis so that the tool can be indexed to anyone of a plurality of different positions before the toothed locating rings are interengaged.

**3,821,845**  
**METHOD OF MAKING A LINEAR FILM POTENTIOMETER HAVING A CIRCULAR CONFIGURATION**  
Vernon V. Hukee, Nashua, N.H., and William J. Travis, Rome, Belgium, assignors to Sprague Electric Company, North Adams, Mass.  
Continuation-in-part of Ser. No. 127,106, March 23, 1971, abandoned. This application June 29, 1972, Ser. No. 267,277  
Int. Cl. H01c 17/00; G01r 17/02  
U.S. Cl. 29-593

1 Claim



Extreme linearity of a film potentiometer is instantaneously obtained by a computerized sectioning method. A circular film potentiometer track is sectioned off for the purposes of trimming the track, the number of sections being determined by the extent of linearity desired. A computerized contact point board programmed to produce a particular linearity for the circular track is then brought into contact with the track.



On contact, current begins to flow through the resistance track producing a particular voltage at each sectionalized contact point area thereon. The voltage produced at each contact area, with reference to ground, is instantaneously compared to an electronically generated desired voltage. Every time the voltage across a particular section varies below the standard or desired comparison voltage, a laser beam cuts radially into the potentiometer track until the desired voltage is achieved. The laser beam moves along through each section of the track and the procedure advantageously provides reproducible results therefor, instantaneously.

3,821,846

# METHOD OF MANUFACTURING A MOTOR STATOR ASSEMBLY

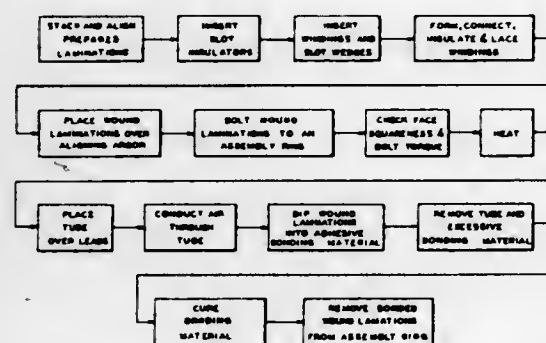
Bernard J. Pleiss, Jr., Dayton, Ohio, and Sam R. Von Krosigk, Mt. Sterling, Ky., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 10, 1973, Ser. No. 322,526

Int. Cl. H02k 15/02, 15/12

U.S. Cl. 29-596

12 Claims



A method of manufacturing a motor stator assembly is disclosed including the steps of stacking and aligning prepared laminations, inserting slot insulators to loosely confine the laminations, inserting windings and slot wedges to further confine the laminations along with the slot insulators, forming, connecting, insulating and lacing the windings and particularly the end turns, placing the wound laminations over an aligning arbor, bolting the wound laminations to an assembly ring, checking the face squareness and bolt torque, heating the compressed laminations at a temperature of 320° plus or minus 10° Fahrenheit for 1 1/2 hours, placing an enclosure or tube over the winding output leads, conducting compressed air through the tube, dipping or immersing the wound laminations into an adhesive bonding material to permit bonding liquid to completely penetrate between the laminations, removing the enclosure or tube along with excessive bonding material, curing the bonding material to permanently bond the laminations, and removing the bonded, wound laminations from the assembly ring.

3,821,847

# METHOD OF PROVIDING A PATTERN OF CONDUCTORS ON AN INSULATING FLEXIBLE FOIL OF A SYNTHETIC MATERIAL

Jan Leendert Meise, and Martinus Adriann Groenewegen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,981

Claims priority, application Netherlands, Feb. 5, 1971, 7101602

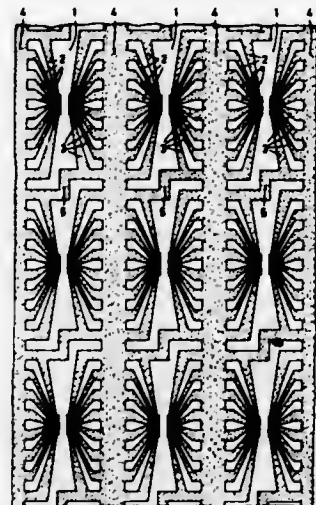
Int. Cl. C23b 5/68

U.S. Cl. 29-624

5 Claims

Patterns of conductors which are destined as current supply members of a semiconductor body, for example, an integrated circuit, are provided on an insulating flexible foil of a synthetic material resin. Each pattern of conductors consists of two groups of conductors. In order to be able to provide the con-

ductors in series production by electrodeposition, a large number of rows of conductor tracks is provided on the foil, the outer ends of the conductor tracks of corresponding groups in a row being connected to a continuous metal track. A connec-



tion track between the metal tracks is provided between at least a number of successive patterns of conductors in a row. The tracks are then covered by means of an electrodeposition process by at least one metal layer of the desirable thickness.

3,821,848

# COPPER BACKED ELECTRICAL CONTACT AND METHOD OF MAKING THE SAME

Melvin L. Backstrom, Murrysville, Pa., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 205,273, Dec. 6, 1971, Pat. No. 3,775,067.

This application June 5, 1973, Ser. No. 367,201

Int. Cl. H01r 9/00

U.S. Cl. 29-630 C

6 Claims

A copper backing is formed on a silver-cadmium oxide contact by first forming a bimetal strip having a thin layer of substantially pure silver and copper layer. The bimetal strip is secured at at least one end to a billet of the contact material, to retain them together during subsequent operations, with the silver surface of the bimetal strip against a surface of the billet of contact materials. The composite is then rolled to a substantial reduction of thickness, of the order of at least 50 percent, to bond the silver surface of the bimetal to the contact material. This produces a tri-layer contact with the layers fully integrated, consisting of the main contact material section, an intermediate silver layer and a copper backing layer.

3,821,849

# BOX CUTTER

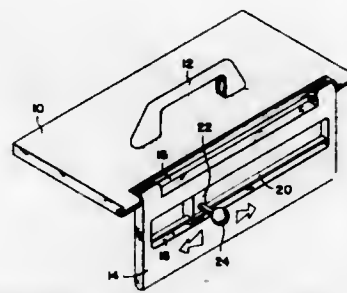
Donald Grinnon, Staten Island, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 3, 1973, Ser. No. 357,016

Int. Cl. B26b 27/00

U.S. Cl. 30-2

4 Claims



A box cutter comprising first and second flat plates having abutting elongated edges one plate having an elongated slot

parallel to said edges; means hingedly joining said abutting edges; and cutting means slidably disposed in said slot, the cutting means having a cutting blade extending through the slot at right angles to said one plate.

3,821,850

# CAN OPENER

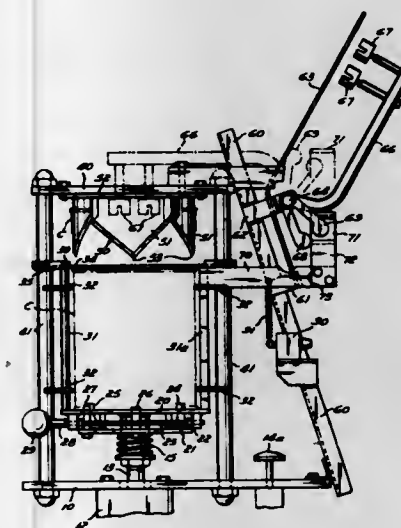
Richard J. Kowalyk, Lyndhurst, Ohio, assignor to Blum Incorporated, Cleveland, Ohio

Filed Dec. 20, 1972, Ser. No. 317,066

Int. Cl. B67b 7/38

U.S. Cl. 30-4 A

12 Claims



Mechanism for rapid opening of cans for restaurant and like large-volume food preparations. Cans opened by relative movement between can-supporting platform carrying stripper plate and a pointed circular guillotine cutting blade having outward beveled or tapered edge to swage the residual panel of the severed lid against inside diameter of can wall, straighten dents in wall of can adjacent crimped rim of lid panel and swell upper wall of can to permit the stripping of opened can from blade. Cams in platform permit unopened cans to displace opened cans and to center the displacing can for opening. Severed lids may be automatically removed or kept in place on contents for subsequent manual removal.

3,821,851

# RAZOR HAVING INWARDLY DIRECTED SINGLE EDGE BLADES

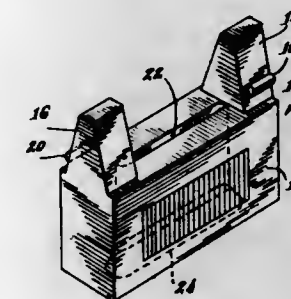
Leopold K. Kuhl, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 4, 1972, Ser. No. 278,165

Int. Cl. B26b 21/24, 21/14

U.S. Cl. 30-50

5 Claims



The specific disclosure provides a razor for supporting two single cutting edge blades in converging planes with the cutting edges of the blades spaced apart a short distance. The razor comprises a pair of opposing upwardly and inwardly sloped blade seats having a pair of spaced stops positioned

between the blade seats for abutting engagement with opposite outer portions of the cutting edges of the two blades. A pair of resiliently yieldable means are provided for clamping the two blades on the blade seats and biasing the two blades into abutting engagement with the stops. The blades are replaceable by use of a single edge dispensing magazine having an elongated key for selectively reducing the clamping pressure of each one of the clamping means.

3,821,852

# TRAY WITH ASTRAL LAMP FOR DENTAL USE

Motohiko Kato, Omiya, Japan, assignor to Kabushiki Kaisha Yoshida Selsakusho, Tokyo, Japan

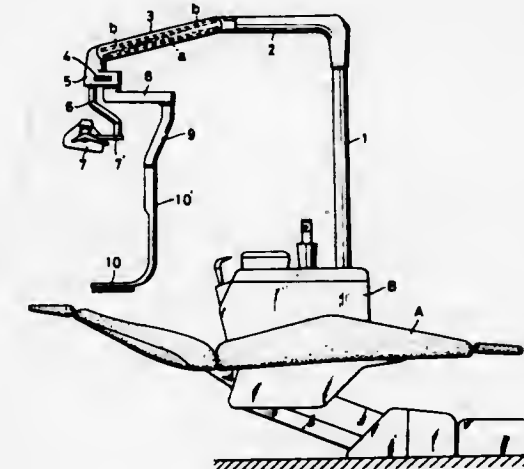
Filed Sept. 27, 1972, Ser. No. 292,775

Claims priority, application Japan, Nov. 17, 1971, 46-106997

Int. Cl. A61c 9/00

U.S. Cl. 32-22

10 Claims



A tray and an astral lamp for dental use are connected to a common support member in a fixed vertically spaced relation, the lamp and tray being individually rotatably attached to the common support member. The common support member is attached to the front end of an up and down swingable arm comprising a parallel link mechanism having a balancing spring, and the latter arm is rotatably mounted on a pole fixed on a dental unit or the like.

3,821,853

# MOBILE TRACK SURVEY APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

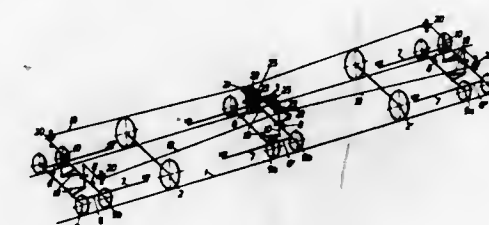
Filed June 23, 1971, Ser. No. 155,851

Claims priority, application Austria, July 2, 1970, 5959/70

Int. Cl. B61k 9/08

U.S. Cl. 33-144

11 Claims



Track alignment deviations are measured with three measuring gears having an axle biased into engagement with a respective track rail and moving transversely in response to alignment deviations. A measuring device is movably mounted on the chassis between the end measuring gears, and an independent transmission between the end measuring axles and the measuring device transmits the transverse movement to



the respective end axle to the device. The combination of the transverse movements of the two end measuring axes and of the center measuring axle moves the measuring device between the end reference points a distance corresponding to the ordinate at the center measuring point, this movement generating a proportional signal which is transmitted to an indicator or recorder.

3,821,854

## DEPTH MICROMETER

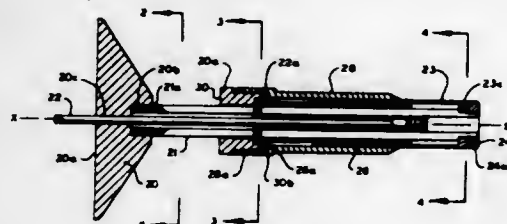
Edwin Koch, R.D. No. 1, Deposit, N.Y. 13754, and William Koch, 150-19 Eleventh Ave., Whitestone, N.Y. 11357

Filed Jan. 26, 1973, Ser. No. 326,872

Int. Cl. G01b 3/28

U.S. Cl. 33—169 B

8 Claims



A precision depth micrometer gauge comprises a block having a flat reference surface from which a measuring rod adjustably extends, the measuring rod being slidably and non-rotatably supported within a shaft extending from the block, with an internally threaded barrel fixedly mounted on the end of the shaft. A pair of coaxial interconnected sleeves surround the shaft and rod, the inner sleeve being in threaded engagement with the barrel and both sleeves being rotatable relative to the rod. The end of the outer sleeve remote from the block is read against a scale inscribed on the barrel. The arrangement provides additive direct reading, so that measurements are calculated in the same manner as with a caliper micrometer gauge.

3,821,855

## DETECTING APPARATUS

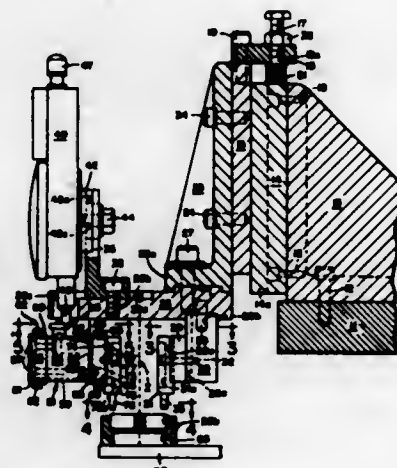
Earl A. Baker, Big Flats, and Joseph R. Jones, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 6, 1972, Ser. No. 260,120

Int. Cl. G01b 7/00, 7/34

U.S. Cl. 33—174 L

6 Claims



Apparatus for sensing or detecting, in an open-sided cavity of a container or nest for supporting an article having a peripheral wall of a uniform height, the presence or non-presence of such an article in said cavity and, if the presence of such an article is sensed or detected, whether the article is

correctly or uniformly seated or positioned in the cavity. A reference or fixed probe and a plurality of actuable probes extend towards said cavity from a detector or detector assembly positioned adjacent said cavity and each is intended to contact a different one of a plurality of substantially equally spaced-apart points on the annular, surface or rim of the peripheral wall of any article in the cavity when the probes move towards the cavity. If the actuable probes contact the rim of the peripheral wall of an article in the cavity at substantially the reference plane at which the fixed probe contacts such rim, display and/or control device or devices reflecting the presence and correct or uniform seating of the article in the cavity are actuated. If any of the actuable probes are not actuated to about the reference plane or are actuated slightly past that plane during the movement thereof towards said cavity, indications or displays and/or control devices reflecting incorrect or non-uniform seating of an article in the cavity, or non-presence of an article in the cavity, are actuated.

3,821,856

## COMPOUND GAUGE DEVICES FOR MEASURING THE AXIAL CURVATURE OF A TUBE

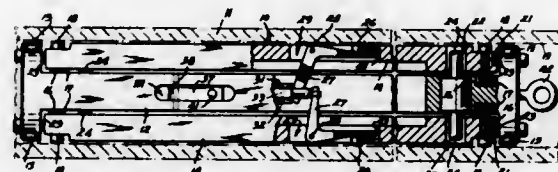
Willard Emanuel Rapp, Franklin Twp., Somerset County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,372

Int. Cl. G01b 7/28, 19/26; E21b 47/08

U.S. Cl. 33—178 E

16 Claims



A compound gauge device includes a carrier on which is mounted two wall curvature gauges in diametrically opposite positions for independent radial movement and for combined axial movement through a tube. Each wall curvature gauge includes a radially movable probe mounted between two feet located at axially opposite sides of the probe. The feet and probe of each gauge bear against an adjacent, inner wall surface of the tube. The radial position of each probe relative to a line joining two reference points on the wall surface, corresponding to the two points engaged by the two associated feet, establishes the radial displacement of a contacted point which corresponds to the curvature of said wall surface.

The coil of an axially mounted linear variable differential transformer (LVDT) is mechanically coupled to one of the probes, while the other probe is mechanically coupled to the core of the LVDT. As the compound gauge is advanced through the tube, a continuous electrical output signal having a voltage proportional to the difference in relative radial displacements of the two probes with respect to their associated reference lines is generated by the LVDT to indicate the axial curvature of the tube.

3,821,857

## CONTINUOUS DRYING OF SOLID PARTICLES

Andre Mercier, La Madeleine, France, assignor to Fives Lille Call, Paris, France

Filed May 1, 1973, Ser. No. 356,199

Claims priority, application France, May 4, 1972, 72.15816

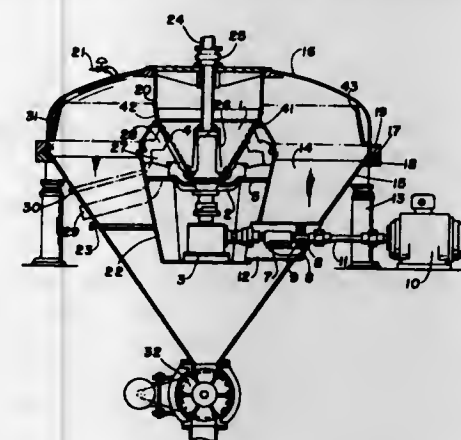
Int. Cl. F26b 5/08

U.S. Cl. 34—8

8 Claims

A liquid-solid mixture is dried in a rotary basket, the separated liquid phase is received in an annular housing surrounding the basket and the centrifugally ejected solid parti-

cles are dried in a fluid-tight, closed casing defining a drying chamber surrounding the housing and filled with a dense and



inert fluid, such as compressed air, to increase the drag on the projected particles and to brake them along the entire length of their trajectory.

3,821,858

## PROTECTOR FOR ATHLETIC SHOES

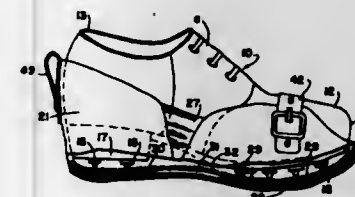
Tennysen K. Haselden, P. O. Box 212, Andrews, S.C. 29510

Filed Sept. 12, 1973, Ser. No. 396,496

Int. Cl. A43b 00/00

U.S. Cl. 36—2.5 AN

10 Claims



A protector for athletic shoes having spikes projecting from the sole thereof. The protector is adapted to receive the shoe and includes an upper, a sole carried by said upper having an outer portion, an inner portion in which the spikes are adapted to be embedded, a hard toe plate and a hard heel plate which plates are positioned between the outer and inner sole portions.

3,821,859

## DREDGE LADDER SHOCK MOUNTING ARRANGEMENTS

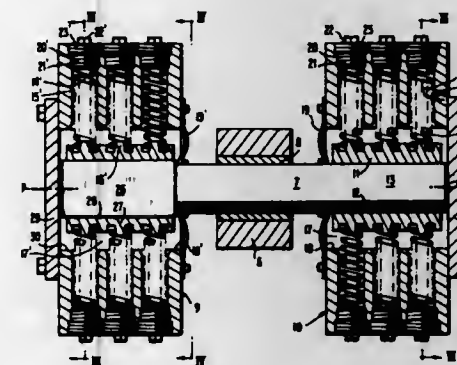
William Andrew McWaters, c/o P. E. Terry, Charlton Rd., East Brookfield, Mass. 01515

Filed Nov. 4, 1971, Ser. No. 195,674

Int. Cl. E02f 3/90

U.S. Cl. 37—67

54 Claims



Shock mounting arrangements for mounting one end of a rigid dredge ladder and for mounting the holding spud on a

dredging barge or dredging platform. In the ladder mounting, pivot pins are connected to one end of the ladder for permitting pivotal movement of the ladder thereabout. The pivot pins are supported in rigid housing structures attached to the barge structure. These housing structures include a plurality of coil springs operatively engaging the pins and the rigid housing structure such that the pins are normally held in a fixed position but are permitted limited radial movement in response to dredging operation shock forces transmitted by way of the ladder to the pin means. Guide means can also be provided to limit the motion of the pin means along a single plane extending perpendicularly to the pivot axis of the ladder. Other shock absorbing means, such as hydraulic means or rubber means can be substituted for the spring means. One arrangement of the invention provides for mounting the dredge ladder for pivoting movement about an axis at the rear of the barge, while another embodiment provides for pivotally mounting the ladder forwardly of the rear of the barge. In the holding spud mounting, a vertically extending housing is provided with radially extending springs for supporting the holding spud in vertical position with respect to the barge. These springs permit limited radial movement to attenuate shifting shock forces caused by winds and water swells.

3,821,860

## PORTABLE INTERNALLY ILLUMINATED SIGN

Richard L. Patty, 1152 Hartzell St., New Haven, Ind. 46774

Filed Feb. 9, 1973, Ser. No. 330,943

Int. Cl. G09f 13/16

U.S. Cl. 40—129 A

4 Claims



An internally illuminated sign comprising a hollow body of translucent material, a reflective material on the inner perimetral surface of the body, and a source of light in the form of an ordinary flashlight secured to the body such that the lens is disposed internally of the body and the handle projects therefrom and serves as a means of manually holding the sign as desired.

3,821,861

## TRAP FOR FISHING

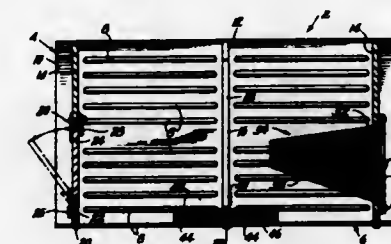
Donald A. Jalbert, 134 South St., Biddeford, Maine 04005

Filed Oct. 2, 1972, Ser. No. 293,832

Int. Cl. A01k 69/08

U.S. Cl. 43—65

5 Claims



A trap is formed from three plastic rectangular side panels with flow openings therethrough, the side panels being secured to a plurality of triangular plastic panels arranged in



spaced, parallel relationship to thereby form a triangular enclosure. Trap nets are removably mounted in the end panels of the triangular trap enclosure, and function to trap a variety of fish. In one embodiment an emptying door is provided in an end panel, while in a second embodiment the emptying door is placed in one of the rectangular side panels. The trap is weighted to secure it in position.

3,821,862

## FLIES AND METHODS OF MAKING SAME

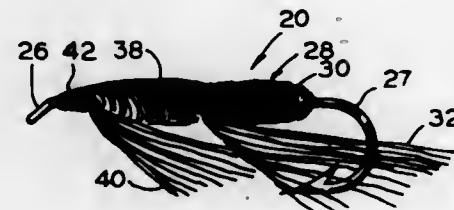
Jim A. Teeny, 915 N.E. 108th, Portland, Oreg. 97220

Filed June 20, 1972, Ser. No. 264,626

Int. Cl. A01k 85/08

U.S. Cl. 43—42.25

13 Claims



Forwardly extending butt portions of barbs of a tail feather from a Chinese pheasant are bound by a thread to the rear portion of a shank of a hook and are closely wound forwardly on the shank to form a nymph body. The barbs are bound to the shank slightly ahead of the closely wound body and the free end portions are folded back and the thread is wound thereover to hold them in downwardly and rearwardly extending positions to form legs. Then, for a smaller fly, the thread is wound into a head, or for a double fly, a second group of barbs are secured to the forward portion of the shank in a like manner to form a second body with legs after which a head is formed.

3,821,863

## CONTROLLED FERTILIZER FEEDER

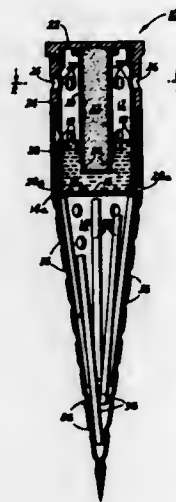
See Fong Chan, 47-09 Newton Rd., Astoria, N.Y. 11103

Filed June 21, 1973, Ser. No. 372,205

Int. Cl. A01g 29/00

U.S. Cl. 47—48.5

8 Claims



A plant irrigating and feeding control device in several embodiments of invention. In both forms a tapered container adapted to be easily pushed into the ground is subdivided into two compartments, a top compartment containing a source of ground fertilizer and serving to meter the fertilizer outflow as a protection against excess fertilization, and a bottom compartment containing additional plant nutrients. A sleeve disposed about the top compartment having apertures therein adapted for partial alignment with apertures in the compartment provides the desired fertilization control. In both forms

of invention the top and bottom compartments serve as a source of air to supply oxygen to the soil containing the roots of plants nourished thereby.

3,821,864

## VEGETATIVE REPRODUCTION OF GRASSES

William E. Stottlemeyer, Ostrander, Ohio, assignor to O. M.

Scott &amp; Sons Company, Marysville, Ohio

Filed Apr. 6, 1973, Ser. No. 348,721

Int. Cl. A01n 5/00

U.S. Cl. 47—58

15 Claims

Grasses of the non-stoloniferous type are vegetatively reproduced by treating the grasses with a growth regulator which produces aerial nodes in the stems thereof by internode elongation in the crown of the grasses. At least one of the aerial nodes are clipped from the stem and this clipping is sprigged into soil. The nodes on this clipping will root and produce tillers. In most instances, the nodes in the crown of the parent plant will produce tillers after removal of the clipping and thus the parent plant will also survive.

3,821,865

## CHANNELED END GATE

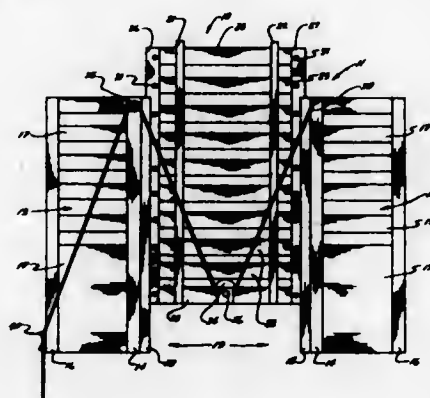
Myrel R. Steinke, Culbertson, Nebr. 69024

Filed June 12, 1972, Ser. No. 261,714

Int. Cl. E05f 15/16

U.S. Cl. 49—404

1 Claim



A channeled end gate for use with a standard stock rack and having a plurality of vertically spaced, horizontally disposed, slats secured to spaced uprights with elongated channels disposed over the ends of the slats wherein the gate is vertically movable in the slideway of the end wall of the rack.

3,821,866

## WORKPIECE TREATING ARRANGEMENT

James H. Carpenter, Hagerstown, Md., assignor to The Car-

borandum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 55,699, July 17, 1970, Pat.

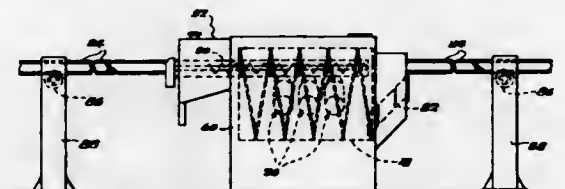
No. 3,693,296. This application Sept. 22, 1972, Ser. No.

291,465

Int. Cl. B24c 3/06, 3/14

U.S. Cl. 51—9

3 Claims



In a workpiece treating arrangement, a drum has an elongated member extending through the upper portion thereof for supporting a throwing wheel within the interior of the drum for treating workpieces during rotation of the drum.

3,821,867

## APPARATUS FOR LOADING, UNLOADING AND HOLDING A WORKPIECE RELATIVE TO A MACHINE

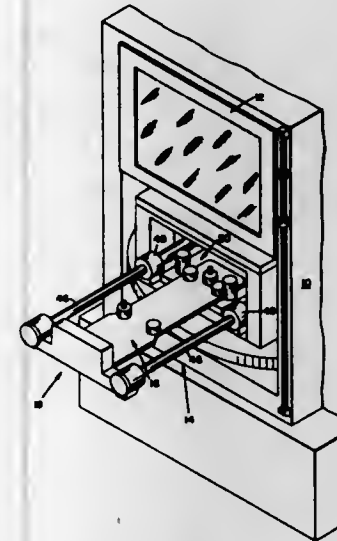
Ernst J. Hunkeler, Fairport, and Philip F. White, Victor, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,367

Int. Cl. B24b 41/06

U.S. Cl. 51—215 R

12 Claims



Apparatus for handling a workpiece includes a holding unit carried by a machine for receiving and holding the workpiece in a precisely located position relative to grinding, milling, or other operations to be performed on the workpiece. A loading and unloading device is secured to the holding unit for receiving a workpiece externally of the holding unit and for advancing the workpiece into the confines of the holding unit along a first axis of movement. Once the workpiece is placed within the holding unit, a placement means functions to move the workpiece along a second axis of movement away from a supporting surface of the loading means and to a final placement position where the workpiece can receive a machining operation. The apparatus is especially useful for handling rotary engine housings during grinding or milling of rotor cavities in the housings.

3,821,868

## GROOVED STRUCTURAL ELEMENT

Lindell N. Edwards, St. Louis, Mo., assignor to Universal

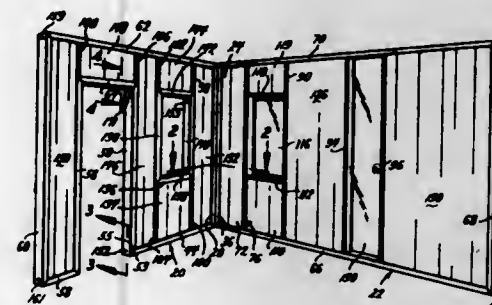
Modular Structures, Inc., St. Louis, Mo.

Filed Jan. 31, 1972, Ser. No. 222,113

Int. Cl. E04b 2/60

U.S. Cl. 52—241

3 Claims



A structural element has elongated, parallel, transversely-spaced grooves which can accommodate the edges of transversely-spaced panels. That structural element coacts with other similar structural elements to constitute a plural-sided frame which has substantially-continuous, elongated, parallel, transversely-spaced, inwardly-directed grooves. A plurality of panels have their upper and lower edges extending into and

held by one of those elongated, parallel, transversely-spaced, inwardly-directed grooves to define a structural plane; and a further plurality of panels have their upper and lower edges extending into and held by the other of those elongated, parallel, transversely-spaced, inwardly-directed grooves to define a second structural plane which is spaced transversely from the first structural plane. Connector members of generally H-shaped cross section have grooves which accommodate the side edges of the first plurality and second plurality of panels and which prevent transverse movement of those side edges relative to each other and relative to those structural planes.

3,821,869

## JOINT CONSTRUCTION FOR CONCRETE STRUCTURES

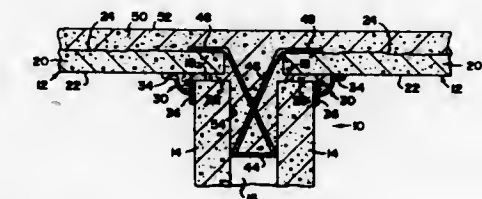
Barton D. Morgan, 302 Aurora St., Hudson, Ohio 44236

Filed Mar. 2, 1972, Ser. No. 231,293

Int. Cl. E04b 1/16, 2/52; E04c 2/38

U.S. Cl. 52—259

7 Claims



A joint between preformed concrete wall and floor panels. The floor slabs, which have smooth bottom surfaces and rough cast upper surfaces, are positioned on the top of the wall panels with shims being provided to maintain spacing between the floor slabs and the tops of the wall panels. A molding strip of, for example, extruded vinyl is affixed to the upper end of the wall panels and engages the lower surface of the floor slabs. Fresh concrete is now poured to form the finished surface of the floor slab and the concrete flows into the space between the floor slab and the upper end of the wall panels, the molding strips retaining the concrete in place. Stopper plates may be provided in the voids of the wall panels to limit the depth to which the concrete flows in the wall panels.

3,821,870

## FITTING FOR GLASS PANELS OF DOORS AND WINDOWS

Brigitte Stittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch &amp; Co. GmbH, Leonberg/Württ, Germany

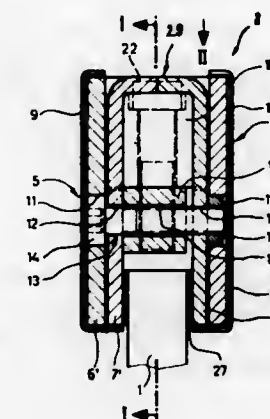
Filed Nov. 15, 1972, Ser. No. 306,868

Claims priority, application Germany, Nov. 17, 1971, 2156954

Int. Cl. E06b 3/00

U.S. Cl. 52—624

19 Claims



Two fitting units are each to be placed at the opposite sides of a glass panel in contact therewith. Each of these units has a



first portion which is to contact a glass panel adjacent an edge thereof, and a second portion which extends outwardly beyond the edge. Each unit includes an inner plate for contact with the glass panel and an outer plate overlying the inner plate, with the two plates having aligned holes of which the one in the outer plate is larger than the one in the inner plate. The second portions are spaced by spacing means remote from the edge of the glass panel, and threaded connectors connect the two units together so as to clamp them in contact with the glass panel.

3,821,871

## FATIGUE RESISTANT FASTENERS

Hubert A. Schmitt, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

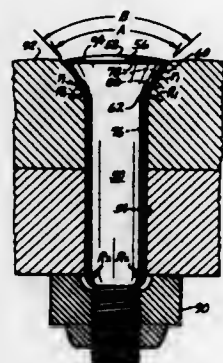
Division of Ser. No. 61,153, Aug. 5, 1970, Pat. No. 3,748,948.

This application May 3, 1973, Ser. No. 356,877

Int. Cl. F16J 5/02, 5/03

U.S. Cl. 52—758 F

6 Claims



A flush head fastener pin for use in aircraft structural joints which are countersunk for surface flushness. The pin is shaped and adapted to preload the joint material surrounding the countersink to create a predetermined residual stress pattern in that region for improvement of fatigue life. Preferred embodiments of a straight shank bolt, a tapered shank bolt, and a rivet are presented. Each pin embodiment has a 70° conical head and a concave transition portion of specified radius and smoothness interconnecting the head with the shank. The 70° head and transition portion cooperate to conformably deform and preload the countersunk region of the hole, which is preferably provided with a convex surface of specified radius at the base of the countersink, and a conical surface having a greater cone angle than that of the pin. The straight shank bolt embodiment further discloses a hardened convex lead-in portion of specified shape and smoothness extending between the shank and the threads to prevent galling of the hole during installation of the bolt.

3,821,872

## CLAMPING DEVICE FOR STRUCTURAL CROSS-MEMBERS

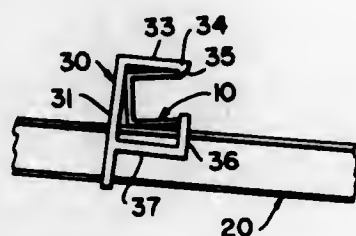
Luigi Merlotti, 14812 Crescentwood, East Detroit, Mich. 48021

Filed July 27, 1972, Ser. No. 275,774

Int. Cl. F16b 7/00

U.S. Cl. 52—760

4 Claims



Transversely abutting tubular members are clamped together by a forked member having side walls and a connect-

ing base undergripping one of the tubular members and having an arm integrally extending from each of the side walls flexibly overgripping the other tubular member. When the forked member is rotatably positioned about the abutting tubular members, the arms and the base resiliently cooperate to press the tubular members together.

3,821,873

## METHOD AND APPARATUS FOR FORMING AND FILLING POUCHES

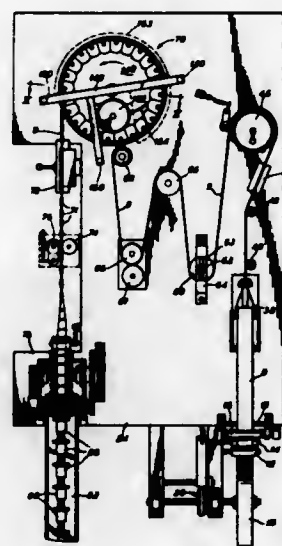
Harold Thomas Benner, Jr., and Charles E. Cloud, both of Wilmette, Ill., assignors to R. A. Jones & Co. Inc., Covington, Ky.

Filed Nov. 14, 1972, Ser. No. 306,283

Int. Cl. B65b 1/22

U.S. Cl. 53—24

13 Claims



A machine for forming and filling pouches from a continuous supply of web material has a station forming said web into a continuous train of pouches, each pouch having an upwardly opening side, a station for filling the pouches as they are carried around the periphery of a carrier wheel, and a station for sealing the open side of each pouch and separating the pouches into individual packets. The carrier wheel has a rocker assembly for rocking each pouch after it is filled, settling the material therein and forming a more compact package. A filling wheel is located above the carrier wheel and rotates therewith to automatically insert filling tubes into the pouches, deposit a charge of material to be packaged into each pouch, and withdraw the filling tubes from the pouches as the carrier wheel rotates. The pouches are opened to receive the filling tubes through the cooperation of vacuum nozzles which grip one side of each pouch, air jets directed into the pouches, and the rocker assembly which supports the pouches as they are rotated by the carrier wheel.

3,821,874

## CARTONING MACHINE FOR CARTONS HAVING LINERS

Wickliffe Jones, Cincinnati, Ohio, assignor to R. A. Jones and Company, Incorporated, Covington, Ky.

Filed Oct. 10, 1972, Ser. No. 295,999

Int. Cl. B65b 41/18

U.S. Cl. 53—27

10 Claims

Constant motion apparatus for inserting a six sided corrugated liner into carton and thereafter inserting a product into the carton. A corrugated liner is formed and conveyed perpendicularly to a carton conveyor. The liner is thrust from its

former to a liner conveyor running parallel to the carton conveyor. From the liner conveyor each liner is pushed into the



carton which thereafter receives a product. Means are provided for closing the liner and carton end flaps and sealing the carton end flaps.

3,821,875

## CONTAINER SEALING APPARATUS

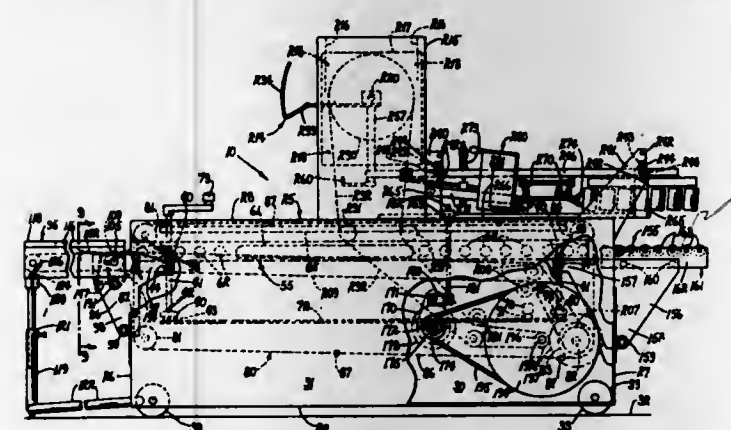
Gerald C. Paxton, Sanger, Calif., assignor to General Nailing Machine Corporation, Sanger, Calif.

Filed Feb. 15, 1973, Ser. No. 332,693

Int. Cl. B65b 7/20

U.S. Cl. 53—374

22 Claims



An apparatus for sealing containers having upstanding longitudinal and transverse flap portions, the apparatus having a conveyor for the motivation of containers therealong in spaced intervals; a folding mechanism, having tucking fingers and folding arms, mounted in spaced relation to the conveyor and synchronous therewith, the fingers being adapted to tuck the transverse flap portions and the arms to fold the longitudinal flap portions to overlay their respective containers during passage along the conveyor; an adhesive applicator mounted adjacent to the folding mechanism for the application of adhesive to selected areas of the flap portions; and pressure rollers mounted adjacent to the applicator to fold the selected areas of the flap portions into contact with the container and to maintain such contact during passage of the container along the conveyor until the adhesive sets.

3,821,876

## SEALED HYDRAULIC RESERVOIR

Charles A. Glaspell, Rt. No. 5, Fairmont, W. Va. 26554

Filed May 18, 1973, Ser. No. 361,563

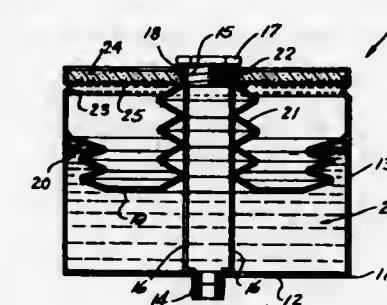
Int. Cl. B01d 46/10

U.S. Cl. 55—385

2 Claims

A sealed hydraulic reservoir having a bellows seal against the surface of the fluid in the reservoir to permit the fluid to

raise and fall in the reservoir without contact with outside air. A filter overlies the bellows to filter the air reaching the top of the bellows to prevent dirt from coming in contact with the



bellows to damage the bellows. The filler cap for the reservoir is supported on posts extending upwardly from the bottom of the reservoir.

3,821,877

## PROCESS FOR PICKING UP DOWNED CROPS AND APPARATUS THEREFOR

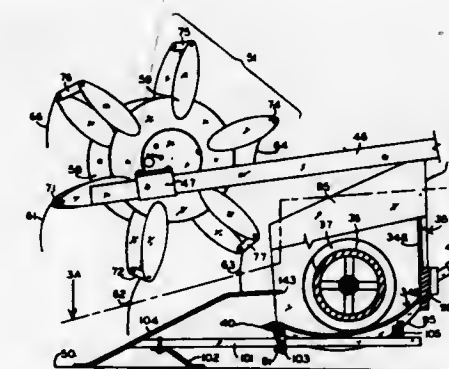
James A. Weinheimer, P.O. Box 1365, Pandhandle, Tex. 79068

Filed Dec. 11, 1972, Ser. No. 314,173

Int. Cl. A01d 65/02

U.S. Cl. 56—312

9 Claims



Array of narrow downwardly and forwardly extending rigid probe members and upwardly and rearwardly sloped vibratory lifter and guide members are supported on a combine header to utilize the weight and forward and vibratory motion of the combine apparatus and its reel to raise downed crop stalks with substantially no interference with the cutting and conveying and separating operation of the combine.

3,821,878

## OPEN-END TEXTILE SPINNING MACHINES

Ronald Parsons, Rishton, England, assignor to Platt International Limited, Oldham, England

Filed Dec. 7, 1971, Ser. No. 205,684

Claims priority, application Great Britain, Dec. 11, 1970, 58,987/70

Int. Cl. D01h 15/00

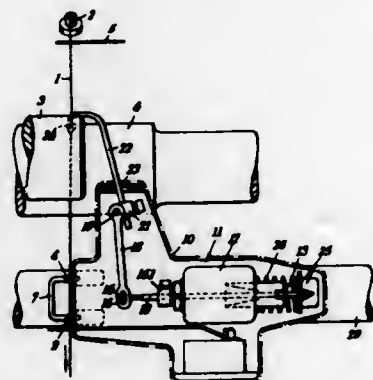
U.S. Cl. 57—34 R

14 Claims

An open-end spinning machine comprises a spinning station at which fibers are fed in discrete form to a fiber collecting surface of a spinning rotor and withdrawn in the form of spun yarn by yarn take-up means. There is provided yarn piecing-up apparatus comprising a yarn reserve-length holding means which holds the yarn during normal spinning in an extended path between the spinning rotor and the yarn take-up means and from which the yarn can be released so as to follow a shortened path thereby to enable the end of yarn to return to the fiber collecting surface and to contact and twist in the fibers



thereon. A yarn reserve-length forming means includes a reciprocating first movement between a position adjacent a yarn in the shortened path and a position adjacent a yarn holding means and a second movement during a part of the said reciprocating movement in which the yarn engaging member moves from a retracted position where it makes no contact with the yarn to an extended position to engage a yarn in the



shortened path, to convey it to the yarn holding means and to surrender the yarn thereto to reform the extended yarn path. The yarn engaging member maintains the extended position during said first movement only when conveying yarn to the yarn holding means and retracting to the retracted position in the absence of yarn in the shortened path and upon surrender of the yarn to the yarn holding means.

3,821,879

#### CONSTANT LENGTH COMPOSITE GLASS FIBER CABLE UNDER VARYING TEMPERATURE CONDITIONS

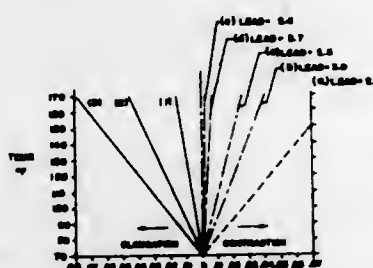
Donald L. Seeliman, and Willard G. Hudson, both of Seattle, Wash., assignors to Norfin, Inc., Seattle, Wash.

Filed Dec. 1, 1972, Ser. No. 311,361

Int. Cl. D02g 3/18, 3/40

U.S. Cl. 57—140 G

8 Claims



A composite glass fiber cable is disclosed having a negative linear coefficient of thermal expansion which is controllable by variation of the twist of helically plied glass roving to substantially zero change in length over a wide variation in environmental temperatures under varying load conditions.

3,821,880

#### HYDRAULIC CONTROL SYSTEMS AND DEVICES THEREFOR

Walter Weirich, Dortmund; Werner Grommas, Dortmund-Wickede; Volker Behrens, Dortmund-Mengede, and Alfred Marquart, Althausen, all of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Wethmar bei Lünen, Westfalen, Germany

Filed July 30, 1971, Ser. No. 167,832

Claims priority, application Germany, Aug. 4, 1970, 2838661; Aug. 4, 1970, 2838663; Oct. 10, 1970, 2049869

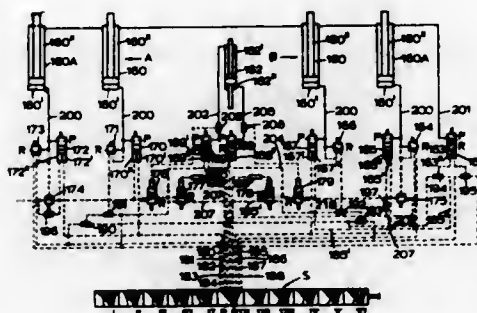
Int. Cl. E21d 15/44

U.S. Cl. 61—45 D

19 Claims

A hydraulic control system for use with mineral mining roof support installations the system having a control device which

can be manually set into various positions to effect certain operations in the components of the installation, such as retraction and extension of roof engaging props, and shifting of support units and a conveyor. The system can perform a certain sequence of operations entirely automatically and the system employs valve devices with two servo pistons either of



which is adapted to actuate the valve device when exposed to pressure medium. One servo piston is used when the installation is controlled manually and the other piston is used when the installation is controlled automatically. The automatic section of the system includes one or more timing mechanisms and fluid flow regulators which initiate various parts of the control sequence.

3,821,881

#### REFRIGERATOR BOX WITH DOOR MOUNTED REFRIGERATION UNIT

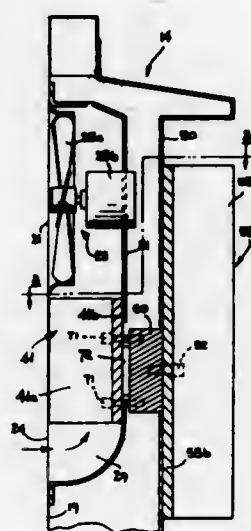
Alex Harkins, Rolling Hills, Calif., assignor to Mobile Metal Products, Inc., Gardena, Calif.

Filed July 14, 1972, Ser. No. 272,026

Int. Cl. F25b 2/102

U.S. Cl. 62—3

11 Claims



A refrigerator box has its refrigeration unit incorporated into the door thereof. A pair of thermoelectric cooling modules are attached to a "cold" bar with their "cold" surfaces abutted thereagainst. Attached to the cold bar is a heat exchanger element having a plurality of fins for effectively cooling the inside of the box, this heat exchanger forming a heat sink which is mounted adjacent to the inside wall of the box door. The "hot" surfaces of the thermoelectric modules are attached to a heat exchanger which has fins, this heat exchanger being mounted adjacent to the outside wall of the door. The second heat exchanger provides a heat sink for dissipating heat energy drawn from and through the thermoelectric modules. An air circulation system is provided by means of a blower mounted adjacent the outside wall of the door for

circulating ambient air through the outside heat exchanger. This blower is kept in operation both by power from a power source which is the same one used for the thermoelectric units and by power supplied by the thermoelectric units themselves when the regular power supply is disconnected by the unit's control thermostat.

3,821,882

#### ELASTIC ROTARY COUPLING, PARTICULARLY FOR THE DRIVING OF RPM REGULATORS ASSOCIATED WITH FUEL INJECTION PUMPS

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 31, 1973, Ser. No. 328,441

Claims priority, application Germany, Mar. 17, 1972, 2212913

Int. Cl. F16d 3/14

U.S. Cl. 64—27 NM

3 Claims



In an elastic rotary coupling for the transmission of torque there is provided a shaft-like driving component coaxially surrounded by a sleeve-like driven component. Aligned recesses in the two components form a plurality of nests each accommodating an elastic (for example, rubber) coupling element. The cross section of each elastic coupling element has the general shape of a rectangle with rounded corners and depressed sides. In the position of rest the elastic coupling element only partially fills the space defined by the nest.

3,821,883

#### DEVICE FOR CONTINUOUSLY TREATING FABRICS

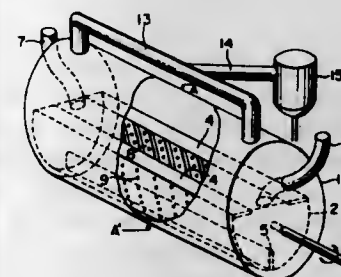
Hajime Horie; Hideo Okayama, both of Fukui, and Tokihide Suzuki, Fukui-ken, all of Japan, assignors to Fukui Seiren Kako Kabushiki Kaisha, Fukui-shi, Fukui-ken, Japan

Filed Dec. 18, 1972, Ser. No. 315,936

Int. Cl. D06f 21/04, 37/06; B05c 3/08

U.S. Cl. 68—18 C

4 Claims



A device for continuously treating fabrics which comprises an outer shell body, a perforated inner vessel of a half-cut drum shape provided within said outer shell body and pivotally supported on rollers and driven by a shaft to be swingably oscillated therewithin, and a pair of fabric inlet and

outlet tubes provided at each end of said inner vessel, respectively, in alignment with an axial line thereof; and, said inner vessel being provided with one or more turbulence plates whose height and shape are changeable disposed on its inside wall in an axial direction thereof, a pair of plates having a suitable width to prevent a fabric material from jumping out thereof under treating conditions fixed to each longitudinal edge thereof covering its whole length, respectively, and a plurality of parallel grooves having a saw-tooth cross-section on its entire inside surface which are extending to both sides of its axial line at an angle with respect thereto.

3,821,884

#### SLIDING DOOR LOCK SYSTEM

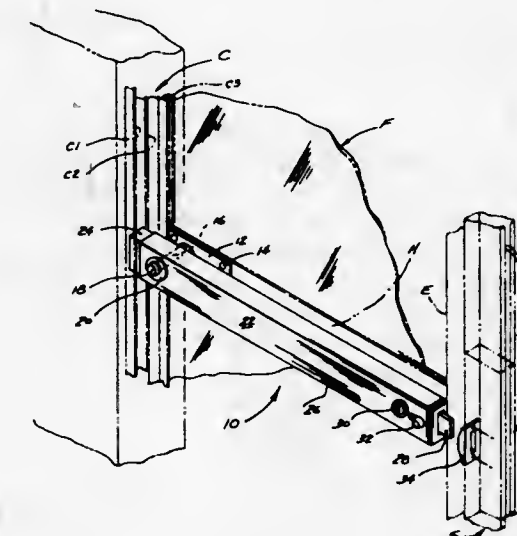
Ronald A. Walsh, 3631 Valley Ter., Baltimore, Md. 21207

Filed Feb. 16, 1973, Ser. No. 333,123

Int. Cl. E05b 65/08

U.S. Cl. 70—95

8 Claims



A multiple-locking bar for securing a sliding glass door and preventing a fixed glass door adjacent the sliding glass door from being pried outward or forced inward; the bar is pivotally attached to the fixed door, and pivots to a horizontal position in the path of the sliding door to block the sliding door; in various embodiments a key-lock-controlled bolt at the free end of the bar engages a keeper on the edge of the sliding door, a bolt extension at the pivoted end of the bar engages the jamb channel ordinarily supplied with glass door installations, a hook on the bar engages the fixed door, and an offset angle engages wall structure adjacent the glass door installation, to prevent forcing the fixed door in or out and to secure the sliding door; special locking bolt and keeper structures are also disclosed.

3,821,885

#### MECHANICAL COMBINATION DIGITAL LOCK

Martin E. Gerry, 13452 Whitrope St., Santa Ana, Calif. 92705

Filed Dec. 29, 1972, Ser. No. 319,369

Int. Cl. E05b 37/16

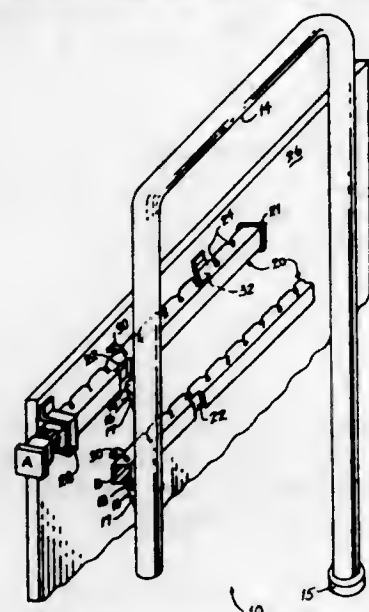
U.S. Cl. 70—298

14 Claims

A mechanical combination digital lock having discrete positions for each combination selector. Such lock is adaptable to hang-type or door installed locks and has a replaceable selector assembly whenever it is desired to change the combination. Throw or dead bolt is provided on the door type lock for



maximum security. This lock may be opened or closed in the dark. Detent action within the lock, and definition of the start



location is provided so that it is possible to accurately position each selector by the sense of touch.

3,821,886

**PICK-PROOF LOCKS**

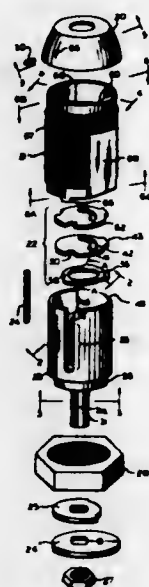
Werner F. Ladewig, P.O. Rt. 4 Box 95, St. Charles, Ill. 60176

Filed Mar. 9, 1972, Ser. No. 233,210

Int. Cl. E05b 9/04, 15/16

U.S. Cl. 70—366

12 Claims



A cylindrical housing contains a lock cylinder having a stack of lock plates rotatably positioned therein. When a key is inserted into the lock and turned, the lock plates rotate and align themselves to form a continuous groove that accepts and receives a locking pin otherwise normally lodged in a juxtaposition groove in the cylindrical housing. This acceptance of the pin enables the lock cylinder to rotate within the housing and thereby move the locking mechanism to the unlocked position. A hardened cap and cover plate make the lock almost indestructible for all practical purposes.

3,821,887

**METHOD AND APPARATUS FOR LOCATING PIPE BENDS**

Robert B. Bennett, 7620 78th St., Rock Island, Ill. 61201

Filed Jan. 23, 1973, Ser. No. 326,107

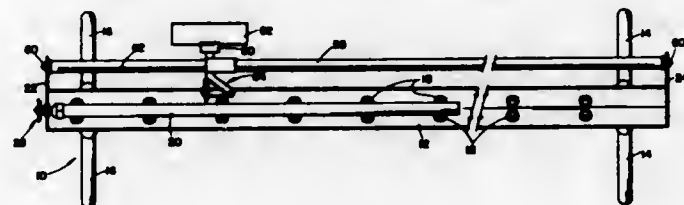
Int. Cl. B21d 7/14

U.S. Cl. 72—34

9 Claims

A pipe marking machine has an elongated stand for rotatably supporting a length of straight pipe, a gravity-

operated rotation indicator being attached to one end of the pipe for indicating the rotation of the pipe about its axis from a predetermined angular position. A marking device is mounted for sliding along an elongated scale adjacent and parallel to the pipe. To mark the location of a bend along the pipe, the marking device is moved a selected distance along the scale and the pipe is rotated while the marker is in contact with the pipe to place a circumferential mark on the pipe a selected



distance from the end of the pipe. The pipe is then rotated a selected number of degrees from the original position as indicated by the rotation indicator, and when the pipe is in its selected angular position, the marker is brought into contact with the pipe and shifted longitudinally of the pipe to place a longitudinal mark intersecting the circumferential mark to provide both a longitudinal and an angular reference point for locating a bend on a pipe prior to bending the pipe in a bending machine.

3,821,888

**PRE-LOADING APPARATUS**

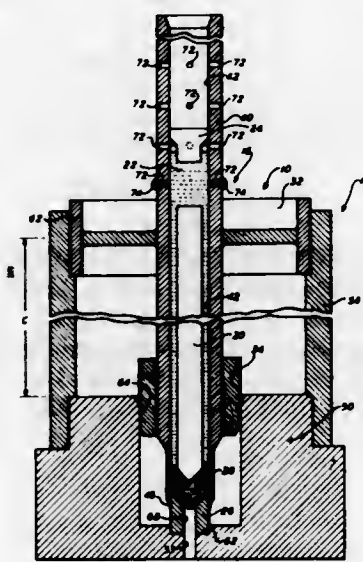
Jack D. Stewart, Doylestown, Pa., assignor to Princeton Metal Systems Corporation, Montgomery Township, N.J.

Filed May 14, 1973, Ser. No. 360,115

Int. Cl. B21c 27/00

U.S. Cl. 72—60

5 Claims



Pre-loading apparatus for pre-loading: (i) a billet to be hydrostatically extruded, (ii) a quantity of hydrostatic extrusion medium, (iii) an extrusion die through which the billet is to be hydrostatically extruded, (iv) an extrusion chamber seal, and (v) a body of consumable material, such items to be loaded into the extrusion chamber of a hydrostatic extrusion apparatus, comprising receiving means for receiving: (i) the billet, (ii) the quantity of hydrostatic extrusion medium, (iii) the extrusion chamber seal spaced apart from one end of the billet and separated therefrom by a portion of the hydrostatic extrusion medium; (iv) the extrusion die spaced apart from the other end of the billet, and (v) the body of the consumable sealing material residing between the extrusion die and the other end of the billet and providing a temporary seal for preventing escape of the hydrostatic extrusion medium through the extrusion die during pre-loading of the items; align-

ning means provided on the receiving means and for engaging predetermined portions of the extrusion apparatus to align the pre-loaded items with the extrusion chamber for the loading of the pre-loaded items into the extrusion chamber; and means for supporting the receiving means during the pre-loading of the items into the receiving means.

3,821,889

**WORK ROLLS DRIVE IN A COLD-ROLLING TUBE MILL**

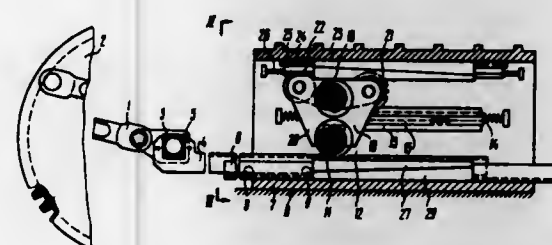
Teodor Alexandrovich Saksagansky, prospekt K. Marxa, 20, kv. 85; Pavel Ivanovich Orro, ulitsa Kirova, 8, kv. 25; Boris Alexandrovich Iskra, prospekt K. Marxa, 68, kv. 15; Vladimir Sergeevich Matveev, ulitsa Bozhenko, 7, kv. 1; Boris Iovich Varenik, Oktjabrskaya ploshad, 5, kv. 14, all of Dnepropetrovsk, U.S.S.R., and Anatoly Ivanovich Kirilenko, deceased, late of ulitsa Kirova, 7, kv. 4, Dnepropetrovsk, U.S.S.R. (Nilla Sergeevna Kirilenko, Administratrix)

Filed Sept. 27, 1972, Ser. No. 292,678

Int. Cl. B21b 35/06

U.S. Cl. 72—249

3 Claims



A drive is disclosed, said drive comprising movable racks which are linked with connecting rods driven from the main drive and engaged with the gears of the driven roll, imparting thereto rotational and reciprocatory motions in the course of rolling. The improvement of the drive is aimed at reducing the weight of its movable components, so as to enable its number of double strokes to be increased.

3,821,890

**ROOF GUTTER AND DOWNSPOUT AND PUNCH THEREFOR**

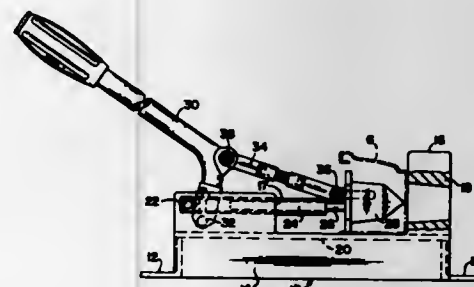
Herbert F. Dewey, 1368 Mac Dr., Stow, Ohio 44224

Filed Nov. 29, 1972, Ser. No. 310,427

Int. Cl. B21d 31/02

U.S. Cl. 72—325

5 Claims



This invention is concerned with a portable punch and the simplification of the attachment of a downspout to a rain gutter for a roof. The gutter is punched to form a downspout opening having integral downwardly extending tabs surrounding the opening and to which the downspout can be secured. The punch includes male and female dies and guide and lever means for moving the male die into the female die.

3,821,891

**ULTRASONIC NONDESTRUCTIVE MATERIAL TESTER**

Jack T. Collins, Boulder, Colo., and Howard E. Van Valkenburg, New Fairfield, Conn., assignors to Automation Industries Inc., El Segundo, Calif.

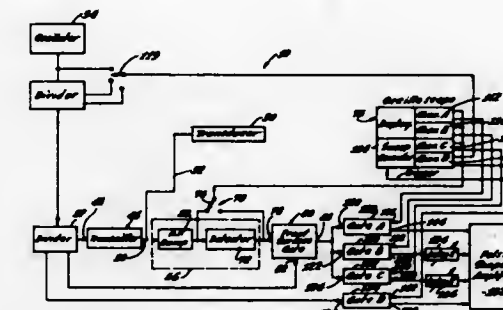
Continuation of Ser. No. 687,752, Dec. 4, 1967, abandoned.

This application Dec. 10, 1970, Ser. No. 97,035

Int. Cl. G01n 29/04

U.S. Cl. 73—67.9

9 Claims



An ultrasonic nondestructive material tester is disclosed which is especially useful in making interface measurements of an eyeball. An ultrasonic transducer receives ultrasonic energy returned from within the eyeball. An oscilloscope which includes a plurality of display channels operates synchronously with corresponding gates which display selected portions of an eyeball on the display of the oscilloscope.

3,821,892

**APPARATUS FOR TENSILE TESTING**

Ove Saberg, 14, Odensegade, Copenhagen, Denmark

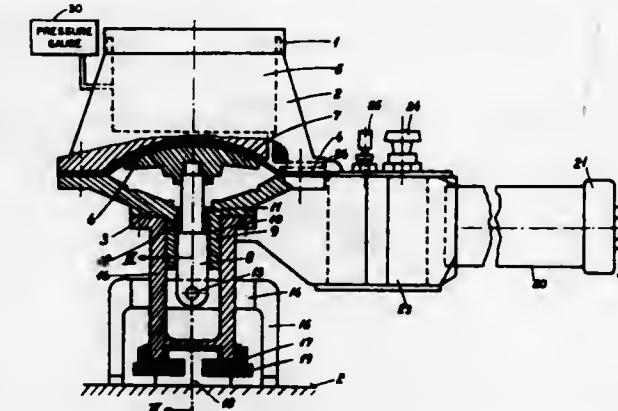
Filed July 21, 1972, Ser. No. 273,966

Claims priority, application Denmark, July 21, 1971. 3576/71

Int. Cl. G01n 19/04

U.S. Cl. 73—88 B

4 Claims



An apparatus for tensile testing, particularly for testing the adhesion of coatings of, e.g., paint, for testing adhesives, and for testing the cohesion of material, includes a pulling member for tearing off a test member adhesively secured to the test object, and a pressure rod with means for moving the rod relative to the pulling member, the pressure rod being pivotally connected to a yoke with two legs straddling the test member and resting on the surface of the test object on a line through the center of the test member when the apparatus is in use.



3,821,893

**TESTING APPARATUS AND RESPECTIVE CONTROL CIRCUIT**

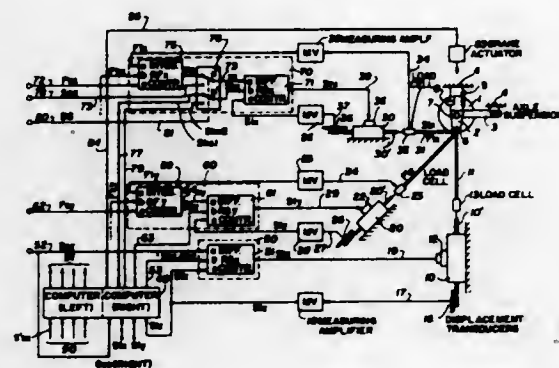
Friedrich Klinger, Darmstadt-Arbellingen, and Rolf Ross, Darmstadt, both of Germany, assignors to Firma Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany  
Filed Apr. 3, 1973, Ser. No. 347,462

Claims priority, application Germany, Apr. 13, 1972, 2217702

Int. Cl. G01m 17/04

U.S. Cl. 73-118

15 Claims



The invention relates to testing apparatus and respective control circuit means, especially for testing samples including movable elements such as vehicular axles with the respective wheels wherein load applying means, such as piston cylinder means are arranged to apply loads to a load application point of the test sample whereby the load applying means are controlled by error compensated control values. The rated displacement value or the actual displacement value of a first load applying means is supplied as a compensation or correction value to the control circuit means of one or more load applying means through a computer which calculates the correction or compensation value as a function of a curve which represents the displacement of the load application point and which displacement depends on the geometric configuration or structure of the sample to be tested.

3,821,894

**SENSOR FOR SUBMERSIBLE PROBES**

Dieter Roeben, Abbehausen, and Horst Urban, Nordenham, both of Germany, assignors to Norddeutsche Seekabelwerke Aktiengesellschaft, Nordenham, Germany

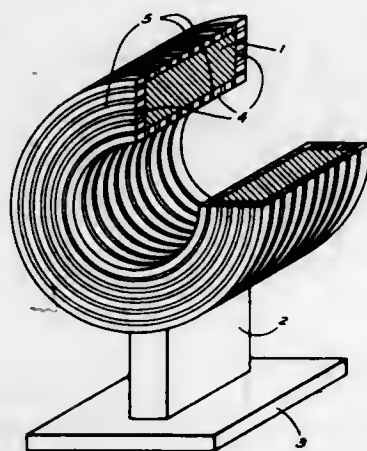
Filed July 20, 1972, Ser. No. 273,514

Claims priority, application Germany, Aug. 5, 1971, 2139206

Int. Cl. G01r 3/00

U.S. Cl. 73-170 A

10 Claims



A sensor body has an outer peripheral exposed surface, and is provided thereon with a plurality of discrete spots of an anti-fouling substance, with each of the spots being separate and spaced from the respective adjacent spots.

3,821,895

**HEAT FLOW METER FOR REMOTE MEASUREMENT**

Sadao Sumikawa, and Yoshiaki Arakawa, both of Yokohama, Japan, assignors to Showa Denko K. K., Tokyo, Japan

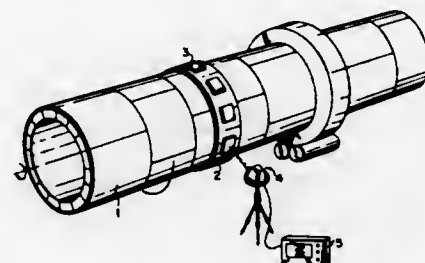
Filed Sept. 27, 1972, Ser. No. 292,556

Claims priority, application Japan, Sept. 29, 1971, 46-75403

Int. Cl. G01r 17/00

U.S. Cl. 73-190 H

1 Claim



A heat flow meter for remote measurement comprising a heat measuring element consisting of a heat conductive substrate and a thin thermal resistance plate mounted on said substrate and having the surface coated with a specified color so as to provide appropriately the same heat emissivity as that of the heat radiating surface of an object whose heat is to be measured; and a noncontact thermometer for measuring the temperature of the surface of said substrate and that of the surface of the thermal resistance plate, the heat conductance of said thermal resistance plate ranging between about 100 and about 1,000 Kcal/m<sup>2</sup>h-deg. within the temperature range of from about 350° to about 700°K.

3,821,896

**PULSE TRANSMITTER CIRCUIT FOR MEASURING INSTRUMENTS**

Russel W. Grob, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

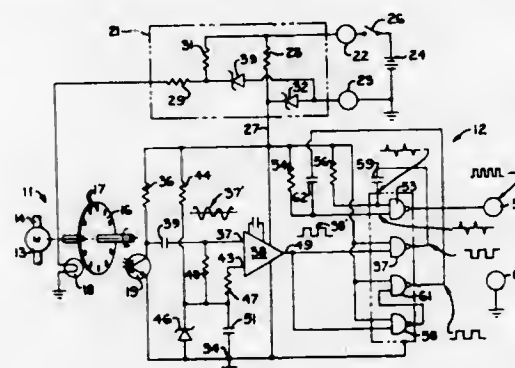
Division of Ser. No. 147,767, May 28, 1971, Pat. No.

3,745,470. This application Feb. 9, 1973, Ser. No. 330,979

Int. Cl. G01f 1/06

U.S. Cl. 73-194 E

2 Claims



A compact, economically manufactured circuit for generating and transmitting pulses in response to predetermined increments of rotation of an element of a fluid flow meter has a photosensitive component detecting rotation of the meter element. Additional components, including an operational amplifier and logic gates, amplify and shape the signals from the photosensitive component and double the signal frequency to achieve a high pulse frequency capability, uniform pulse shape, good resolution and reliable operation in the presence of severe environmental conditions around the flow meter.

3,821,897

**PRESSURE SENSING PROBE**

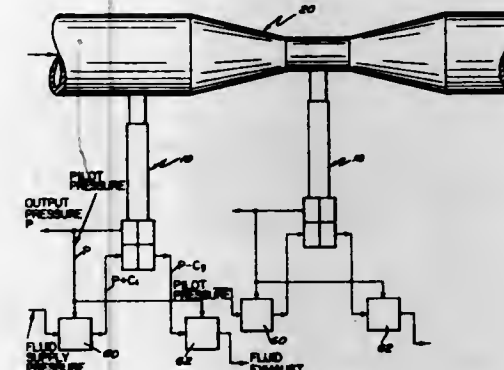
Wilbur H. Frazel, Riverdale, R.I., assignor to General Signal Corporation, New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 296,408

Int. Cl. G01f 1/00; G01f 7/08

U.S. Cl. 73-213

8 Claims



A pressure sensing probe having an elongated housing with an elastic diaphragm located at one end of the housing. The outer face of the diaphragm is substantially flush with the outer wall surface of the housing. An interior cavity is formed in the housing with at least a portion of the inner face of the diaphragm being in communication with the interior cavity. Also in communication with the interior cavity are a fluid supply port containing a flow-restricting supply orifice, a fluid output pressure port, and a fluid exhaust port containing a flow-restricting exhaust nozzle, each of which are formed in the walls of said housing. The diaphragm is normally biased inwardly by a biasing spring having its one end attached to an armature secured to the inner face of the diaphragm. The other end of the biasing spring is attached to an armature stem guide fixedly secured within the cavity of the housing which maintains the spring in constant tension. The armature also has a stem that passes downwardly within the biasing spring and through the armature stem guide. The lower end of the armature stem acts as a flapper which when the armature stem is raised and lowered varies the flow of fluid through the exhaust nozzle positioned beneath the flapper to control the amount of fluid passing outwardly through the fluid exhaust port. A fluid supply regulator is connected to the fluid supply port and a fluid exhaust regulator is connected to the fluid exhaust port in order to control the pressure of the fluid supplied through the orifice to the fluid cavity of the probe and to control the pressure of the fluid exhausted through the nozzle from the fluid cavity of the probe. The fluid output pressure port is also connected directly to each of the pressure regulators, thereby providing a pilot pressure for each of the regulators. The function of the probe is to reproduce exactly in fluid pressure the changes in the fluid pressure to which the sensing diaphragm is exposed. The probe output pressure reading will always be greater than the actual fluid pressure if the diaphragm is preset with an inward bias by the biasing spring. This probe biasing allows negative fluid pressures to be read out on the instrument as positive fluid pressures, thus enabling it to deal with negative heads of pressure.

3,821,898

**PISTON TYPE FLOW METER**

Hiyoshi Tatsuno, 4-4-11 Shirogane, Minato-ku, Tokyo, Japan  
Filed Aug. 7, 1972, Ser. No. 278,390

Claims priority, application Japan, Aug. 16, 1971, 46-61641; June 9, 1972, 47-56845

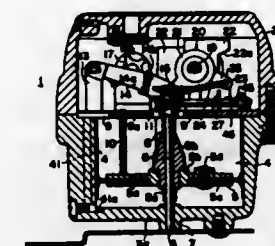
Int. Cl. G01f 3/16

U.S. Cl. 73-251

6 Claims

The present piston type flow meter is a small sized flow meter for measuring accurately the flow quantity of kerosene or the like used for heating, and comprises a piston dividing

the container for said flow meter into upper and lower chambers, an indicator for integrating the number of strokes of said piston, and a change-over rotary valve for coupling selectively the upper and lower chambers, divided by the piston, with a flow inlet and a flow outlet of the container, and wherein a



tumbler mechanism operated through the reciprocation of the piston and transmitting the stroke of piston to said change-over rotary valve is controlled by a restraining means for operating said mechanism when a predetermined position of the piston is reached.

3,821,899

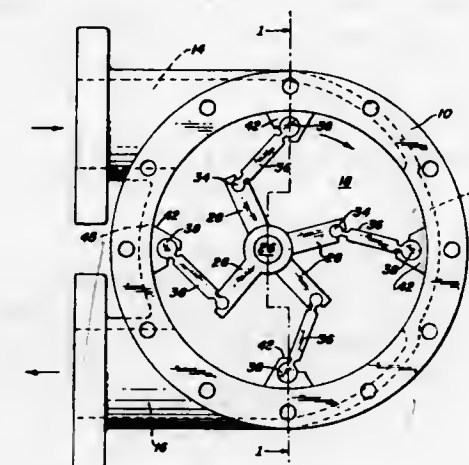
**FLUID METER**

Albert J. Gramberg, 6001 Rockwell St., Oakland, Calif. 94618  
Continuation of Ser. No. 810,710, March 26, 1969,

abandoned. This application Apr. 19, 1971, Ser. No. 135,487  
Int. Cl. G01f 1/06

U.S. Cl. 73-260

7 Claims



A rotary meter which is of the vane type and in which the vanes are multiple hinged elements as distinguished from conventional sliding vanes and in which each vane is commonly journaled and extends radially from a shaft which is eccentrically disposed in a generally cylindrical housing. Each vane comprises two parts journaled together and hinged to the eccentric shaft and to one of several valving posts on a disc which rotates concentrically in the housing. This enables the vanes to change in length by virtue of their hinged construction and articulated relative to one another to form variable volume compartments through which a measured volume of liquid may be transferred from the inlet to the outlet of the meter.



3,821,900

**PROPORTIONAL BIN LEVEL SENSOR**

Fritz K. Prokischat, 16020 Lake Hills Blvd., Bellevue, Wash. 98004

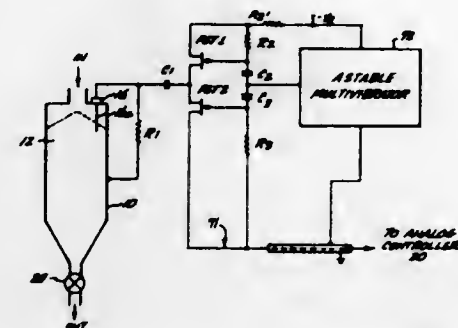
Division of Ser. No. 54,286, July 13, 1970, Pat. No. 3,653,543.

This application Oct. 18, 1971, Ser. No. 190,169

Int. Cl. G01f 23/26

U.S. Cl. 73—304 C

5 Claims



A system for providing a proportional and continuous signal indicative of the level of a product within a bin includes a capacitive sensor which provides an output signal which is proportionally related to the actual level of the product within the bin. The sensor comprises a metallic rod and provides its output signal by determining the complex impedance existing between the rod and the bin wall, wherein the rod is partially immersed in the product.

3,821,901  
**MUD BALANCE**

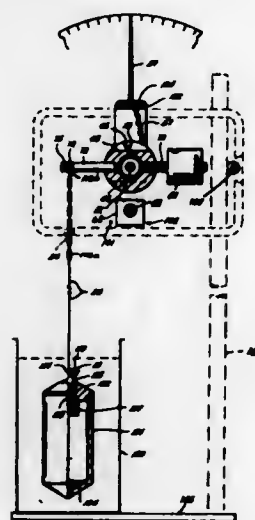
James D. Fann, 8625 Meadowcroft, Houston, Tex. 77042

Filed Sept. 13, 1971, Ser. No. 179,938

Int. Cl. G01m 9/04, 9/20

U.S. Cl. 73—437

9 Claims



Mud balance wherein the specific gravity of a fluid, or of a slurry, e.g., drilling fluid, is determined by immersion of a weight of known volume in the fluid or slurry, and the buoyancy of the fluid or slurry is determined directly. The buoyancy is measured by spring deflection.

3,821,902

**ELECTRIC KITCHEN APPLIANCE**

Jean P. Du Bois, Niles, and Eugene S. Wessel, La Grange, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

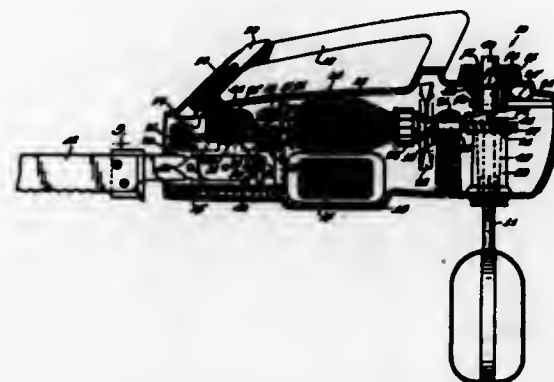
Division of Ser. No. 761,780, Sept. 23, 1968, which is a continuation of Ser. No. 464,286, June 16, 1965, abandoned.

This application May 13, 1971, Ser. No. 142,895

Int. Cl. F16h 19/02

U.S. Cl. 74—16

4 Claims



A combination rotary beater and reciprocating knife appliance.

3,821,903

**MOTION CONVERSION APPARATUS**

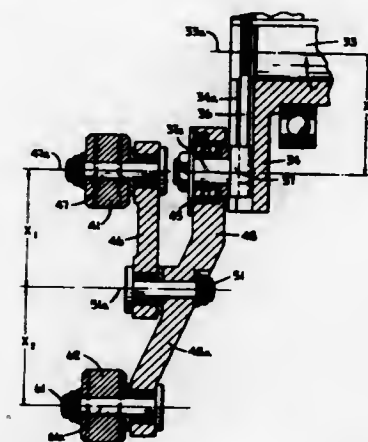
Robert J. Eminger, Fort Wayne, Ind., assignor to Windomatic Systems Inc., Fort Wayne, Ind.

Filed Apr. 4, 1973, Ser. No. 347,715

Int. Cl. F16h 21/16

U.S. Cl. 74—50

8 Claims



Disclosed is an apparatus for converting uniform rotation of a drive shaft into rectilinear harmonic motion of a cross head in which a crank, offset from the drive shaft, is connected to the cross-head by means of arms or links pivotally joined together and to the cross-head and crank. The cross-head and the extending end of one of the arms are constrained by guide means to move in a rectilinear path aligned with a diameter of the circular path in which the crank is moved by rotation of the drive shaft.

3,821,904

**HANDLE MECHANISM**

Arthur G. Fowler, 15628 Cordury Ave., Lawndale, Calif. 90260

Filed June 5, 1972, Ser. No. 259,847

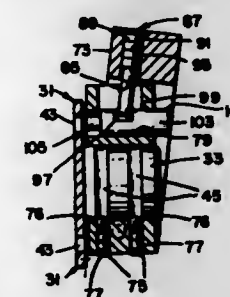
Int. Cl. F16h 27/02

U.S. Cl. 74—142

8 Claims

A handle mechanism for machine tools having a manually rotatable shaft, the mechanism including an indexing fixture

with an indexing plate and a sleeve fixedly mountable on the rotatable shaft, and includes a frame member with a handle-mounted yoke portion and a pivotally mounted block portion with an opening to rotatably mount but be axially restrained on the sleeve, the block portion carrying a sliding indexing pin registerable into indentations in the indexing plate and movable



in and out of registration with the indexing plate by relative pivotal movement between the block and yoke portions by manual manipulation of the handle in a plane generally parallel to the axis of rotation of the rotatable shaft, whereby the indexing pin may be made to engage the indexing fixture and turn the rotatable shaft only when the handle is in a predetermined axial position.

3,821,905

**POLYMERIC FRICTIONAL DRIVE WHEEL WITH REINFORCING STEEL INSERTS**

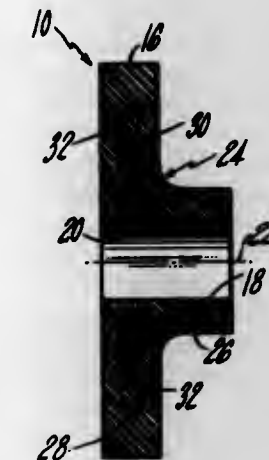
Alec David Chesmer, Windham Center, Conn.; Albert M. Anstrom, and John T. Vernon, both of Sandford, N.C., assignors to Rogers Corporation, Rogers, Conn.

Filed Dec. 1, 1972, Ser. No. 311,120

Int. Cl. F16h 55/34

U.S. Cl. 74—216

6 Claims



A drive wheel is presented having a hard synthetic rubber compound molded around a rigid insert. The wheel has a hub section for mounting on a shaft and an outer section for driving contact with a spindlette. The rigid insert has a band around the hub of the wheel to prevent centrifugal expansion and loosening of the wheel on the shaft at high speeds. The outer portion of the insert also prevents outer diameter growth of the wheel to maintain the driven speed of the spindlette within an acceptable tolerance.

3,821,906

**TRANSMISSION BELT**

Winfred M. Berg, 89 Grant Ave., E. Rockaway, N.Y. 11518

Continuation-in-part of Ser. No. 195,972, Nov. 5, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,982

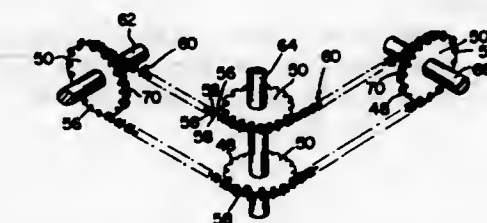
Int. Cl. F16g 13/02

U.S. Cl. 74—246

32 Claims

A transmission belt for use with sprockets and gears featuring an elongated body portion comprising: at least one cable

or the like, with a soft plastic jacket or covering, and a series of transmission pins being generally perpendicular to the cable



in which the diameter of the pins is greater than the outside diameter of the cable.

3,821,907

**MEANS FOR OPERATING THE SIDE-WINDOWS IN AUTOMOBILE VEHICLES**

Roger Habert, 73, Avenue de la Republique, 93800 Epinay/Seine, Paris, France

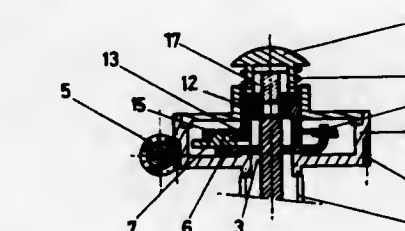
Filed May 31, 1973, Ser. No. 365,716

Claims priority, application France, June 9, 1972, 72.20860; Apr. 18, 1973, 73.14203

Int. Cl. F16h 1/16

U.S. Cl. 74—425

6 Claims



A worm and worm wheel reduction mechanism for use in vehicle window operating mechanism wherein said mechanism includes a housing rotatable with the worm wheel, a shaft for connection to window moving means, a guide member rotatable with said shaft, an anchoring member rotatable with said guide member and radially slidable therein between a coupled position in which it enters a recess formed in said housing for rotatably connecting said housing and said worm wheel to said shaft and an uncoupled position in which it is disengaged from said recess to disconnect said housing and worm wheel from said shaft, there being also provided a resilient member which acts on said anchoring member so as to urge it towards its coupled position.

3,821,908

**RETAINER FOR PLANET PINION SHAFT**

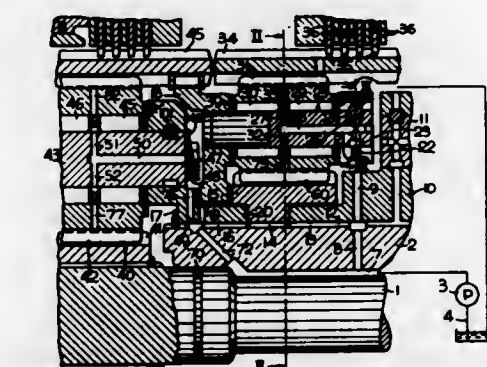
James E. March, Brookfield, and Joseph R. Hoepfl, Greenfield, both of Wis., assignors to Allis Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 12, 1972, Ser. No. 314,339

Int. Cl. F16h 1/28

U.S. Cl. 74—801

9 Claims



A pin retainer for a planet pinion shaft providing angular and axial alignment of a pinion shaft with means for providing lubrication of the pinion gear bearing.

3,821,909

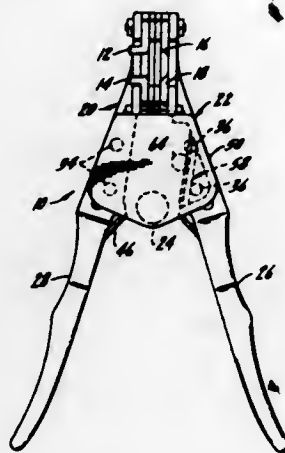
**WIRE STRIPPER AND LATCH STRUCTURE**

John A. Cox, Jr., Genoa, Ill., assignor to Ideal Industries Inc., Sycamore, Ill.

Continuation of Ser. No. 187,808, Oct. 8, 1971, abandoned, which is a continuation of Ser. No. 868,333, Oct. 22, 1969, abandoned. This application Jan. 26, 1973, Ser. No. 327,127  
Int. Cl. H02g 1/12

U.S. Cl. 81-9.5 A

17 Claims



In a wire stripper device having a pair of pivoted levers, handles mounted in the levers to open and close the levers, a latch assembly operable to allow substantial penetration of the insulation of a wire before stripping and also to allow removal of the stripped wire prior to closing the levers, thereby preventing nicking or other damage to the wire. A latch plate operates to delay movement of the levers after movement of the handles due to the frictional resistance or restraint of a ridge on the plate that is in contact with a button secured to a lever.

3,821,910

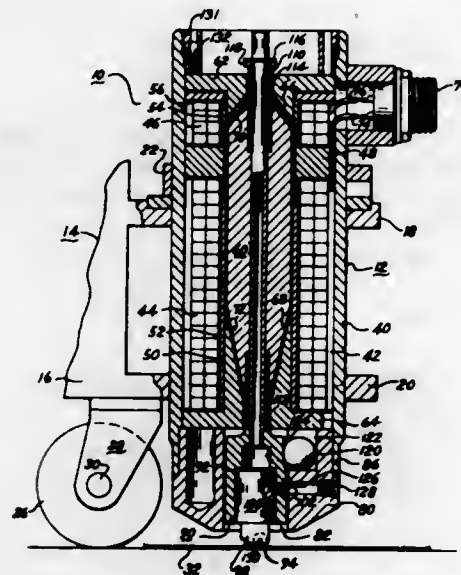
**GLASS CUTTING MECHANISM**

James S. Tjaden, South Bend, Ind., assignor to South Bend Controls Inc., South Bend, Ind.

Filed Aug. 8, 1972, Ser. No. 278,788  
Int. Cl. C03b 33/02

U.S. Cl. 83-8

11 Claims



A mechanism for cutting glass sheet in which a solenoid operates a scoring tool which is urged with a substantially constant force into engagement with the surface of the glass, regardless of variations in glass thickness or irregularities in the surface. The armature in the solenoid is provided with tapered ends which engage end plates having recesses corresponding

to the tapered ends of the armature, and a means, preferably a second coil, is used to retract the cutting tool when the first solenoid is de-energized.

3,821,911

**APPARATUS FOR FORMING OPPOSED SCORE LINES BETWEEN ROWS OF CHARACTERS ON ONE OR BOTH SIDES OF A THIN METAL PLATE**

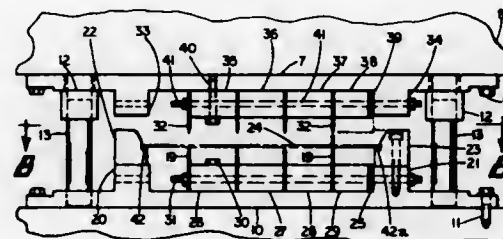
Joseph P. Seme, Walton Hills, Ohio, assignor to Sem-Torg Incorporated, Bedford, Ohio

Division of Ser. No. 870,495, Oct. 2, 1969, Pat. No. 3,626,616. This application June 1, 1971, Ser. No. 148,547

Int. Cl. B26d 3/08

U.S. Cl. 83-11

4 Claims



Apparatus for forming oppositely disposed score lines on a thin metal plate having rows of characters, such as letters, numbers, punctuation marks, and blanks, or a combination of two or more of such characters on one or both sides of the plate. In one form of the apparatus, a reciprocal press is provided having a head plate to which is secured a plurality of spaced downwardly extending blades having converging edge portions and a lower plate is secured to the base of the press and is provided with a plurality of blades, each having tapered upper edge portions for forming score lines in alignment with the upper score lines on the bottom face of the plate. When a thin metal plate rests upon the lower blades and the upper head of the press is moved downwardly it forces the plate on to a pair of spaced abutments and forms score lines between longitudinal or transverse rows of characters upon the upper face of the plate at which time the lower blades form score lines in alignment with the score lines formed on the upper face of the plate which may extend between transverse or longitudinal rows of characters thereon. The score lines may be first formed on both sides of the plate between the transverse rows and then between the longitudinal rows or first between the longitudinal rows and then the transverse rows on one or both sides of the plate. Another modification of the apparatus includes upper and lower shafts having blades thereon by means of which first longitudinal and then transverse score lines may be formed on the opposite sides of the plate between rows on the upper face of the plate or first between transverse rows of characters on one or both sides of the plate and then between longitudinal rows on one or both sides of the plate. Means may also be provided to vary the height of the upper shaft to vary the size of the plate that may be passed between the blades.

3,821,912

**METHOD FOR PROVIDING PARTIAL SLITS IN CORRUGATED DRAIN PIPE**

Charles Wesley Howe, Tujunga, Calif., assignor to Vern Emery Company, Inc., Pacoima, Calif.

Division of Ser. No. 220,354, Jan. 24, 1972, Pat. No. 3,768,365. This application May 4, 1973, Ser. No. 357,164  
Int. Cl. B23c 1/14; B26d 3/06; B23d 25/16

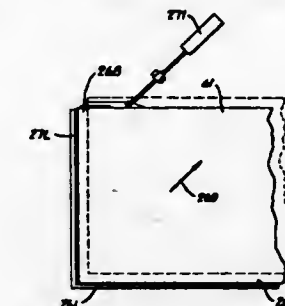
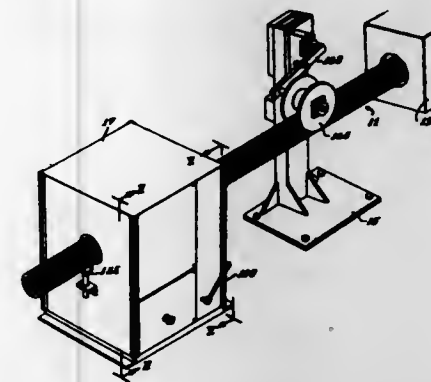
U.S. Cl. 83-54

2 Claims

A method and apparatus for providing a plurality of partial slits about the periphery of continuous corrugated drain pipe comprising a plurality of rotating blades which are oscillated simultaneously by coordinated linkage systems which are con-

trolled by a main drive. The main drive also controls a work feed system comprising a pair of opposed sprockets which cooperate with the corrugated surface of the pipe to move it

other, a finished blank conveyor behind the shears is shiftable in a horizontal plane with respect to one or both of the pairs of



past the cutters. The overall machine speed is controlled by a dancer roller which actuates a potentiometer system in accordance with the catenary of the pipe between the pipe extruder and the slitting apparatus.

shears to open scrap slots adjacent thereto when, and as, needed, and returnable for conveying finished blanks away from the shears.

3,821,913

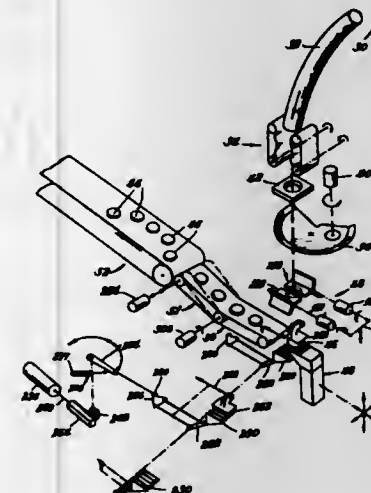
**APPARATUS FOR ACCUMULATING STACKS OF SLICED MATERIAL**

Miles S. Bajcar, Palos Hills, and Robert Howard Marshall, Hinsdale, both of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Filed Sept. 28, 1972, Ser. No. 293,144  
Int. Cl. B26d 5/00

U.S. Cl. 83-92

6 Claims



Apparatus for accumulating stacks of sliced material successively cut from an elongated mass comprises a platen mounted on a vertically movable carriage and means for moving the carriage downwardly as the slices are accumulating on said platen. After an accumulation of a desired number of slices in a stack, the platen is rapidly moved to release and discharge the stack and the carriage is moved upwardly on a return stroke to a position ready for the next accumulation cycle.

A mechanically driven, rotary blade cutting device for cutting various types of fibers and sheet materials. The device includes a rotary blade shaft-mounted on a carriage for transverse movement across the material to be cut. Along the carriage traverse is a sprocket chain to which the blade is coupled by means of a sprocket wheel on the end of its shaft. The rate of blade rotation as driven by the sprocket-gear arrangement develops a sawing or slicing action for increased effectiveness in cutting the materials involved. Handles are provided on the blade housing to permit propelling the carriage in either direction and from either side. The rack on which the unit is mounted has a support for rolls of sheet materials to be cut, is portable, and is arranged to be bench or wall mounted. The unit also includes in combination with the blade a particular blade sharpening mechanism comprising a pair of grinding wheels angled to develop the desired sharpened blade angle. The sharpening mechanism is pivoted for use as desired and, when in blade-engaging position, its rotary sharpening wheels are driven by the rotation of the blade itself to accomplish the sharpening as the cutting mechanism is operated.

3,821,914

**AUTOMATIC SHEARING APPARATUS**

Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.

Division of Ser. No. 42,047, June 1, 1970, Pat. No. 3,691,887. This application Sept. 7, 1972, Ser. No. 286,900

Int. Cl. B65h 29/16, 29/26

U.S. Cl. 83-155

3 Claims

In a large, corner-notching shearing machine having two pairs of shears, disposed at right angles with respect to each

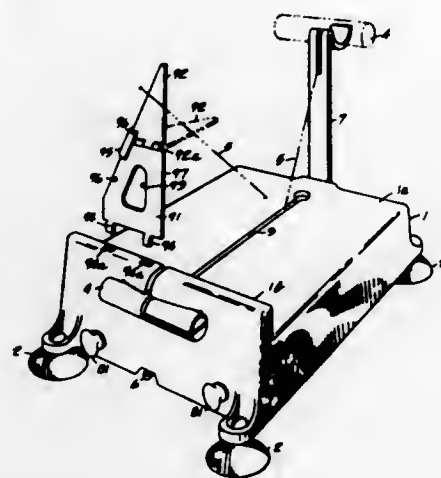


3,821,916

**CUTTING MACHINE FOR CHEESE AND THE LIKE**  
Angelo Ricci, 2790 24th St., San Francisco, Calif. 94103, and Raffaele Banducci, 18 Prescott Ct., San Francisco, Calif. 94133

Filed Dec. 4, 1972, Ser. No. 311,967  
Int. Cl. B26d 1/00

U.S. Cl. 83—200.1



A machine utilizes a combination of portable table, cutting wire and handle in combination with a novel mechanism for facilitating movement of the wire through the material being cut and its return. Combination of elements prevents kinking and breakage of the cutting wire, insures a straight cut, as well as providing for ready securing of the machine to a table or counter.

3,821,917

**PAPER SUPPLYING DEVICE IN COIN-WRAPPING MACHINE**

Yoshihiro Hatanaka, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Hyogo-ken, Japan

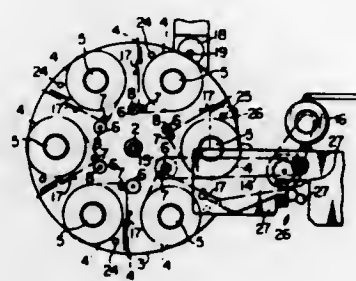
Filed June 23, 1972, Ser. No. 265,696

Claims priority, application Japan, June 24, 1971, 46-45950

Int. Cl. B26d 7/06, 7/14

U.S. Cl. 83—272

9 Claims



In a coin-wrapping machine, a movable structure holds several rolls of selectable wrapping papers of different kinds respectively corresponding to different kinds of coins to be wrapped and respective cutters for cutting corresponding papers and operates to feed each selected paper to a coin-wrapping mechanism by way of a paper tensioning mechanism, the length of paper cut for each coin stack being adjustably varied to correspond to the kind of coin to be wrapped by varying the distance between each cutter and the tensioning mechanism, and the speed at which each selected paper is supplied is adjusted to correspond to the cut length of the paper.

3,821,918

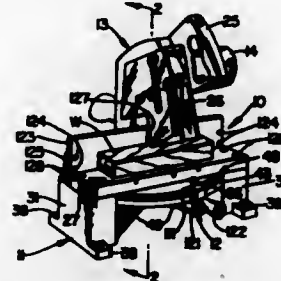
**MOTORIZED MITER BOX**

Edward J. Nicholas, and Harry D. Benney, both of Tupelo, Miss., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sept. 1, 1972, Ser. No. 285,654  
Int. Cl. B27b 5/18; B23d 45/14

U.S. Cl. 83—471.3

4 Claims



A motorized miter box including a support base mounting an angularly adjustable support arm the rear end of which carries a forwardly and downwardly swingable motor driven saw means and the front end of which extends beyond and upwardly and inwardly around the arcuate web-run to form pointer means and quick acting detent means for adjustably setting the support arm to the frequently used miter cutting angles. The support for the swingable motor driven saw means includes compression spring biasing means for maintaining the motor driven saw means in its upper rest position including guide means for supporting the biasing spring, in event of spring failure, in partial operative position to arrest movement of the motor driven saw means to its operative position thereby assuring the operator against injury.

3,821,919

**STAPLE**

Friedrich Karl Knohl, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 10, 1972, Ser. No. 305,400

Int. Cl. F16b 15/02

U.S. Cl. 85—49

2 Claims



A staple device which is particularly adapted to be used with gypsum board workpieces or the like and which includes a head portion having a cross-sectional configuration defined by an advancing and trailing portion which is particularly adapted to distribute the load on the workpiece to preclude damaging the workpiece when the head is driven flush with the surface of the workpiece.

3,821,920

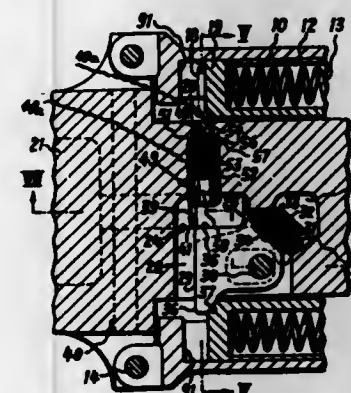
**CATCH DEVICE FOR AN AUTOMATIC FIRING WEAPON**  
Hans Brieger, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland  
Filed July 13, 1973, Ser. No. 379,187

Claims priority, application Switzerland, July 28, 1972, 11323/72

U.S. Cl. 89—132

Int. Cl. F41d 11/02

7 Claims



A catch device for an automatic firing weapon comprising a breechblock which can be displaced from a rearward position into a firing position and a pivotal catch element which, when assuming its catch position, extends into the path of travel of the breechblock and behind which catch element there can engage a blocking element for catching the breechblock shortly prior to reaching its firing position. A second catch element is provided which is engageable from the rear by the blocking element. When the blocking element engages behind the second catch element the latter is moved against the force of a first spring into the path of the breechblock. The first-mentioned catch element, when the blocking element is not engaged therebehind, under the influence of the force of a second spring, extends into the path of the breechblock, and the breechblock is caught by the second catch element at a different location than by the first catch element.

3,821,921

**PROXIMITY DETECTOR FOR NUMERICAL CONTROL SYSTEM**

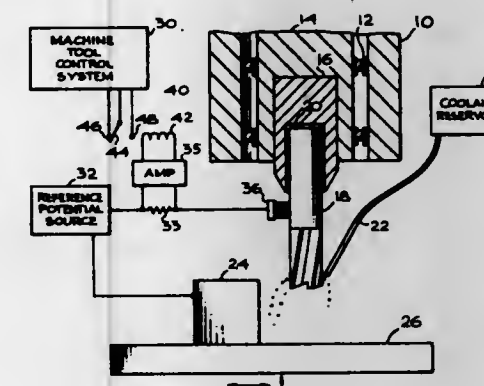
Jack Rosenberg, 808 Blauvenada Ave., Pacific Palisades, Calif. 90272

Filed June 11, 1973, Ser. No. 368,523

Int. Cl. B23c 9/00; B23b 39/08

U.S. Cl. 90—11 C

5 Claims



A method and means for indicating that a tool driven by a numerically controlled spindle is sufficiently close to a workpiece so that the system may be switched from a rapid traverse operation to operation at whatever speed is determined proper for the cutting operation.

3,821,922

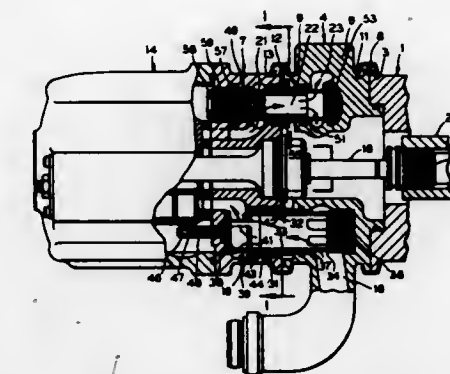
**QUICK CHANGE CONNECTION APPARATUS**  
Herbert H. Kouns, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,891

Int. Cl. F01b 3/00

U.S. Cl. 91—499

7 Claims



Quick change hydraulic connection apparatus suitable for removably mounting a rotatable hydraulic unit into fluid sealed relation with a complementary rotatable torque exchange device and also mounting said unit into torque transmitting relation with said device; includes a fluid manifold defining a plurality of manifold passages for fluids and connectable by fastener means between the device and the unit; the unit defines a plurality of unit passages for fluids which are adapted for registry with the manifold passages upon axial connection of the unit with the manifold; each passage of the manifold passages and the unit passages has complementary valve means to selectively close each respective passage upon disconnection of the unit from said manifold and to permit fluid flow through each respective passage when said unit and said manifold are connected into operative condition.

3,821,923

**SMOKE VENT**

Pierre Georges Albert Dange, Bogaerstraat 21, at 9830 Sint-Martens-Latem, Belgium

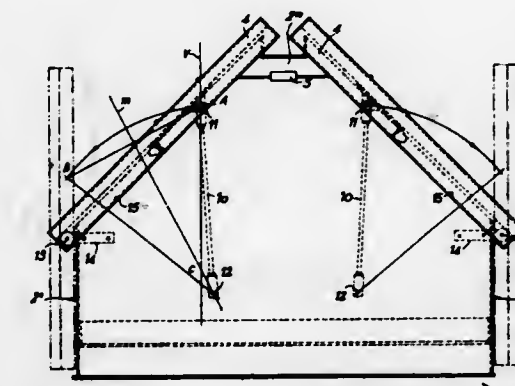
Filed Sept. 13, 1972, Ser. No. 288,800

Claims priority, application Belgium, Sept. 15, 1971, 772606

Int. Cl. F23i 13/02

U.S. Cl. 98—86

2 Claims



The invention pertains to a smoke vent of the type comprising a case as support to at least one leaf and, between said case and said leaf a locking device intended to release said leaf upon detection of excessive heat and/or smoke and/or pressure, wherein connecting means are provided between the case and the leaf such as to ensure the opening of the leaf by gravity following a detection by said locking device.



3,821,924

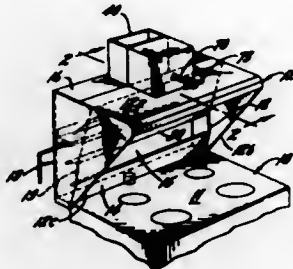
**DAMPER MECHANISM FOR KITCHEN VENTILATING SYSTEMS**

Jack W. Walters, Buffalo Grove, Ill., assignor to Doane Manufacturing Company, Wheeling, Ill.

Filed Jan. 15, 1973, Ser. No. 323,931

Int. Cl. F23j 11/02

U.S. Cl. 98-115 K



A damper mechanism for kitchen ventilators including a damper door journaled for movement between open and closed positions within the ventilator system. A spring urges the damper door toward its closed position, and a mechanical latch located outside the ventilator system includes a first latching element connected to the door and a second latching element mounted for movement between latched and unlatched positions. A solenoid moves the second latching element to its unlatched position when the solenoid is energized, thereby releasing the damper door for movement to its closed position. A manual reset plunger is connected to the damper door.

3,821,925

**APPARATUS FOR PRESSURE COOKING FOODS**

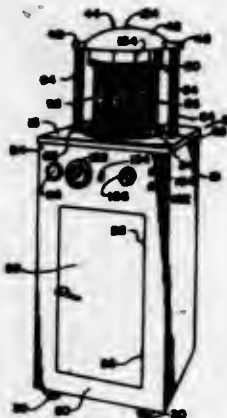
George A. Moore, 843 N. Dellrose, Wichita, Kans. 67208

Continuation of Ser. No. 480,998, Aug. 19, 1965, abandoned.

This application July 3, 1969, Ser. No. 871,409

Int. Cl. A47j 37/12

U.S. Cl. 99-327



Apparatus for cooking moisture-containing foods. The apparatus is of the deep-fat pressure cooker type and includes a cover or closure means that is sealingly movable downwardly into the upper portion of an open topped cooking pot, whereby the pot is selectively closable by the closure means and in addition the latter serves on downward movement into the pot to compress and pressurize the contents of the pot by reducing the volume of the confined space. Food supporting means are dependently carried by the closure means, whereby food can be lowered in the pot to be immersed in a hot cooking liquid (oil or fat) in the pot at the same time as closure means closes the pot and is in the act of compressing the contents thereof. The apparatus includes means for forcibly moving the closure means, and pressure relief and vapor venting

means, as well as an electrical control and timer system to control cooking fluid temperature, and to control automatically timed upward and downward movements of the closure means.

3,821,926

**MULTI-PURPOSE OUTDOOR GRILL**

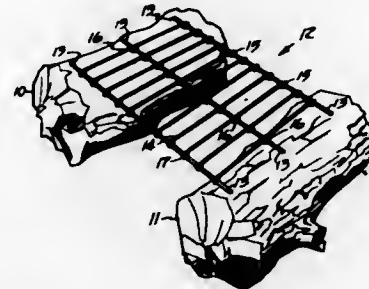
Keith E. Clark, 767 Lindo Ln., Chico, Calif. 95926

Filed Feb. 23, 1972, Ser. No. 228,566

Int. Cl. A47j 37/07

U.S. Cl. 99-340

6 Claims



An outdoor grill comprises at least two laterally spaced and horizontally disposed primary support rods having a plurality of transversely disposed secondary support rods loosely attached thereto by eyelets formed thereon. In a grill embodiment of this invention, three such primary support rods are utilized and each secondary support rod has three eyelets formed thereon to provide a substantially large, flat grill. In barbecue and oven embodiments, a horizontal grill portion has a pair of vertically disposed secondary support rods mounted on each end of two primary support rods and a horizontal spit rod is attached between such pairs and above the grill portion.

3,821,927

**REFUSE COMPACTOR CONTROL SYSTEM**

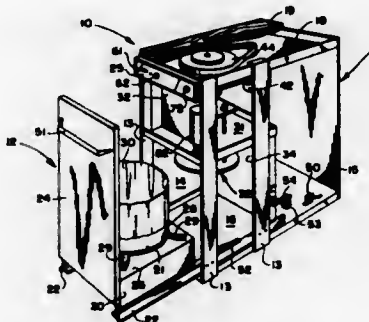
Jerome F. Stratman, Cypress, and John Novak, Anaheim, both of Calif., assignors to The Tappan Company, Mansfield, Ohio

Filed Nov. 5, 1971, Ser. No. 195,991

Int. Cl. B30b 15/30

U.S. Cl. 100-73

7 Claims



A domestic refuse compactor in which there is a powered ram reciprocated within a housing vertically in a receptacle therein for the refuse, and the ram reversal for withdrawal is controlled by either advance to a predetermined distance above the receptacle bottom or development of a given compaction force in reaction to the advance. The receptacle is laterally movable to and from the housing by a positioning carriage, with non-rigid latching of the latter in the inner position to receive the ram for slight outward yielding during compaction. A deodorizing spray is provided by a front mounted spray can, a manually operated solenoid actuator, and a spray directing fixture which causes the spray to be discharged inwardly and to the rear for injection into the receptacle while in its inner storage and compacting position.

3,821,928

**APPARATUS FOR CONTINUOUS EXPRESSION**

Takemi Sugita, Osaka, Japan, assignor to Moritake Iron Works Co., Ltd., Osaka, Japan

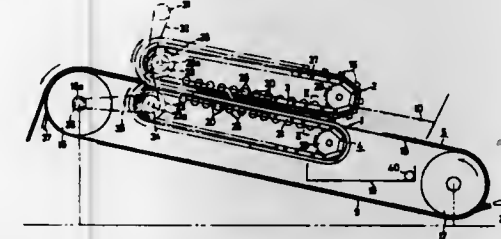
Filed Nov. 13, 1972, Ser. No. 306,095

Claims priority, application Japan, May 10, 1972, 47-46253

Int. Cl. B30b 9/24; B01d 31/04

U.S. Cl. 100-118

12 Claims



An apparatus including a lower endless filter belt and an upper endless pressing belt with a squeezing chamber formed therebetween. The filter belt comprises a belt main body impermeable to liquid for backing and a filter medium covering the main body to provide a filtrate passageway therebetween and is inclined with its one end positioned at a higher level than the other end. The belt main body is substantially in the form of a trough having upstanding portions along its opposite side edges and receives filtrate which has passed through the filter medium, permitting the same to flow down the inclined filter belt and drop from its one end.

3,821,929

**REFUSE COMPACTOR**

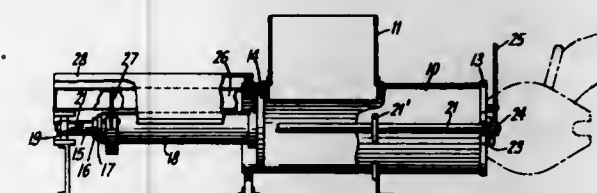
William E. Stapf, Alexandria, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,145

Int. Cl. B30b 11/08

U.S. Cl. 100-179

1 Claim



A pair of tie bolts along opposite sides of the compacting cylinder are used to take up the compacting forces by mounting the cylinder door at one end of the bolts and the cylinder ram actuator at the other end of the bolts. The door is hinged to one of the bolts and locked to the other. Since the bolts are spaced from the cylinder a refuse bag can be slipped over the door end of the cylinder, and the door can be replaced with a refuse extruder.

3,821,930

**PRINTING APPARATUS**

Edwin E. Boshinski; James W. Fellows, both of Dayton, and James J. Krollick, Kettering, all of Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed May 12, 1971, Ser. No. 142,547

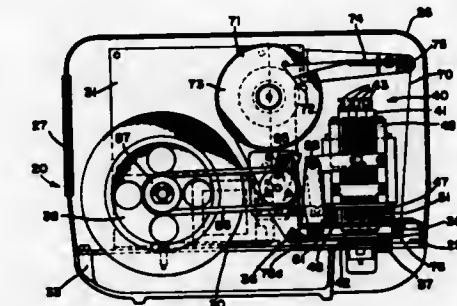
Int. Cl. B41j 15/20; B41f 31/16

U.S. Cl. 101-93 R

2 Claims

A tape printing apparatus for use in connection with a weighing scale includes a set of printing wheels which are electrically positioned in accordance with signals from circuitry within the weighing scale. A roll of adhesive tape is contained within the apparatus, and tape may be removed manually from the roll by the operator. A continuous inked ribbon is pro-

vided with the ribbon being positioned between the printing wheels and the tape so that, as the printing wheels are pressed through the ribbon and against the tape, a visible indication of the electrical input signal is provided on the tape. This indication may include such things as weight, price per unit weight,



3,821,931

**COPYING-PRINTING APPARATUS**

Keizo Yamaji, Tokyo, and Akira Kurahashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

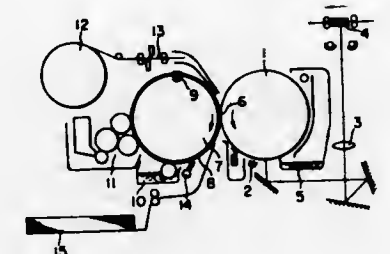
Filed Feb. 28, 1972, Ser. No. 229,884

Claims priority, application Japan, Mar. 4, 1971, 46-11732

Int. Cl. B41i 11/08

U.S. Cl. 101-132

12 Claims



An electrophotographic copier unit and an offset printer unit are combined together to constitute a copying-printing apparatus in accordance with the principles of the present invention, which utilizes an electrophotographic process to accomplish offset printing, utilizes preferably the wet type development to develop an electrostatic latent image, and utilizes an image transfer system to transfer the developed image to a transfer sheet. Such transfer sheet may in turn be used as an offset master sheet. Thus, the apparatus can perform copying and printing operations at high speeds and produce multiple copies in a short time and in an economical and hygienical manner.

3,821,932

**APPARATUS FOR INDICATING AND CORRECTING A TRACK POSITION DEVIATION**

Josef Theurer, Vienna, and Friedrich Ollerer, Herzogenburg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Sept. 28, 1972, Ser. No. 292,880

Claims priority, application Austria, Oct. 8, 1971, 8741/71

Int. Cl. E01b 33/06

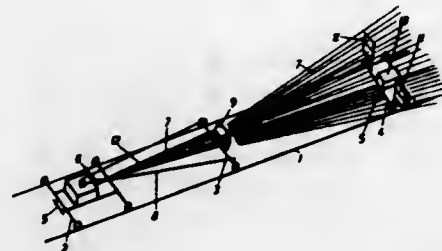
U.S. Cl. 104-7 B

16 Claims

Apparatus for indicating a deviation of the position of a track from a desired position and for correcting the track position comprises an emitter of a reference beam, a target for the



emitted beam, and a lens for deflecting the beam intermediate the emitter and target, the track position deviation being indicated at the intermediate point. The target indicates a normal path of the emitted beam corresponding to the desired



track position, and the lens deflects the beam from the normal path when it is at a track point whose position deviates from the desired position. Track correction is controlled by the deflected beam.

3,821,933

**APPARATUS FOR LINING TRACK IN A TRACK CURVE**  
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, A-1010 Vienna, Austria

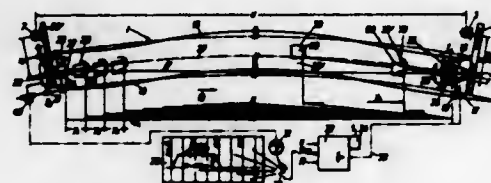
Filed Dec. 11, 1972, Ser. No. 313,745

Claims priority, application Austria, Feb. 7, 1972, 972/72

Int. Cl. E01b 35/08

U.S. Cl. 104-8

10 Claims



A mobile track liner comprises a laser beam gun in an uncorrected track section emitting a reference beam forming a chord in the arc of a track curve, and a laser beam receiver mounted on the liner, laser beam gun and receiver are transversely adjustable in relation to fixed points, such as telegraph poles and like markers defining a planned track position and respectively associated with the laser beam gun and the receiver. A control means for the track lining converts lining error signals which are a function of the receiver position in dependence of the length of the path of the movement of the receiver on the track into lining control signals. In the lining method, the receiver on the liner is moved towards the laser beam gun which is mounted on a carriage in the uncorrected track section.

3,821,934

**HEAVY WEIGHT TRANSPORTING TRUCK**

Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

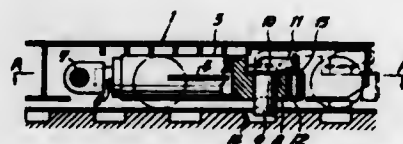
Filed Jan. 26, 1973, Ser. No. 326,869

Claims priority, application Japan, Jan. 27, 1972, 47-10374

Int. Cl. B61c 11/04; B61b 13/02

U.S. Cl. 104-147

4 Claims



A truck for transporting a heavy weight moved by reciprocating of hydraulic cylinder provided on the truck and by intermittent fixing of the cylinder or piston rod thereof to the ground.

3,821,935

**HATCH COVER**

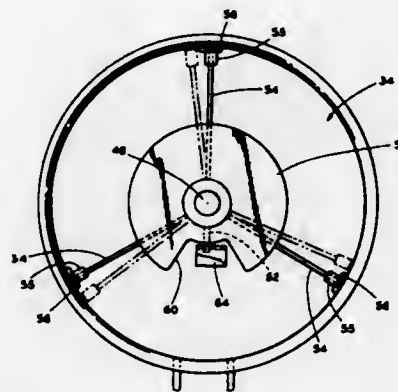
Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed Jan. 5, 1973, Ser. No. 321,440

Int. Cl. B61d 39/00

U.S. Cl. 105-377

10 Claims



A hatch cover adapted to close a hatch structure opening and including a locking mechanism having a hand wheel projecting through the hatch cover and having a threaded shaft connected thereto. Threaded onto the shaft is a locking spider having a hub and arms extending therefrom with end portions engageable with locking lugs evenly spaced about the inner vertical wall of the hatch. A slotted guide projects downwardly from the hatch cover, the slot therein being of offset or serpentine construction. A follower finger attached to the spider arm supporting hub travels in the slot to thereby provide a rotational movement to the spider as the hub moves vertically upon rotation of the actuating hand wheel and the attached threaded shaft. This spider arm rotation moves the spider into and out of locking alignment with the peripheral locking lugs.

3,821,936

**KNEE DESK**

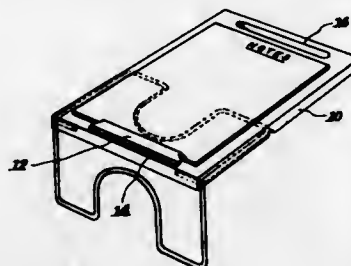
Joseph Morze, 4444-2 Kaneohe Bay Dr., Kaneohe Oahu, Hawaii 96744

Filed Oct. 31, 1972, Ser. No. 302,536

Int. Cl. A47b 23/00

U.S. Cl. 108-43

1 Claim



A clip board has pivotally secured at one end a wire form shaped to the contour of a leg. The form, when not in use, folds against the board. When in use the form folds out at an angle of about 90°.

3,821,937

**COOLING OF LOW-INERTIA MOTOR DRIVEN DIRECT DRIVE SEWING MACHINE**

Henry A. Seemelberg, South Plainfield, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,149

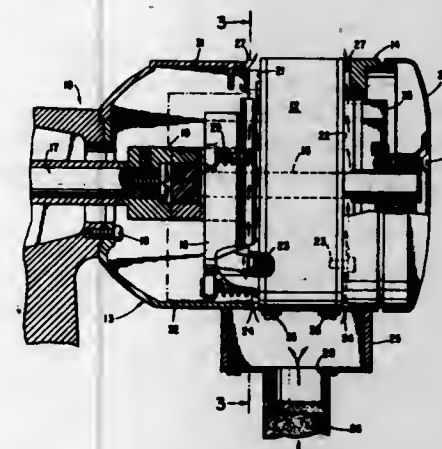
Int. Cl. D05b 71/00

U.S. Cl. 112-218 R

10 Claims

A direct drive sewing machine driven by a sealed low-inertia motor having a combination of elements adapted to provide

for temperature control of the motor and certain operator accessible and auxiliary elements of the sewing machine. The motor is enclosed in end bonnets which are provided with cooling air entrance and exit openings. A blower external to the motor and operable independently thereof produces a



continuous stream of cooling air regardless of the intermittent operation of the motor, which stream of air is directed through the entrance openings of the end bonnets and in close proximity to the motor shaft-bearing end plates of the motor within said end bonnets. The cooling air is then exhausted through the exit openings.

3,821,938

**TONER USAGE SENSING SYSTEM**

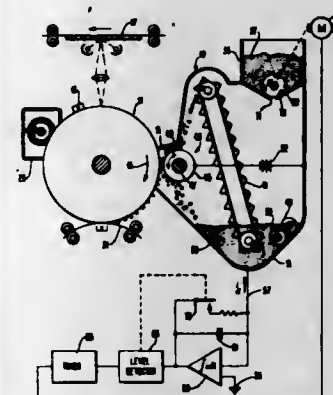
James L. Bacon; Carl A. Queener, and Henry W. Simpson, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,040

Int. Cl. G03g 13/08

U.S. Cl. 118-7

11 Claims



A toner usage sensing system for an electrostatic reproduction apparatus which utilizes multicomponent developer material including electrostatically charged toner to develop electrostatic latent images on a photosensitive plate directly senses the amount of toner consumed by the reproduction process. Since the average toner body charge (coulomb/gram) is constant for a given desired toner concentration, the weight of the electrostatically charged toner consumed is sensed by measuring the charge removed from the developer material during the reproduction process. The developer unit containing the developer material is electrically isolated from the remainder of the reproduction apparatus and grounded through a single connection. The current in the ground connection returns charge to the developer unit sufficient to replace the charge removed and is sensed to obtain a measurement of the toner consumed. A measured amount of toner is added to the developer material when a preselected amount of charge has been sensed as being removed. In one embodiment,

3,821,939

**APPARATUS FOR APPLYING ADHESIVE TO THE EDGES OF A SLIT TUBE**

John J. Doherty, Braintree, Mass., assignor to Armstrong Cork Company, Lancaster, Pa.

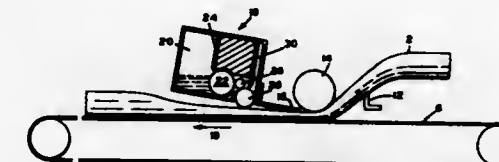
Division of Ser. No. 143,119, May 13, 1971, Pat. No.

3,782,994. This application May 1, 1972, Ser. No. 249,309

Int. Cl. B05c 1/08, 1/16

U.S. Cl. 118-44

1 Claim



Foamed tubular insulation is provided with a slit down its longitudinal length so that it may be slid over a pipe. The apparatus herein opens up the tubing so that an adhesive coater may apply an adhesive to both edges of the slit in the tubing. A flattening structure opens up the tube so that the two surfaces to be coated are in the same horizontal plane and a roll coating structure then applies adhesive to the two edges in the same plane. The adhesive is permitted to dry and is then later solvent actuated when it is to be utilized to fasten the two edges together.

3,821,940

**ANIMAL ACTIVATED INSECTICIDE DUST APPLICATOR**

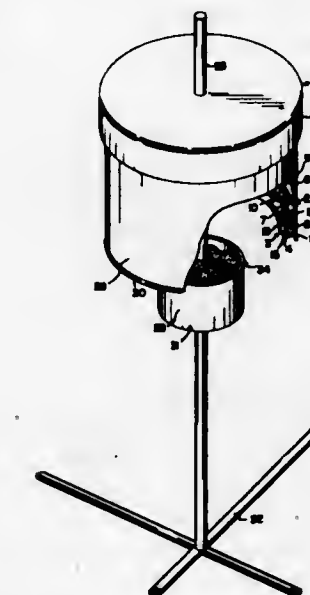
Fred W. Mann, Box 444, Waterville, Kans. 66548

Filed Feb. 26, 1973, Ser. No. 336,039

Int. Cl. A01k 29/00

U.S. Cl. 119-159

9 Claims



An animal activated insecticide dust applicator for application of dust to an animal includes a first bag or container for storage of the dust and having a second bag or container depending therefrom and formed of porous material to permit escape or dispensing of dust therefrom. The first bag or container has discharge or delivery control structure therein activated by animal contact with the container to cause flow of dust from the first container to the second container and agitation of the second container by the animal causes dust to work



through the second container and onto the animal. The structure is supported on a standard which also has an attractive media such as a support of a food supplement or the like to attract the animal.

3,821,941

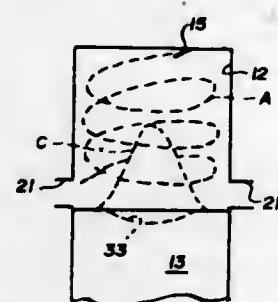
## VALVING FOR INTERNAL COMBUSTION ENGINE

Frank J. Rychlik, 5200 N. Reserve, Chicago, Ill. 60656

Filed Jan. 2, 1973, Ser. No. 320,157

Int. Cl. F02b 75/02; F02d 39/04

U.S. Cl. 123—65 WA



A modified stratified charge engine, having a unique pressure actuated inlet valve arrangement for controlling the induction of fuel and air into the combustion cylinder as a rapidly swirling mass, thereby to produce efficient combustion and, correspondingly, low exhaust emissions. An engine of the type described capable of operating with substantially equal efficiency, and without knock, on a wide range of octane rated fuels.

3,821,942

## DRIVING APPARATUS FOR VALVES OF INTERNAL COMBUSTION ENGINES

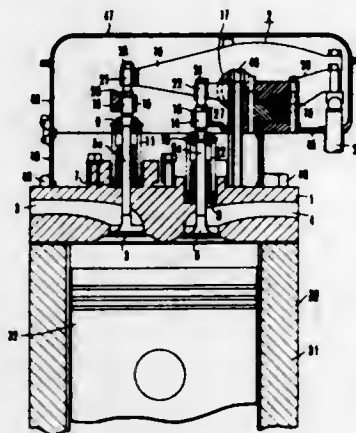
Naoyoshi Ishida; Atsushi Watanabe, and Yukio Ishii, all of Tamano, Japan, assignors to Japan Ship's Machinery Development Association, Tokyo, Japan

Filed Sept. 29, 1972, Ser. No. 293,426

Claims priority, application Japan, Sept. 30, 1971, 46-89569; Sept. 30, 1971, 46-89570

Int. Cl. F01m 1/06

U.S. Cl. 123—90.38



In an internal combustion engine of the type wherein the suction and exhaust valves are operated by a valve operating mechanism housed in a cover, the valve operating mechanism comprises a plurality of rocking arms pivotally supported by the cover, rod means interposed between one end of the rocking arms and the valve stems of the suction and exhaust valves for opening and closing the same and means for permitting lateral movement to the rod means with respect to the valve stems in accordance with the rocking motion of the rocking arms. The cover is supported by a cylindrical support

disposed within a circle on which a plurality of bolts adapted to secure the cylinder head to a cylinder block are arranged, and the cover is removably secured to the cylinder head.

3,821,943

## AUTOMOTIVE AIR-POLLUTION PREVENTIVE SYSTEM

Yoshio Toda, Yokohama; Masaji Shiobara, Chigasaki, and Mitsutaka Konno, Yokohama, all of Japan, assignors to Nissan Motor Company, Yokohama City, Japan

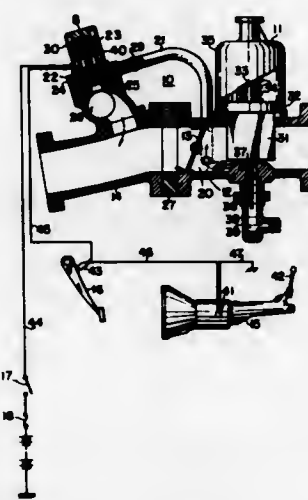
Continuation-in-part of Ser. No. 7,850, Feb. 2, 1970,

abandoned. This application Feb. 22, 1972, Ser. No. 228,127 Claims priority, application Japan, Feb. 5, 1969, 44-8255; Feb. 5, 1969, 44-8256

Int. Cl. F02d 31/00

U.S. Cl. 123—97 B

1 Claim



An air-pollution preventive system to be used in combination with an automotive internal combustion engine having a carburetor of variable venturi type, which system comprises a deceleration passage to supply an air-fuel mixture to the engine in an amount and mixture ratio that are suited for the engine operation during deceleration, the deceleration passage being closed and opened by valve means which is controlled upon driving conditions of the motor vehicle particularly upon vehicle speeds, positions of the clutch pedal, vacuum in the intake manifold of the engine, or combinations of two or more of these variables.

3,821,944

## IGNITER FOR AN INTERNAL COMBUSTION ENGINE

Takao Miki, Himeji, and Toshikazu Saita, Takasago, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

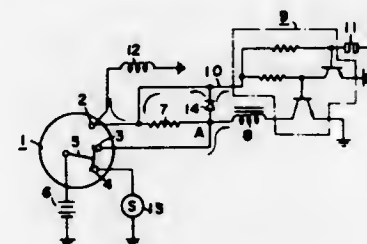
Filed Feb. 22, 1972, Ser. No. 227,857

Claims priority, application Japan, Feb. 23, 1971, 46-10838

Int. Cl. F02p 3/02

U.S. Cl. 123—179 BG

2 Claims



An igniter for an internal combustion engine using a semiconductor switch is disclosed. A voltage dropping element is selectively inserted in a feeding circuit of an ignition coil of the engine which is connected to a DC electric source

during the time of initiation of the engine or during a normal operation so as to compensate for a battery voltage drop at the time of initiation of the engine. A diode is provided for feeding a base current directly to the semiconductor switch at the time of ignition of the engine by short-circuiting the voltage dropping element at such time. A decrease in the base current of the semiconductor switch at the time of initiation of the engine, due to the voltage dropping element, is thereby avoided. The semiconductor switch is thus sufficiently conducted at the time of initiation of the engine, such that sufficient current is fed to the ignition coil so as to improve the ignition efficiency at the time of initiation of the engine.

3,821,945

## TARGET THROWING DEVICE HAVING AUTOMATICALLY VARYING TARGET THROWING ANGLES

Harry Clark Foster, East Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

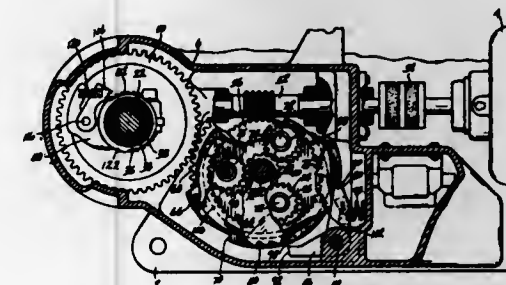
Continuation of Ser. No. 57,206, July 22, 1970, abandoned.

This application Nov. 6, 1972, Ser. No. 303,752

Int. Cl. F41b 3/04

U.S. Cl. 124—9

9 Claims



A target launching device that as a target throwing arm that is held in a cocked position during the oscillation of the throwing arm. A control device is used to engage and disengage the drive mechanism that is used to oscillate the throwing arm. A sun gear is drivingly connected to the motor, the planetary gears and the interrupter gear. The interrupter gear is rotatable and interrupts for a short period of time the operation of the control device so that the drive mechanism ceases to operate, resulting in the stopping of the oscillation of the throwing arm.

3,821,946

## ARCHERY BOW

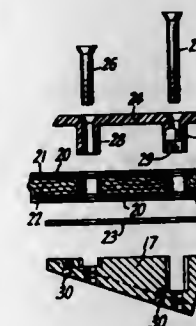
Lonnie P. Griggs, Jacksonville, Tex., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 4, 1972, Ser. No. 278,179

Int. Cl. F41b 5/00

U.S. Cl. 124—24 R

2 Claims



A collapsible archery bow having a handle with removable bow limbs. Each limb has a single block permanently attached thereto. The blocks are manually insertable into notches in the

respective ends of the handle and are held therein by a tongue and groove connection and by spring detents positioned in the base of each block. The spring detents engage the upper surfaces of the notches.

3,821,947

## INFANT WARMER-INCUBATOR

George W. Schomow, 2316 Lilac Ln., White Bear Lake, Minn.

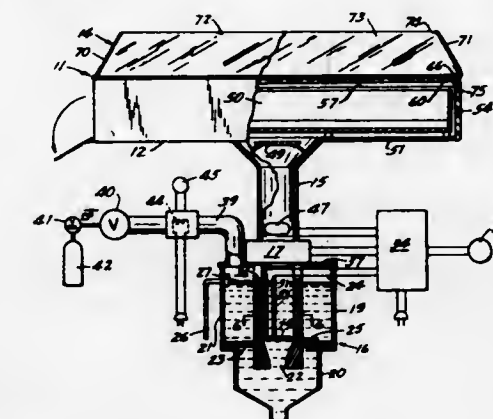
55110

Continuation of Ser. No. 111,305, Feb. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 832,279, June 11, 1969. This application Jan. 11, 1973, Ser. No. 322,781

Int. Cl. A61g 11/00

U.S. Cl. 128—1 B

11 Claims



An infant warmer-incubator constructed to provide a controlled air environment about the infant. The incubator maintains the proper environment in an "open" or "closed" position and will permit resuscitation, technical procedures, surgery or routine nursing care of the infant as with a crib or bassinet. In the "closed" position some nursing care may be performed while in the open position it may serve as an operating table and not materially disturb the controlled environment for the infant. The incubator control permits the premixing and careful measuring of a therapeutic gas, e.g., oxygen with air, and the humidification thereof, which mixture is delivered to the incubator to surround and maintain the infant in a preferred environment of warm, humidified and oxygen-abundant gases. This apparatus can be placed into operation very rapidly, within 3-5 minutes if needed for emergencies, e.g., deliveries of premature infants. It comprises a vaporizer having a small boiling chamber over which is drawn the therapeutic gas to be mixed with the vapor and discharged to the bottom shell of the incubator. From the bottom shell the mixture is distributed and is forced upward through a bed frame and around an infant. Continued movement carries the gases out the open top and the pressure inside avoids ambient room air from flowing down onto the infant.

3,821,948

## SYSTEM AND METHOD FOR ANALYZING ABSOLUTE DERIVATIVE SIGNAL FROM HEARTBEAT

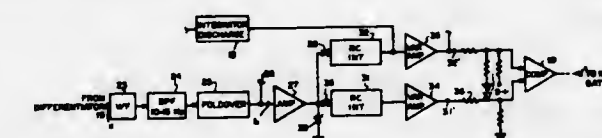
Eugene King, Yardley, Pa., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 3, 1971, Ser. No. 195,396

Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 A

10 Claims



An arrhythmia detection system for analyzing electrocardiographic signals comprising transforming a filtered, ab-



solute, derivative of the electrocardiographic signals into a first integral signal defining an adaptive threshold level and depending from prior heart beat signals, transforming the electrocardiographic signals into a second integral signal representative of a heart beat virtually independent from prior heart beat signals, and comparing the levels of the first and second integral signals for generating a QRS trigger pulse. Further aspects include providing a third integral signal accentuating noise and comparing its level with the first integral signal level for inhibiting QRS trigger signals during noise occurrence.

3,821,949

## BIO-FEEDBACK APPARATUS

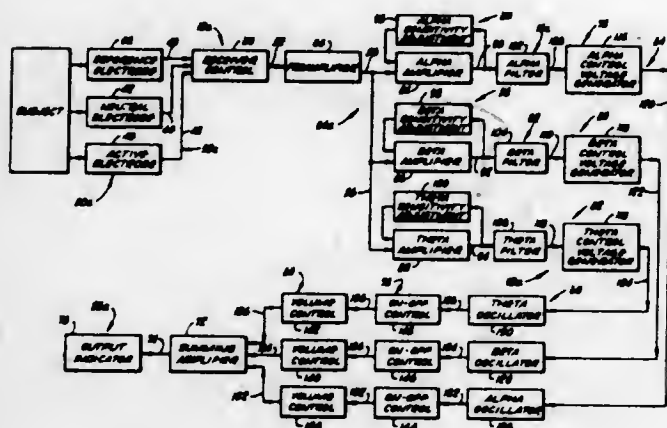
Rex A. Hartnell; Duane L. Calles; Wendell H. Spencer; Darrell D. Albright, all of Topeka, and Elmer E. Green, Ozawie, all of Kans., assignors to The Menninger Foundation, Topeka, Kans.

Filed Apr. 10, 1972, Ser. No. 242,567

Int. Cl. A61b 5/04

U.S. Cl. 128-2.1 B

32 Claims



An improved bio-feedback apparatus for sensing the brain-wave potentials produced by a subject wherein the sensed brain-wave potentials are processed through separate parallel processing channels of a controlling channel, each processing channel processing a preselected frequency range of the sensed brain-wave potential to provide subject-preceivable feedback signals indicative of signal presence within the preselected frequency of each processing channel. Each processing channel is constructed to provide predetermined signal amplitude and duration criteria for determining signal presence prior to initiating and terminating the feedback signals and, in one form, each processing channel is constructed to provide feedback signals indicative of the percentage of time during a subsequent predetermined epoch of time wherein a signal presence existed in the sensed brain-wave potential. In one form, the bio-feedback apparatus simultaneously produces audible feedback signals, each audible feedback signal having a separately identifiable tone indicative of signal presence within the preselected frequency range of the processing channels.

3,821,950

## RESPIROMETER

John R. Boehringer, 427 Parkview Dr., Wynnewood, Pa. 19096

Filed Nov. 15, 1972, Ser. No. 306,549

Int. Cl. A61b 5/08

U.S. Cl. 128-2.08

13 Claims

Elongated, air tight, flexible bag for measuring respiratory volume is attached at one end to a roller having a passageway therethrough which communicates with the interior of the bag and with a means for receiving expiratory gas from a test subject, and which further includes an easily closable opening,

requiring deliberate closure during use, to prevent suffocation of an incapacitated test subject. In its preferred form, the bag includes a relatively inflexible corrugated structure opposite that part of the bag in communication with the interior of the roller passageway to prevent excessive back pressure. Preferably, the calibration markings are devised so that mea-



surement is taken by progressively collapsing the bag beginning at one end thereof while holding the bag against a flat surface and proceeding toward the opposite end of the bag until the internal pressure in the uncollapsed portion of the bag causes a distention of the bag away from the flat surface. This specific method of measuring respiratory volume is also within the scope of the present invention.

3,821,951

## FOOT COMFORT PRODUCING APPARATUS

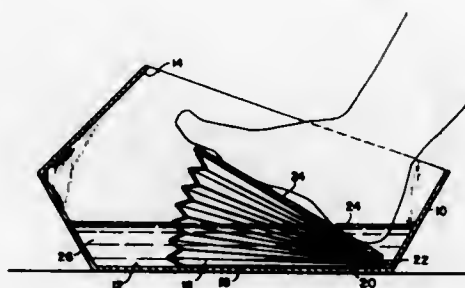
Lloyd Giles, Montreal, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 9, 1973, Ser. No. 358,794

Int. Cl. A61h 9/00

U.S. Cl. 128-66

4 Claims



A hollow container has a flat bottom surface and a top opening. The container is large enough to accommodate at least one foot. A bellows has a main portion intermediate a bottom plate and a top plate. The bottom plate is disposed horizontally along the bottom of the container. The top plate is pivotally secured at one end to one end of the bottom plate and is biased inclinedly upward. The container is partially filled with water to a position intermediate both ends of the top plate. The top plate has openings communicating with the interior of the bellows, some of the openings being above the water line, other openings being below the water line.

3,821,952

## ADJUSTABLE CHIROPRACTIC TABLE

Sylvester E. Binegar, Indianapolis, Ind., assignor to Binegar Design and Engineering Corp., Indianapolis, Ind.

Filed Jan. 11, 1973, Ser. No. 322,715

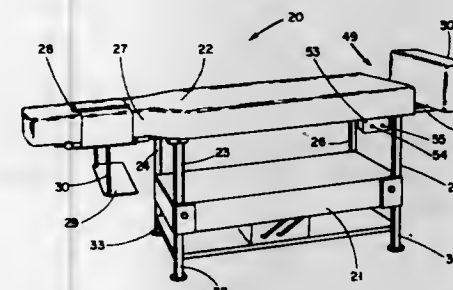
Int. Cl. A61f 5/00

U.S. Cl. 128-70

4 Claims

A chiropractic table which will position the patient at the desired height. A cushion is mounted atop four racks which are slidably received by the table frame. In one embodiment, a pair of independent electric motors mounted to the frame have output shafts with gears thereon in meshing engagement with the racks. The motors may be independently operated to raise and lower the opposite ends of the cushion. In the same embodiment, the top ends of the racks are pivotally mounted

to the cushion base. In another embodiment, the cushion is fixedly mounted to the top ends of the rack with a single elec-



trical motor being provided to simultaneously raise or lower both ends of the cushion. Control means are provided to allow the operator to raise and lower the ends of the cushion.

3,821,953

## TRACTION BED CONSTRUCTION

Venzel R. Mikan, 205 Kennedy Rd., Saginaw, Mich. 48603

Filed Feb. 5, 1973, Ser. No. 329,904

Int. Cl. A61f 5/00

U.S. Cl. 128-71

13 Claims



A bed construction having articulated body-supporting sections operable to enable a reclining person's back and knees to be elevated to flex the lumbar spine, the sections being adjustable toward and away from one another to subject the person's lumbar spine to traction.

3,821,954

## DRESSING WITH QUANTITY OF PARTICULATE MATERIAL

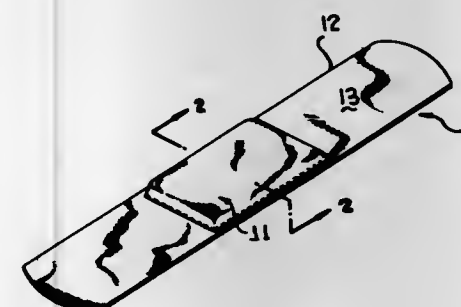
Henry M. Grubel, 15 Suncrest Dr., Six Hills, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,754

Int. Cl. A61h 19/00

U.S. Cl. 128-149

1 Claim



A dressing includes a quantity of particulate material enclosed in an outer layer internally lined with a non-porous, non-wettable material. The particulate material causes the dressing to conform to the shape of a corn, bunion, cyst, or localized area of swelling, providing complete coverage of such body protrusion and redistribution of a major portion of pressure from shoes or clothing to regions surrounding the swelling thereby minimizing pain and irritation.

3,821,955

## GAS-SALINE DISPENSING AMPULE

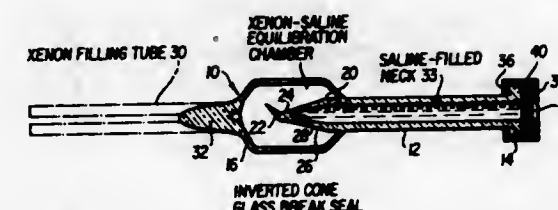
Robert G. Carroll, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Department of Health Education and Welfare, Washington, D.C.

Filed Mar. 29, 1972, Ser. No. 239,197

Int. Cl. A61j 1/06

U.S. Cl. 128-272

7 Claims



A glass ampule for storing and dispensing radioactive gas-saline solution mixture comprising an elongated neck for storing saline, a bulb attached to the neck for storing gas at sub-atmospheric pressure and an inverted conical glass seal at the proximate intersection between neck and bulb for keeping the materials separate until use. A tapping needle inserted through a gasket disc at the free end is used to rupture the glass seal thereby allowing mixing to occur and subsequent removal by volume displacement into a syringe attached to the tapping needle.

3,821,956

## BOVINE TEAT DILATOR AND MEDICAMENT DISPENSER

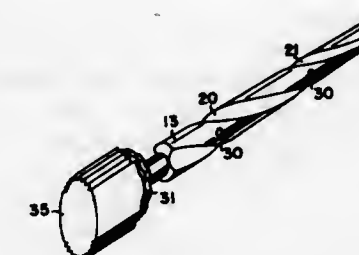
Dale A. Gordhamer, P.O. Box 334, 1516 Harding St., Eau Claire, Wis. 54701

Filed Aug. 14, 1973, Ser. No. 388,089

Int. Cl. A61m 29/00, 31/00

U.S. Cl. 128-343

1 Claim



A dilator for an injured or diseased teat of a cow has a base portion and a portion to be inserted in the milk duct. The latter portion is provided with a spirally grooved conical outer wall and a central passage extends axially entirely through both portions and diverges in the base portion to provide a substantially conical cavity. Radially extending apertures in the wall communicate with the passage. A closure member may be attached to the base portion by interlocking means involving resilient deformation of the closure. The closure member has an internally protruding portion which occupies a large portion of the conical cavity whereby medicaments may be contained therein to force material contained in said cavity upwardly through said passage.



3,821,957

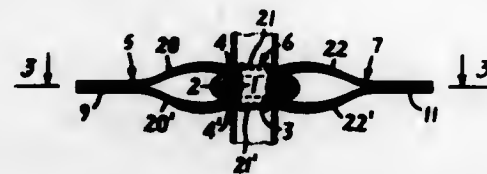
**RETENTION SLIDE FOR CATHETERS AND OTHER TUBULAR MATERIALS**

Phyllis Riely, Northport; John Varga, Bayville, and Dominic Spinoza, Wantagh, all of N.Y., assignors to East/West Medical Products, Inc., Syosset, N.Y.

Filed May 2, 1973, Ser. No. 356,649  
Int. Cl. A61m 25/02

U.S. Cl. 128—348

12 Claims



A retention slide is provided for catheters, tracheotomy tubes and like tubular materials, having a tubular body through which the catheter passes and in which it is engaged in a friction grip, and radially laterally extending retaining lugs for attaching the slide to a fixed location at which the tubular material is to be retained.

A method is also provided for forming such retention slides in one piece from tubular material, slitting the tubular material at both ends to form a plurality of arms, bending the arms at each end radially laterally towards each other in opposed spaced pairs, and joining together the opposed arm pairs thus formed at their lateral extremities, to form the retaining lugs.

3,821,958

**FIRE-PROOF AND ASH-PROOF CIGARETTE**

Raymond Overleese, Box 95, Arlington, Ind. 46104

Filed Feb. 22, 1973, Ser. No. 334,685

Int. Cl. A24d 01/08

U.S. Cl. 131—4 A

4 Claims



A cigarette of improved type, and which is centrally contained within a tubular sleeve or case so to enclose the cigarette flame for preventing accidental fires, the case having a front end wall that is perforated so to allow igniting the cigarette and admit air for maintaining the cigarette flame.

The cigarette may be ignited by means of an elongated member extending through the front end wall, the member having a portion arranged to cover the perforations in the end wall and being lightly adhered thereto before use; the cigarette having its front end coated with a ring of ignitable material and the rear end portion of the elongated member having an enlarged abrasive surface thereon on such that the abrasive material will cause ignition of the cigarette end upon relative axial movement thereof.

3,821,959

**RECONSTITUTED TOBACCO COMPOSITION**

Otto K. Schmidt, So. Windsor, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,895

Int. Cl. A24b 3/14

U.S. Cl. 131—17 AC

4 Claims

This invention is for a new composition of matter comprising tobacco and at least one gum selected from the group con-

sisting of film-forming, polar solvent soluble ether, ester and mixed ether-ester substituted galacto-mannan gums. The process for preparing the new composition comprises mixing the tobacco, preferably in finely divided form, a polar solvent and the gum and agitating the mixture until a homogeneous composition is attained.

Generally, in use, the composition is then formed into a sheet by conventional means, the sheet product having improved properties and which may be commercially used in smoking articles, especially a wrapper for cigars which has excellent wet strength as well as being more resistant to enzymatic degradation.

3,821,960

**TOBACCO DENICOTINIZATION PROCESS**

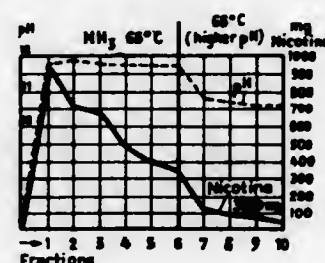
Lazlo Egri, Basel, Switzerland, assignor to Tamag Basel AG, Birsfelden, Switzerland

Continuation-in-part of Ser. No. 823,508, May 9, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 195,960  
Claims priority, application Switzerland, May 13, 1968, 7072/68

Int. Cl. A24b 15/02

U.S. Cl. 131—143

28 Claims



A method for denicotinizing and/or mellowing tobacco by treating the tobacco with a gaseous treatment medium containing at least water vapor and/or at least ammonia wherein there is contemplated controlling the process conditions, especially when working with an ammonia-containing treatment medium controlling the quantity of ammonia added thereto and, during an exclusive or subsequent treatment with an ammonia-free water vapor-containing treatment medium controlling the termination of the tobacco treatment on the basis of the pH-value and/or the titration value of the condensate of the treatment medium leaving the treated tobacco.

3,821,961

**FILL FUNNEL CONSTRUCTION FOR PLASTIC TUBS**

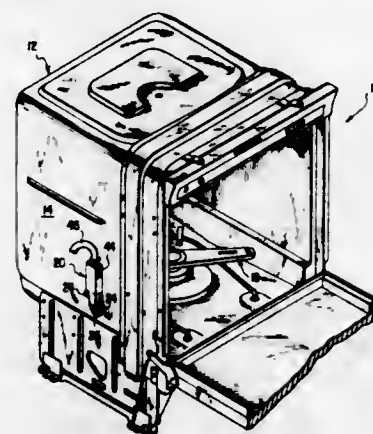
Thomas O. Schimke, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,201

Int. Cl. B08b 3/02

U.S. Cl. 134—182

5 Claims



The fill opening extending through a sidewall of a plastic dishwasher tub is sealed with respect to an interconnecting fill

funnel while splash-out and spray-out through the fill funnel are substantially eliminated. The fill funnel comprises a unipartite, plastic construction which is secured to the exterior surface of a plastic tub sidewall by fasteners extending through the funnel and into mounting bosses on the tub wall but terminating short of the inner tub surface to eliminate any fastener sealing requirement. The fill funnel includes a short, cylindrical conduit extending through the fill opening which includes an integral, diametral rib whose lower horizontal surface lies within the normal splash-out and spray-out paths intersecting the fill opening.

3,821,962

**WELL TOOL**

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Jan. 3, 1972, Ser. No. 214,734

Int. Cl. F16k 17/20

U.S. Cl. 137—12

11 Claims



A subsurface safety valve well tool adapted to be positioned in the bore of a production tubing for controlling flow of fluid through the bore of the tubing by rotating a ball valve to and from open and closed positions in response to a series of sequential pressure changes in the bore of the tubing.

3,821,963

**LIQUID PROPORTIONING APPARATUS**

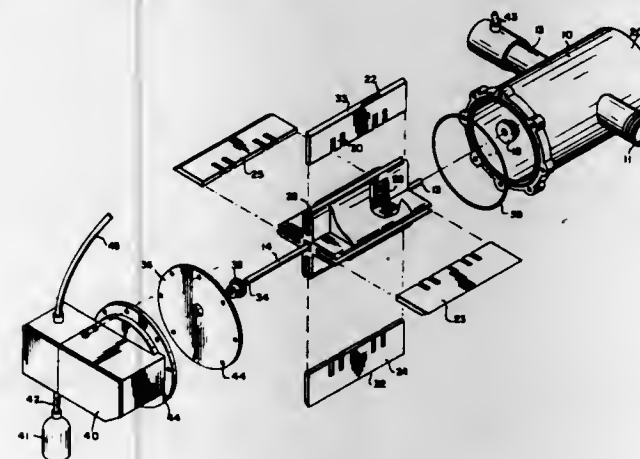
Roy C. Olson, Rockton, Ill., and Charles G. Haire, Cranston, R.I., assignors to Merit Industries, Inc., Cranston, R.I.

Filed Sept. 22, 1972, Ser. No. 291,227

Int. Cl. G05d 11/035

U.S. Cl. 137—99

10 Claims



An apparatus for injecting a liquid fertilizer or the like into a water flow wherein the flow of the water is utilized to drive a fluid motor which in turn drives a pumping mechanism to effect the fertilizer injection. A predeterminable volumetric

ratio of fertilizer to water is obtained and maintained without regard to changes in the pressure and the rate of flow of the water since the speed at which the pumping mechanism is driven is directly proportional to the pressure and the velocity of the water flowing through the fluid motor.

3,821,964

**VALVED TANK NOZZLE FOR A STORAGE TANK**

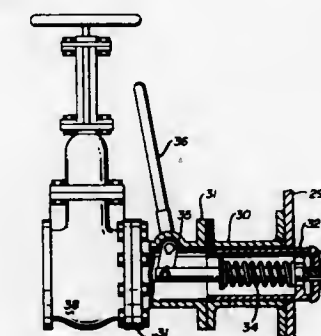
Vincent S. Bacon, 3835 Fairway Dr., Canfield, Ohio 44406

Filed Feb. 23, 1973, Ser. No. 335,091

Int. Cl. B23b 41/08; F16c 41/04

U.S. Cl. 137—317

4 Claims



A valved tank nozzle for installation on a filled storage tank includes a first tubular member arranged to be welded to the tank, a second tubular member detachably mounted thereon, said first tubular member arranged to provide a communicating support for said second tubular member and a gate valve, a third tubular member insertable through said gate valve and second tubular member into said first tubular member and a spring urged normally closed poppet valve on said tubular member, a lever extending exteriorly of said second tubular member engages a rod therein for moving said poppet valve to open position. An opening is formed in the filled storage tank in communication with the tank nozzle after the first tubular member is installed thereon.

3,821,965

**APPARATUS FOR FORMING A HOLE IN A PIPE**

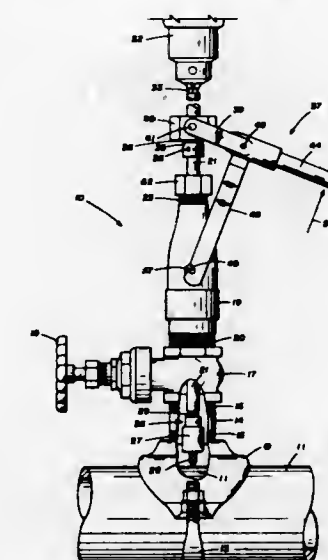
Dennis J. Reynolds, 203 N. Woods, Sherman, Tex. 75090

Filed Aug. 6, 1973, Ser. No. 386,078

Int. Cl. B23b 41/08; F16c 41/04

U.S. Cl. 137—318

8 Claims



Apparatus for forming a hole in a pipe having a fluid therein under pressure includes a sleeve temporarily attachable to a valve mounted on the pipe. A rod is coaxially disposed within the sleeve and extends at one end of the sleeve through the



opened valve in the direction of the pipe to carry a hole-cutting head. The rod extends through the other end of the sleeve and is adapted to receive a rotational force, of at least 50 rpm. First and second yokes are rotatably interconnected, one yoke engaging the sleeve and the other yoke engaging the rod above the cylinder. A lever attached to one of the yokes facilitates applying a downward pressure to the rod to advance the drill head in the direction of the pipe. Means are also provided for pressure sealing the interior of the cylinder where the rod exits from it and to facilitate rotation of the rod.

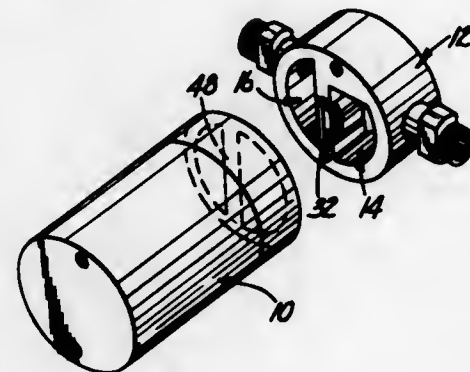
3,821,966

## CHECK-VALVE ASSEMBLY

Charles B. Small, Elyria, Ohio, assignor to Airborne Manufacturing Company, Lorain County, Ohio  
Filed Mar. 15, 1973, Ser. No. 341,538  
Int. Cl. F16k 15/14

U.S. Cl. 137—525.3

7 Claims



A check-valve assembly for allowing fluid to flow from one chamber to another, but check reverse flow. The assembly includes a flapper valve, made of elastomeric material which has a sealing face which seals against sealing surfaces directed toward the high pressure chamber, and an edge extending transversely to the face which seals against a closure member.

3,821,967

## FLUID CONTROL SYSTEM

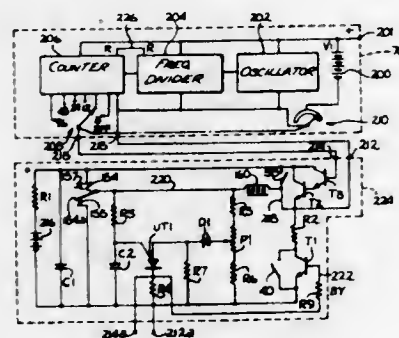
Oded E. Sturman, 18643 Kirkcolum Ln.; Benjamin Grill, 8523 Etiwanda No. 25, and Yigal Froman, 10339 Zelzah No. 64, all of Northridge, Calif. 91324

Filed Dec. 30, 1971, Ser. No. 213,997

Int. Cl. F16k 31/40

U.S. Cl. 137—624.15

15 Claims



A battery operated fluid control system, which may be used in a sprinkler system having a master valve unit with a battery operated electronic clock therein for periodically opening the valve for a preset duration in response to the clock turn-on pulse, and being operable with one or more slave valve units connected in series to sequentially open the slave valves for their corresponding preset time duration. The clock is comprised of an oscillator having a plurality of countdown flip-flops, with the clock turn-on pulse being selectable from the outputs of a group of the lower flip-flops to give a selection of

valve turn-on intervals. A battery operated solenoid valve of the latching type and associated circuitry is located in the master valve unit and each of the slave valve units, with the circuitry being adapted to receive a pulse, either from the clock or from the turn-off signal of the previous valve unit, and to provide a turn-on pulse to the solenoid. The circuitry is also comprised of an adjustable time delay circuit to measure the desired duration from the turn-on pulse and to provide a subsequent turn-off pulse to the solenoid. One embodiment is adapted to replace the valve mechanism in a prior art anti-siphon valve assembly. Another embodiment incorporates a unique anti-siphon valve which does not obstruct the primary flow path and further has a moisture collecting container on the side thereof, cooperatively disposed with the anti-siphon valve and having electrical probes therein connected to the circuitry. When the valve turns on, the initial leakage of the anti-siphon valve fills the container, which will remain filled in rainy or very humid weather, thereby preventing subsequent opening of the valve until the moisture has evaporated. The valve and time delay circuit is also adaptable for use in manually initiated systems, such as toilets and the like, and a unique toilet bowl and water valve component arrangement is disclosed to achieve the anti-siphon function.

3,821,968

## CONTROL VALVE STRUCTURE HAVING DOUBLE PORTS

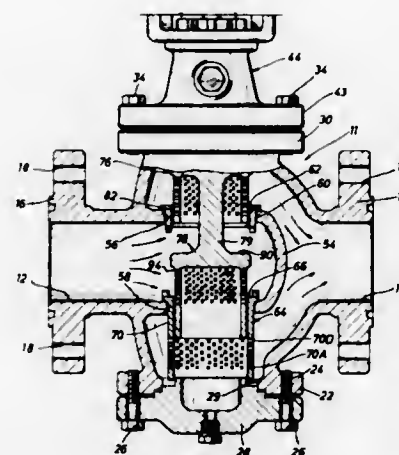
Gayle E. Barb, Houston, Tex., assignor to ACF Industries Incorporated, New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,640

Int. Cl. F16k 11/06

U.S. Cl. 137—625.3

4 Claims



A control valve structure in which the flow of fluid from the inlet is divided into two separate streams and then recombined at the outlet. The control valve is of the globe-valve type having two opposed parts through which the fluid flows from the inlet, and the control valve includes two cylindrical valve portions thereon to control the flow of fluid through the two ports. The cylindrical valve portions are mounted on a common valve post in spaced relation to each other and are perforated to provide a restriction to the fluid flow, thereby converting some of the energy of the fluid stream to heat.

3,821,969

## PLUG

George M. Slako, Royal Oak, Mich., assignor to Underground Products, Inc., Livonia, Mich.

Filed May 31, 1972, Ser. No. 258,393

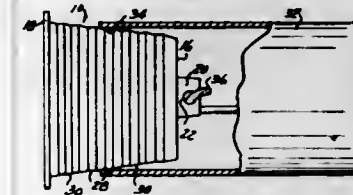
Int. Cl. F16l 57/00

U.S. Cl. 138—89

5 Claims

A universal-type plug for obturating an aperture of any size in a predetermined range, and which is made of a resilient, preferably hollow, generally tapered body peripherally pro-

vided with consecutive right cylindrical and frusto-conical surface portions, the right cylindrical surface portions being of



progressively decreasing diameters from the larger end to the smaller end of the body to accommodate the various sizes of apertures that the plug is capable of closing.

3,821,970

## QUICK DISCONNECT CAP FOR CONDUITS

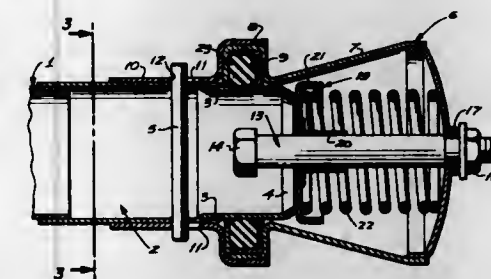
Stephen N. Affa, Torrance, Calif., assignor to General Connectors Corporation, Burbank, Calif.

Filed July 24, 1972, Ser. No. 274,434

Int. Cl. F16l 55/10

U.S. Cl. 138—89

2 Claims



A quick disconnect cap for conduits which includes a tubular fitting for permanent attachment to an end of a conduit, the fitting having a diametrically extending attachment pin, its ends protruding from the fitting and sealed with respect thereto; and a closure overlying and confronting the end of the fitting, the closure having a sleeve slidable over the fitting and provided with L-slots for receiving and interlocking with the ends of the pin. A seal ring is interposed between the fitting and closure outwardly of the pin and slot connection. The closure supports a headed shaft which extends into the fitting and slidably receives a flange which bears against the end of the fitting and is backed by a spring which exerts an outward force on the closure sleeve to maintain the pin and slot connection in its interlocked condition.

3,821,971

## PIPE PATCH

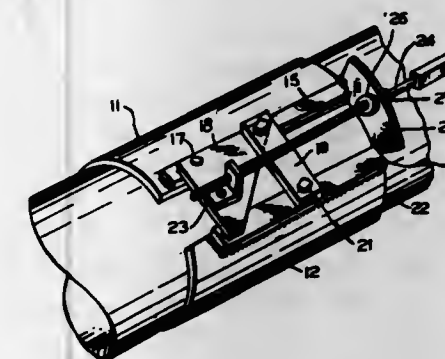
Clarence A. Christensen, 1002 Blaine St., Holdrege, Nebr. 68949

Filed June 26, 1972, Ser. No. 266,363

Int. Cl. F16l 55/16

U.S. Cl. 138—99

6 Claims



A patch to be applied externally on a conduit and clamped in place from a station which may be axially remote from the patch.

3,821,972

## METHOD OF PICKING WEFT YARNS IN SHUTTLELESS LOOMS

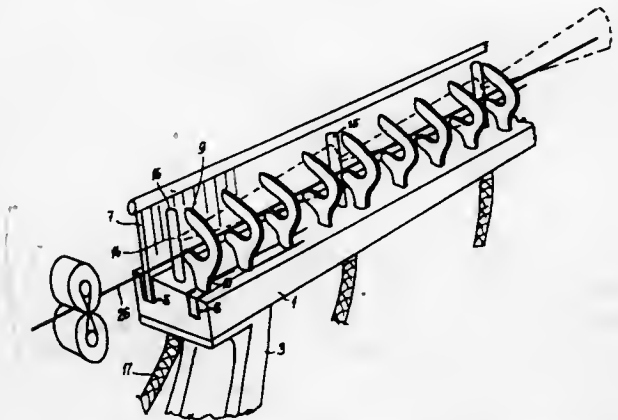
Vladimir Svaty, and Jiri Libansky, both of Liberec, Czechoslovakia, assignors to Elitex Zavody textilního strojírenství, generální ředitelství, Liberec, Czechoslovakia  
Filed Sept. 16, 1971, Ser. No. 181,154

Claims priority, application Czechoslovakia, Sept. 18, 1970, 6368-70

Int. Cl. D03d 47/30

U.S. Cl. 139—127 P

12 Claims



Method and apparatus for inserting weft threads on a shuttleless loom by picking up the weft thread and carrying it at least through part of the length of the shed by either mechanical means or a pressure fluid flow and subsequently contacting the front part of the weft thread with a flow of a pressurized fluid to carry it through the remaining length of the shed in a selectively controlled and directed manner.

3,821,973

## REPLACEABLE HAMMER TIP

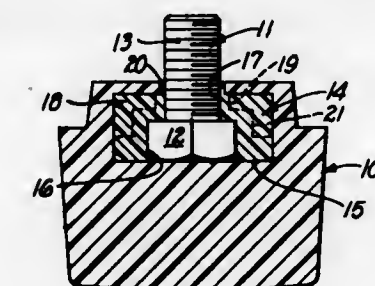
Joseph Allen Carmien, Sun Valley, Calif., assignor to Nupla Corporation, Sun Valley, Calif.

Filed Aug. 17, 1973, Ser. No. 389,234

Int. Cl. B25d 1/02

U.S. Cl. 145—29 A

8 Claims



A replaceable hammer tip which is molded to incorporate as an integral part of its body the upper portion of an hexagonal head bolt of standard manufacture and a molded plastic stud lock. The stud lock has an hexagonal opening within which the head of the bolt is mounted to prevent rotation of the bolt with respect to the stud lock. The shank of the bolt extends through the center of the stud lock and protrudes from the lower edge of the tip for removable attachment to the hammer. The stud lock has a plurality of radially directed fins which engage the body of the tip to prevent rotation of the stud lock and a circular top which prevents vertical movement of the stud lock.



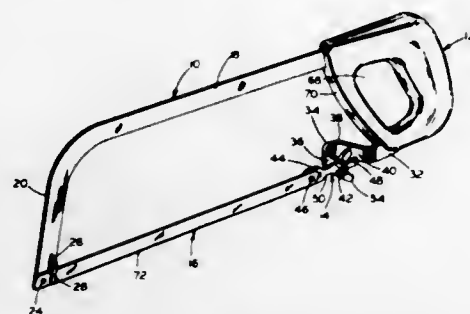
3,821,974

**HACKSAW WITH NOVEL BLADE MOUNTING MEANS**  
George W. Merrow, Bloomfield, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed July 16, 1973, Ser. No. 379,605  
Int. Cl. B27b 21/00

U.S. Cl. 145—33 R

14 Claims



A hacksaw includes an integrally formed frame member providing a bridge section and outer and inner end sections depending therefrom. The inner end section has a reversely bent portion extending laterally to one side thereof to provide a transversely extending mounting arm at its free end and a spacing between the transversely extending mounting arm and the other arm of the reversely bent mounting portion. Handle means are provided on the inner end section and blade engaging means are provided on the outer end section adjacent the free end thereof for engaging one end of the hacksaw. Mounting means are provided on the mounting arm to engage the other end of the associated hacksaw blade. The blade engaging means on the outer end section includes a transversely extending pin projecting from one side surface thereof and a laterally offset leg portion adapted to bear upon the side surface of the associated hacksaw blade to retain it upon the transversely extending pin. The blade engaging means may also include a depending pin at the free end thereof so that the blade may be mounted in either horizontal or vertical disposition. The blade mounting means on the mounting arm includes a draw bolt assembly seated in a slot on the mounting arm, and the slot is desirably configured so as to permit 90° rotation of the draw bolt assembly for mounting of the saw blade in either horizontal or vertical positions.

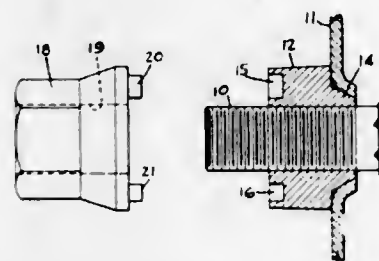
3,821,975

**AUTOMOTIVE WHEEL LOCK MEANS**  
Leroy C. Haker, 1011 Rice Rd., Elma, N.Y. 14059

Filed Nov. 16, 1972, Ser. No. 307,117  
Int. Cl. B25b 15/00

U.S. Cl. 145—50 A

2 Claims



An automotive wheel nut has a frusto-conical periphery and in its outer end face has a pair of wrench receiving openings of different diameters and spaced angularly at oblique angles. A wrench member in the shape of a nut has a clearance hole to fit over the wheel stud which projects from the nut and has pins in its inner face so spaced and sized as to fit the openings in the nut. A conventional wrench is employed for manipulating the wrench member to tighten or loosen the wheel nut.

3,821,976

**TWO PIECE GOLF CLUB COVER**

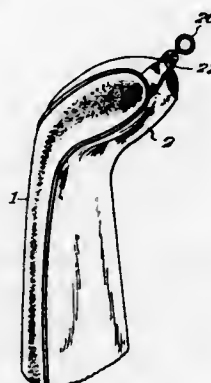
Earl Louis Smith, New Castle; Clifford Edward Wetenkamp, and Thomas Kelly Ferguson, both of Eminence, all of Ky., assignors to Brunswick Corporation, Skokie, Ill.

Filed Sept. 14, 1972, Ser. No. 288,928

Int. Cl. A63b 57/00; B65d 65/02

U.S. Cl. 150—52 G

2 Claims



A golf club cover configured generally in the shape of a wood club head but comprised essentially of only two pieces of material joined by stitching along a single common edge. A swiveling eye for attaching the cover to a lanyard is attached to the cover by a loop of material having its ends caught in the stitching.

3,821,977

**RADIAL TIRE HAVING HIGH MODULUS BREAKERS**

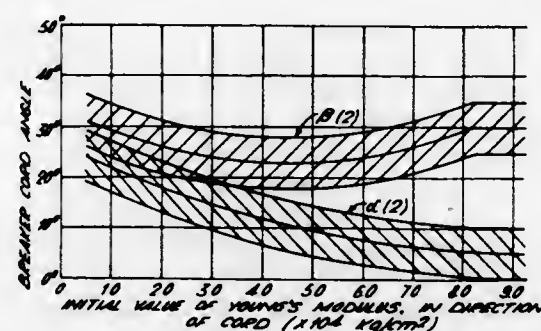
Koichi Yamagishi, and Shiro Takahashi, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 98,830, Dec. 16, 1970, abandoned. This application Jan. 11, 1973, Ser. No. 322,775  
Claims priority, application Japan, Dec. 24, 1969, 44-103626

Int. Cl. B60c 9/02

U.S. Cl. 152—361 R

2 Claims



A radial tire having a high cornering power by using a tire breaker consisting of four or six rubberized sheets including cords, the cords of different rubberized sheets being slanted relative to the circumference of the tire at different angles, depending on the initial Young's modulus of each sheet, so as to optimize the lateral rigidity of the breaker for given elastic properties of the breaker materials.

3,821,978

**AUTOMATIC FOUNDRY SYSTEM**

Kauffman John H., Richland Center, Wis., assignor to National Engineering Company, Chicago, Ill.

Filed Dec. 21, 1972, Ser. No. 317,428

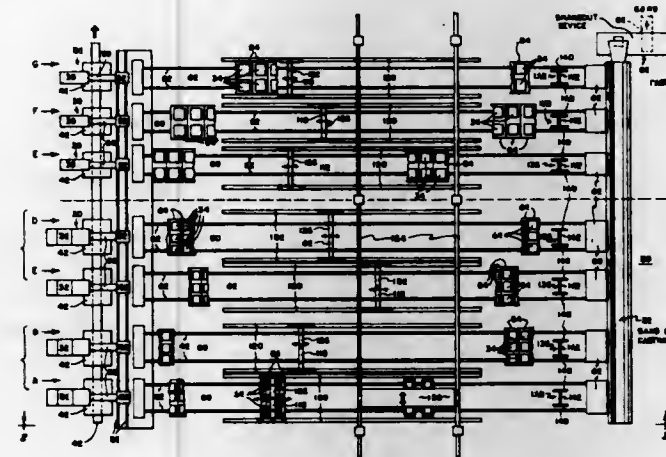
Int. Cl. B22d 17/32, 47/00

U.S. Cl. 164—154

18 Claims

An automatic foundry system comprises a plurality of mold pallet lines directed to discharge onto a common shakeout

conveyor for carrying castings to a shakeout unit for separating the castings and molding sand. Each mold pallet line comprises a track, a plurality of pallet carts movable between a molding station at one end of the track mold and a dumping station at the other end adjacent the shakeout conveyor. The mold dumping stations include a gate mechanism, a mold dumping device for dumping the molds from the pallet carts



onto the shakeout conveyor and initiating the return of the carts to the molding station. Control means is provided for initiating a sequential dumping of a selected number of carts from one or more selected pallet lines before carts from separate or different pallet lines may be dumped. Accordingly, different castings from different lines are not generally intermixed and the requirement of additional sorting operations after shakeout is completed is reduced.

3,821,979

**ELECTRON-BEAM FURNACE FOR REMELTING ELECTRODES**

Boris Evgenievich Paton, ulitsa Kotajubinskogo, 9, kv. 21, Kiev; Igor Stepanovich Pryanishnikov, ulitsa Korshkova, 12, kv. 8, Elektrostal Moskovskoi oblasti; Boris Alexeevich Movchan, ulitsa Darvina, 7, kv. 7, Kiev; Alexei Lavrentievich Tikhonovsky, ulitsa Vernadskogo, 73, kv. 45, Kiev; Jury Mikhailovich Krivosheykov, bulvar Lesi Ukrainki, 20, kv. 40, Kieve; Leonid Fedorovich Ljubarets, ulitsa Stratsinskogo, 29/1, kv. 1, Kiev; Viktor Alexandrovich Timashov, ulitsa Prazhskaya, 3, kv. 223, Kiev; Grigory Bagradovich Asolants, bulvar Lesi Ukrainki, 2, kv. 16, Kiev; Alexandr Ivanovich Sapko, prospekt Zhdanova, 4, kv. 12, Zaporozhie; Valentin Vasilievich Topilin, ulitsa Sovetskaya, 15, kv. 6, Elektrostal Moskovskoi oblasti; Lev Konstantinovich Kosyrev, ulitsa Mira, 15, kv. 75, Elektrostal Moskovskoi oblasti; Andrei Alexeevich Tjulkin, ulitsa Shkolnaya, 22-a, kv. 51, Elektrostal Moskovskoi oblasti; Vyacheslav Vasilievich Nakhabin, ulitsa Zhulyabina, 31, Elektrostal Moskovskoi oblasti; Vasily Semenovitch Kulygin, ulitsa Profsojuznaya, 3, kv. 69; Georgy Nikolaevich Sergeev, ulitsa Bazhova, 1, kv. 60, both of Moscow; Pavel Petrovich Kucherenko, ulitsa Gorkogo, 14, kv. 29, Kiev; Peter Dmitrievich Gostry, ulitsa Krasnoarmeykaya, 51, kv. 38, Kiev; Anatoly Alexeevich Baranov, ulitsa Gorkogo, 19/21, kv. 13, Kiev, and Oleg Nikolaevich Zalka, Zadorozhny pereulok, 4, kv. 43, Kiev, all of U.S.S.R.

Continuation of Ser. No. 187,310, Oct. 7, 1971, abandoned.

This application Dec. 11, 1972, Ser. No. 313,752

Claims priority, application U.S.S.R., Dec. 7, 1970, 1495105

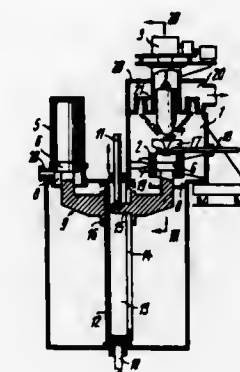
Int. Cl. B22d 27/02

U.S. Cl. 164—252

2 Claims

An electron-beam furnace for remelting metals in vacuum to produce an ingot has a chamber with a melting zone, a crystallizer and a mechanism bearing ingot supports and sleeves provided with a drive for their rotation around a vertical axis and also for their vertical movement. The mechanism

includes a column having a carriage carrying oppositely mounted assemblies each including a pair of elements consisting of a bar sleeve and an ingot support and having a sealing



valve common for each pair of elements; the axes of the ingot supports, sleeves, crystallizer and the axes of the means for feeding the bar into the melting zone are spaced equidistantly from the axis of rotation of the mechanism said above.

3,821,980

**APPARATUS FOR AUTOMATICALLY STRIPPING A SECTIONALIZED MOLD FROM A CAST**

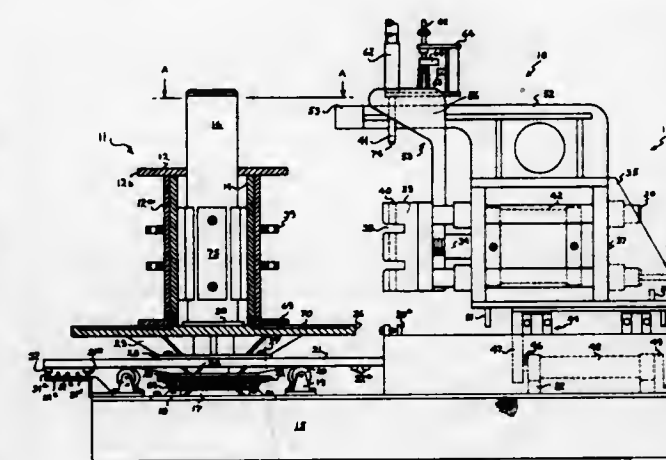
William C. LaBahn, Scotia; Robert G. MacNary, Elmora, and William R. Smith, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,280

Int. Cl. B22d 29/06

U.S. Cl. 164—401

6 Claims



A highly automated mold stripping machine is described wherein a single jaw sequentially strips mold sections from the cast and subsequently reassembles the stripped sections into a composite unit after removal of the cast from the interior of the stripped sections. A vertically extending, radially expandable arbor serves to retain the cast in position during stripping and dual pistons of diverse diameter drive the stripping jaw into engagement with the mold sections. As each self-supporting mold section is stripped from the cast, the section is released adjacent the edge of the turntable supporting the cast whereafter the arbor is retracted from an engaged position with the cast interior and the mold and stripped cast section are rotated independently of the arbor to register the stripping jaw with a succeeding mold section. After all mold sections have been stripped from the cast, the cast is axially removed from the interior of the stripped sections and the jaws of the stripping machine are again actuated to automatically reassemble the mold for a subsequent cast.



3,821,981

## ROTARY HEAT EXCHANGERS

John Sidney O'Neill, Alcester; Alan John Surrall, Studley, and Calvin Eric Silverstone, Alcester, all of England, assignors to British Leyland Truck and Bus Division Limited, Leyland, Lancashire, England

Filed June 21, 1972, Ser. No. 264,922

Claims priority, application Great Britain, July 3, 1971, 31254/71; Sept. 9, 1971, 42005/71

Int. Cl. F28d 19/00

U.S. Cl. 165—10

15 Claims

To reduce the friction between the matrix of a rotary ceramic heat-exchanger and a counterface seal, the matrix core is impregnated with a metallic salt and this treatment is followed by decomposition of the salt to the oxide. The preferred metal oxides are chromium oxide, cobalt oxide and zinc oxide in quantities in the range of 2 to 10 percent of the weight of the matrix core.

3,821,982

## AIR CONDITIONING APPARATUS

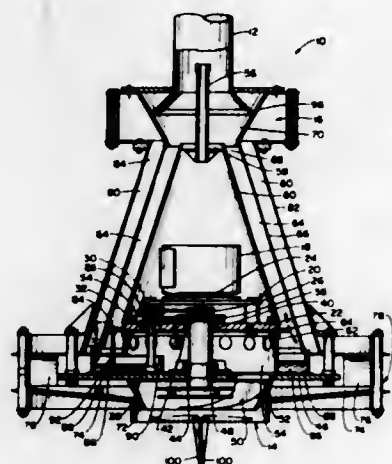
Ernest Alan Manning, 6564 Valley Circle Blvd., Canoga Park, Calif. 91304

Filed Apr. 5, 1972, Ser. No. 241,306

Int. Cl. F24f 3/14

U.S. Cl. 165—60

18 Claims



An air conditioning apparatus wherein a portion of the air is removed from the conditioned space and sprayed with water, the resulting humidified air is conducted through a decreasing volume first chamber, the first chamber being in a heat transfer relationship with an increasing volume second chamber, air from the conditioned space is passed through the second chamber in an opposite direction to the passage of air through the first chamber.

3,821,983

## AIR CONDITIONER CONDENSER

Milton H. Strickland, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, Oklahoma City, Okla. 10007

Filed May 25, 1972, Ser. No. 256,794

Int. Cl. F28d 7/00

U.S. Cl. 165—159

1 Claim



A condenser for connecting any standard auto air-conditioner to a water cooled one so as to cool the interior of a boat cabin; the condenser being operated by a motor and consisting

of a sealed housing having a coiled copper tubing therewithin, the tubing ends extending out of the housing and one end of the tubing being connected to a compressor and the other end being connected to a receiver of the auto air-conditioner; and an inlet and outlet being connected to the housing interior so as to flow water through the housing, the inlet being connected to a water pump, while the outlet is connected to the boat bilge line.

3,821,984

## EMERGENCY VALVE SHUT-OFF ASSEMBLY FOR OFFSHORE MULTIPLE WELL PIPES

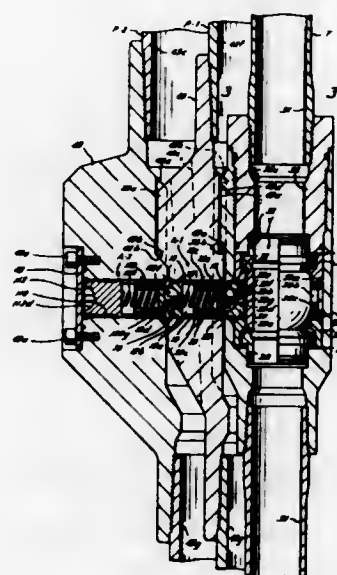
William T. Lee, Gretna, La., assignor to Fishing Tools, Inc., Harvey, La.

Continuation-in-part of Ser. No. 232,559, March 7, 1972, abandoned. This application June 5, 1972, Ser. No. 259,670

Int. Cl. E21b 33/06; F16k 31/143

U.S. Cl. 166—85

22 Claims



An emergency valve shut-off assembly for offshore multiple concentric well pipes, wherein one or more control valves disposed in the innermost tubing string or strings of the multiple concentric well pipes may be operated in an emergency, such as at the beginning of a well blow-out, to cut off the flow of well fluid to the surface, thereby preventing spillage, fire and other pollution and disastrous consequences accompanying an offshore well which has blown out of control. Such assembly may be manually operated by a diver underwater, or remotely by a power actuator.

3,821,985

## WELL CEMENTING METHOD USING HIGH TEMPERATURE CEMENTING COMPOSITIONS

Charles R. George, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 245,996, April 20, 1972, Pat. No. 3,748,159. This application Apr. 30, 1973, Ser. No. 356,035

Int. Cl. C04b 7/02, 13/00; E21b 33/14

U.S. Cl. 166—293

9 Claims

This specification discloses additives for retarding the setting time of cement compositions at high temperatures which are basically comprised of mixtures of a lignosulfonic acid salt and a pentaboric acid salt, novel cement compositions containing the additives and methods of cementing high temperature well formations employing the cement compositions.

3,821,986

## DISCHARGE HEAD FOR A FIXED FIRE EXTINGUISHING SYSTEM

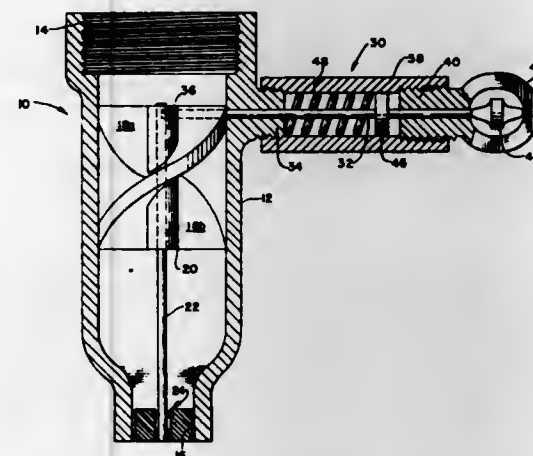
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Mar. 11, 1971, Ser. No. 123,213

Int. Cl. A62c 37/12

U.S. Cl. 169—41

12 Claims



A discharge head for use in a fixed fire extinguishing system including a body member having an inlet and an outlet for receiving and discharging fire extinguishant, and a plug member normally retained in the body member by a latching assembly for preventing the flow of extinguishant through the body member. The latching assembly is adapted to release the plug member in response to a fire occurring in the vicinity of the body member, thus permitting the discharge of the plug member from its flow-preventing position. A fusible member cooperates with the plug and is adapted to fuse at a predetermined temperature to permit the flow of extinguishant through the body member independent of the operation of the latching assembly.

3,821,987

## LETTUCE HARVESTING APPARATUS

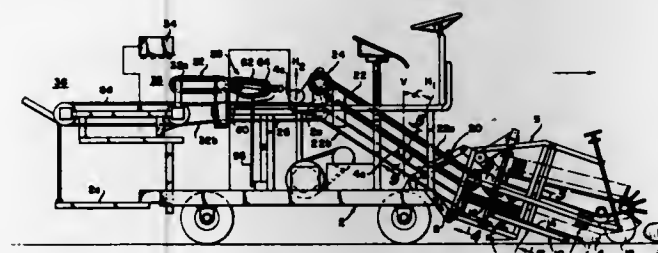
Edwin S. Shephardson, Ithaca, and John G. Pollock, Trumansburg, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,130

Int. Cl. A01d 23/04

U.S. Cl. 171—61

13 Claims



Apparatus for removing loose and/or excess leaves from the head of a leafy edible plant, including conveyor means for conveying the head—after the stump has been removed therefrom—with the residual stump portion arranged at the bottom of the head and with the sides of the head unencumbered, whereby the outermost excess leaves fall by gravity from the head during transport from a first position to a second position. In one embodiment, the head is supported solely between the parallel vertically-spaced adjacent runs of upper and lower endless conveyor means, the horizontal run being less than the diameter of the head, whereby the removal of the excess leaves is greatly facilitated with the aid of gravity.

The second position may be higher than the first position, in which event the adjacent parallel runs of the upper and lower conveyors are inclined to the horizontal, thereby further assisting in leaf removal. In a second embodiment, the head is supported by generally horizontal conveyor means that include a pair of parallel spaced adjacent longitudinal runs between which are arranged selectively operable cutter means for trimming the residual stump portion of a head and thereby effect removal of excess leaves therefrom.

3,821,988

## ROOT AND SOIL SEPARATING AND WINDROWING APPARATUS

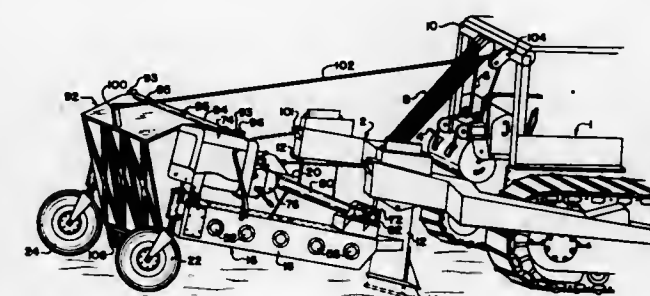
Winfred A. Arnold, P.O. Box Drawer B, Three Rivers, Tex. 78071

Filed Apr. 10, 1972, Ser. No. 242,725

Int. Cl. A01d 19/02

U.S. Cl. 171—133

11 Claims



A root and soil separator and root windrowing apparatus to be attached to a conventional root plow, which plow is pulled behind a tractor, so as the plow cuts the roots of trees and brush, the roots and soil will be directed onto a series of power driven, rotary beater blade elements, the circular paths of which beater blades pass between the paths of the blades on adjacent shafts, so as to separate the roots from the soil and move the roots rearwardly into a catcher element, which roots may be dumped from the catcher periodically, as in windrows, to enable the roots to be burned or to be hauled away. Provision is made to journal shafts in the frame of the root and soil separator at each end of each transverse, rotary beater blade, which shafts are connected in non-rigid, non-rotatable relation with respect to the transverse beater blade shaft. The root and soil separator is provided with an independent prime mover to rotate the transverse beater blade shafts.

3,821,989

## ROTARY HARROWS

Ary Van Der Lely, 10, Weverskade, Maassland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed Aug. 24, 1972, Ser. No. 283,338

Claims priority, application Netherlands, Aug. 31, 1971, 7111947

Int. Cl. A01b 33/06

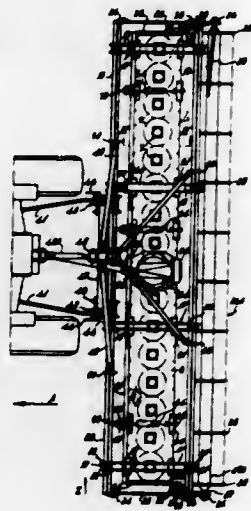
U.S. Cl. 172—59

17 Claims

A rotary harrow has a main frame that extends transverse to the direction of travel with soil-working members journaled in the frame to rotate about vertical axes. A supporting structure surrounds the main frame and is attached to spaced apart plates secured at intervals along the top of the main frame.



The supporting structure includes coupling means with strengthening rods attached to the structure at the front and rear of the main frame. A roller is connected to arms to trail the soil-working members and the arms are pivotally as-



sociated with the supporting structure with adjusting means to regulate the working depth of the soil-working members. A screening element is resiliently pivoted to the front of the main frame to protect the soil-working members from debris during operation.

3,821,990

## FARM IMPLEMENT

Frederick Ellis Elmelle, 174 Union Blvd., Kitchener, Ontario, Canada

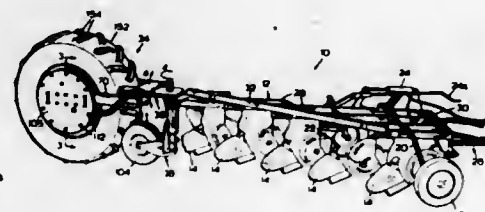
Filed Oct. 24, 1972, Ser. No. 300,104

Claims priority, application Canada, Oct. 29, 1971, 126400

Int. Cl. A01b 51/02

U.S. Cl. 172-292

29 Claims



A trailer type soil cultivator such as a plow or the like is provided with a supplementary soil traction device in the form of a driven wheel which permits a relatively small tractor device to operate with a large capacity cultivating device. The traction wheel carries its own hydraulic motor and hydraulic power is supplied by means of a hydraulic pump which is coupled to the supplementary power output shaft of a conventional tractor. The frame of the cultivator device may be formed in a number of sections arranged in a side-by-side relationship, one of the sections having a hitch for connecting it to a tractor and at least some of the sections having a soil traction member mounted therein so that the assembled frame may be much wider than that which could have previously been pulled by a tractor.

3,821,991

## FASTENER TOOL

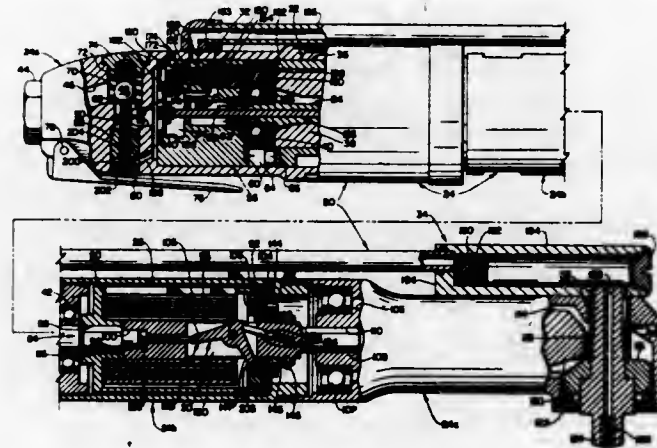
Robert H. Alexander, Columbia, S.C., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 104,209, Jan. 6, 1971. This application May 11, 1972, Ser. No. 252,479

Int. Cl. B25b 23/14

U.S. Cl. 173-12

22 Claims



A tool including a fastener rotating output member and mechanism for indicating if a fastener rotated by said output member has been tightened to a prescribed torque and/or for providing an indication of the length of time for which the fastener was tightened.

3,821,992

## IMPACT DEVICE USING A GAS AS ITS MEDIUM

Susumu Matsuo, Minamitsuruki 196, Chosen-cho, Saito-gun, Shizuoka-ken, Japan

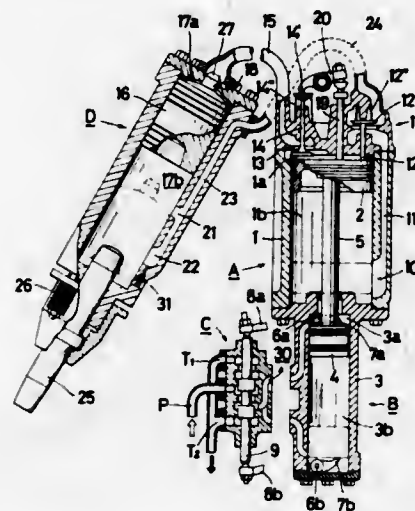
Filed Sept. 6, 1972, Ser. No. 286,730

Claims priority, application Japan, Sept. 23, 1971, 46-73805

Int. Cl. B25d 9/08

U.S. Cl. 173-116

1 Claim



An impact device using a gas as its medium is formed of an air pump and an impact cylinder. The air pump and the impact cylinder are respectively divided by a pump piston and a hammer piston into upper and lower chambers which intercommunicate upper with upper and lower with lower through valves which regulate the flow of high and negative pressure gas causing the downward impact stroke of the hammer piston onto the tool at the lower end of the impact cylinder and the downward stroke of the pump piston to begin simultaneously after the pump piston has reached its top dead point compressing the air in the upper chamber to the maximum and generating the maximum negative pressure in the lower

chamber. There are further provided means for communicating the upper and lower chambers of the pump cylinder when the pump piston has reached the lower dead point and means for communicating the upper chamber of the impact cylinder with the means for connecting the lower chambers of the two cylinders.

3,821,993

## AUGER ARRANGEMENT

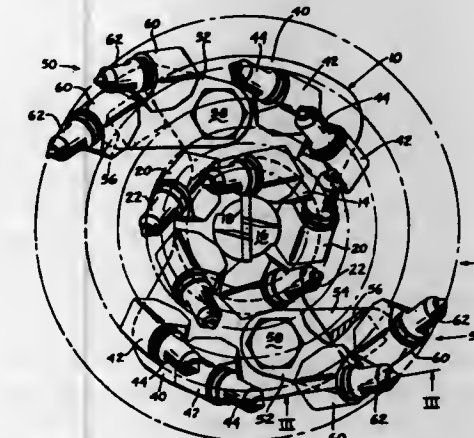
Thomas J. Kniff, Bedford, and Robert J. McKenry, Windber, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sept. 7, 1971, Ser. No. 178,161

Int. Cl. E21b 9/26

U.S. Cl. 175-292

7 Claims



The specification discloses an auger arrangement for boring holes in earth formations in which the auger comprises a body with a central cutter arrangement including a pilot cutter on the axis and with laterally extending wing portions on the axis and with laterally extending wing cutters on the auger, on each of which is pivotally mounted a wing cutter arranged to swing outwardly when the auger rotates in cutting direction and to swing inwardly when the auger is not rotating or when it is rotating in the reverse direction so that the auger can readily be withdrawn from a hole bored thereby.

3,821,994

## MOTOR SLEIGH AND SLED FOR USE IN CONNECTION WITH SAME

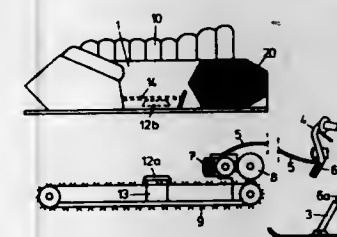
Rauno Bergius, Jyväskylä; Heikki Lihanen, and Kauko Kallo, both of Oulu, all of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Apr. 7, 1972, Ser. No. 242,185

Int. Cl. B62m 27/02

U.S. Cl. 180-5 R

2 Claims



A motor sleigh composed of structural units which are rapidly detachable and mutually attachable for facilitating transport, servicing and storage of the motor sleigh and for increasing the possible uses of the track chassis. The invention is particularly characterized in that the motor sleigh comprises a first, light structural unit comprising the body structure with seat, and a second structural unit, substantially heavier than the first, which comprises the track mat with its return wheels and spring suspension system and the engine with transmission

gear, and that the structural units comprise quick attachment means for their attachment together.

According to a specific embodiment, the quick attachment means consists of a mating body affixed to the body of the second structural unit and having a substantially horizontal mating surface and inclined side surfaces, and with which fits together a mating body affixed to the body of the body structure, the mating bodies having been arranged to be attached to each other by screws.

3,821,995

## VEHICLE WITH COMPOSITE WHEEL

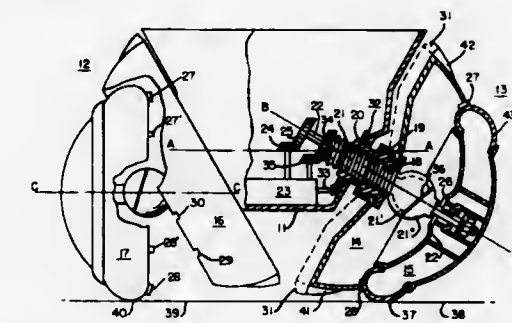
Elie P. Aghaides, 795 Fifth Ave., New York, N.Y. 10021

Filed Oct. 15, 1971, Ser. No. 189,669

Int. Cl. B60b 11/00; B62d 11/06

U.S. Cl. 180-6.2

17 Claims



The disclosure relates to a vehicle with hemispherical wheels, at least one of which is a composite wheel and a steering means for the vehicle. The composite wheel is generally hemispherical in shape and has two parts, i.e. a large treaded portion for use on soft unstable ground, and a smaller rod surface portion. The respective axes of rotation for the two portions may be varied to place the smaller road surface part in a vertical or upright position, to lift the larger portion away from the road surface or to leave it in its normal slightly-above-the-ground position for conventional use on roads or firm terrain. The two wheel portions may be aligned or left unaligned for use in soft, unstable terrain.

3,821,996

## APPARATUS FOR HINDERING THE THEFT OF A STORAGE BATTERY FROM A MOTOR VEHICLE

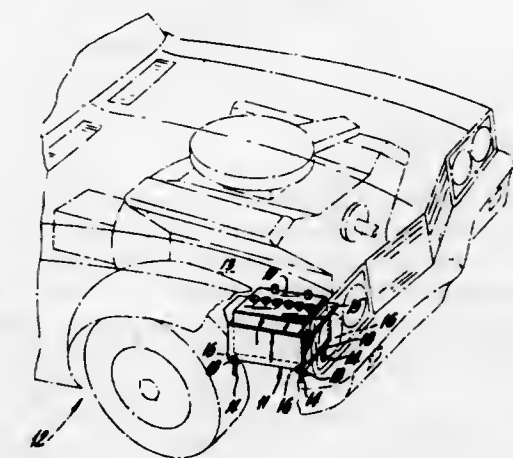
Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y. 11021

Filed Apr. 27, 1972, Ser. No. 248,025

Int. Cl. B60r 18/02

U.S. Cl. 180-68.5

4 Claims



A storage battery housing for hindering the theft of a storage battery from a motor vehicle. The battery housing is provided with means for securing the storage battery housing to a vehicle mounting structure in such a manner that the



storage battery cannot be detached from the mounting structure which extends from the vehicle frame unless the vehicle is lifted up a sufficient distance from the ground so that a person can fit under the vehicle and disassemble the securing means from the underside of the vehicle.

3,821,997

## PIVOTAL BATTERY MOUNT

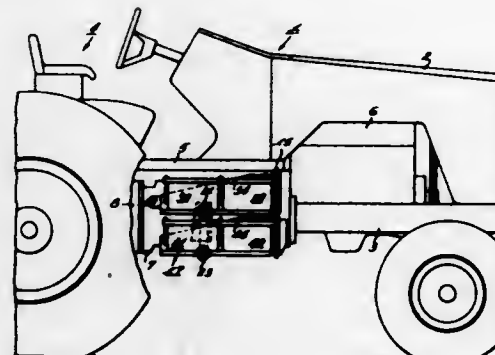
Gerald E. Sieren, Greendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 11, 1972, Ser. No. 252,200

Int. Cl. B60r 18/02

U.S. Cl. 180—68.5

9 Claims



A battery mount pivotally supporting the vehicle battery for readily servicing or latching the battery in the operative position on the vehicle chassis.

3,821,998

## PLATE FOR HINDERING THE THEFT OF A STORAGE BATTERY FROM A MOTOR VEHICLE

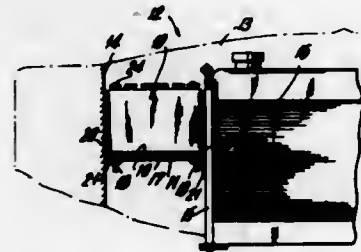
Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y. 11021

Filed May 31, 1972, Ser. No. 258,316

Int. Cl. B60r 18/02

U.S. Cl. 180—68.5

5 Claims



A plate for hindering the theft of a storage battery from a motor vehicle. Means is provided for securing a storage battery housing to a vehicle mounting structure in such a manner that the storage battery cannot be detached from the mounting structure which extends from the vehicle frame unless the vehicle is lifted up a sufficient distance from the ground so that a person can fit under the vehicle and disassemble the securing means from the underside of the vehicle. The securing means is provided by a holding plate which is bonded to the underside of the battery housing. The holding plate includes bolts or studs which depend from the bottom thereof and pass through holes in a battery cradle so that screws may be appropriately screwed up onto the bolts or studs from the underside of the battery cradle and in this manner have the battery fastened to battery cradle, which cradle in turn is part of the structure of the motor vehicle.

3,821,999

## ACOUSTIC LINER

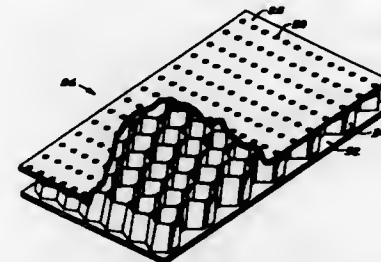
Arnold W. Gues, Corona Del Mar, and Guenter M. Schindler, Palos Verdes Peninsula, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 5, 1972, Ser. No. 286,457

Int. Cl. G10k 11/04; E04b 1/99; F01n 1/10

U.S. Cl. 181—33 H

4 Claims



An acoustic liner consisting of a perforated honeycomb sandwich panel wherein the axes of the honeycomb cells are tilted relative to the outer surface for more effective absorption of high amplitude sound and shock waves over a relatively narrow band of the frequency spectrum. An application is in the prevention of the harmonic content of the shock pattern from changing to lower frequencies.

3,822,000

## SCAFFOLDING FOR WELDING OF PREFABRICATED HULL MODULES IN SHIPBUILDING

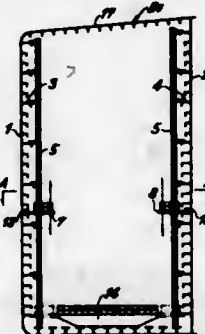
Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,064

Int. Cl. E04g 3/16

U.S. Cl. 182—82

5 Claims



Scaffolding comprising a pair of lifting platforms each having a scaffold and vertically movably provided an inner wall of the prefabricated module to be connected other modules, and a scaffold connecting both platforms.

3,822,001

## LUBRICATION SYSTEM FOR HAMMER TOOL

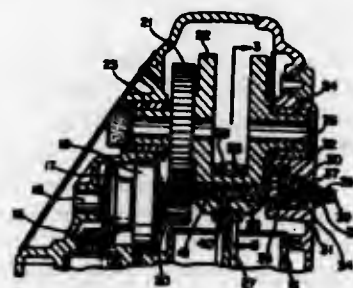
Daniel Harrison Sides, New Freedom, Pa., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Mar. 19, 1973, Ser. No. 342,864

Int. Cl. F16n 31/02

U.S. Cl. 184—10

10 Claims



An electric paving breaker is described which includes an electric motor, a crank and a piston driven by the motor, and a

ram driven by the piston which delivers energy to a tool bit to produce a hammering output. An improved lubricating system for the rotating mechanism is described

3,822,002

## UNIBLOCK LUBRICATOR

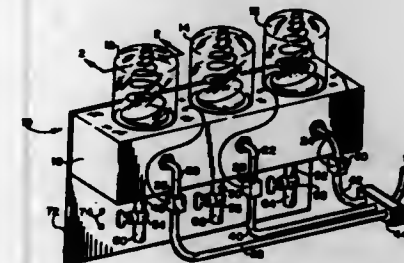
Elvie L. Reedy, 3617 London Ln., Fort Worth, Tex. 76118

Filed Dec. 8, 1972, Ser. No. 313,486

Int. Cl. F16n 11/04, 29/02

U.S. Cl. 184—45 R

19 Claims



A lubricating apparatus having a cylindrical chamber with an axially movable piston therein. This piston is resiliently biased or driven by a compression spring to compress lubricant in the chamber. This chamber is provided with lubricant supply and output ports. Conduit means are attached between the lubricant output ports and the object to be lubricated. Conduit means are also attached between the lubricant input port and a supply of pressurized lubricant. Solenoid valve means are provided in the input conduit to selectively supply pressurized lubricant to said chamber. Natural magnets are mounted on said piston while a magnetically-responsive reed switch is positioned in said chamber. This switch is operated by the movement of the piston and is connected to the solenoid valve means to open the valve when the piston moves to a predetermined position. In a second embodiment, a plurality of chambers is formed in a resiliently-molded mounting block. Mounting means independent of conduits are provided for the blocks.

3,822,003

## AUTOMATIC BRAKE ADJUSTMENT MECHANISM

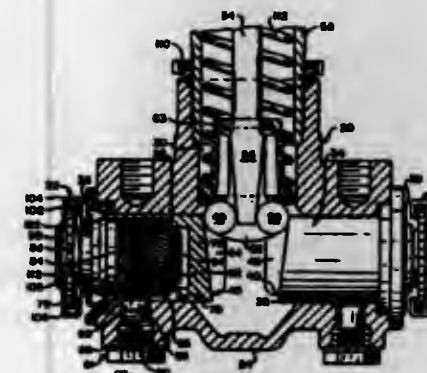
James M. Prange, Dearborn Heights, and William J. Williams, Lake Orion, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1973, Ser. No. 334,854

Int. Cl. F16d 65/56

U.S. Cl. 188—79.5 GE

4 Claims



A wedge actuated brake assembly including a self-adjusting brake actuating mechanism. A ratchet member on the mechanism cooperates with a pawl mounted in a bore in the brake actuator housing to control mechanism movement. The pawl is part of an assembly that extends into the actuator housing and includes the pawl member itself in toothed engagement with the ratchet member, spring means urging the

3,822,004

## BULK VENDING MACHINE WITH SOUND PLAYBACK APPARATUS

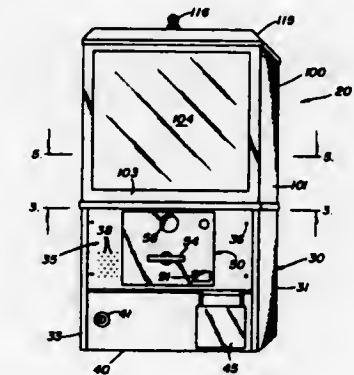
Waldo E. Bolen, Jr., Morris, Ill., assignor to The Northwestern Corporation, Morris, Ill.

Filed June 11, 1973, Ser. No. 369,006

Int. Cl. G07f 9/02

U.S. Cl. 194—15

18 Claims



The machine comprises a base and a merchandise storage member, the base having a removable cash box and an outlet for merchandise. A sound producing mechanism is mounted on the merchandise storage member and is actuated in response to operation of a coin actuated merchandise dispensing apparatus.

3,822,005

## DEVICE FOR PRINTING CHARACTERS BY POINTS

Roger H. Murat, Argenteuil, France, assignor to Societe D'Applications Generales D'Electricite Et De Mecanique, Paris, France

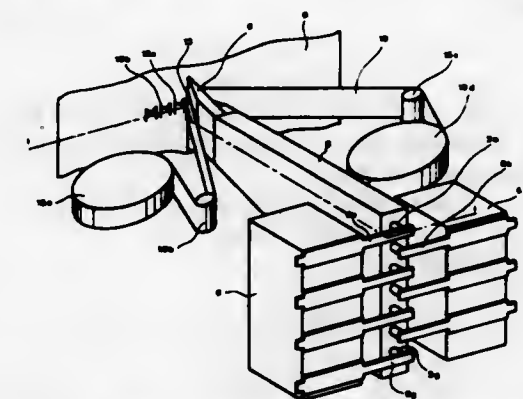
Filed Mar. 12, 1973, Ser. No. 340,381

Claims priority, application France, May 4, 1972, 72.15905

Int. Cl. B41j 3/10

U.S. Cl. 197—1 R

3 Claims



This invention relates to a device for printing characters by points wherein an arrangement is provided for rendering visible the last character printed.

The printing of characters is effectuated by means of movable printing elements located in a guiding member. Said guiding member in the vicinity of the printing support is beveled and provides a dihedral one face of which forms an angle of nearly 90° with the part of the said support located on the side of the already printed character so as to render the last printed character visible.

This arrangement permits to correct more easily printing errors.



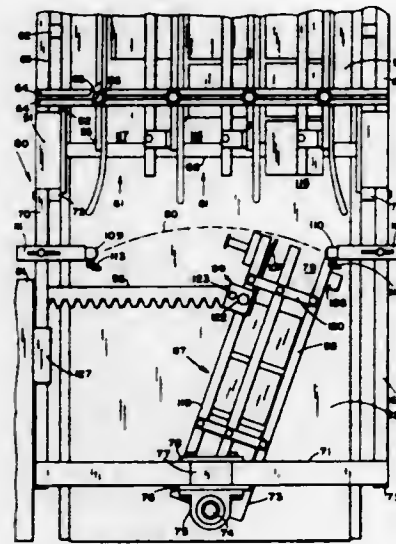
3,822,006

**APPARATUS FOR DIVIDING MOVING OBJECTS INTO ROWS**

Howard P. Shuttleworth, Warren, Ind., assignor to Shuttleworth Machinery Corporation, Huntington, Ill.  
 Filed June 19, 1972, Ser. No. 264,352  
 Int. Cl. B65g 47/26

U.S. Cl. 198—31 AC

4 Claims



An apparatus for dividing moving objects from a row into a plurality of rows. A hollow arm is pivotally mounted above a conveyor which moves a row of objects through the arm. The discharge end of the arm is sequentially positioned to discharge a number of objects into a row at a time of a plurality of parallel rows. The arm is connected to a rack engaged by a pinion operatively connected through a Geneva mechanism to a clutch and motor. The rotating output shaft of the motor is coupled by the clutch to the driver wheel of the Geneva mechanism. The driver wheel is engaged with the driven wheel of the Geneva mechanism thereby providing intermittent rotational motion of the pinion and the intermittent movement of the rack. A counting system is provided to count the number of objects discharged from the arm into a given lane and to provide a signal for engaging the clutch to pivot the arm to the next lane. An end of cycle switch is operated by a cam to disengage the clutch upon positioning of the arm at the next lane. A pair of switches are provided at the ends of the arc through which the arm pivots so as to reverse the rotational output of the motor.

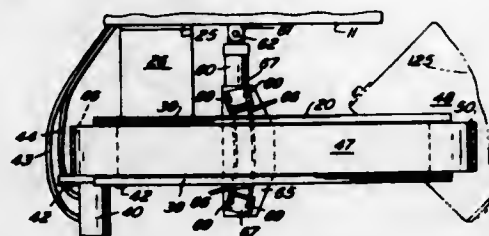
3,822,007

**ARTICLE DISTRIBUTION APPARATUS**

Edward W. Bridge, Jr., c/o Bridge Machine Co., Inc., Kennedy St., Palmyra, N.J. 08065  
 Filed May 29, 1973, Ser. No. 364,625  
 Int. Cl. B65g 47/26

U.S. Cl. 198—31 AC

3 Claims



Apparatus is provided for distributing articles from a source of single articles, such as a meat patty forming machine, which includes a frame carrying a variable speed conveyor belt the delivery end of which is oscillated over a wider belt for delivering a plurality of the articles in spaced relationship for further operations such as packing, freezing, drying, or broiling.

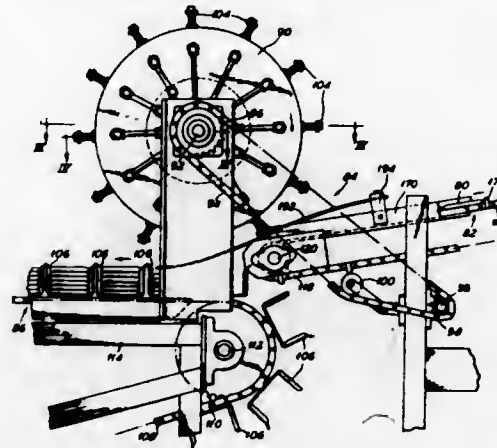
3,822,008

**TRANSFER APPARATUS FOR PACKAGING MACHINE**

Harold T. Benner, Jr., and Charles E. Cloud, both of Wilmette, Ill., assignors to R. A. Jones & Co. Inc., Covington, Ky.  
 Filed Feb. 1, 1973, Ser. No. 328,512  
 Int. Cl. B65g 57/04, 57/32

U.S. Cl. 198—35

20 Claims



A packaging machine for packaging a group of packets into a carton has an incoming conveyor adapted to transport the packets in single file fashion, and a transfer wheel is juxtaposed with the end of the incoming conveyor to receive the packets and transfer them to an outgoing conveyor travelling at a slower velocity than the incoming conveyor. The outgoing conveyor carries a series of compartments, and a plurality of packets are deposited into each of the compartments in stacked relationship.

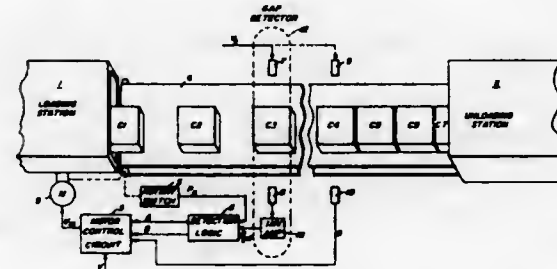
3,822,009

**ITEM TRANSPORTING SYSTEM**

James J. Richards, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
 Filed Feb. 1, 1973, Ser. No. 328,830  
 Int. Cl. B65g 43/00

U.S. Cl. 198—40

8 Claims



An item transporting system is disclosed in which the rate at which packages are deposited on a conveyor is automatically controlled as a function of the backlog of packages awaiting removal from the conveyor. A circuit combines pulses with a repetition rate equal to the package deposit rate, and signals indicating the number of packages awaiting removal from the conveyor to generate feedback signals that control the operating speed of a loading station depositing the packages on the conveyor.

3,822,010

**PRODUCT CARRIER FOR CHILLING MACHINE**

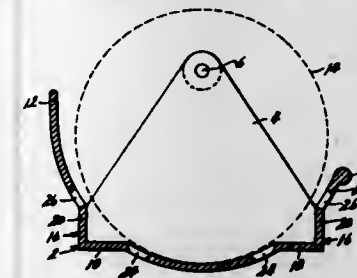
Phil W. Thompson, 13307 Spring St., and Ralph F. Thompson, 11919 Bennington, both of Grandview, Mo. 64030  
 Filed Mar. 2, 1973, Ser. No. 337,635  
 Int. Cl. B65g 17/16

U.S. Cl. 198—152

5 Claims

A carrier for supporting objects to be chilled in their travel through a chilling machine in which they are subjected to

sprays of a refrigerant liquid, and particularly adapted for use with either round or square sausage products, consisting of a generally semi-cylindrical, upwardly-opening bucket adapted to be supported from conveyor chains or the like, its shape adapting it to support round or "chub" sausage products, having



ing longitudinally extending right-angled outward offsets defining a flat floor adapting it to support square sausage products without sagging thereof, and having drain openings for the refrigerant liquid so positioned to drain the bucket effectively whether round or square product is being supported thereby.

3,822,011

**CONVEYOR TROUGH CONSTRUCTION PARTICULARLY FOR CHAIN SCRAPER CONVEYORS**

Gert Braun, and Ernst Braun, both of Essen-Heisingen, Germany, assignors to Halbach & Braun, Wuppertal-Barmen, Germany

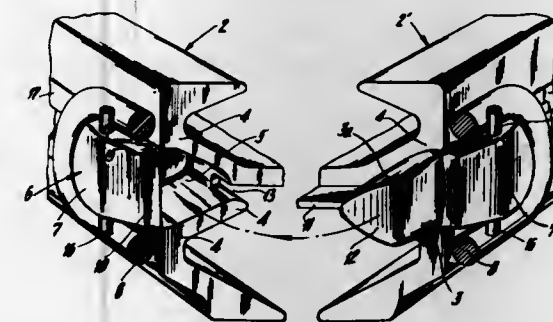
Filed Jan. 12, 1973, Ser. No. 323,051

Claims priority, application Germany, Jan. 13, 1972, 2201400

Int. Cl. B65j 15/60

U.S. Cl. 198—204

8 Claims



A conveyor trough particularly for chain scraper conveyors, includes bottom walls over which the chain is advanced and side walls which are formed as trough sections which are joined together in end-to-end relationship. The trough sections have trough joining elements secured to the side walls which comprise a connecting bolt projecting outwardly from one adjacent section and a connecting claw pocket defined on the associated side wall of the other adjacent section and of a size to receive said connecting bolt therein for interengagement of said section. Each of the connecting claws and bolts are provided with raised portions or projections which extend outwardly from the side wall and define holder elements or posts. A closed loop or link is engaged over the holders and holds the two sections together.

3,822,012

**MULTIPLE CONTAINER PACKAGE ARRANGEMENTS**

William N. Weaver, Glen Ellyn, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 14, 1972, Ser. No. 271,883

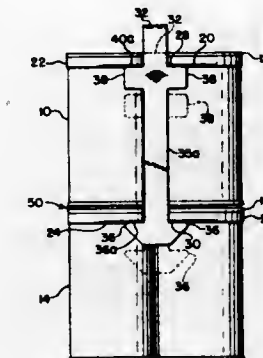
Int. Cl. B65d 71/00, 25/28; B66f 19/00

U.S. Cl. 206—151

5 Claims

A unit handled group of container packages and a carrier support handle therefor; each package including plural in-

dividual containers, such as beaded cans arranged in six packs, interconnected by an apertured carrier sheet of plastic material with the carrier sheet material around each aperture resiliently stretched and deformed to engage individual containers below the bead or other rim formation at the upper ends thereof; the packages in the group being disposed in vertical array one above the other; and the web portions of the



carrier sheet of each package being provided with openings between adjacent containers to receive therethrough the ends of a support handle having lateral tabs below each carrier sheet and spaced to engage the same for individually supporting each package of containers when the handle is grasped to transport the vertical array of container packages in the group.

3,822,013

**PACKING FOR CAPSULES FOR PREPARATION OF INFUSIONS**

Germaine Van Der Veken, Vrijheidlaan 171, 1080 Brussels, Belgium

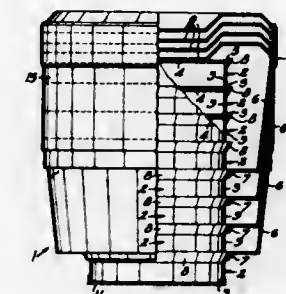
Filed Sept. 29, 1972, Ser. No. 293,579

Claims priority, application Belgium, Jan. 18, 1972, 778.159

Int. Cl. B65d 21/00, 85/62

U.S. Cl. 206—223

8 Claims



An infusion package includes a filter body having stacked therein multiple infusion capsules intended for use with the filter body, the bottom capsule occupying the normal capsule position in the filter body, the remaining capsules being nested thereabove where they are held in place by a top closure for the filter body. An imperforate cover over the bottom capsule closes the bottom opening of the filter body. Multiple filter bodies may be nested together according to this invention, and various lid details and hermetic sealing means are described.



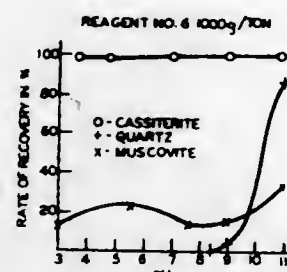
3,822,014

**PROCESS OF FLOTATION OF MINERALS AND ORES**  
 Albert Verheyden, Gentsstraat, and Jean Hartmann, Rodenbachlaan, both of Belgium, assignors to Citrex, Societe Anonyme, Saint-Gilles-lez-Bruxelles, Belgium  
 Filed Feb. 11, 1971, Ser. No. 114,613  
 Claims priority, application Great Britain, Feb. 12, 1970, 6850/70

Int. Cl. B03d 1/02

U.S. Cl. 209-166

8 Claims



Process of froth flotation of oxide minerals which comprises using at least one of the following collector agents

1. mixed salts of ammonium and amines of the formula:  $X(COONH_4)_2(COOH.NR'R''R''')_2$
2. ester-sulfonates of the formula:  $HX(COOR')(COOR'')(COOR''')(COOR''''(SO_2M))$
3. ester amine salt sulfonates of the formula:  $HX(COOR)_2(COOH.NR'R''R''')_2(SO_2M)$
4. sulfonates of mixed salts of ammonium and amines of the formula:  $HX(COONH_4)_2(COOH.NR'R''R''')_2(SO_2M)$  in these formulae, X representing the hydrocarbon radical of the acid obtained by controlled pyrolysis of calcium citrate and acidification of the obtained pyrolysate; R being a  $C_1$ - $C_{20}$  alkyl radical;  $R'$ ,  $R''$ ,  $R'''$  and  $R''''$  being each hydrogen,  $C_1$ - $C_{20}$  alkyl, cycloalkyl, aralkyl, alkaryl or aryl, at least one of  $R'$ ,  $R''$ ,  $R'''$  and  $R''''$  being other than hydrogen and M being sodium, potassium or ammonium.

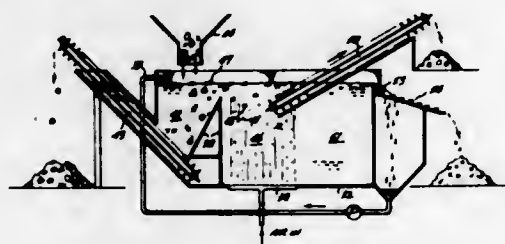
3,822,015

**SEPARATION OF SOLIDS BY VARYING THE BULK DENSITY OF A FLUID SEPARATING MEDIUM**  
 Jack Jui-Chang Hsieh, Richland; John F. Cline, Sunnyside, and Harry A. Kornberg, Richland, all of Wash., assignors to The Battelle Development Corporation, Columbus, Ohio  
 Filed Feb. 4, 1970, Ser. No. 8,467

Int. Cl. B03b 1/00

U.S. Cl. 209-173

7 Claims



A method and apparatus for separating discrete solid articles according to their density is described. A fluid is placed in a vessel, and discrete solid articles having various densities are placed therein. The density of the fluid is altered to a value which will cause separation of the solid articles due to differences in buoyancy. The density of the fluid separating medium is preferably altered by injection of small gas bubbles or other fluid substances having a density differing from the first fluid placed in the vessel.

3,822,016

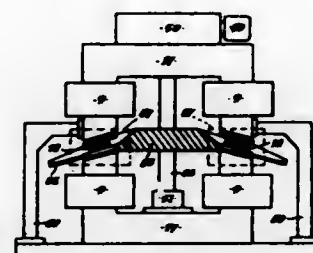
**MAGNETIC SEPARATOR HAVING A PLURALITY OF INCLINED MAGNETIC SEPARATION BOXES**  
 George Henry Jones, Connor Downs, Hayle, Cornwall, England

Filed Apr. 17, 1972, Ser. No. 244,786

Int. Cl. B03c 1/04

U.S. Cl. 209-222

8 Claims



A separator device for separating magnetic particles from a fluid current containing magnetic and non-magnetic particles in which separation of the magnetic particles is effected by passing the fluid through a separation device in the form of a number of parallel plates to which the particles will adhere under the action of a strong magnetic field applied to the separator device, the plates of the separator device being inclined at a small angle to the horizontal, the separator being cyclically operated to cause zones of strong and substantially zero magnetic field whereby separation of the magnetic particles from the remainder of the fluid current is effected.

3,822,017

**CHLORINATION UNIT**

Włodzimierz Rast, 38 Hillcrest Dr., Eden Hills, Australia (5050)

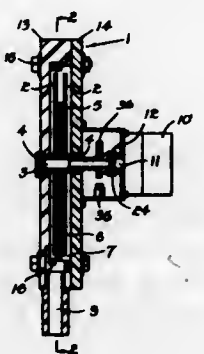
Filed Aug. 7, 1972, Ser. No. 278,456

Claims priority, application Australia, Aug. 6, 1971, 5798/71

Int. Cl. C02b 3/06

U.S. Cl. 210-145

7 Claims



An electrical chlorination unit for water having scrapers to mechanically remove white calcium growths or the like from cathodes in the cell by relative movement between cathodes and scrapers, and including acid supply means.

3,822,018

**WATER FILTER DEVICE**

Zacharias Krongos, 128 Sherman Ave., New York, N.Y. 10034  
 Filed June 28, 1973, Ser. No. 374,628

Int. Cl. B01d 35/02

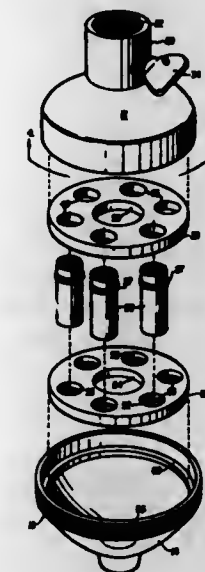
U.S. Cl. 210-323

5 Claims

A water filter adapted to be attached to faucets. The filter comprises a plurality of cylindrical filter elements annularly

arranged within two generally hemispherical sections joined together. The device comprises valve means for directing tap

scooped into the bowl. The straining portion of the ladle is made to have a variable position with respect to the bowl, so



water through the filter elements and also for directing the water through the device unfiltered.

3,822,019

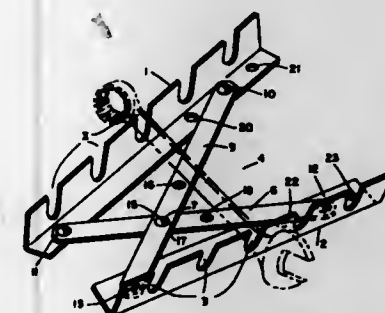
**ADJUSTABLE TOOL HOLDER**

Jerome T. Bantz, 412 Paragon, Troy, Mich. 48064  
 Filed Nov. 17, 1972, Ser. No. 307,447

Int. Cl. B25h 3/04

U.S. Cl. 211-60 T

3 Claims



Disclosed herein is an adjustable rack ideally adapted to hold hand tools such as wrenches. It comprises two rack members having opposing recesses for holding objects. The rack members are connected by two pivotally connected intersecting arms which form an X-support. The ends of the arms are pivotally connected to the rack members. There are a plurality of connection locations along both the arms and the rack members which permits a change in the geometry of the rack to hold a wide variety of tools of different lengths.

3,822,020

**ADJUSTABLE SOUP LADLE**

Leon Hong, Freeport, Long Island, N.Y., assignor to Jerome J. Norris, Bronx, N.Y., a part interest

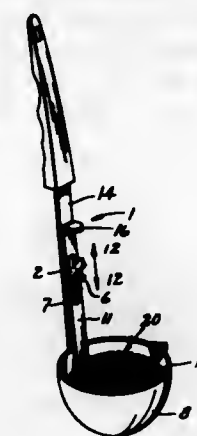
Filed Nov. 7, 1972, Ser. No. 304,326

Int. Cl. B01d 35/28

U.S. Cl. 210-465

5 Claims

A soup ladle for controlling the ratio of soup solids to soup liquids spooned from the soup mixture. The ladle comprises a bowl and handle, and means for straining the soup as it is



that different quantities of solids are entrained by the straining element. The strainer position is easily settable by a slot-pin-fastener arrangement.

3,822,021

**COMBINED STOP AND SUPPORT ARRANGEMENT FOR THE REAR END OF THE RETURN SPRING ASSEMBLY OF A RAILWAY VEHICLE CUSHIONING UNIT**

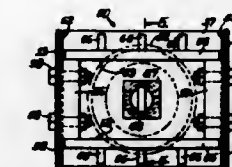
Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.

Filed Nov. 20, 1972, Ser. No. 307,932

Int. Cl. B61g 9/12, 11/12

U.S. Cl. 213-8

10 Claims



A combined stop and support arrangement is disclosed for confining the rear end of the return spring assembly of a railway vehicle cushioning unit between the laterally spaced, vertical flange portions of the longitudinally extending center sill of a railway vehicle underframe. The arrangement includes a plate secured to the rear end of the return spring assembly so as to extend generally perpendicularly to the longitudinal axis of the center sill and the line of action of the applied force from the cushioning unit. A pair of vertically spaced, horizontally arranged plates are secured to the rear face of the return spring assembly plate, and a pair of blocks are secured to the inner surfaces of the vertical flange portions of the center sill so as to nest between the horizontally arranged plates. The blocks thus function as stops for preventing rearward longitudinal movement of the return spring assembly and also to prevent vertical movement of the rear end of the return spring assembly with respect to the center sill. The plate on the rear end of the return spring assembly has a width substantially equal to the lateral spacing between the inner surfaces of the vertical flange portions of the center sill so that the rear end of the spring assembly is confined against lateral movement in the sill. A plurality of gusset blocks are secured to the upper and lower surfaces of the horizontally arranged plates on the return spring assembly rear plate, and to the outer surface of the latter plate, for increased strength.



### 3,822,022 CLAMP MEANS FOR MATERIAL HANDLING APPARATUS

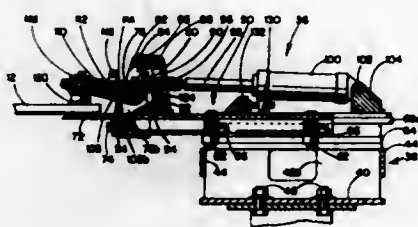
Kenneth L. Klammer, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Jan. 26, 1973, Ser. No. 326,699

Int. Cl. B65g 61/00

U.S. Cl. 214-1 R

5 Claims



For use with an apparatus for handling elongated elements wherein the elements are initially arranged in a horizontal tier on spaced support members overlying a receiving device such as for example a vertically adjustable elevator, and wherein the support members are subsequently retracted from beneath the elements to deposit the latter on the receiving device, the improvement which comprises a clamp mechanism located at one end of the receiving device, said clamp mechanism being movable from an open inoperative position remote from the ends of the elements being handled to a closed operative position gripping the ends of the elements to thereby prevent the elements from turning or flipping about their longitudinal axes as they drop from the support members onto the receiving device.

### 3,822,023 PIVOTING AND LIFTING STRUCTURE FOR SHEETING BUILDING MATERIAL

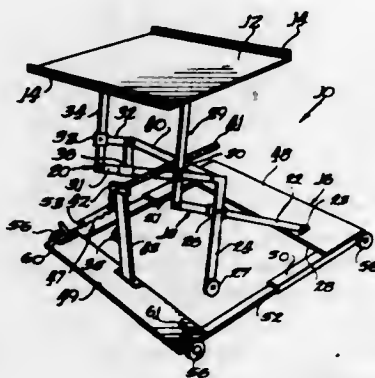
Ted Cordel, 1101 Williams St., Flatwoods, Ky. 41139

Filed July 18, 1973, Ser. No. 380,380

Int. Cl. B66f 9/12

U.S. Cl. 214-1 SW

10 Claims



The embodiment of the invention disclosed herein is directed to a pivoting and lifting structure for raising building sheet material to a predetermined height, such as, for example, raising dry wall sheets to be fastened to a ceiling. The pivoting and lifting structure includes a platform for receiving a sheet of building material to be raised, this platform including at least one turned edge portion for providing holding means during an initial condition of placing the building sheet material on the platform. As the platform is raised by a simultaneous arcuate and lifting motion the building sheet material is lifted to a desired height. The pivoting and lifting structure also includes a support base upon which the link members of the pivoting and lifting mechanisms are secured. This support base is arranged for easy movement across a floor surface by the provision of wheels placed at four displaced corner positions. The pivoting and lifting mechanism has first and second

groups of pivotal arms, each group including at least first, second and third independent pivotal arm members pivotally connected and slidably fastened to one another to effect simultaneous arcuate and raising motion of the support platform means which raises the building sheet material. A cross bar is secured to the first and second groups of pivotal arms and has a central aperture threadedly secured to a threaded shaft, which, in turn, has a journaled end portion fastened to a standard. This standard extends upwardly from a support base. The threaded shaft preferably may be manually operated by a hand crank formed at one end thereof. The support base includes two movable sections, preferably telescopically secured to one another. As the first and second groups of pivotal arms are manipulated by rotation of the threaded shaft the two sections of the support base move relative to one another as a result of drawing in or pushing out of these sections depending on the direction of movement of the pivotal arms.

### 3,822,024 CARD LOADING MECHANISM FOR A PHOTOGRAPHIC COPYING MACHINE

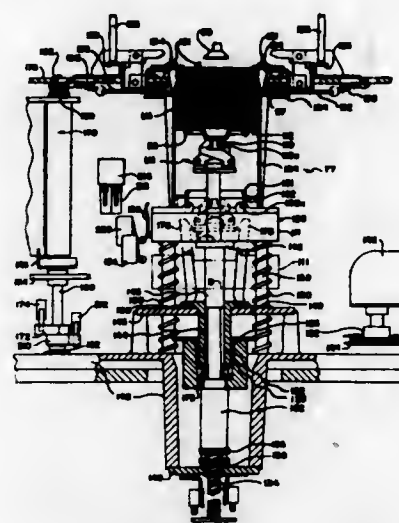
Dale S. Endter; Edwin E. Miller, and Charles F. Shute, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,446

Int. Cl. B65g 59/04

U.S. Cl. 214-8.5 D

5 Claims



A light tight cartridge containing aperture cards having unexposed microfilm inserts mounted therein is inserted into a card loading mechanism of a photographic camera. Upon actuation of the camera, the loading mechanism removes a cover from the cartridge by engaging the cover and pulling the cartridge away from the cover. The cover is then pivoted away from a vertical path of movement for the cartridge and the cartridge is raised along such path until checked by a stop plate. An opening in the stop plate allows a separable bottom of the cartridge and a card stack supported on such bottom to continue to be raised until the topmost card of the stack trips a card sensing switch. Card buckling fingers engage the topmost card and buckle it outwardly. A platen having suction cups then engages and removes the topmost card from the stack. Other such platens successively remove other topmost cards. The card sensing switch senses when the topmost card is too low for pickup by a platen and activates the elevator mechanism to raise the cartridge bottom and card stack to the proper position. To remove a partially or completely depleted cartridge, the elevator mechanism is lowered to reengage the cartridge bottom and body. The cover is then pivoted over the cartridge and the elevator mechanism raised to reseal the cover on the cartridge body. The elevator mechanism is then lowered to a discharge position for removal by the operator.

### 3,822,025 PRESSURIZED GAS SELECTOR MECHANISM

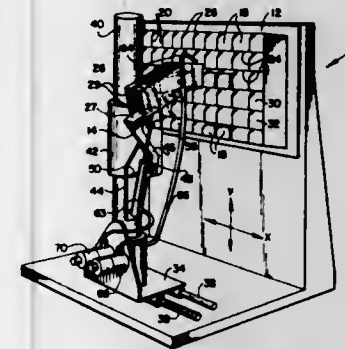
William A. Loos, Broad Brook, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Mar. 16, 1973, Ser. No. 341,930

Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 A

13 Claims



An apparatus for handling generally identical articles stored in a matrix of individual open-ended compartments includes a transfer receptacle movable to position it adjacent to any selected compartment. A first ejecting means comprising a pneumatic tube and nozzle directs a current of pressurized air or other gas from in front of the open end of the selected compartment toward the interface between the article in the compartment and the wall thereof. Through the influence of this gas, the article is rapidly shifted from the compartment to the adjacent transfer receptacle. One or more of the compartments may be a sending station to which articles are delivered by the transfer receptacle for transport to remote points, and another one or more of the compartments may be a receiving station to which articles are returned from the remote point. The remainder of the compartments are storage stations. An article carried by the transfer receptacle is returned to the matrix by a second ejecting means including a member movable relative to the transfer receptacle for pushing the article from the receptacle into the compartment adjacent to which the receptacle is positioned.

### 3,822,026 LOG GRAPPLE

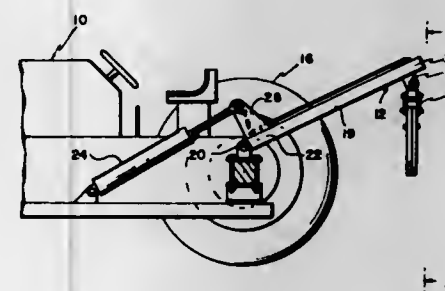
William F. Helms, III, and Kenneth L. Moss, both of Conroe, Tex., assignors to Helms-Moss Industries, Inc., Conroe, Tex.

Filed Apr. 19, 1973, Ser. No. 352,430

Int. Cl. B66c 23/36

U.S. Cl. 214-147 G

5 Claims



A log grapple adapted to be carried by a vehicle having an elongate boom pivotally connected at one end to the vehicle for vertical movement with a pair of log grapple tongs carried from a rotative shaft from the second end of the boom for movement about a vertical axis. An elongate rigid actuating rod, one end of which is connected to the rotative shaft at a point off of the center of the shaft. The second end of the rod is positioned adjacent the first end of the boom whereby actuation of the second end of the rod rotates the tongs to permit the tongs to engage a log.

924 O.G.-3

### 3,822,027 CONTAINER WITH SAFETY CAP

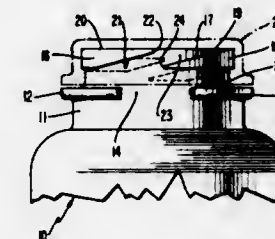
Samuel Cherba, 735 Totowa Rd., Totowa, N.J. 07512

Filed Jan. 8, 1973, Ser. No. 321,830

Int. Cl. B67c 9/00

U.S. Cl. 215-9

11 Claims



A container with a cap which cannot be readily removed by small children. The container neck and cap have cooperating interrupted thread-like formations which selectively retain them in fully telescoped, container-closed, position wherein turning of the cap does not further tighten or loosen it on the container neck; when the cap is turned to a predetermined angular position relative to the container neck, shown by indicia on the container and cap, the cap can be pulled axially outwardly to a position in which turning of the parts relative to each other effects the unscrewing of the cap. The thread-like formation on at least one of the cap and container may be such as to divide the cap unscrewing operation into stages, it being required that the cap be pulled axially outwardly between stages. The turning of the cap in successive stages may take place in the same direction, or it may take place in opposite directions.

### 3,822,028 FUEL TANK CONSTRUCTION

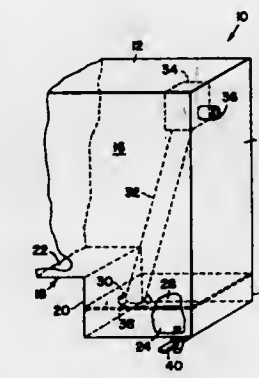
David Emmert Stover, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1972, Ser. No. 310,113

Int. Cl. B65d 1/24; B01d 43/00

U.S. Cl. 220-20

11 Claims



A fuel tank has a sediment trap in one end thereof which is constructed in conjunction with a fuel withdrawal or suction tube so as to minimize the remixing of trapped sediment with the fuel being withdrawn during operation of the vehicle.

### 3,822,029 IMPACT PROTECTION FOR PLASTIC TUBS EMPLOYING MOLD RETENTION RIB

Richard L. Butsch, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,557

Int. Cl. B65d 7/42

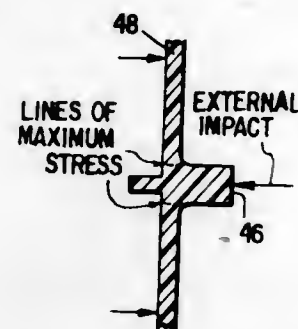
U.S. Cl. 220-72

5 Claims

The decreased impact resistance of a unipartite plastic tub formed to include internal mold retention ribs is compensated for by the addition of external ribs, substantially coextensive



in length and position with the internal ribs, having a width greater than that of the internal ribs to spread the stress con-



centration area beyond the juncture of the internal ribs and tub wall and thus avoid the conventional "notch" effect.

3,822,030

**LID WITH STRAW POSITIONING MEANS**

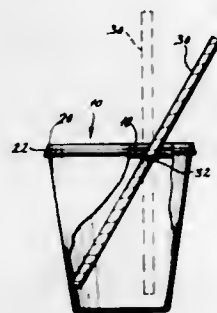
John Tanzer, 411 N. 7th St., Brookfield, Wis. 63101

Filed Aug. 26, 1971, Ser. No. 175,250

Int. Cl. A47g 19/22; B65d 41/18

U.S. Cl. 220—90.2

1 Claim



A lid having a pair of flexible wing elements which are configured, arranged and dimensioned to flexibly engage and automatically incline a straw positioned therebetween.

3,822,031

**CONTAINER-ORIENTING APPARATUS**

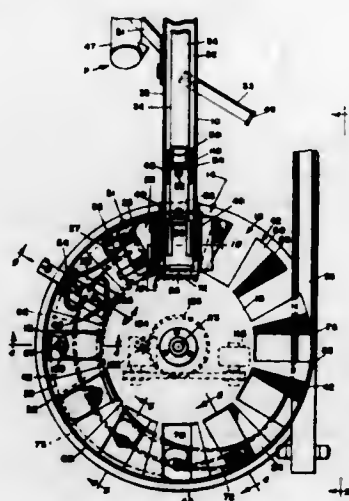
Walter S. Sterling, Quincy, and Robert W. Vergobbi, Braintree, both of Mass., assignors to Pneumatic Scale Corporation, Quincy, Mass.

Filed Oct. 10, 1972, Ser. No. 295,972

Int. Cl. B65h 9/18

U.S. Cl. 221—10

33 Claims



Apparatus for orienting elongated containers such as plastic bottles or other elongated articles. The bottles are deposited

into the apparatus in a horizontal position from an intake chute without regard for the direction of the open or closed ends of the bottles and provision is made for standing upright successive bottles with their open ends up for delivery in a line to subsequent container cleaning or filling machines.

3,822,032

**APPARATUS FOR FILLING CONTAINERS INCLUDING MEANS RESPONSIVE TO BOTH THE WEIGHT AND THE HEIGHT OF THE MATERIAL DISPENSED**

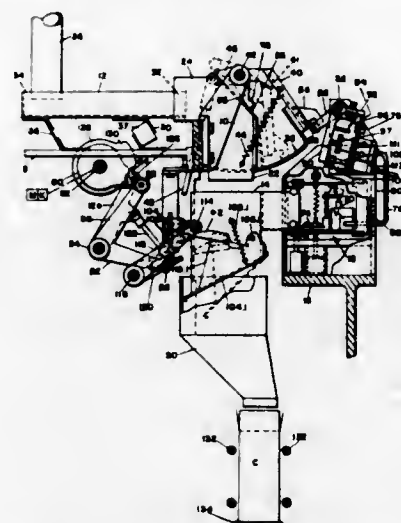
Robert W. Vergobbi, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Mar. 1, 1973, Ser. No. 337,115

Int. Cl. B67d 5/08

U.S. Cl. 222—55

6 Claims



A filling machine provided with a weighing hopper for receiving a predetermined weight of material and depositing it into a container, for example a carton, in which the material is to be retailed, a feed hopper, a shutter arranged to control delivery of material from the feed hopper to the weighing hopper and controls responsive, respectively, to the weight of the material and the volume of the material deposited in the weighing hopper so that if, when a predetermined weight of material is deposited in the weighing hopper, the volume is less than a predetermined minimum the material will continue to be delivered to the weighing hopper until said predetermined minimum volume is deposited.

3,822,033

**COLLAPSIBLE TUBE SQUEEZING DEVICE**

Heribert Hopf, Beuscher Weg 1, 717 Schwab. Hall, Germany

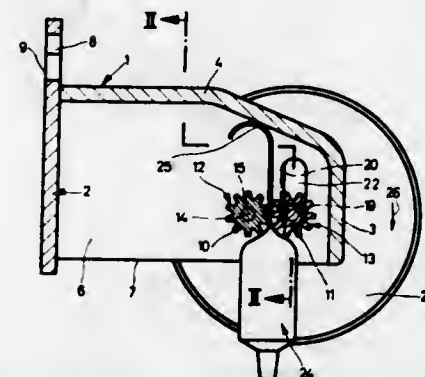
Filed Aug. 2, 1972, Ser. No. 277,378

Claims priority, application Germany, Aug. 3, 1971, 2138661

Int. Cl. B65d 35/28

U.S. Cl. 222—102

8 Claims



A collapsible tube squeezing device includes a housing having two lateral walls each having an upwardly directed slot. A first gear roller is rotatably mounted about a fixed axis between the two lateral walls. A second gear roller substantially parallel to the first roller has end portions pivotally

arranged in the slot and is movable transversely to the direction of its axis in the slot between a tube squeezing working position for squeezing a tube inserted between the rollers and a tube releasing position in which it is spaced from the first roller. The slots are provided with gear teeth on one edge of the upper portion of each slot which mesh with the gear teeth of the second roller when the latter is turned in one direction to eject the tube, bringing it to its spaced position. The second roller moves to its working position, in which it is disengaged from said slot gear teeth, when the second roller is turned in the opposite direction to squeeze the tube.

3,822,034

**PLEATING APPARATUS**

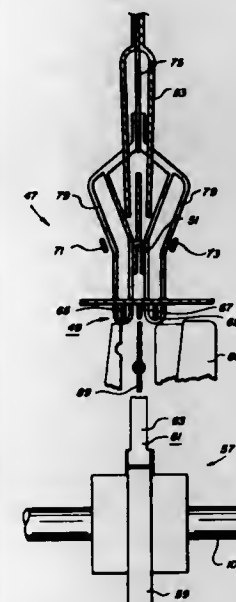
Jack M. Lawson, 3161 Ashwood, No. 3, Memphis, Tenn. 38118

Filed Sept. 4, 1973, Ser. No. 394,404

Int. Cl. A41b 43/00; D06j 1/00

U.S. Cl. 223—28

18 Claims



An apparatus for use in the manufacture of the pleated upper section of a drapery panel. The apparatus includes a computing device for determining the required pleat size and space size from a given hemmed width size and a given number of pleats desired in the finished drapery panel to obtain a given finished width of the drapery panel and includes a plurality of pleat forming devices for evenly spacing, folding and tacking a plurality of pleats in the upper section of the drapery panel in accordance with the computations of the computing device.

3,822,035

**SOLDERING AND DESOLDERING SYSTEM**

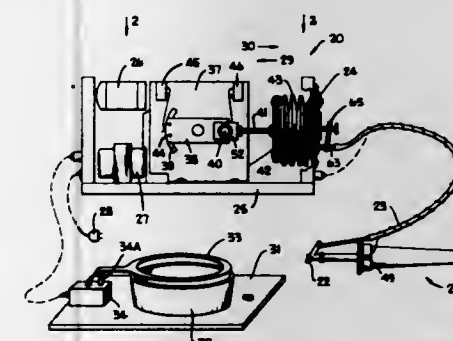
Rudy L. Kopernak, Indianapolis, Ind., assignor to Enterprise Development Corporation, Indianapolis, Ind.

Filed Feb. 14, 1972, Ser. No. 225,960

Int. Cl. B23k 1/00

U.S. Cl. 228—20

24 Claims



This is a system for continuous soldering and desoldering. A soldering iron is provided with a hollow tip which is connected

by a tube to a bellows pump. An electric motor has an output drive shaft fixedly connected to a crank. One end of the crank is rotatably connected to a rod secured to the movable end of the bellows. The bellows is expanded and contracted by rotating the output drive shaft. The opposite end of the crank has a cam fixedly mounted thereon which is engageable with actuator arms of a pair of electrical switches mounted on opposite sides of the output drive shaft. A switch mounted on the iron is operable to connect a source of electrical energy to the motor, thereby expanding the bellows pump and withdrawing material from a soldered joint or connection, through the tip. Another switch on a receptacle is operable to cause contraction of the bellows causing the withdrawn material to be expelled or ejected into the receptacle. A third switch and a pressure release flap valve are operable to establish a continuous vacuum at the tip, with every expanding cycle of the bellows, if desired, to enable withdrawal of material through the tip and avoid necessitating ejection of material therethrough.

3,822,036

**CORNER CAP**

James R. Goodsite, Sandusky, Ohio, assignor to Westvaco Corporation, New York, N.Y.

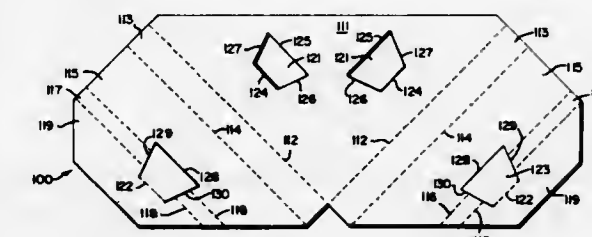
Division of Ser. No. 830,001, June 3, 1969, Pat. No. 3,613,985.

This application May 11, 1971, Ser. No. 142,366

Int. Cl. B65d 5/50

U.S. Cl. 229—14 C

2 Claims



The present invention is embodied in a corner cap construction for reinforcing shipping containers wherein the corner cap comprises a plurality of panels of multi-ply corrugated paperboard or the like which panels are folded adjacent one another in face-to-face contact and secured together without stitching, stapling, gluing or taping.

3,822,037

**COMPACTOR BAG AND METHOD OF MANUFACTURE**

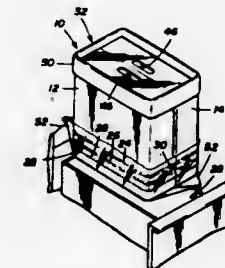
Donald V. Long, Dallas, Tex., assignor to The Delpak Corporation, Dallas, Tex.

Filed Feb. 14, 1972, Ser. No. 226,087

Int. Cl. B65d 33/02, 31/04

U.S. Cl. 229—53

5 Claims



A compactor bag includes opposed paper sheets which are joined at the edges and at one end in the manner of a "flat" bag. A liquid impervious casing extends over the joined ends of the sheets and comprises a length of low density polyethylene which is folded and then heat sealed along the edges. The liquid impervious casing is secured to the paper sheets by separate and distinct joining systems each resistant



to attack by a different substance. By this means the liquid impervious casing retains liquid in the compactor bag even though refuse containing substantial amounts of moisture and/or other deleterious materials is deposited in the bag.

3,822,038

# MULTICOUPLER PERCENT FREQUENCY SEPARATION CALCULATOR

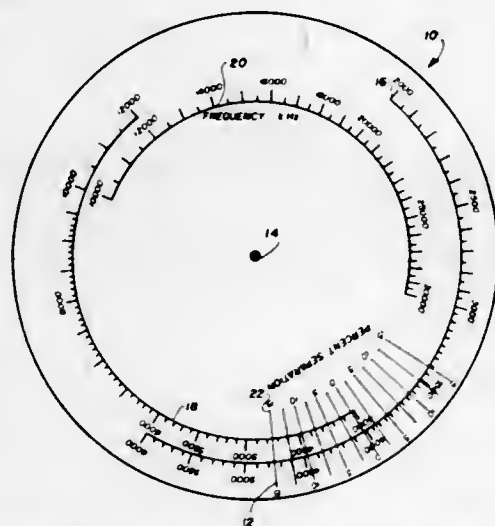
Irving C. Olson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 15, 1972, Ser. No. 263,067

Int. Cl. G06c 3/00, 27/00

U.S. Cl. 235-88

2 Claims



A circular slide rule device for quickly and accurately determining percent frequency separation necessary between frequencies for acceptable operation in high frequency multicoupler environments. A circular base member is circumferentially graduated clockwise in three concentric, overlapping logarithmic scales which represent frequencies from 2,000 kHz to 30,000 kHz. A transparent cursor member is concentrically and rotatably mounted on the base and has marked thereon percent frequency separation indicia with respect to a centerline zero percent reference. The device is easily operated and provides direct readouts of percent frequency separation at any frequency for multicoupler/transmitter/receiver combinations.

3,822,039

# GAS COMBUSTION CONTROL DEVICE

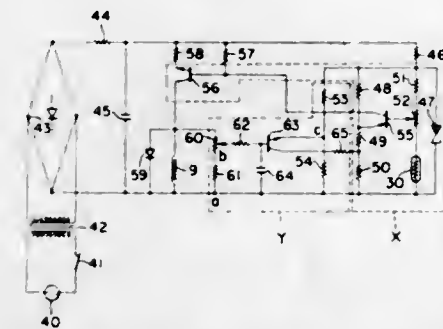
Keljiro Mori, Nara, and Keiichi Mori, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka-fu, Japan

Filed July 17, 1972, Ser. No. 272,650

Int. Cl. H01h 47/26

U.S. Cl. 236-75

9 Claims



For a device of the type in which the amount of fuel gas to be supplied to a gas burner is controlled by a proportional position type solenoid valve, there are provided a first control circuit which controls the exciting current to be applied to the

solenoid of the valve in response to the temperature change of a medium heated by said gas burner, thereby controlling the supply of gas fuel to the gas burner, and a second control circuit which detects the magnitude of the exciting current and causes the abrupt change in output current of the first control circuit after the gas burner is ignited and when gas burner is extinguished, thereby causing the abrupt change in gas supply to the gas burner.

3,822,040

# AERIAL SPRAY NOZZLE ASSEMBLY

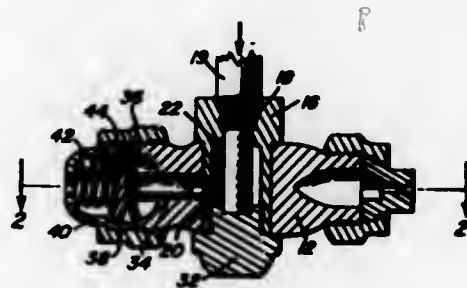
Horace E. Hibbard, 630 N. 7th St., Payette, Idaho 83661

Filed May 22, 1973, Ser. No. 362,827

Int. Cl. B05b 17/02, 1/30

U.S. Cl. 239-86

9 Claims



An aerial spray nozzle assembly is provided which includes a fluid pressure responsive valve for discouraging dripping of fluid from the nozzle when the fluid supply is shut off while in flight and a manual rotary valve associated with the spray nozzle body to provide a secondary seal against fluid leakage when rotated to the closed position.

3,822,041

# MIXING SYSTEM FOR EXPANDING FOAM AND APPARATUS FOR APPLYING SAME

Dieter Reimold, Heddeshelm, Germany, assignor to Firma Rheinhold & Mahla GmbH, Mannheim, Germany

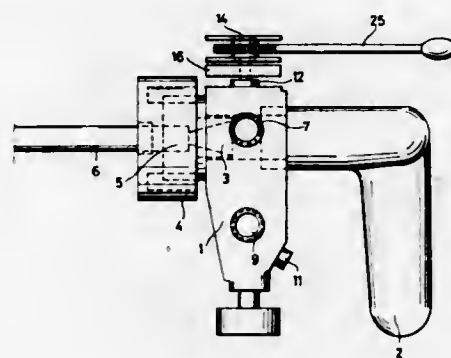
Filed Feb. 5, 1973, Ser. No. 329,863

Claims priority, application Germany, Feb. 11, 1972, 7205125[U]

Int. Cl. B05b 15/02, 7/12

U.S. Cl. 239-112

6 Claims



A spray gun, for mixing expanded plastic foam using compressed air and discharging the foam-air mixture, has a gun body with a mixing chamber, inlet means for connection to a supply of expanded plastic foam, inlet means for connection to a compressed air supply and a mixture discharge line. The gun has valves mounted in the body controlling supply of the

expanded plastic foam to the mixing chamber. A third inlet is provided for connection to a control line, for the pump or the like, and this control line contains air under pressure which, when released, interrupts operation of the foam supplying means. Another valve in the gun body is operable to release the air under pressure from the control line. The body carries an operating handle which is geared to operating members for the valves controlling the supply of plastic foam, so that the valves are operated conjointly, and further gearing interconnects these valves with the valve controlling release of air under pressure from the control line. Thereby, when the supply line to the gun is closed down, air is discharged from the control line responsive to movement of the operating member in a valve closing direction, and the release of air from the control line interrupts operation of the pump or the like. Preferably, the gearing interconnecting the several valves and the operating handle is provided so that the gearing and the control handle may be removed as a unit from the gun body for pre-adjustment of the several valves.

3,822,042

# DEMOLITION APPARATUS

Roger E. Roy, 5837 Clear Valley Rd., Hidden Hills, Calif. 91302

Continuation-in-part of Ser. No. 217,519, Jan. 13, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,839

Int. Cl. B02c 13/20

U.S. Cl. 241-235

54 Claims



The present invention relates to demolition apparatus for fragmenting to any desired fragment or chip size a wide variety of solid waste materials, as for example whole trees, stumps and logs, torn down houses, street collection trash, garbage and the like. Demolition apparatus according to the present invention has particular utility in clearing large tracts of land for buildings, shopping centers, housing developments, industrial plants, etc. The disclosed apparatus comprises a semitrailer that is adapted to be towed by a tractor, and to perform its demolishing action either while stationary, or while being towed.

The disclosed demolition apparatus comprises a rubble chamber into which rubble such as entire trees is dumped, the apparatus having a masticating bed comprising multitoothed demolition rollers that cut the trees or other rubble into small fragments. The demolition apparatus then discharges the fragments to be collected and packaged or otherwise distributed as desired.

3,822,043

# FILM UNWINDING METHOD

Carl R. Pepmeyer, and David C. Burks, both of Fredericksburg, Va., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 31, 1972, Ser. No. 240,050

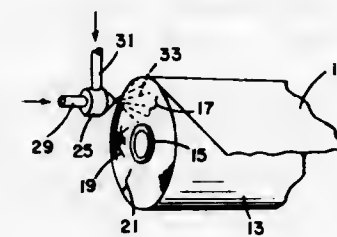
Int. Cl. B65h 75/02

U.S. Cl. 242-55

3 Claims

A method in which moisturized air is impinged against the end of a roll of hydrophilic film to provide for smooth and continuous edge separation of overlying film convolutions during the unwinding thereof. The moisturized air is com-

prised of extremely fine particles of water which are suspended in a moving air stream and which are present in



only such amounts as to avoid water from accumulating and discharging as droplets from the impinged end of the film roll.

3,822,044

# AUTOMATIC REEL EXCHANGING DEVICE FOR A WINDING APPARATUS

Asko Sakari Riekkinen, Kauniainen, Finland, assignor to Oy Nokia AB, Helsinki, Finland

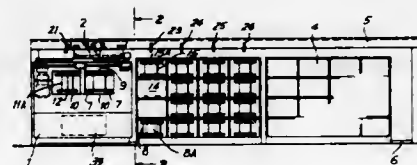
Continuation-in-part of Ser. Nos. 838,151, July 1, 1969, abandoned, and Ser. No. 159,636, July 6, 1971, abandoned.

This application Aug. 13, 1973, Ser. No. 387,808

Claims priority, application Finland, July 2, 1968, 1900/68 Int. Cl. B21c 47/24

U.S. Cl. 242-79

4 Claims



A reel exchanging device for a winding apparatus for thread-like or ribbon-like material comprising a movable reel conveying arrangement which is programmed to carry out the reel conveying operations automatically synchronous with the winding operation of the winding apparatus.

3,822,045

# ARCHIMEDES SPIRAL WOBBLE CONTROL

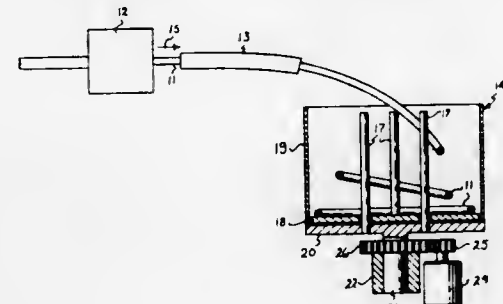
Thomas D. Johnson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed June 30, 1972, Ser. No. 268,086

Int. Cl. B21c 47/28; B65h 75/02

U.S. Cl. 242-83

7 Claims



A control system for a pouring reel to allow a product to be deposited in the reel in continuous layers, each layer forming an Archimedes spiral. The control system produces a reel speed reference signal by dividing a signal proportional to the linear speed of the product by a signal proportional to the desired coil convolute radius of the product in the reel to obtain the desired result.



3,822,046

**RETRACTOR FOR SAFETY BELTS ESPECIALLY FOR MOTOR VEHICLES**

Arnold Baelder, Norderstedt, and Uwe Peters, Hamburg, both of Germany, assignors to Klippan GmbH, Konfurth, Germany

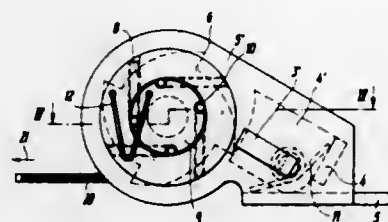
Filed Aug. 30, 1972, Ser. No. 284,846

Claims priority, application Germany, Sept. 3, 1971, 2144207

Int. Cl. A62b 35/02; B65h 63/04

U.S. Cl. 242—107.4

11 Claims



A belt retractor for safety belts including, in addition to a conventional latching mechanism, sensing means for sensing small values of belt withdrawal acceleration and operating means for actuating the latching mechanism. A guide disc is movably connected to a plurality of locking members serving merely as release means for actuating sensor arms and detents which block the belt roller. For more positive blocking of the roller, the latching mechanism may include a pair of ratchet wheels operationally coupled to the respective actuating means.

3,822,047

**TAKEOFF AND GO-AROUND CLIMB-OUT PROFILE PITCH COMMAND FORMULATION FOR AIRCRAFT**

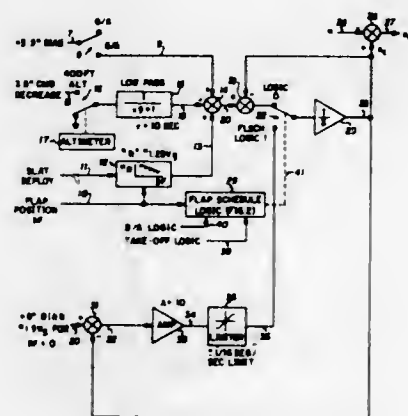
Theodore J. Schultdt, Jr., Thousand Oaks, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 14, 1972, Ser. No. 315,272

Int. Cl. B64c 13/18

U.S. Cl. 244—77 D

9 Claims



A pitch command signal formulation using angle-of-attack as basic reference provides improved noise abatement takeoff and go-around aircraft climb profiles. A stall margin reference angle-of-attack, as modified by flap position provides an angle of attack rundown profile based on flap change schedules. Rundown is effected in response to first flap reductions during the climbing phase in either mode such that common signal formulation circuitry is employed to command the same profile for either flight mode.

3,822,048

**MAIN LANDING GEAR**

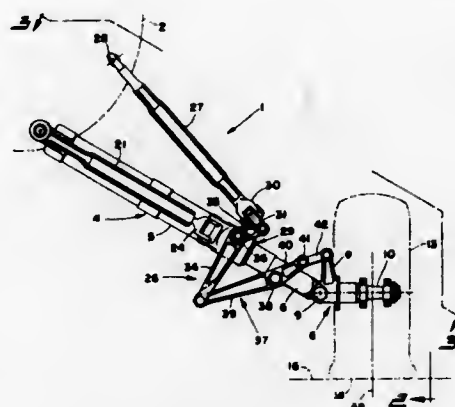
Erwin H. Hartel, Brunswick, Ohio, assignor to Pneumo Dynamics Corporation, Boston, Mass.

Filed Mar. 2, 1973, Ser. No. 337,454

Int. Cl. B64c 25/60

U.S. Cl. 244—104 R

10 Claims



A main landing gear for helicopters and the like includes a pivotal oleo strut having a cylinder and projecting piston rod, a tire mounted on the free end of the piston rod, and a linkage assembly for controlling the extension of the piston rod according to the pivotal position of the oleo strut relative to the fuselage, whereby the ground engagement portion of the tire tread is maintained in a substantially vertical plane of fixed lateral distance from the helicopter fuselage during all landing and support modes of the landing gear. In two embodiments of the invention, the tire is mounted on a wheel support that is pivotally controlled by the linkage assembly during landing gear retraction to throw the mid circumferential plane of the tire into an orientation substantially parallel to the axis of the oleo strut.

3,822,049

**ANTI-THEFT BRACKET DEVICE**

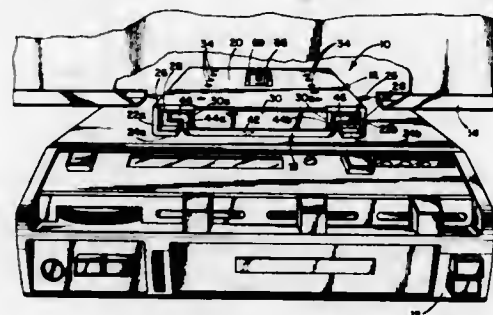
Allan L. Saunders, Melrose, Mass., assignor to Automatic Radio Mfg. Co. Inc., Melrose, Mass.

Filed Sept. 5, 1972, Ser. No. 286,274

Int. Cl. E05b 73/00; F16b 41/00

U.S. Cl. 248—203

10 Claims



A bracket assembly for removably mounting an accessory, for example a tape player, radio, speaker or the like, to a support member, for example a vehicle dashboard, transmission hump or fire wall. The assembly includes a first bracket member adapted to be fixed relative to the support member and a second bracket member adapted to be fixed relative to the accessory. The accessory is removably mounted on the support member by slidably assembling the two bracket members in interlocked engagement. When thus assembled, the two bracket members are adapted to receive a separate lock, for example a conventional padlock, which prevents separation of the bracket members, thereby also preventing unauthorized removal of the accessory from the support member.

3,822,050

**MOUNTING BRACKET FOR ELECTRICAL TERMINAL BLOCK DEVICES**

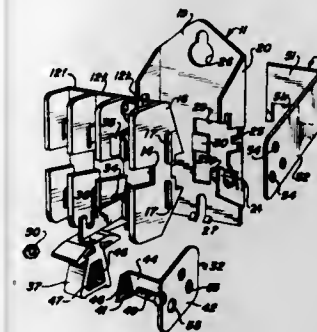
C. Allan Schurr, 19805 Scottsdale, Shaker Heights, Ohio

Filed May 16, 1972, Ser. No. 253,753

Int. Cl. H01h 9/08

U.S. Cl. 248—223

2 Claims



A mounting bracket holds one or more standard electrical terminal block devices for mounting on a wall or panel without requiring use of a mounting or terminal strip. Cooperating handle lock-off means may be used for locking a terminal block knife switch in its open position.

3,822,051

**TELESCOPIC SUPPORT**

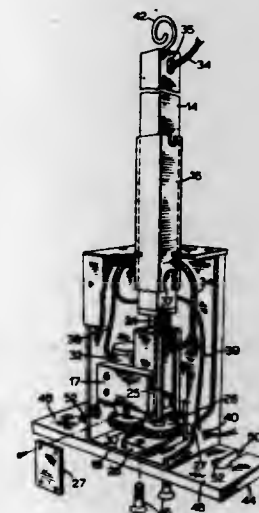
Alexander Donald Karapita, 44 Lyme Regis Crescent, Scarborough, Ontario, Canada

Filed Aug. 13, 1971, Ser. No. 171,555

Int. Cl. F16m 13/00

U.S. Cl. 248—333

7 Claims



A manually operable, adjustable telescopic suspension support in which a second tube is slidable axially in a first tube. The second tube is non-rotatable axially with respect to the first tube and carries fixed means having a threaded aperture which is engaged by a threaded rod of coarse pitch fixed longitudinally in the first tube and selectively releasable to rotate in either direction. The support is axially extended or collapsed by exerting manual force axially on the first tube with releasing clutch means to unlock the rod and exerting force axially on the first tube.

The second tube is non-rotatable axially with respect to the first tube and carries fixed means having a longitudinal threaded bore which is engaged by a threaded rod fixed longitudinally in the first tube and rotatable selectively in each direction. The support may be extended or collapsed by exerting force axially on the first tube with releasable clutch means to lock the rod against turning and thereby lock the

3,822,052

**SHUT OFF CLAMP**

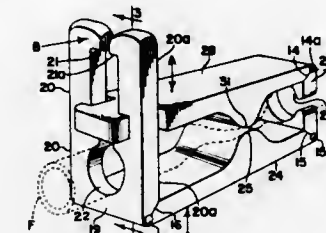
Carl W. Lange, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 2, 1973, Ser. No. 347,006

Int. Cl. F16k 7/04

U.S. Cl. 251—10

8 Claims



A clamp for one-hand manipulation in controlling the flow of fluid through flexible tubing, such as intravenous tubing systems, and formed from a molded flat strip of plastic material configured to provide hinge areas for bending the strip to provide a base with an overlying lever arm between which the tubing is disposed, and a slotted locking arm upstanding from the base and having notches to receive a locking head on the lever arm for cooperation with the notches to hold abutment surfaces on the lever arm and base in position for clamping the tubing therebetween in completely or partially constricted position, and with permissible finger manipulation causing relative movement between the lever and locking arms to effect quick release of the interengaged head and notches, respectively.

3,822,053

**TUBULAR PICKET FENCE**

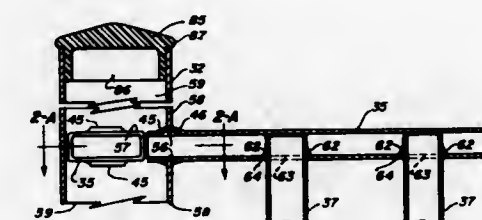
Dallas E. Daily, Ambler, Pa., assignor to Daily Corporation, Montgomeryville, Pa.

Filed Dec. 16, 1971, Ser. No. 208,659

Int. Cl. E04h 17/14

U.S. Cl. 256—22

7 Claims



A picket fence formed of relatively thin-walled rectangular cross-sectioned tubular-steel posts, rails and pickets, with holes in the posts receiving the ends of the rails and with holes in the rails receiving the ends of the pickets. The ends of the rails are provided with spring-tangs pressed outwardly therefrom a slight distance and so arranged that when the ends of the rails are inserted into the rail-receiving holes in the posts, the tangs will first be deflected inwardly slightly and will then spring back to lock the ends of the rails in the posts with the facing ends of pairs of spring-tangs closely flanking the wall of the post, and the pickets are either provided with similar spring-tangs for locking the ends of the pickets to the rails when such picket-ends are inserted into the holes in the rails, or, in the alternative, the pickets are locked to the rails by expanding pairs of ribs from the walls of the pickets, which ribs closely flank the walls of the rails.



3,822,054

## ROTARY VIBRATOR AND MOUNT THEREFOR

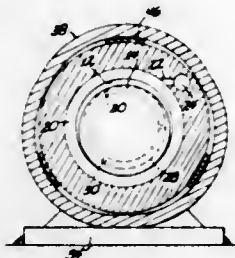
Carl G. Matson, Kewanee, Ill., assignor to Martin Engineering Company, Neponset, Ill.

Filed Oct. 13, 1972, Ser. No. 297,381

Int. Cl. B06b 1/18; B28b 1/08

U.S. Cl. 259-1 R

10 Claims



A rotary vibrator interfitted with a mounting structure wherein the vibrator casing and mounting structure have cooperative cam portions adapted to continuously tighten as a result of the migratory rotative movement of the vibrator casing ensuing from the continuing driving force applied to the vibrator rotor, thus providing a simple automatic clamping of the vibrator to the mounting structure.

3,822,055

## ULTRASONIC CLEANING OF RESIN

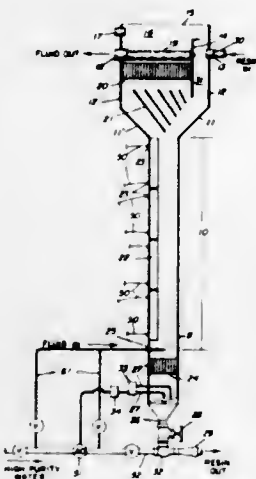
James H. Holloway, Tracy, and George E. Petersen, Fremont, both of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 39,030, May 20, 1970. This application Oct. 19, 1972, Ser. No. 298,887

Int. Cl. B01f 1/102

U.S. Cl. 259-1 R

16 Claims



A method of cleaning contaminated resins for reuse comprises establishing a countercurrent flow between the contaminated resin and a carrier fluid for carrying the removed contamination from the resin and applying ultrasonic energy to the countercurrent flow with the countercurrent flow being conducted so that a region of turbulence is achieved where the ultrasonic energy is applied. A cleaning apparatus has means for introducing a contaminated resin and means for introducing a carrier fluid to a treatment zone in a countercurrent flow, means for collecting cleaned resin from the treatment zone, means for removing the carrier fluid from the treatment zone, and ultrasonic energy means for applying an ultrasonic energy field to the countercurrent flow in the treatment zone.

3,822,056

## METHOD AND MEANS FOR ADDING SMALL MEASURED QUANTITIES OF SELECTED MATERIALS TO A LARGE CAPACITY MATERIAL-MIXING PLANT

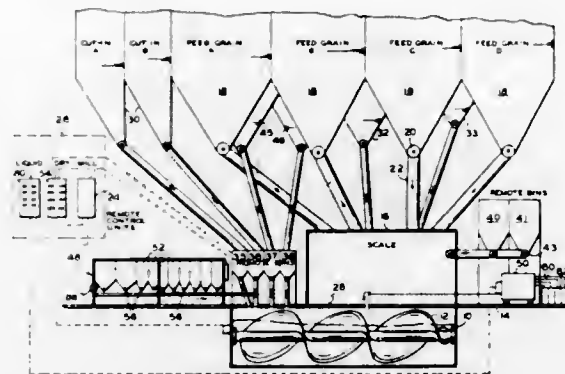
Roland J. Hawes, Jr., 10 Mesa Dr., Boise, Idaho 83705, and Sherman H. Brewster, Twin Falls, both of Idaho, assignors to said Hawes, by said Brewster

Filed Mar. 31, 1972, Ser. No. 239,909

Int. Cl. B01f 15/02

U.S. Cl. 259-25

32 Claims



Small, measured amounts of concentrated liquid and dry flowable microingredients, such as vitamins, minerals, antibiotics and hormones, are stored and metered separately but delivered simultaneously to the large-capacity batch mixer of a commercial feed mill. Here the microingredients are added to large quantities of previously delivered macroingredients, such as various animal feed grains and molasses, during the batch-mixing cycle. The amounts of microingredients and optionally some macroingredients dispensed are accurately determined through the use of calibrated cyclically operating metering pumps in the case of liquids and augers in the case of dry materials. The number of metering pulses or revolutions required to dispense a desired quantity of each ingredient is predetermined, and each pulse or revolution is counted during operation of each metering device. When the preset number of counts for each metering device is reached, that device is automatically shut off. Delivery and mixing continues until all metering devices have reached their preset counts and shut off and all dispensed microingredients have been delivered to the batch mixer and blended into the feed.

3,822,057

## SHOT VOLUME CONTROL FOR INJECTION MOLDING MACHINE

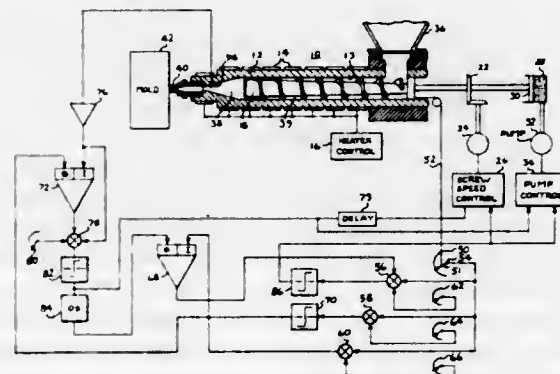
James E. Wheeler, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Nov. 1, 1971, Ser. No. 194,129

Int. Cl. B28c 5/06; B28b 17/00

U.S. Cl. 259-191

16 Claims



A control for an injection molding machine of the type in which a rotating screw is operative to produce a quantity of material disposed before the screw known as the "shot" and in

which the shot is injected into a mold by a reciprocating action of the screw. The control includes means for sensing a deviation from a desired or appropriate volume of the shot and making necessary corrections to the machinery operation in order to insure the proper volume of the shot during the next injection.

3,822,058

## CARBURETOR

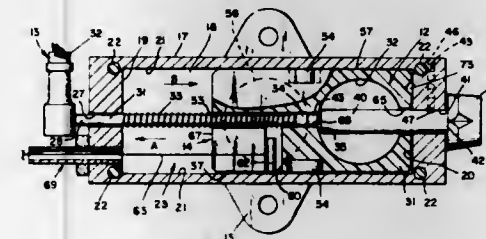
Efton T. Carter, 2737 Irwin, Lake Isabella, Calif. 93240

Filed Sept. 14, 1972, Ser. No. 289,158

Int. Cl. F02m 9/06

U.S. Cl. 261-44 R

1 Claim



A fuel carbureting device having a housing with an air intake passage therethrough and an engine mounting fixture and utilizing a unique fuel-metering and throttle system including an elongated hollow fuel tube axially movable in the housing and coupled to a source of fuel at an outer end and having an open inner end into which an elongated flat-tapered fuel metering needle is disposed, the needle being essentially fixed in position except for slight axial movement by rotation of an external adjustment knob; the system also including a sliding throttle plate having a relatively large opening through its planar surface registrable with the air intake passage to a degree determined by the throttle linkage, opening of the carburetor's throttle being accomplished through linkage which causes the plate to move so that more of the opening therein is exposed to the air intake passage, throttle plate movement also causing movement of the fuel tube in an axial direction toward the tip of the tapered needle to enlarge the fuel-metering orifice at the inner end of the fuel tube.

3,822,059

## FLAME CUTTING MACHINE

Karlo Friedel, Russelsheim; Erich Neander, Weisskirchen/Taunus, and Hans Kleist, Herborn, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Apr. 9, 1973, Ser. No. 349,476

Claims priority, application Germany, Apr. 20, 1972, 2219181

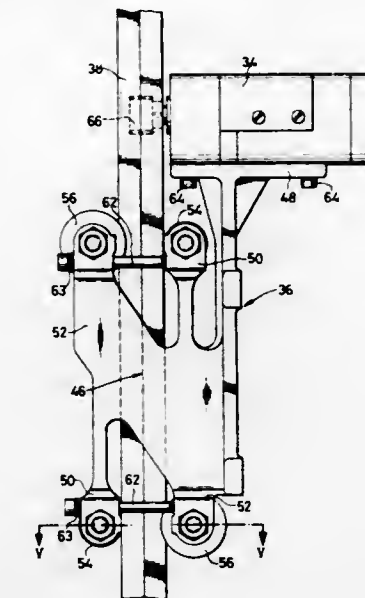
Int. Cl. B23k 7/10

U.S. Cl. 266-23 K

10 Claims

A flame cutting machine includes a torch carriage, a guiding cantilever track supporting and guiding the carriage, and a movable upright guard bar carried by the carriage and supporting a cutting torch. A single structural unit is formed by

the guard bar, by a guiding frame that is movably attached to the guard bar, and by a drive motor that is supported on the



frame and is in driving connection with the guard bar. The structural unit is insertable as a whole into, and disconnectably secured to, the carriage.

3,822,060

## APPARATUS AND METHOD FOR FEEDING SHEETS FROM THE BOTTOM OF A STACK

Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England

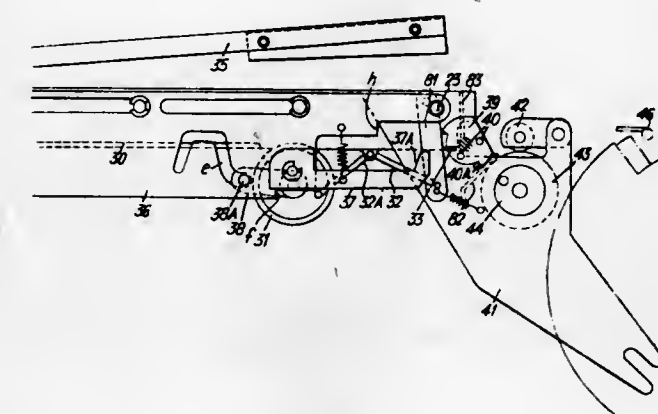
Filed Jan. 23, 1973, Ser. No. 326,003

Claims priority, application Great Britain, Jan. 24, 1972, 3265/72

Int. Cl. B65h 3/30

U.S. Cl. 271-23

21 Claims



A sheet feeding method and apparatus wherein sheets are fed from the bottom of a stack by being buckled downwardly while retained at the leading edge by a trip bar. The leading edge is then released and urged forwards, preferably towards a guide and forwarding rollers. Operation of sheet forwarding means and the trip bar is by means of a reciprocable operating plate, and a control arrangement moves the plate when a lever is moved. The control arrangement can also control forwarding rollers, grippers on a machine cylinder and movement of a collector tray.

3,822,061

## SPRING TYPE EXERCISING DEVICE

Kenji Sigma, Kashiwa, Japan, assignor to Sanyei Merchandise Co., Ltd., Tokyo, Japan

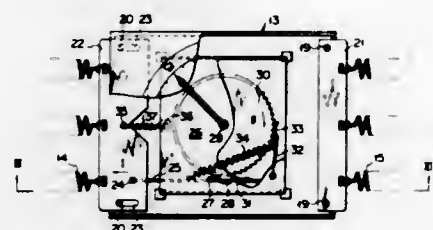
Filed Dec. 18, 1972, Ser. No. 315,862

Claims priority, application Japan, Dec. 23, 1971, 46-121809

Int. Cl. A63b 21/00

U.S. Cl. 272-83 R

16 Claims



An expander of two groups of tension springs and a counter disposed between the two groups of tension springs and so connected together that a pull on one of the groups of tension springs will operate the counter to indicate the number of times said tension springs are stretched by an external force, the outer ends of the respective tension springs of each group being fitted to one of paired grip members. The counter is caused to operate by a ratchet and stop member so that when one group of tension springs is pulled the ratchet will cause a shaft to rotate which in turn will cause a pointer on the counter to operate.

3,822,062

## MESH WEBBING FOR A LACROSSE STICK

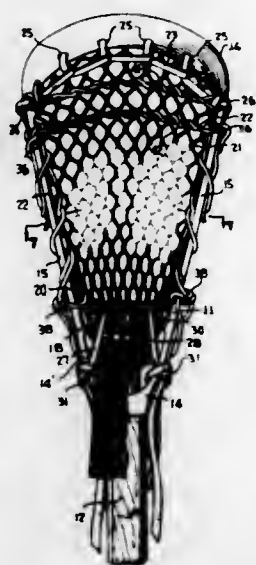
Richard B. C. Tucker, and William C. Crawford, both of Baltimore, Md., assignors to Wm. F. Burnett &amp; Co., Incorporated, Baltimore, Md.

Filed Dec. 3, 1973, Ser. No. 421,357

Int. Cl. A63b 71/00

U.S. Cl. 273-96 D

12 Claims



This disclosure relates to an improvement in the webbing of the head of a lacrosse stick and the method of forming such webbing. Expandable knitted mesh of a desired width is pro-

vided and the mesh is rearranged so that one end portion of the mesh is substantially free of expansion and the opposite end portion of the mesh is widely expanded in accordance with the maximum width of the lacrosse stick head. This mesh is then secured in place in the lacrosse stick head by means of suitable lacing with the mesh being only limitedly expanded adjacent the throat of the head and being readily deformable to define a ball pocket adjacent the stop.

3,822,063

## POCKETED TARGET AND NET ARRANGEMENT

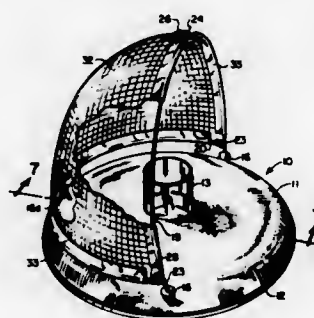
Harry E. Rea, 4667 Camelot Dr., New Orleans, La. 70127

Filed May 1, 1973, Ser. No. 356,089

Int. Cl. A63b 71/02

U.S. Cl. 273-105 R

5 Claims



A ball is provided with the toy which may be bounced against the floor or table on which the toy is located and into the cup. The net provides a backstop for poorly bounced balls. The net is attached to the base by means of supporting wires having pegs at their outermost ends. The pegs are inserted into holes in the base.

3,822,064

## RECORD PLAYER

Max Meier-Maletz, Dusseldorf, Germany, assignor to Inter-sound Ltd., Zug, Switzerland

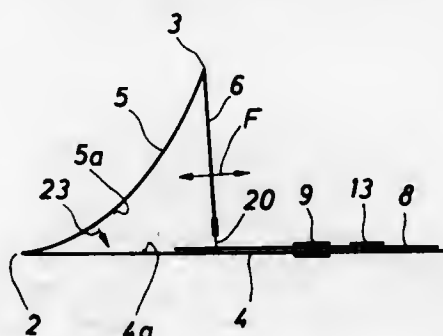
Filed Apr. 19, 1972, Ser. No. 245,311

Claims priority, application Germany, Apr. 27, 1971, 2120591

Int. Cl. G11b 3/02, 25/04

U.S. Cl. 274-7

4 Claims



The invention relates to a manually driven record player consisting of a paperboard or cardboard cut-out which is divided into three portions by folding, of which one portion carries the needle at its outer edge, the middle portion acting as a resonance branch and the third portion having the record or disc rotatably arranged on it.

3,822,065

## CLEANING OF GRAMOPHONE RECORDS

Richard Arbib, Gerrards Cross, England, assignor to Multicore Solders Limited, London, England

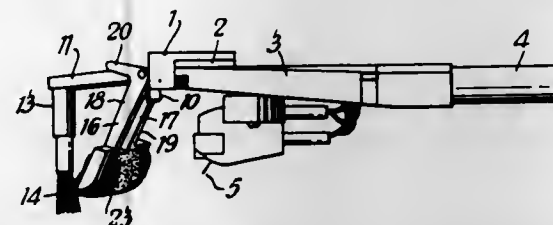
Claims priority, application Great Britain, Aug. 15, 1972, 38099/72

Filed Aug. 6, 1973, Ser. No. 385,658

Int. Cl. G11b 3/58

U.S. Cl. 274-47

14 Claims



There is disclosed a gramophone pick-up attachment which comprises a first part attached to a pick-up cartridge or arm, a second part pivotally connected to the first part with a pivot axis which is substantially horizontal when the pick-up is in use, the second part carrying a record-cleaning device in the form of a brush for engagement with the playing surface of a record whilst it is being played, and a third part pivotally connected to the first part with a pivot axis which is substantially horizontal when the pick-up is in use, the third part carrying a record-cleaning device in the form of a pad for engagement with the playing surface of a record whilst it is being played. There are no springs engaging any of the first, second and third parts and the construction and arrangement of these three parts is such that the second part can pivot with respect to the first part about its pivot axis but its pivoting is limited in that it is prevented from pivoting so far in one direction that the part of the brush which contacts the record comes vertically below its pivot axis when the pick-up is in use and the third part can pivot with respect to the first part about its pivot axis but its pivoting is limited in that it is prevented from pivoting so far in one direction that the part of the pad which contacts the record comes vertically below its pivot axis when the pick-up is in use.

3,822,066

## SEAL

Marvin C. Keys, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

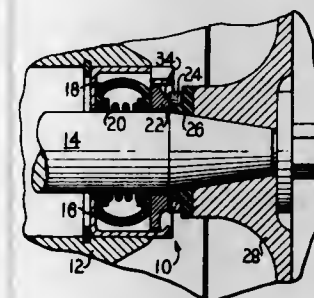
Continuation of Ser. No. 805,218, March 7, 1969, abandoned.

This application Sept. 18, 1972, Ser. No. 289,939

Int. Cl. F16j 15/54

U.S. Cl. 277-96

6 Claims



A seal, which may be utilized in suitable applications such as water pumps, having a resin impregnated carbon ring with 1 percent available porosity with a hardness in the range Rockwell C80. A ceramic ring, engaged in frictional contact with the carbon ring, has a minimum hardness of Rockwell 45N 78, and a surface having a maximum of 8 pores or valleys between 2 and 100 micro-inches in depth per 0.03 inch of cut-off length, the pores having a maximum diameter of 0.0015 inch and being uniformly distributed. Measurement of the number and size of the pores is made by means of a profilometer having a tip radius of 100 micro-inches.

3,822,067

## WELL PRESSURE SEALING CUP REINFORCING STRUCTURE

Robert F. Berry, Dallas, and Henry W. Blackwell, Venus, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

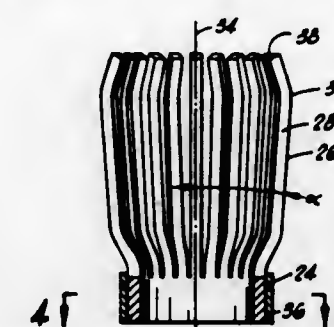
Division of Ser. No. 166,171, July 26, 1971, Pat. No.

3,722,053. This application Jan. 8, 1973, Ser. No. 321,622

Int. Cl. F16j 15/00

U.S. Cl. 277-181

13 Claims



An improved reinforcing structure and method of making said structure are disclosed. The improved reinforcing structure is a polyfurcated cylinder having an integral base portion and a tines portion. The method of manufacture includes the steps of rolling a polyfurcated plate with an integral base and tines portion, rolling the base portion into a cylindrical shape and securing the abutting ends of the base.

3,822,068

## PACKING ASSEMBLIES

James Albert Frazier Litherland, Walsall, England, assignor to B.A.L. Limited, Halesowen, England

Filed Dec. 15, 1972, Ser. No. 315,589

Claims priority, application Great Britain, Dec. 31, 1971, 60961/71

Int. Cl. F16j 15/32

U.S. Cl. 277-208

6 Claims



The invention is concerned with a fluid packing assembly comprising a sealing member having a sealing lip for co-operation with the surface of a relatively movable member so as to form a fluid seal therewith. The sealing member is provided with a roughened zone adjacent to the sealing lip, the roughened zone acting to disturb the fluid film on the surface of the relatively movable member in advance of the contact of the surface with the sealing lip.

3,822,069

## COMPACTLY STORABLE COMBINATION WAGON, SLED AND CHAIR DEVICE

Jeffrey Alan Hoff, 234 W. 10th St., New York, N.Y. 10014

Filed Mar. 12, 1973, Ser. No. 340,476

Int. Cl. B62b 13/18

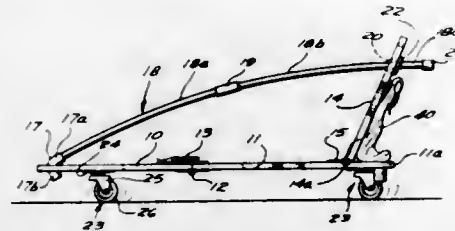
U.S. Cl. 280-8

12 Claims

A compactly storable wagon, sled and chair device comprising three foldably related planer members with means for rigidly supporting two of said members in a common plane and the third member disposed angularly generally perpendicularly to said plane, the underside of said co-planar members carrying wheel means facilitating wagon use of the



device, axially stressed tubular means connecting remote ends of said co-planar members and angularly disposed member providing side supports for seating means provided therebetween, and supplemental axially stressed tubular means projecting from the underside of said co-planar members in alignment with said first named tubular means and beyond the wheel means forming both runners for sled use of the device and supplemental support in chair use of the device, and said axially stressed means being formed of a plu-



ality of axially detachable members, the longest of which is shorter than the width of said planar members, thereby permitting storage of all components of the disassembled device within the boundaries of the folded planar members.

The wheel means are preferably of the caster type and are so positioned on each of the co-planar members as to provide engagement with contoured edges of other planar members as to provide engagement with contoured edges of other planar members operative to support said planar members in folded relation to each other when the device is disassembled.

3,822,070

## DEVICE FOR RESTORING A BOOT ON A SKI

Georges Pierre Joseph Salomon, 34, Avenue de Loverchy, Haute-Savoie, Annecy, France

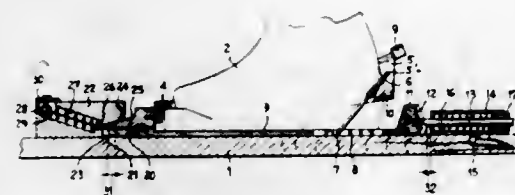
Filed Mar. 16, 1972, Ser. No. 235,119

Claims priority, application France, Mar. 24, 1971, 71.10381

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 N

25 Claims



A device is provided for automatically restoring a boot to a specific position on a ski where it may be locked by a releasable safety binding and includes at least one element connecting the boot to the ski in such a manner that the boot may separate from the ski when the safety binding releases but remains attached thereto by this connecting element. The device is characterized by a centering block fixed to the ski and having an engagement profile receiving a complementary engagement profile fixed to the boot. One end of the connecting element is received in the block while the other end thereof is received in the complementary profile. The connecting element urges engagement of the two profiles with each other.

3,822,071

## SKI BINDING PART

Willy Mottet, Bienne, Switzerland, assignor to Gertsch AG, Zug, Switzerland

Filed May 25, 1972, Ser. No. 256,669

Claims priority, application Switzerland, May 28, 1971, 7811/71

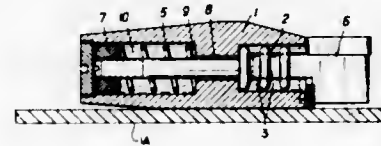
Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 T

8 Claims

A ski binding part having a pair of symmetrically arranged sole holders which are pivotally supported on a base part. The

sole holders comprise a pair of two arm levers pivotally supported on the base part. One arm of each of the two arm levers



engages the sole of the boot and the other arm engages through a structural part a spring so that the two arm levers are resiliently urged into engagement with the sole of the boot.

3,822,072

## APPARATUS FOR AUTOMATICALLY COLLAPSING AND ERECTING SEAT BACK OF BABY STROLLER

Allen D. Jacobs, and Robert V. Jacobs, both of Los Angeles, Calif., assignors to Questor Corporation, Toledo, Ohio

Filed Dec. 19, 1972, Ser. No. 316,509

Int. Cl. B62b 11/00

U.S. Cl. 280—36 B

4 Claims



A collapsible stroller having a plate connected to the back seat frame which extends below said frame forward of an upwardly extending U-shaped bar secured between the two rear wheels of the stroller. When the stroller is erected, the plate contacts the U-shaped bar so as to move the back of the seat into a substantially vertical position.

3,822,073

## FRONT END WEIGHT CARRIER

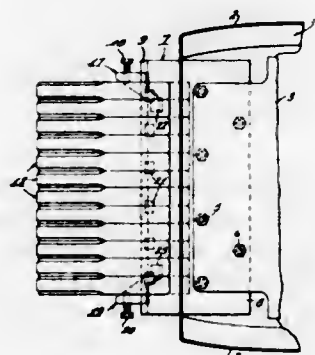
Gerald E. Sieren, Greendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 2, 1972, Ser. No. 303,282

Int. Cl. B60r 27/00

U.S. Cl. 280—150 E

9 Claims



A front end weight carrier for supporting a plurality of front end weights to provide traction and stabilization for steering on the front end of the vehicle.

3,822,074

RELEASEABLE COUPLING FOR TUBULAR MEMBERS  
AND METHOD FOR ASSEMBLING SAID COUPLING  
Friedrich Wecker, Im Sonnenwinkel 28, 585 Hohenlimburg, Germany

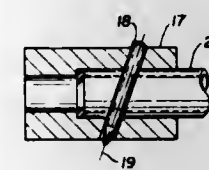
Filed Jan. 16, 1973, Ser. No. 324,542

Claims priority, application Germany, Jan. 21, 1972, 2202808

Int. Cl. F16l 21/00

U.S. Cl. 285—305

5 Claims



The present releasable coupling for tubular members includes a female bushing with a bore therethrough and with one or more holes extending through the bushing intermediate its ends, in such a position that the longitudinal axis of the hole extends substantially tangentially and preferably also at right angles to the bore whereby the hole extends partially into the bore. One or two tubular members are inserted as the male element or elements into said bore and a locking pin is then inserted into the respective hole. The locking pin has a conical tip so that the wall of the respective male element is gradually forced inwardly to provide a tight connection. Preferably, the inner end of the male element rests against an inner shoulder in the bore of the bushing.

3,822,075

## PNEUMATIC TUBE COUPLING

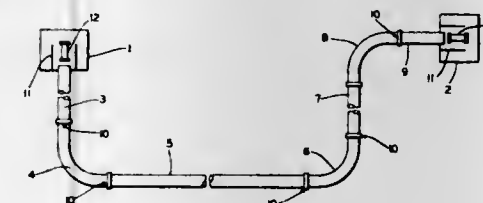
James C. Duncan, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Aug. 15, 1972, Ser. No. 280,773

Int. Cl. F16l 17/00

U.S. Cl. 285—367

4 Claims



A coupling construction for coupling tube sections of pneumatic tube systems together in axial alignment. The coupling involves outturned flanges at the ends of adjacent tube sections. A flexible band having intumed angled fingers engage and compress cooperating portions of a generally trough-shaped rubber gasket against and surrounding the tube section flanges. A typical high torque strap-type hose clamp surrounds the flexible band and is tightened to reduce the effective diameters on the band and gasket and to apply compressive forces to the trough-shaped rubber gasket.

3,822,076

## FLUID SHOCK ABSORBING BUFFER

Jacques Mercier, and Andre LeFeuvre, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France

Filed Jan. 24, 1972, Ser. No. 220,287

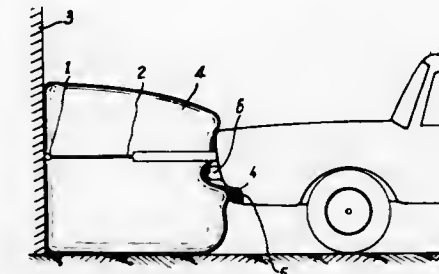
Int. Cl. B60r 19/10, 21/02; B61f 19/04

U.S. Cl. 293—1

2 Claims

A fluid energy absorbing buffer device for motor vehicle, of the type comprising a bag or bladder adapted to be inflated instantaneously, characterized in that said inflatable bag is

folded in its inoperative condition in a cavity provided to this end on the front and/or rear portions of the vehicle, so as to be adapted to react against the chassis or any other reinforced portion of the vehicle structure, the inflation of said bag



through means known per se being determined by detector members projecting from the vehicle body, said detector members being normally retracted at zero or low vehicle speeds.

3,822,077

## FITTING FOR LIFTING CARGO CONTAINERS

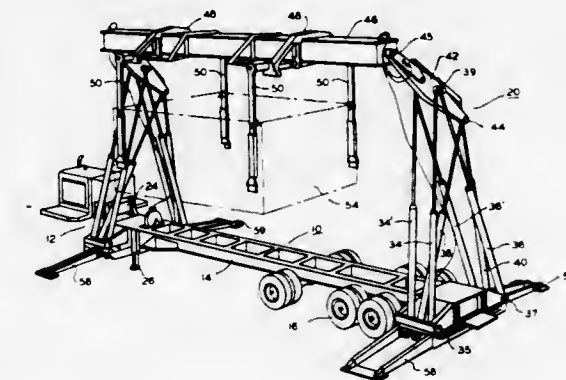
Richard L. Palen, New Buffalo, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 12, 1973, Ser. No. 340,211

Int. Cl. B66c 1/00

U.S. Cl. 294—67 DA

13 Claims



A fitting for use with a load handling apparatus for lifting cargo containers with fixtures in the upper side corners, in which there are an axially movable load lifting pin for extending into the container fixture, and axially movable positioning pins disposed above and to the side of the load lifting pin for assisting in seating the lifting pin in the container fixture. Sleeves are provided for the pins, and frame members are rigidly connected to the sleeves to form a rigid frame structure to support the pins and to permit axial movement thereof. The three pins are connected to one another for simultaneous axial movement between a withdrawn inoperative position and an extended load lifting position, and a latch means is preferably provided for retaining the three pins in either of the two selected positions, and one of the two positioning pins is rotatable for operating said latch means.

3,822,078

## FURNITURE UNIT

Pieriugi Spadolini, Firenze, Italy, assignor to IP Industria Chimica Per L'Arredamento S.P.A., Roma, Italy

Filed July 25, 1972, Ser. No. 275,098

Claims priority, application Italy, July 31, 1971, 9632/71

Int. Cl. A47b 39/00

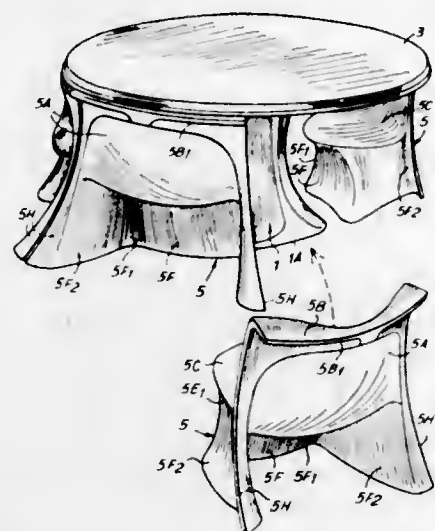
U.S. Cl. 297—140

5 Claims

Furniture unit consisting of a table having a circular top and a central supporting column, and a plurality of chairs. The chairs are defined by a shaped continuous wall having a height



less than that of the table top and having seat and back parts contained within two inclined planes. The upper edges of the



back parts are arcuate and are preferably centered on a line of intersection of the inclined planes, and have a radius substantially equal to that of the table top.

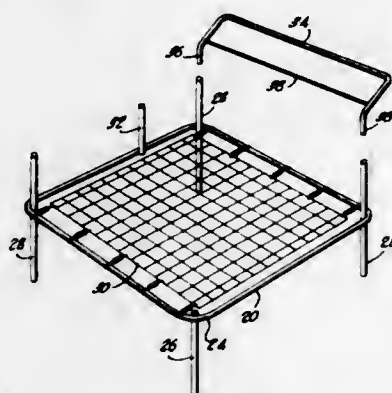
3,822,079

**FURNITURE HAVING COMPONENTS WHICH CAN BE ASSEMBLED IN DIFFERENT WAYS**

Harvey Propper, Guilford Rd., Rye, N.Y. 10580  
Filed July 28, 1972, Ser. No. 276,202  
Int. Cl. A47c 4/02, 7/00

U.S. Cl. 297-445

6 Claims



An article of furniture having a seat portion and, if desired, an upper portion forming an arm or back. The seat portion has a lower frame and legs some of which are short and extend only downwardly from the lower frame and some of which are long and extend not only downwardly from but also upwardly from the lower frame. If an upper portion is joined to the seat the upper portion has a frame joined to the longer legs. The legs and frames are embedded in blocks of foam plastic with the legs extending downwardly beyond the lower block of a seat to the floor. The upper frames of the upper portions can be fixed to the longer legs. In this way it is possible to assemble components to provide articles of furniture of different desired configurations.

3,822,080

**BEARINGS FOR BODIES OF REVOLUTION**

Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Aug. 17, 1972, Ser. No. 281,484

Claims priority, application France, Sept. 3, 1971, 71.31952

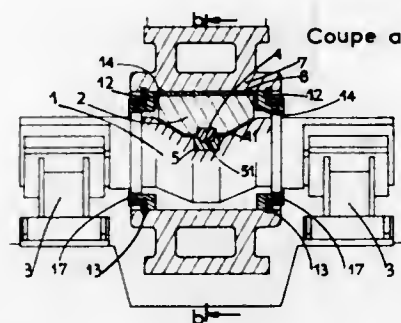
Int. Cl. F16c 11/00

U.S. Cl. 308-2 R

3 Claims

A body of revolution mounted for rotation about a non-rotary bearing which comprises a segment received by a bore of

the body and articulated about a single pivot axis, normal to the bore axis, on a support shaft, the segment in use of the



body being positioned in the line of and on that side of the shaft directed toward a radial load to be applied to the body.

3,822,081

**AXIAL ROLL ADJUSTMENT MEANS**

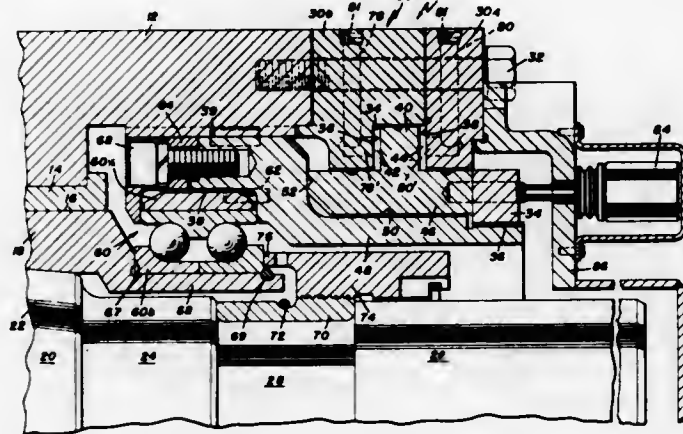
Charles S. Mercer, Worcester, and Lewis C. Jennings, Boylston, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Mar. 8, 1973, Ser. No. 339,120

Int. Cl. F16c 19/00

U.S. Cl. 308-233

6 Claims



An apparatus for axially adjusting a work roll in a rolling mill. The apparatus includes an annular piston-cylinder assembly surrounding one end of the work roll. The cylinder is fixed relative to the roll chock and the piston, which is hydraulically actuated for reciprocal adjustment in opposite directions parallel to the rotational axis of the work roll, is connected through a thrust bearing assembly to the roll sleeve, the latter being fixed relative to the work roll and being both rotationally journaled in and movable axially relative to the roll chock.

3,822,082

**MAGNETIC CARD FILING EQUIPMENT**

Nicolaus Per Mathiesen, 1512 Primm Ave., San Jose, Calif. 95122

Filed Aug. 14, 1972, Ser. No. 280,168

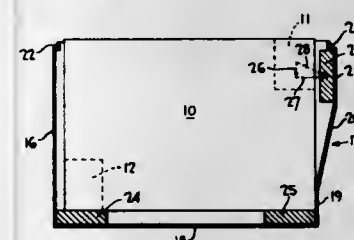
Int. Cl. A47b 63/00; G09d 1/00

U.S. Cl. 312-183

5 Claims

A magnet card filing system of the type in which the cards, having inserts of magnetic material, are spread apart by magnetic repulsion induced in the inserts by permanent magnets associated with the tray containing the cards. In the present case each card has an insert adjacent an upper corner and a second insert adjacent the diagonally opposite lower corner,

the tray having elongated permanent magnets adjacent said inserts for inducing the usual repulsion effect and additionally



for holding the bottom edges of the cards in close contact with supporting rails at the bottom of the tray, whereby inadvertent tilting or lifting of the cards is prevented.

3,822,083

**TYPEWRITER CASE**

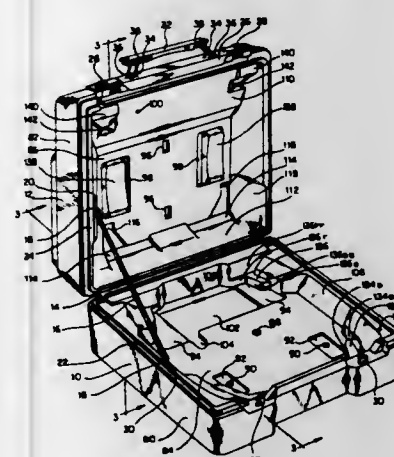
Aaron C. Zeamer, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,849

Int. Cl. A47b 21/00, 89/00

U.S. Cl. 312-208

7 Claims



A double-walled thermoplastic case for a typewriter is provided that prevents damage to the typewriter during transportation and storage. The inner walls of the cover and base are formed to resiliently clamp the typewriter between them. The resilient faces of steps projecting from the inner wall of the base position the typewriter and restrain it against lateral movement and the resilient faces of the inner wall above the steps restrain the typewriter against lateral movement if the steps should be overridden. Resilient feet depending from the inner wall of the cover restrain the keyboard of the typewriter against upward movement and depressions in the inner wall that are nearly in contact with the outer wall resiliently limit the upward movement permitted by the depending feet. In a second embodiment of the invention that is used with a typewriter having a rugged keyboard, the depressions in the inner wall are in contact with the outer wall.

3,822,084

**DOUBLE, REVERSED MOUNTING BOSS FOR PLASTIC TUB**

Bernard J. Brezovsky, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,556

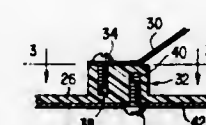
Int. Cl. A47b 91/00

U.S. Cl. 312-253

3 Claims

The generally imperforate character of a plastic tub wall is retained while yet achieving a rigid, internal tub component mounting anchored in an external metal frame by the separate securement of the internal component and metal frame to op-

posite sides of a common mounting boss integral with the tub wall. The mounting boss includes reversely directed, blind fastener receiving bores terminating within the body of the



mounting boss. Threaded fasteners respectively engaging the internal tub component and external metal frame join the same in a rigid mounting via the commonly, interconnected mounting boss.

3,822,085

**DISHWASHING MACHINE RACK LEVEL ADJUSTMENT SYSTEM**

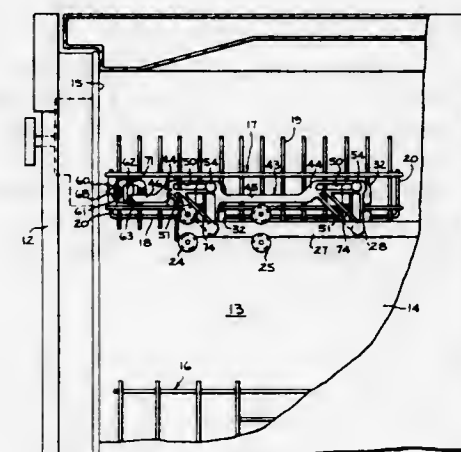
David L. Clark, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 27, 1971, Ser. No. 212,343

Int. Cl. A47b 88/00, 95/00

U.S. Cl. 312-351

5 Claims



A rack is supported within the wash chamber of a dishwashing machine by a connecting means permitting selective manual adjustment of the vertical level of the rack side. The connecting means includes a slidable surface portion inclined to serve as a ramp and bear on a support member whereby movement of the ramp against the support member causes vertical movement of the rack side. Manual control means on the rack is linked to the connecting means such that manipulation of the control means is translated to the slidable surface portion whereby the vertical positioning of the rack side is selectively adjusted.

3,822,086

**APPARATUS FOR RECHARGING A TR TUBE**

Sungik F. Park, Sudbury, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,828

Int. Cl. H01j 9/50

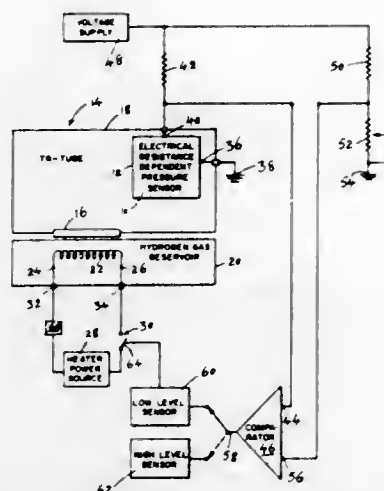
U.S. Cl. 316-28

7 Claims

A hydrogen gas reservoir outside main discharging chamber of a transmitter-receiver tube is allowed to leak hydrogen at a controlled rate through a palladium window in the envelope of the TR tube. An automatic pressure controlling unit is provided which comprises an electrical bridge circuit with a pres-



sure sensing element in one arm of the bridge. An imbalance in the bridge circuit turns on a heater which raises the tem-



perature of the palladium window which in turn lets hydrogen from the reservoir pass through it to recharge the TR tube.

3,822,087

# SYSTEM OF SELECTION AND DISPLAY OF GRAPHICAL DATA BY HOLOGRAPHY

Christian S. Bolusset, Kerlerranouet, Perros-Guirec; Michel E. Treheux, Servel, Lannion; Jean C. LeGall, rue des Bruyeres, La Clarte-Ploumanach, Perros-Guirec, and Francois LeBer, allee des Bruyeres, Lannion, all of France

Continuation of Ser. No. 207,151, Dec. 13, 1971, abandoned.

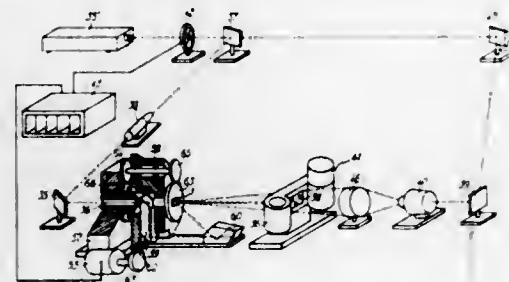
This application Sept. 4, 1973, Ser. No. 394,302

Claims priority, application France, Dec. 11, 1970, 70.44831; Dec. 1, 1971, 71.43116

Int. Cl. G02b 27/00

U.S. Cl. 350-3.5

4 Claims



System for recording graphical data in the form of holograms on a plurality of hologram carriers, each hologram carrier storing a group of holograms, and for reading selected ones of these graphical data. The recording means includes an object carrier for holding transparent objects, a coherent light source giving rise to an object beam passing through an object and a recording reference beam describing a cone around the axis of the object beam and able to take discrete azimuthal angular positions on the cone. The reading means includes a coherent light source giving rise to a reading reference beam describing a cone around the normal to the hologram carrier and able to take discrete azimuthal angular positions on the cone. The hologram carriers are arranged in a matricial array and a given hologram has three addresses: the coordinates of the hologram carrier which contains it and an angle which is the position of the reading reference beam on the cone which it describes.

## 3,822,088 MAGNIFYING GLASS ATTACHMENT FOR A SEWING MACHINE

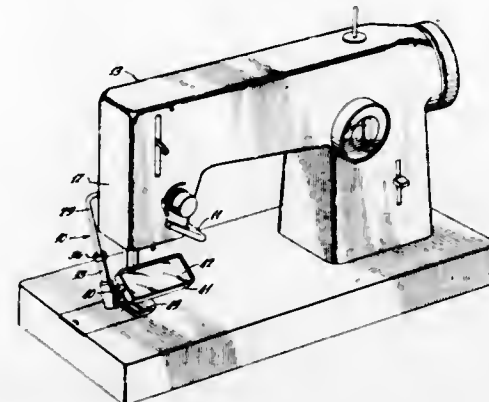
Ann H. Steiner, 7428 Arizona Ave., Los Angeles, Calif. 90045

Filed Mar. 22, 1973, Ser. No. 343,639

Int. Cl. G02b 7/02

U.S. Cl. 350-243

13 Claims



A magnifying glass for a sewing machine including a first clamp for engaging the machine, a second clamp carried by the first clamp and adjustably engaging an L-shaped link which at its lower end telescopically engages a member which, through a ball-and-socket joint, carries a magnifying glass positionable adjacent the needle and pressure foot of the sewing machine.

3,822,089

## CONTACT LENS BLANK OR REPLICA MADE FROM ANHYDROUS, SPARINGLY CROSS-LINKED HYDROPHILIC COPOLYMERS

Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie Ved., Praha, Czechoslovakia

Division of Ser. No. 762,618, Sept. 25, 1968, Pat. No. 3,699,089, which is a continuation-in-part of Ser. No. 318,627, Oct. 24, 1963, abandoned, and a continuation-in-part of Ser. No. 393,506, Sept. 1, 1964, abandoned, and a continuation-in-part of Ser. No. 423,034, Jan. 4, 1965, Pat. No. 3,408,429, and a continuation-in-part of Ser. No. 424,065, Jan. 7, 1965, Pat. No. 3,361,858, and a continuation-in-part of Ser. No. 468,908, July 1, 1965, Pat. No. 3,496,254, and a continuation-in-part of Ser. No. 538,978, March 31, 1966, abandoned, and a continuation-in-part of Ser. No. 551,873, May 23, 1966, Pat. No. 3,499,682, and a continuation-in-part of Ser. No. 616,208, Feb. 15, 1967, Pat. No. 3,542,907. This application Oct. 7, 1971, Ser. No. 187,531

Int. Cl. G02c 7/04

U.S. Cl. 351-160

16 Claims

A substantially anhydrous sparingly cross-linked hydrophilic polymer capable of being swollen when in contact with water is prepared. The polymer is useful in preparing a contact lens.

3,822,090

## ULTRAMICROFICHE VIEWER WITH PANTOGRAPH CONNECTION BETWEEN INFORMATION LOCATER AND FICHE CARRYING X-Y TABLE

Stephen Mak, Culver City, and Homer G. Dunn, Marina Del Rey, both of Calif., assignors to UMF Systems Incorporated, Los Angeles, Calif.

Filed June 19, 1972, Ser. No. 264,361

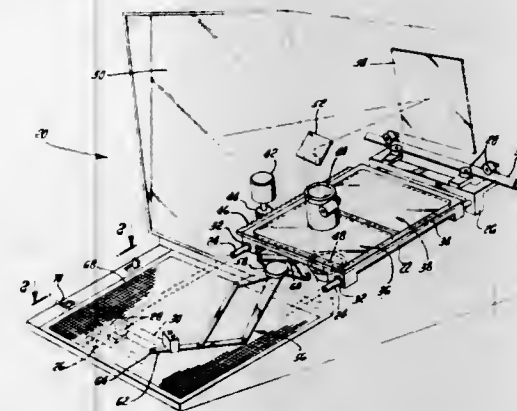
Int. Cl. G03b 21/10, 23/08

U.S. Cl. 353-27

8 Claims

A dual focus microfiche viewing system wherein an x-y table carries a pair of superimposed transparent fiches. A map spaced from the table bears indicia corresponding to the

microimages on at least one of the fiches and is large as compared to the fiches. A dual focus lens is located adjacent the superimposed fiches and is capable of focusing on either of a pair of superimposed microimages on the fiches. A locator is movable over the map to produce corresponding movement of the pair of fiches relative to the lens, such corresponding movement being produced by a pantograph having an input end connected to the locator and having an output end connected to the table. The input end of the pantograph is movable through relatively large distances proportional to the size of the map while the output end is movable through relatively small distances proportional to the size of the fiches. By positioning the locator over a desired indicium on the map, a corresponding pair of superimposed microimages is positioned in the field of the lens.



In some embodiments, the x-y table carries two pairs of superimposed transparent fiches either of which may be moved relative to the table into the field of view of the lens. The map is capable of corresponding movement to bring a corresponding set of indicia thereon into view through a windowed plate. In one embodiment, the fiches of each pair bear related information and the map is movable between two positions respectively corresponding to the pairs of fiches. In another embodiment, the fiches bear unrelated information and the map is orbitally movable between four positions spaced 90° apart and respectively corresponding to the four fiches.

In one embodiment of the invention, one microimage of each superimposed pair bears a transportation schedule from point A to point B and the other microimage of such pair bears a transportation schedule from point B to point A.

3,822,091

## AUTOMATIC FOCUSING APPARATUS

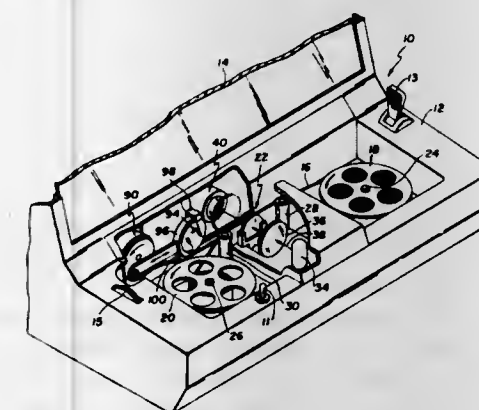
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,113

Int. Cl. G03b 3/02, 3/10

U.S. Cl. 353-69

5 Claims



In image projection apparatus having an optical axis, automatic focusing apparatus maintaining the focus of an image projected along said axis from an image bearing medium ir-

respective of changes in location of the image layer of such medium. The apparatus includes an image bearing medium support including a pair of transparent members which hold the image bearing medium substantially flat. The opposing surfaces of the transparent members are provided with transparent conductive coatings adapted to contact the image bearing medium held between the members. Light from an illuminating source is transmitted through the image bearing medium and heats up the image layer of a supported medium. The conductive coatings in contact with the image layer will also heat up effecting a change in the electrical resistance thereof. The conductive coatings are part of an electrical circuit which develops a signal representative of the location of the heated image layer. This signal may be used in a variety of ways to adjust the focal distance to maintain the projected image in focus. In a preferred embodiment the signal is applied to a rotary solenoid to alternately position an optical compensating member into and out of the optical axis of the image projector.

3,822,092

## PHOTOGRAPHIC TRANSPARENCY SUPPORT WITH ROTATABLE SOUND TRACK CARRIER

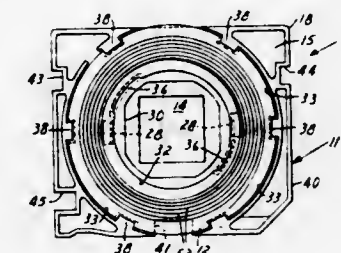
Leland W. Annett, Crystal, and George J. Wallin, St. Paul, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1972, Ser. No. 239,461

Int. Cl. G03b 21/00, 23/08

U.S. Cl. 353-120

4 Claims



A frame for a transparency and a rotatable sound track. The front face of the frame is formed with an annular cavity for rotatably supporting an annular sheet of material having a magnetizable coating and an embossed area forming a spiral sound track on the front face. The annular sheet is supported on a circular wall surrounding an opening through the frame, and the rear face of the frame is provided with a support for positioning a transparency over the opening.

3,822,093

## TRANSFER REGULATING APPARATUS

Charles A. Whitel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 9, 1973, Ser. No. 404,444

Int. Cl. G03g 15/00

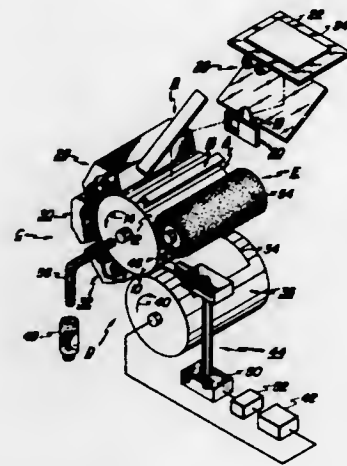
U.S. Cl. 355-3 R

16 Claims

An apparatus in which the transfer of charged particles from a support surface to a sheet of support material is regulated. The apparatus electrically attracts the charged particles from the support surface to the sheet of support material. After the charged particles have been transferred to the sheet of support material, a sample density of charged particles cor-



responding to the density of charged particles remaining on the support surface is detected. In response to the detected



sample density of charged particles, the electrical attraction between the support surface and sheet of support material is suitably adjusted.

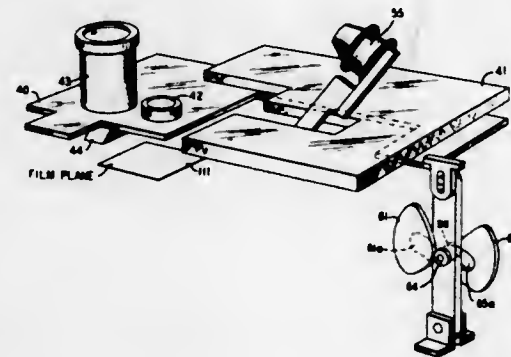
3,822,094

### MICROFILM HANDLING SYSTEM WITH FILM-HELD CARD

Edward William Festa, Holmdel, and John William Wesner, Jr., Freehold Township, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed July 23, 1973, Ser. No. 381,712  
Int. Cl. G03b 27/52

U.S. Cl. 355-27

11 Claims



Writing, exposing, processing, and projecting of microimages in microfilm aperture cards is advantageously achieved without physical movement of the card itself. The system consists of a drawer assembly, a film plane locator, a shuttle assembly, a drive mechanism, and associated optics. A shuttle is constrained to move along a straight line and mount the projection lens and a photodetector which are vertically alignable with respect to the microfilm which is held in the film plane locator. The shuttle drive mechanism consists of a pair of oppositely rotating cams with associated followers which align the detector or projection lens or a processor access slot with the microfilm. The processor is a heating element mounted on a pivot arm and a backup pad.

3,822,095

### SYSTEM FOR DIFFERENTIATING PARTICLES

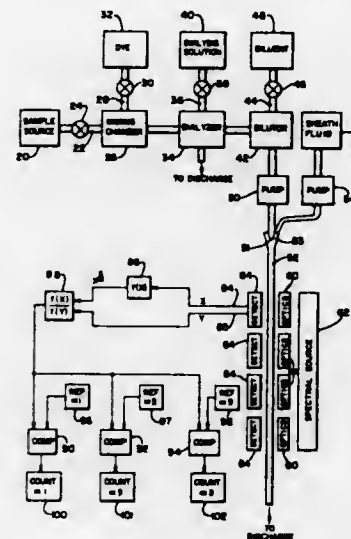
Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering Inc., Cambridge, Mass.  
Filed Aug. 14, 1972, Ser. No. 280,271  
Int. Cl. G01n 21/26, 21/52

U.S. Cl. 356-39

26 Claims

A system for differentiating among white blood cells by flowing the latter in a supporting liquid through an elongated

sheathed-fluid flowcell in which the supporting liquid and sheath fluid contain additives to adjust the indices of refraction, the viscosity and the osmotic pressure. Radiation is focussed onto each cell in sequence to provide measurements of two different shape-dependent functions of the cellular



nucleus, such as the surface area, volume, mean thickness or mean, cross-sectional area. Means are provided for establishing a shape factor based upon a ratio of the two measurements normalized to eliminate size dependent variables. The derivation of the shape factor from an idealized standard factor is then indicative of the classification of the cell.

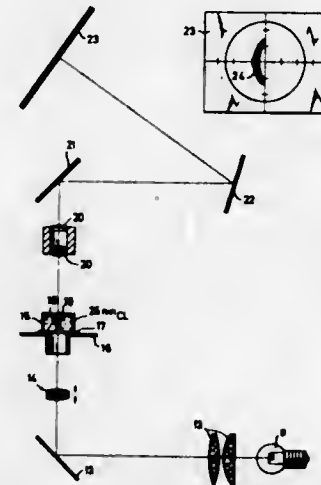
3,822,096

### METHOD AND APPARATUS FOR THE ENLARGED REPRESENTATION OF THE CROSS-SECTION OF NON-DESTRUCTED CONTACT LENSES OR THE LIKE

Karl-Heinz Wilms, Dachau, and Gregor Henke, Maisach, both of Germany, assignors to Optische Werke G. Rodenstock, Munchen, Germany  
Filed Aug. 1, 1972, Ser. No. 277,125  
Int. Cl. G01b 9/08

U.S. Cl. 356-164

21 Claims



A method and apparatus for the enlarged reproduction of the cross-section of non-destructed contact lenses or the like with the aid of a projection apparatus that includes a light source, a condenser, a lens carrier, an objective and a projection surface as well as an immersion vessel arranged between the condenser and the objective, into which the contact lens to be reproduced is inserted; the immersion vessel is filled with a liquid having an index of refraction approximately that of the contact lens.

3,822,097

### OPTICAL SYSTEM

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.  
Filed Jan. 10, 1973, Ser. No. 322,483  
Int. Cl. G01n 21/22

U.S. Cl. 356-206

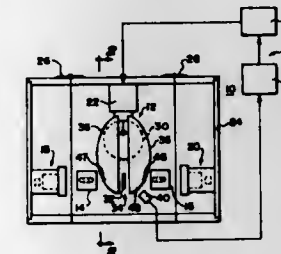
35 Claims U.S. Cl. 402-47

3,822,099

### CARPET SAMPLE BOOK BINDER

De Lorus M. Angle, 12524 S.W. Boones Ferry Rd., Lake Oswego, Oreg. 97034  
Filed May 2, 1973, Ser. No. 356,623  
Int. Cl. B42f 3/04, 13/32

1 Claim



To maintain the intensity of a beam of light applied to an absorbance cell constant in an optical system for measuring the light absorbance of a fluid within the absorbance cell, a light radiating member receives light from a primary light source and re-radiates the light with proportional intensities to one or more absorbance cells and to a photoresistive element of a light-intensity monitor, with the photoresistive element generating a signal representing changes in the intensity of light. This signal is applied through a feedback circuit to a light intensity control circuit and changes the intensity of light emitted by the primary light source in a direction that compensates for any changes in the intensity of the light emitted from the light radiating member.

3,822,098

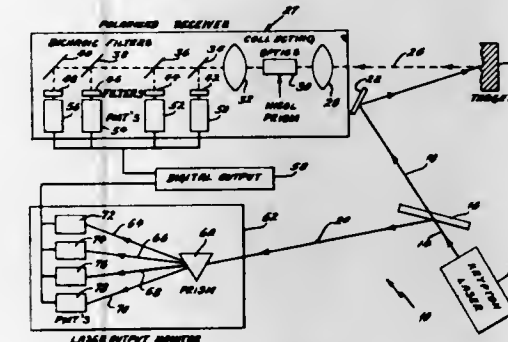
### MULTISPECTRAL SENSOR MEANS MEASURING DEPOLARIZED RADIATION

Charles L. Rudder, Granite City; John C. Leader, Manchester; David P. Owsley, and William A. J. Dalton, both of Florissant, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

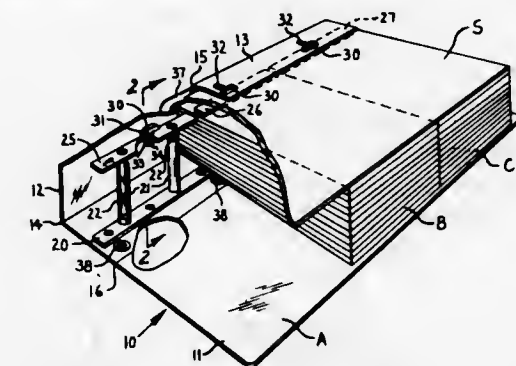
Filed May 2, 1973, Ser. No. 356,511  
Int. Cl. G01n 21/48; G01j 3/42

U.S. Cl. 356-209

22 Claims



A multispectral sensor including associated detection apparatus which are able to detect and identify radiations scattered from an object or substance, and particularly depolarized as distinguished from polarized radiations, which depolarized radiations are due to volume scattering characteristics, not surface scattering characteristics, and which enable the object or substance to be uniquely identified as to its material composition, color, density and other similar inherent characteristics as distinguished from surface characteristics, physical location and physical orientation. The present multispectral sensor can use laser means as well as other means for generating illumination or radiation.



A stiff one-piece cover is folded to provide a bottom or back portion, an upstanding edge portion and a narrow top flap which leaves the samples exposed to view at all times. A button bar has posts which slidably telescope into tubular posts on the back portion of the cover. The samples are apertured to receive the posts. The button bar is equipped with turn buttons having transversely elongated heads which are received through elongated openings in the top flap and then rotated 90° to hold all the parts in assembled relation. When the turn buttons are released from the top flap, the button bar is freed for removal from the hollow posts. A sample may be conveniently removed or replaced at any depth in the pile by grasping a top portion of the pile and lifting the top portion and button bar off the posts which still retain the lower portion of the pile.

In one embodiment separate button bars are provided for a plurality of piles of samples so that a sample may be removed from any pile without disturbing the other piles. In this embodiment one large sample overlies the button bars and the piles of small samples and is confined individually between the button bar and the top flap of the cover member.

3,822,100

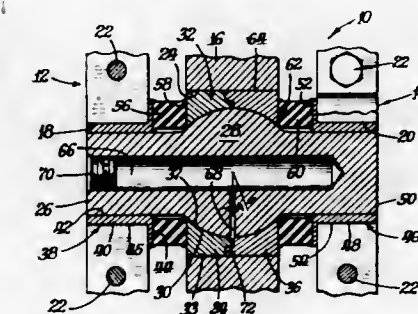
### JOINT FOR A SPHERICAL BEARING

Harold L. Reinsma, Dunlap, and Eldon D. Oestmann, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 16, 1973, Ser. No. 333,274  
Int. Cl. F16c 11/06

U.S. Cl. 403-134

10 Claims



A joint includes a shaft on which a ball is formed, and a socket body about the ball. End retainers are fixed to the shaft on either side of the socket body, and annular resilient members are positioned on either side of the socket body and in contact with the end retainers and socket body to form a sealed joint. The resilient members are held in a compressed



state, and limited rotation of the socket body about any axis perpendicular to the shaft, and about the longitudinal axis of the shaft, is permitted, the deflection of such resilient members allowing such rotation.

3,822,101

# RELEASABLE CORNER CONNECTION DEVICE FOR HOLLOW SECTIONS

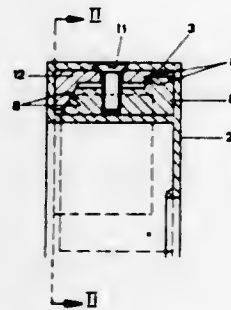
Jean-Pierre Schneider, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland  
Filed Mar. 22, 1972, Ser. No. 242,875

Claims priority, application Switzerland, Mar. 23, 1971, 4197/71

Int. Cl. F16b 1/00

U.S. Cl. 403-295

18 Claims



The disclosure is concerned with a corner jointing device for mitred hollow sections which have to be assembled into window or door frames. The device comprises an angle piece and at least one tightening piece which both have corresponding wedge surfaces running parallel to the longitudinal axis of the frame members and at an acute angle to the transverse axis of the respective frame members, and at least one screw inserted in the direction of a transverse axis of the respective frame member. The tightening of the screw, as a consequence of the wedge surfaces, presses the angle piece and the tightening piece against at least three walls of the frame members cavity.

3,822,102

# PITOT PUMP WITH THRUST BALANCE

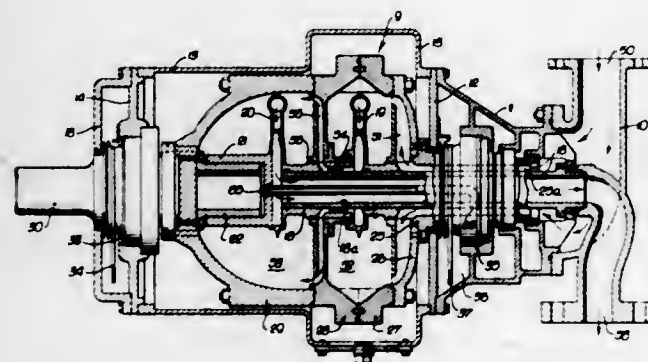
John W. Erickson, Huntington Beach, and Carter P. Williams, La Crescenta, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Mar. 5, 1973, Ser. No. 337,851

Int. Cl. F04d 1/14; F01d 3/00

U.S. Cl. 415-89

3 Claims



A pitot pump, i.e., a centrifugal pump comprising a rotating casing, means for delivering the fluid to be pumped to the interior of the casing, a pitot tube fixed within and extending radially of the rotating casing, and a discharge duct for the

pitot tube coaxial with the rotating casing, with means built into the pump for balancing the fluid forces normally developed in the pump tending to move the casing axially.

3,822,103

# FLEXIBLE FAN

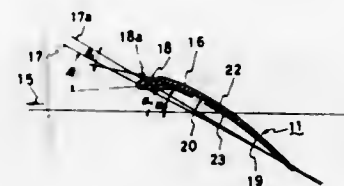
Takanobu Hori; Masaharu Hayashi, both of Toyota, and Motoharu Yoshida, Ichimiya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan  
Filed Dec. 26, 1972, Ser. No. 318,421

Claims priority, application Japan, Jan. 8, 1972, 47-4800

Int. Cl. F04d 29/38

U.S. Cl. 416-132

8 Claims



The invention relates to a flexible fan comprising, a boss portion and a plurality of fan blades radially extended from the boss portion and integrally formed therewith, the boss portion and the fan blades being of one piece construction and made of synthetic resin material, the flexible fan being characterized in that,  $\alpha$  shows an angle of inclination of a wing chord against the rotational direction of the blade and  $\beta$  shows an angle against the wing chord of a leading edge portion of the fan blades, and  $\alpha \leq \beta$  is represented.

3,822,104

# PLUG AND SEAL DESIGN FOR ADJUSTABLE BLADE PROPELLER TURBINE

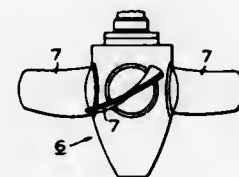
Emanuel M. Poet, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 7, 1972, Ser. No. 304,497

Int. Cl. F01d 7/00

U.S. Cl. 416-168

2 Claims



In many propeller type turbines the runner blades are supported in a hollow hub and are pivoted about their axes relative to the hub. The operating mechanism is in many instances contained within the hub. Such operating mechanism frequently requires a pivot pin which is supported in a bore in the hub wall. For ease of manufacture and assembly this bore usually extends completely through the wall of the hub, and a plug is required to seal the end of the bore. A simplified design of such a plug is shown herein wherein an O-ring is utilized to seal the bore and a set screw is threaded into a bore partially in the plug and partially in the hub wall and is tack-welded in place.

3,822,105

# HELICOPTER BLADE

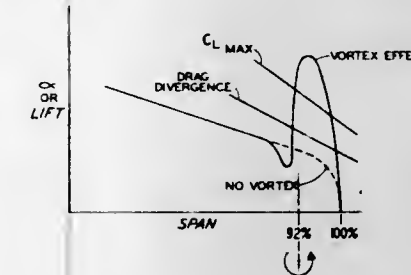
W. Donald Jepson, Huntington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 182,618, Sept. 22, 1971, abandoned. This application June 4, 1973, Ser. No. 366,825

Int. Cl. B64c 27/46

U.S. Cl. 416-223

138 Claims



A helicopter blade is shaped to have a tip of selected twist, camber, planform, thickness distribution, sweep and airfoil so as to increase rotor operating efficiency, reduce rotor noise, and to reduce or eliminate rotor instability.

3,822,106

APPARATUS FOR MOLDING TUBES OF FIBEROUS CEMENT AND ORIENTING THE FIBERS THEREIN  
Sebastian Bonet Siera, Valencia, Spain, assignor to Phillips Petroleum Company

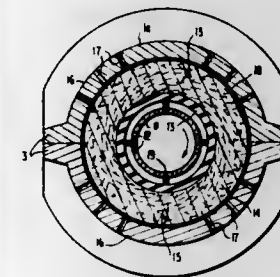
Filed Nov. 8, 1971, Ser. No. 196,573

Claims priority, application Spain, Nov. 9, 1970, 385343; Nov. 27, 1970, 385941

Int. Cl. B28b 7/32

U.S. Cl. 425-84

3 Claims



An apparatus for molding tubular members of fibrous cement, comprises a two part mold including a foraminous casing and an expansible core structure; means rotatably supporting at least one of said mold parts, and means for expanding and contracting said core to compress and express moisture from the cement and then release the compressed cement, said core structure including a flexible sleeve surrounding a foraminous core having longitudinal external ribs.

3,822,107

# IMPROVEMENTS IN OR RELATING TO AN INJECTION MOLD

Alfred Wogerer, Schwertberg, Austria, assignor to Ludwig Engel K.G. Maschinenfabrik, Schwertberg, Austria

Division of Ser. No. 91,329, Nov. 20, 1970, abandoned. This application Dec. 20, 1972, Ser. No. 316,697

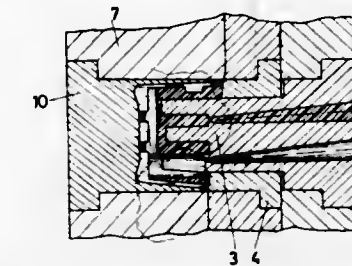
Int. Cl. B29c 9/00

U.S. Cl. 425-130

5 Claims

An injection molding apparatus includes a first and a second nozzle connected to a two part mold having a first and second chamber. A molding compound may be injected into one chamber by the first nozzle. The molded piece is maintained constantly in connection with one of the parts. The second

chamber is closed during the injection from the first nozzle by movable means against access of the molding compound. The mold part after the first injection has been finished through



the first nozzle is exchanged and the second chamber is filled by the second nozzle after changing the position of the movable means.

3,822,108

# HEATING SYSTEM FOR EXTRUSION OF THERMOPLASTICS

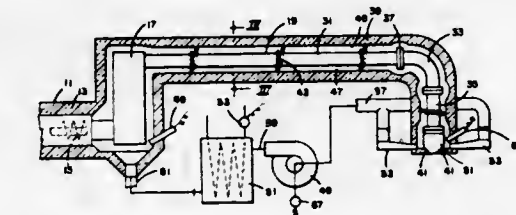
John A. Mihalik, Swarthmore, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 20, 1972, Ser. No. 236,106

Int. Cl. B29f 3/08

U.S. Cl. 425-143

4 Claims



Extrusion apparatus in which a flow line for transporting molten thermoplastic polymeric material from a supply source to a shaping die, and including portions of the die itself, are enveloped by a circulating heated gas to minimize the introduction of temperature differentials into such molten material during its transit and thereby provide for extruded products having improved properties.

3,822,109

# PHOTOFLASH LAMP

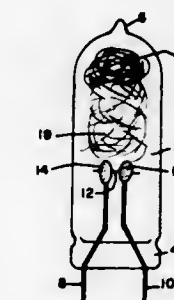
John W. Shaffer, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 21, 1972, Ser. No. 308,313

Int. Cl. F21k 5/02

U.S. Cl. 431-93

10 Claims



A photoflash lamp in which the combustible metal within the oxygen-filled lamp envelope comprises a quantity of shredded foil, such as zirconium or hafnium, for providing a source of actinic light, and a much smaller quantity of an oxygen-scavenging metal, such as coarse strands of aluminum or

magnesium, for quickly and effectively reducing the internal pressure in the lamp to below one atmosphere following ac-tinic combustion. The rapid reduction in pressure after usable light emission significantly improves the containment capability of the lamp. The proportionate quantity and nature of the oxygen-scavenging metal are selected to provide the desired pressure reducing function with essentially no effect on photometric output.

3,822,110

## ADJUSTABLE BURNER

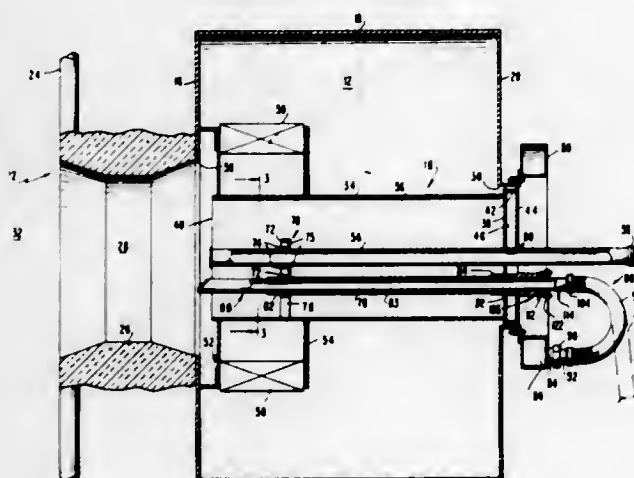
Candelario Paredes, Dallas, Tex., and Norman K. Trozzi, West Caldwell, N.J., assignors to Forney Engineering Company, Carrollton, Tex.

Filed Feb. 22, 1973, Ser. No. 334,782

Int. Cl. F23c 5/00

U.S. Cl. 431-174

1 Claim



A burner unit is provided with a housing in which a plurality of nozzles are removably coupled to a fuel supply. The burner nozzles are mounted in the housing for axial and rotatable movement.

3,822,111

## APPARATUS FOR PULLING UP SEMICONDUCTOR CRYSTALS

Toshihiko Suzuki; Kinji Hoshi, and Yasuo Tamate, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 229,469, Feb. 25, 1972, abandoned.

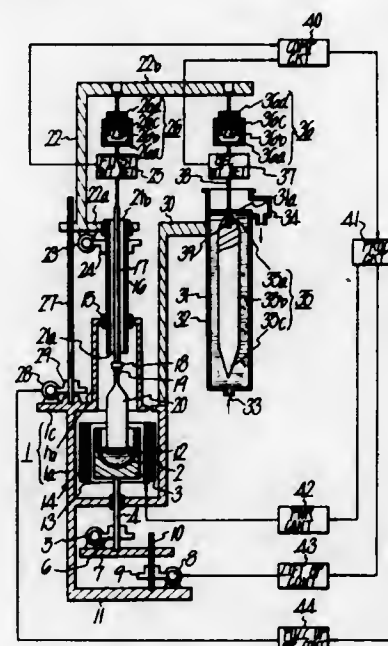
This application Jan. 29, 1973, Ser. No. 327,759

Claims priority, application Japan, Feb. 25, 1971, 46-9517; Nov. 8, 1971, 46-88838

Int. Cl. B01d 9/00; F27b 14/08

U.S. Cl. 23-273 SP

40 Claims



Apparatus for controlling the diameter of a crystal pulled from a semiconductor melt in a crucible including a float which has a shape substantially similar to the crystal and which is pulled from a liquid filled tub in synchronism with the pulling up of the crystal, and an electronic circuit for comparing the weight of the float with the weight of the crystal during the pull up operation. The rate at which the crystal is pulled up and the temperature of the crucible are controlled as a function of the relative weights of the float and the crystal as they are being pulled up.

## CHEMICAL

3,822,112

## DYEING LIVE HUMAN HAIR WITH AN AQUEOUS SOLUTION OF A DIRECT DYE, 2-PHENOXY-ETHANOL AND ETHYL GLYCOL ACETATE

Charles Zviak, Franconville, and Galiana Ghilardi, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Filed June 26, 1969, Ser. No. 836,986

Int. Cl. A61k 7/12

U.S. Cl. 8-10.1

1 Claim

Live human hair is dyed by applying thereto a hair dye composition comprising an aqueous solution of a direct dye, 2-phenoxyethanol and ethyl glycol acetate.

3,822,113

## ACID DYE AND ETHYLENE OXIDE CONDENSATE OF AN N-LONG CHAIN ALKYL DIPROPYLENE TRIAMINE

John Francis Edmund Keenan, Cheadle Hulme, Thomas Ivor Jones, Poynton, and Norman Richardson, Middleton, England, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application July 2, 1971, Ser. No. 159,460, now abandoned. Divided and this application May 18, 1973, Ser. No. 361,840

Claims priority, application Great Britain, July 9, 1970, 33,418/70

Int. Cl. D06p 5/04

U.S. Cl. 8-169

1 Claim

Chemical compositions are provided which are useful as surface active agents, and especially as auxiliaries more particularly as levelling agents in the dyeing of textiles. These compositions are produced by a process which comprises first cyanoethylating an alkyl amine to give an NN'-di(cyanoethyl) derivative, second hydrogenating this derivative to form an amine and third reacting this amine with ethylene oxide.

3,822,114

## BLEACHING PROCESS AND COMPOSITIONS THEREFOR

Ronald E. Montgomery, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 169,491, Aug. 5, 1971. This application Sept. 28, 1972, Ser. No. 293,262

Claims priority, application Great Britain, Aug. 1, 1972, 35,878/72

Int. Cl. D06l 3/02

U.S. Cl. 8-111

34 Claims

A process for activation of peroxygen bleaching agents which comprises conjointly dissolving in aqueous solution certain peroxygen bleaching agents, certain aldehyde or ketone bleach activators, and buffering compounds. Concentrated dry bleach compositions containing a peroxygen compound; an aldehyde- or ketone-producing activator and a buffering agent as essential ingredients are also disclosed.

3,822,115

## METHOD AND REAGENT FOR URIC ACID DETERMINATION

Leo G. Morin and Jerome R. Prox, Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,882

Int. Cl. G01n 33/16

U.S. Cl. 23-230 B

5 Claims

A method and reagent for the determination of uric acid in biological fluids by the reduction of ferric phenanthroline without the requirement for protein precipitation.

3,822,116

## REAGENT AND METHOD FOR CALCIUM DETERMINATION

Leo G. Morin, Miami, Fla., assignor to Medico Electronic, Inc., Indianapolis, Ind.

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,884

Int. Cl. G01n 33/16

U.S. Cl. 23-230 B

10 Claims

A method and reagent for the determination of calcium in biological fluids by the complex formation with o-cresolphthalein complexon in an alkaline amphiprotic buffer is disclosed.

3,822,117

## METHOD OF OBTAINING ALCOHOL SPECIMENS AND APPARATUS THEREFOR

Arne Knut Bergh, Ottawa, Ontario, and Peter George Rodgers, Regina, Saskatchewan, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

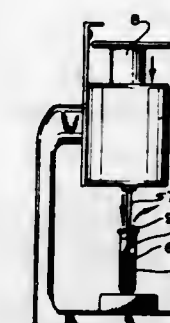
Filed July 31, 1972, Ser. No. 276,844

Claims priority, application Canada, Sept. 29, 1971, 123,992

Int. Cl. G01n 1/22, 33/16

U.S. Cl. 23-232 R

5 Claims



A known quantity of deep lung air containing alcohol is delivered from a heated chamber through a narrow introductory tube into a sealed vial. The chamber is heated to prevent condensation of the alcohol. The sealed vial contains a known volume of a solvent for alcohol and a known concentration of internal standard. After a breath







3,822,127

**PROCESS OF PRODUCING METAL IMAGES BY AMPLIFICATION OF DIFFUSION TRANSFER IMAGES**

Masayoshi Tsuboi, Hatohiko Kamata, and Yoshimi Suganuma, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,542

Claims priority, application Japan, Dec. 29, 1970, 46/121,451

Int. Cl. G03c 5/54

U.S. Cl. 96—29 R

13 Claims

A process for producing metal images comprising image-exposing, through an original image, a photosensitive element which comprises a photosensitive silver halide photographic emulsion laid on a hydrophilic surface of a plastic which has a surface containing a diffusion transfer nucleus material forming reversal silver images of the original on the surface by a diffusion transfer developing process and intensifying said silver images by electrolytically plating a metal thereon.

3,822,128

**METAL-PLATED IMAGES**

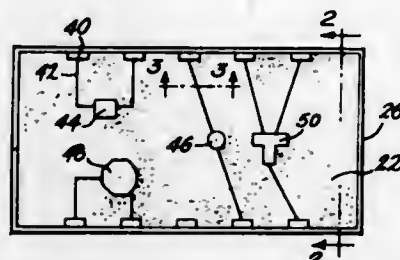
Eugene Walner, Shaker Heights, and Harold J. Quintance, Fairview Park, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed Oct. 22, 1971, Ser. No. 191,635

Int. Cl. G03c 5/00, 5/24, 5/32

U.S. Cl. 96—38.4

8 Claims



A novel product of radically increased photographic speed, photographic density and contrast is comprised in part of a silver image produced by photographic and/or other radiation techniques, or a silver image formed by radiation and having silver added thereto by physical development with reagents containing silver, or a silver image produced by adding silver to a select area through photoresist techniques, and/or a silver image produced by stencil and printing techniques; and plating thereon in only the silver image areas, metals taken from the group comprising nickel, cobalt, iron, copper, chromium, gold, silver, platinum, and palladium and mixtures thereof. Silver images are the preferred base and nickel is the preferred plating material. However, gold, palladium and platinum may be used as the base for the selective plating of nickel or the other metals noted above.

In a useful variation of the invention, one-sided and/or two-sided plated through conductive circuit boards useful for printed circuits may be produced by the techniques of the invention without the need for use of a photoresist.

3,822,129

**PHOTOGRAPHIC MATERIALS AND PROCESSES**  
Joseph S. Dunn and Rowland G. Mowrey, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 189,330, Oct. 14, 1971. This application Aug. 31, 1972, Ser. No. 285,399

Int. Cl. G03c 1/40

U.S. Cl. 96—60 R

26 Claims

Photographic materials are provided which comprise a support having coated thereon an image dye-providing

layer unit containing a light-sensitive photographic silver halide emulsion layer comprising up to about 320 mg. silver per square meter, a photographic color coupler coated at a concentration of at least two times the weight of the silver and a hydrophilic colloid binder for the silver halide and coupler coated at a coverage of from about 215 to 970 mg. per square meter, the weight ratio of silver to hydrophilic colloid being from 1:2 to 1:20 and the weight ratio of coupler to hydrophilic colloid binder being from 1:½ to 1:2. The photographic elements of the invention are preferably processed in a developer solution comprising a photographic color-developing agent and an oxidizing agent such as a cobalt complex which undergoes redox reaction with the color-developing agent in the presence of metallic silver.

3,822,130

**METHOD FOR DEVELOPING SILVER HALIDE PHOTOSENSITIVE MATERIAL**

Atsushi Arai, Kimi Ohkubo, Tetsuya Tajima, Mitsugu Tanaka, and Yoshinori Tsuchiya, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1971, Ser. No. 192,953

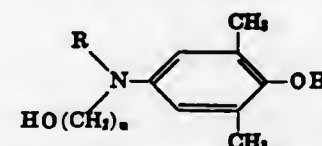
Claims priority, application Japan, Oct. 27, 1970, 45/94,869

Int. Cl. C03c 5/30, 1/76, 1/06

U.S. Cl. 96—66.3

19 Claims

A photographic developing process which comprises: developing an exposed light sensitive silver halide emulsion layer of a photographic material with an alkaline solution in the presence of hydroquinone and a derivative of p-aminophenol having the formula:



wherein R is an alkyl group of from 1 to 4 carbon atoms, and n is an integer of from 2 to 5.

3,822,131

**RADIOGRAPHIC ELEMENTS AND PRODUCTS**

Henry M. Cleare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Oct. 21, 1969, Ser. No. 868,222, now abandoned. Divided and this application Aug. 31, 1972, Ser. No. 285,292

Int. Cl. G03c 1/92

U.S. Cl. 96—82

6 Claims

A radiographic image-recording element comprising an ultraviolet absorbing material, an improved image-recording product comprising said element and substantially ultraviolet emitting phosphors containing thickly covered intensifying screens and processes employing said materials are disclosed whereby improved radiographic characteristics are obtained.

3,822,132

**HEAT RESISTANT DYES FOR POLYESTER FILM PRODUCTS**

C. Shelburn Hunter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 822,032, May 5, 1969. This application May 24, 1971, Ser. No. 146,501

Int. Cl. G03c 1/84

U.S. Cl. 96—84 R

15 Claims

Certain azabenzanthrone and diazabenzanthrone dyes have been found

(a) to be peculiarly resistant to spontaneous high temperature degradation, and

(b) to be particularly useful as colorants for photographic film products made by extruding a dyed polyester film base.

In combination with a green dye such as 1,4-dihydroxy-5,8-di-p-toluidino anthraquinone or 1,4-di-p-butyl anilino-5,8-dihydroxy anthraquinone, which has the ability to inhibit or minimize edge fog in light sensitive film products having a polyester substrate, the red azabenzanthrone or diazabenzanthrone dye is particularly useful in the form of an approximately "neutral" colored film substrate.

3,822,133

**PHOTOSENSITIVE MATERIALS SENSITIZED WITH A SUBSTITUTED ISOALLOXAZINE**

Glyn David Short and Jan Willem Frederik van Ingen, Ramcora, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 22, 1972, Ser. No. 255,636  
Claims priority, application Great Britain, May 21, 1971, 16,242/71

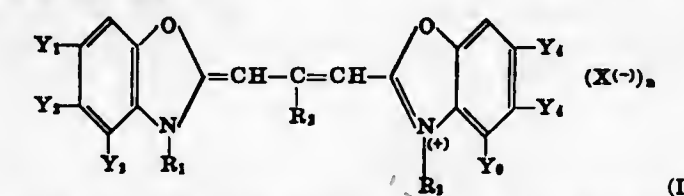
Int. Cl. G03c 1/00

U.S. Cl. 96—68

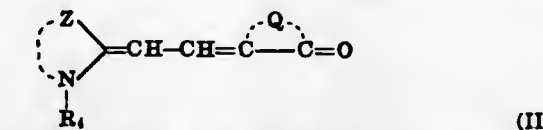
4 Claims

Photosensitive materials, of the type such as bipyridylum, biquinolinium and diazapyrenium, are sensitized with a substituted isoalloxazine, such as riboflavin.

prises a silver halide photographic emulsion and a specific combination of at least one compound expressed by following formula (I)



with at least one compound expressed by following formula (II)



This light-sensitive material can be applied to not only black-and-white photography but also color photography, and is excellent over conventional supersensitized light-sensitive emulsions in spectral sensitivity, good storability, high color reproducibility with less color contamination, and other photographic characteristics.

3,822,137

**ORGANIC ARSENIC COMPOUND FOR CREOSOTE FORTIFICATION**

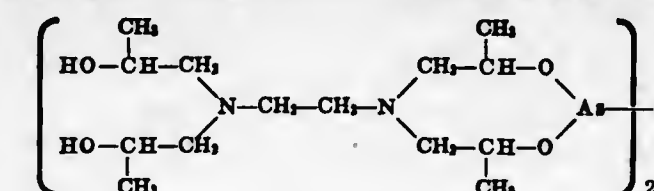
Woodrow E. Kemp, Pittsburgh, Pa., assignor to Koppers Company, Inc.

No Drawing. Original application Jan. 26, 1972, Ser. No. 221,080, now Patent No. 3,764,377. Divided and this application July 16, 1973, Ser. No. 379,270  
Int. Cl. C09d 3/24

U.S. Cl. 106—15 R

2 Claims

A wood preservative composition comprised of creosote in which is dissolved the novel arsenic-containing compound 1 - (bis(2 - hydroxypropyl)nitriolethylene)-5-arsa-1-aza-4,6-dioxacyclooctyl As-ether whose structure is



3,822,138

**LOW SHRINKAGE WAX COMPOSITION FOR INVESTMENT CASTING**

Kazuo Noguchi, Yutaka Ueda, and Satoshi Inada, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Sept. 18, 1972, Ser. No. 289,602  
Claims priority, application Japan, Sept. 18, 1971, 46/72,116

Int. Cl. B28b 7/34; C08h 9/06

U.S. Cl. 106—38.8

3 Claims

A novel wax composition for use in investment casting by the "lost wax" process. The novel wax composition contains hollow carbon microspheres and a conventional molding wax. It may additionally contain a rosin and/or an amide. The composition is characterized by low shrinkage, exhibiting only a small volume change in transition between the solid state and liquid state.

3,822,139

**ELECTROSTATIC DEVELOPER DEVICE**

Virgil W. Westdale, Chagrin Falls, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Oct. 13, 1972, Ser. No. 297,580

Int. Cl. G03g 13/08, 15/08

U.S. Cl. 117—17.5

4 Claims

An electrostatic image developing unit employing a rotating magnetic toner brush. The brush is created by

3,822,136

**SILVER HALIDE LIGHT-SENSITIVE SUPERSENSITIZED MATERIALS**

Katichiro Sakazume, Shuji Sato, Noboru Fujimori, and Eiichi Sakamoto, Hanno, and Kiyomasa Mine, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,512  
Claims priority, application Japan, Sept. 27, 1971, 46/74,631

Int. Cl. G03c 1/14

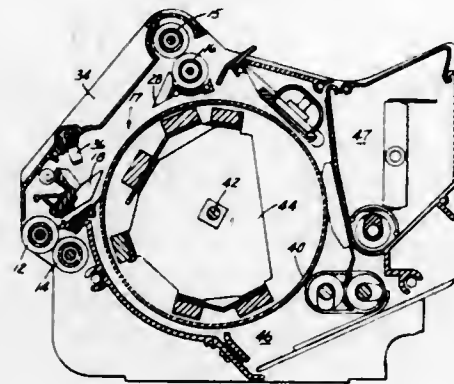
U.S. Cl. 96—126

5 Claims

This invention provides a light-sensitive material of the silver halide type having high speed green sensitivity and being highly supersensitized to green light, which com-



iron carrier particles in the developer mix. The iron follows a flux path created by stationary magnets within a rotating cylinder. Particles of toner are carried by the iron. At high rotation speeds the mix tends to expand outwardly to an excessive degree, and cause a disturbance of the electrical bias normally used in such devices. The



paper in process will confine the mix, over most of the development area, but some will escape the edges. The normal rise of the mix is controlled by shaping the brush form to suppress the rise at the cylinder ends. This is preferably accomplished by a doctor blade having forwardly extending extreme end members. In effect, a "U" shaped doctor blade.

3,822,140

# METHOD OF AND APPARATUS FOR THE PRODUCTION OF COATED-PARTICLE FUEL FOR NUCLEAR REACTORS

Erno Gyarmati and Hubertus Nickel, Jülich, and Carl-Friedrich Wallroth, Laursberg, Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Germany

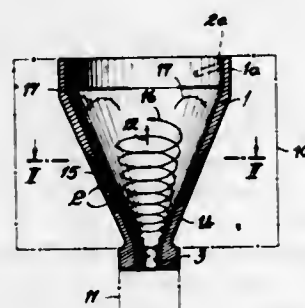
Filed Dec. 20, 1971, Ser. No. 210,080

Claims priority, application Germany, Dec. 19, 1970, P 20 62 794.5

Int. Cl. B44d 1/02

U.S. Cl. 117-46 CG

7 Claims



A method and apparatus for coating nuclear fuel particles in a fluidized bed with carbon deposited from a pyrolytically decomposable gas. The static layers in the fluidized bed coating system are broken up by generating a vortex or twisting displacement of the fluidized bed about its axis in a divergent conical fluidized bed chamber. Carrier gas is introduced axially into the bottom of the chamber and downwardly and tangentially through openings in the wall of the fluidized bed chamber. The tangentially and helical movement imparted to the gases in the chamber results in an improved coating uniformity on the particles.

3,822,141

# COATED PEARLESCENT PRODUCT

Harold Kaufman, Freehold, N.J., assignor to Whittaker Corporation

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,255

Int. Cl. B44d 5/06; C09c 1/00

U.S. Cl. 117-54

1 Claim

An improved bismuth oxychloride coated pearlescent particle comprising a water-insoluble particulate silicate pretreated with an aqueous acidic solution and having co-precipitated thereon bismuth oxychloride and titanium dioxide.

3,822,142

# ETCHING PRIMER FOR CONCRETE FLOOR SURFACES CONTAINING SULFURIC ACID

Eric Arntson, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

No Drawing. Filed Jan. 10, 1973, Ser. No. 322,520

Int. Cl. B44d 1/20

U.S. Cl. 117-54

10 Claims

A liquid conditioning composition for set cementitious surfaces which forms a coherent and stable mass fixed to the cementitious surface, and may be in the form of an adherent coating film in bonded relationship thereto and which includes an aqueous dispersion of sulfuric acid, a surfactant which is preferably in the form of a nonionic and/or cationic emulsifier, and an air curable acid stable miscible resinous binder, along with compatible dispersants. The formulation may be utilized for application to concrete floor surfaces and particularly in a single operation which provides both etching and formation of a conditioning coat.

3,822,143

# IMPREGNATING NONWOVENS WITH LATEXES OF A BUTADIENE POLYMER AND A CARBOXYL POLYMER

George L. Wheelock, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 739,584, May 20, 1968. This application July 14, 1972, Ser. No. 272,005

Int. Cl. B44d 1/48

U.S. Cl. 117-62.2

11 Claims

A process for obtaining nonwoven materials having improved physical properties, especially internal bond strength and resistance to delamination is provided. Nonwoven fabrics and papers impregnated with carboxyl-containing butadiene polymer latices, containing a carboxyl-containing polymer, are exposed to ammonia or amine vapors prior to the drying and curing operations to obtain the improved properties. Papers treated in this manner have shown a marked increase in internal bond strength.

3,822,144

# THERMOPLASTIC FILM COMPOSITE FOR USE AS A BONDING AGENT

Cecil H. Taylor, 1229 Romany Road, Kansas City, Mo. 64113

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,529

Int. Cl. B32b 31/12; C09j 7/00

U.S. Cl. 117-122 H

11 Claims

A thermoplastic composite suitable for bonding textile materials and cellulosic sheets, upon the application of heat, the composition being a polymeric film, such as a polyethylene film, which has been treated, e.g., by coating, with an oligophenyl; the film composite is useful for mending apparel, for instance.

3,822,145

# FABRIC SOFTENING

Marvin Liebowitz, Edison, Neil M. McHugh, Bridgewater, and Henry D. Cross III, Colts Neck, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,010

Int. Cl. C08j 1/44; D06m 13/00, 15/26

U.S. Cl. 117-139.5 A

21 Claims

Poly-lower alkenes, such as polyethylene, are applied to tumbling fabrics to be softened. Preferably, such application is in the form of a stable foam, dispensed from a pressurized container, polyethylene is emulsified in such foam, the fabrics treated are of damp, recently washed laundry and the conditioning is effected in an automatic laundry dryer while the laundry is being dried.

3,822,146

# APPLICATION OF ELECTRICALLY CONDUCTIVE COATINGS TO INSULATING TUBES OF SWITCHING MAGNETS FOR PARTICLE ACCELERATORS

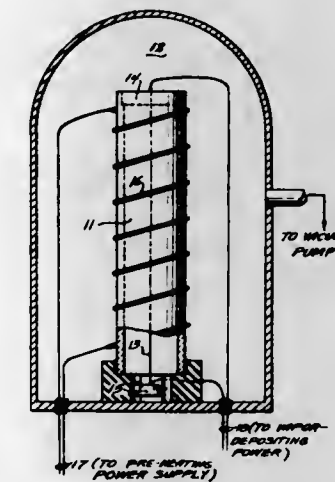
Edward R. Tillis, Aurora, and Rudolf F. Nissen, Batavia, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed July 5, 1972, Ser. No. 269,005

Int. Cl. B05b 13/06; B44d 1/20

U.S. Cl. 117-213

1 Claim



Indium is applied in controlled amounts to the interior of an insulating tube used in a switching magnet for a high-energy particle accelerator. The indium is then oxidized to form indium sesquioxide. Electrical resistance of the indium sesquioxide is controlled by varying the thickness of the coating. The invention is of especial utility in preventing the buildup of surface on such tubes.

3,822,147

# INSULATED ELECTRICAL CONDUCTOR AND COILS FORMED THEREOF

Ernest C. Koerner and William W. Wareham, Fort Wayne, Ind., assignors to Phelps Dodge Magnet Wire Company, Fort Wayne, Ind.

Filed May 3, 1972, Ser. No. 290,750

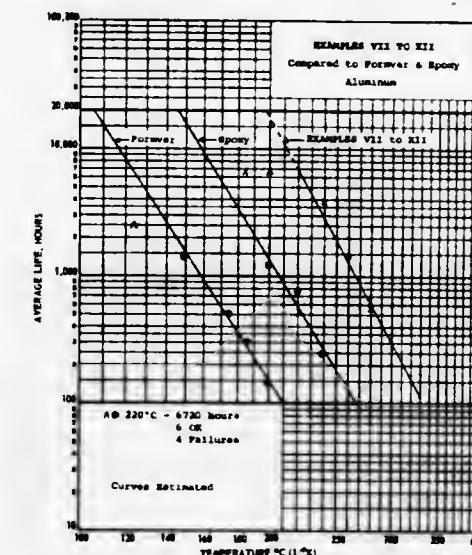
Int. Cl. C09g 20/32; H01b 7/02

U.S. Cl. 117-218

16 Claims

A metal conductor coated with multiple layers of a cured polyaromatic, polycarboxylic aromatic imide resin and a cured phenoxy resin. The layers are superposed and may be arranged so as to provide an inner layer of imide resin and an outer layer of phenoxy resin, an inner layer of phenoxy resin and an outer layer of imide resin, or

both inner and outer layers of imide resin with a mediate layer of phenoxy resin sandwiched therebetween. Magnet



wire made in accordance with the invention has special utility in oil-filled transformers.

3,822,148

# LITHIUM-METAL MOLYBDATE ORGANIC ELECTROLYTE CELL

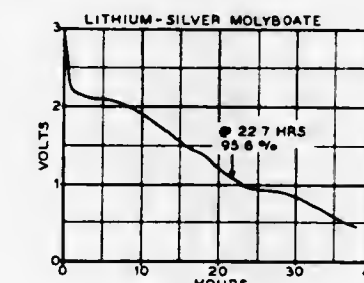
Arabinda N. Dey, Needham, and Robert W. Holmes, Dedham, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation of application Ser. No. 54,931, July 15, 1970, now Patent No. 3,711,334. This application May 15, 1972, Ser. No. 254,332

Int. Cl. H01m 13/00

U.S. Cl. 136-83

12 Claims



This invention relates to a novel primary electric cell comprising positive electrodes composed of any of the molybdates of silver, iron, cobalt, nickel, mercury, thallium, lead, bismuth and their mixtures, negative electrodes composed of any of the light metals such as Li, Na, K, Ca, Be, Mg and Al, said electrodes being disposed in an electrolyte comprising an organic solvent selected from the group consisting of tetrahydrofuran, N-nitrosodimethylamine, dimethyl sulfoxide, propylene carbonate, gamma-butyrolactone, dimethyl carbonate, dimethoxy ethane, acetonitrile, dimethyl sulfoxide, dimethyl formamide and the mixtures thereof, and having dissolved therein soluble salts of the light metals, for example, the perchlorates, hexafluorophosphates, tetrafluoroborates, tetrachloroaluminates, hexafluoroarsenates of lithium.

3,822,149

# RECHARGEABLE ZINC ELECTROCHEMICAL ENERGY CONVERSION DEVICE

Hubert Jackson Hale, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1972, Ser. No. 227,046

Int. Cl. H01m 27/00, 29/04, 47/00

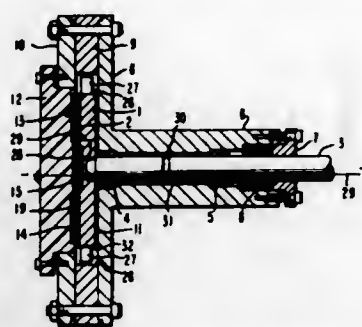
U.S. Cl. 136-86 A

12 Claims

A rechargeable zinc cell and battery, preferably a zinc-air cell and battery, are disclosed in which the cell com-



prises (1) a circular casing having a circular reservoir with electrolyte contained therein; (2) a rotatable electrode, having at least one planar zinc surface, enclosed coaxially in the reservoir; (3) a stationary planar counter-electrode spaced from the rotatable electrode; (4) means



for preventing the electrochemical reaction in the axial area of the zinc surface; (5) wiper means disposed between the electrodes for lightly abrading the zinc surface, and (6) means for agitating the electrolyte to maintain particulate matter in suspension.

3,822,150

#### HIGH TEMPERATURE BATTERY PACKAGE AND A METHOD OF ASSEMBLING SAME

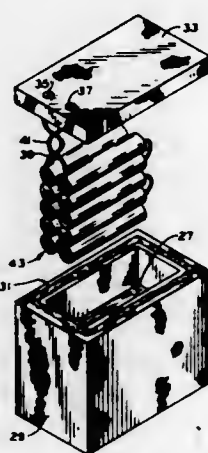
Don Harvey Boardman, Alhambra Springs, Fla., and Ronald Henry Limbach, Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed May 15, 1972, Ser. No. 253,093

Int. Cl. H01m 45/02

U.S. Cl. 136—161

12 Claims



A battery package to be disposed in an elevated temperature environment for a predetermined length of time as the primary energy source for a telethermometer transmitter is disclosed comprising a liquid-tight molded foam heat insulating housing having the battery and a mass of fusible material such as a paraffin therein. The housing is formed in two parts, the battery connected to appropriate conductors which sealingly pass through one of those parts, the battery and fusible material in its molten state placed in one of those parts leaving an air space, and the two parts sealingly fastened together.

3,822,151

#### THERMOELECTRIC GENERATOR WITH RADIO-ACTIVE MATERIAL HEAT SOURCE

David L. Purdy, Indiana, Zahner M. Shapiro, Pittsburgh, Thomas F. Hansen, Monroeville, and Gerould W. Maurer, Apollo, Pa., assignors to Arco Nuclear Corporation, an abandoned application Ser. No. 601,697, Dec. 14, 1966. This application May 10, 1971, Ser. No. 142,070

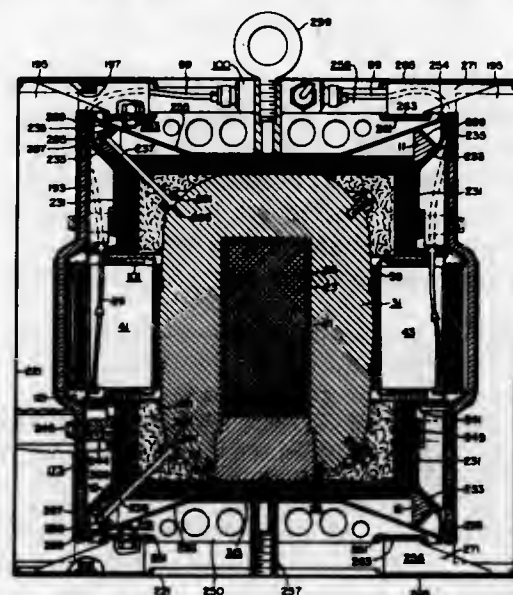
Int. Cl. H01v 1/30, 1/32

U.S. Cl. 136—202

8 Claims

An electrical generator having an Isotopic Heat Capsule including radioactive fuel rod 21 as a primary heat source

and Thermoelectric Modules 41 and 43 as converters. The Biological Shield for the Capsule is suspended from Spiders at each end each consisting of pretensioned rods 237 and 239 defining planes at right angles to each other. The



Modules are mounted in cups 171 of transition members 173 of a heat rejection Fin Assembly whose fins 195 and 197 extend from both sides of the transition member 173 for effective cooling.

3,822,152

#### GRADUATED SiGe ALLOY THERMOCOUPLE

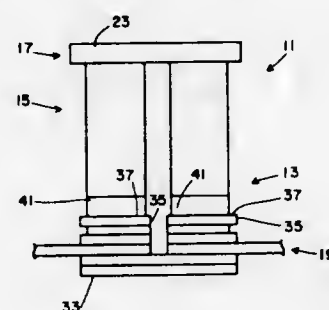
Francis Kot, Harrison, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission

Continuation of abandoned application Ser. No. 101,539, Mar. 30, 1971. This application Apr. 25, 1973, Ser. No. 354,415

Int. Cl. H01v 1/08

U.S. Cl. 136—237

2 Claims



Method and apparatus providing a mechanically sound, low electrical and thermal resistance, metal contact for cold junctions for high silicon content silicon-germanium alloys for use in thermocouples for thermoelectric power generation.

3,822,153

#### METHOD FOR FABRICATING A DOUBLE DRIFT DIODE

Bernard Collins De Loach, Jr., Murray Hill, William Charles Niehaus, Florham Park, and Thomas Edward Seidel, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1973, Ser. No. 345,081

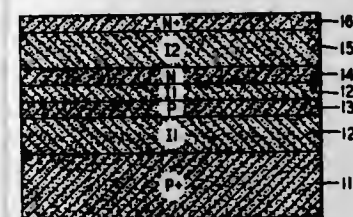
Int. Cl. H01l 7/54

U.S. Cl. 148—1.5

10 Claims

A method for fabricating semiconductor diodes particularly double drift region diodes of the P+IPININ+ type adapted for use in oscillators operating at frequencies from about four to 30 gigahertz. A P layer and then an N layer are formed by ion implantation into a high re-

sistivity P-type epitaxial layer, I, disposed over a P+ type substrate. Over the P-type epitaxial layer a high resistiv-



ity N-type epitaxial layer, also I, is formed and subsequently an N+ type layer is formed contiguous with the surface of the N-type epitaxial layer.

3,822,154

#### SUPPRESSION OF UNSTABLE BURNING USING FINELY DIVIDED METAL OXIDES

Ralph W. Lawrence, Glendora, and Albert J. Secchi, Arcadia, Calif., assignors to Aerojet-General Corporation, Azusa, Calif.

Filed Oct. 1, 1962, Ser. No. 227,613

Int. Cl. C06d 5/06

U.S. Cl. 149—19.1

19 Claims

1. A solid propellant composition which comprises a cured intimate mixture of a nonmetallic oxidizing salt, a resin binder selected from the group consisting of polyurethane resin, polyester resin, acrylate resin, polysulfide polymer, nitrocellulose plasticizer, and nitropolyurethane resin, and, as a resonance suppressor, a material selected from the group consisting of aluminum oxide, zirconium oxide, silicon dioxide, thorium oxide, titanium oxide, lanthanum oxide, and mixtures thereof, in an amount effective to suppress resonant burning up to an amount not greater than that equivalent to about 5 percent by weight of the propellant composition, said resin binder being present in an amount between about 5 percent and about 55 percent by weight and the solid non-metallic oxidizing salt being present in an amount between about 95 and about 45 percent by weight, all percentages being given by total propellant weight basis.

3,822,155

#### METHOD OF MAKING A SEMITRANSSPARENT PHOTOMASK

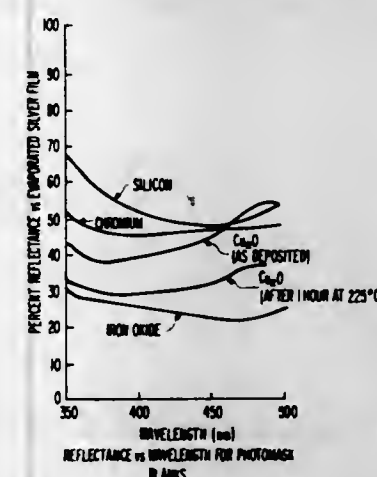
Nathan Feldstein, Kendall Park, and Joel Alan Weiner, Cranbury, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,308

Int. Cl. C23f 1/02

U.S. Cl. 156—3

10 Claims



A method comprising electrolessly depositing a semi-transparent film which is predominantly cuprous oxide on a transparent substrate and delineating a pattern in the film by etching.

#### 3,822,156 SEALING AND DESMUDGING ANODIZED ALUMINUM

Paul F. Wallace, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,327

Int. Cl. C23f 1/00

U.S. Cl. 156—22

7 Claims

Triethanolamine sealing of anodized aluminum followed by desmudging with one or more mineral acids.

3,822,157

#### REINFORCED NONWOVEN FABRIC AND METHOD OF MANUFACTURE

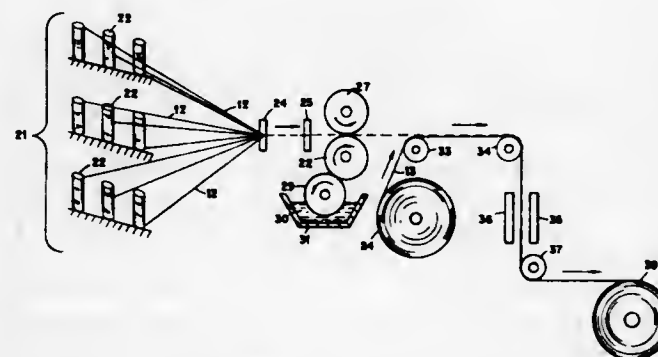
Charles A. Lee, Knoxville, Tenn., assignor to International Paper Company, New York, N.Y.

Original application Jan. 29, 1970, Ser. No. 6,688, now Patent No. 3,682,755. Divided and this application June 21, 1972, Ser. No. 264,990

Int. Cl. B32b 5/08, 5/10, 5/26

U.S. Cl. 156—85

7 Claims



A reinforced laminated nonwoven fabric comprising first and second web plies overlaid with their respective machine directions disposed at an angle with respect to each other and with respect to the longitudinal and transverse directions of the fabric. The first and second web plies are reinforced by respective first and second plies of reinforcing filaments, the filaments of each filament ply being generally aligned with the machine direction of the respective web ply. The plies are bonded one to another.

3,822,158

#### METHOD OF REFURBISHING REFLECTIVE-TYPE PAVEMENT MARKERS

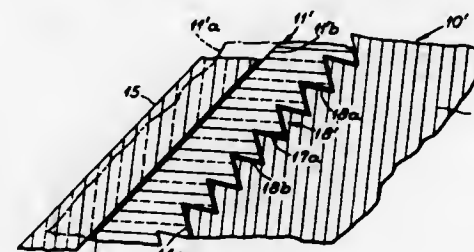
Kenneth C. Hoffman, 22 W. 665 Poplar, Glen Ellyn, Ill. 60608, and Kenneth M. Johnson, 6015 W. Melrose, Chicago, Ill. 60634

Filed Aug. 14, 1972, Ser. No. 280,668

Int. Cl. B32b 35/00

U.S. Cl. 156—98

11 Claims



A method of refurbishing a deteriorated light-receiving face of reflective-type pavement marker comprising removing the outer surface of a deteriorated light-receiving face, as by mechanical abrasion, applying an adhesive coating to the abraded light-receiving surface, positioning



a transparent pane, as of high-impact high-abrasion glass, acrylic or other similar material and subjecting the resultant structure to curing conditions sufficient to form a unitary refurbished light-receiving face.

3,822,159

# METHOD AND APPARATUS FOR BONDING THREADS TO A WEB

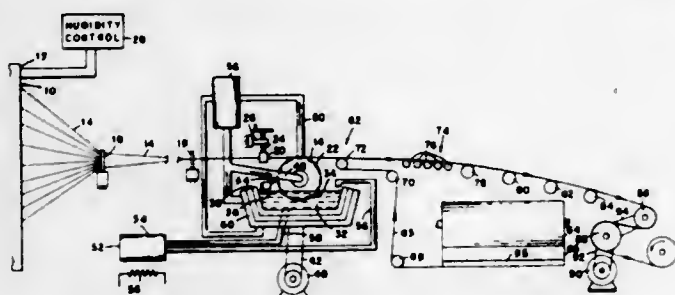
Charles A. Lee, Frank D. Sorrells, and James R. Hood, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Mar. 28, 1972, Ser. No. 238,914

Int. Cl. B32b 29/02

U.S. Cl. 156—178

11 Claims



A method for bonding a plurality of aligned threads to one of the flat surfaces of a web, such threads running in the machine direction of the web and spaced apart from each other laterally of the web. A metered quantity of liquid thermoplastic resin is applied to individual threads whereupon the resin-bearing threads are applied to the web in a manner which transfers a portion of the resin to the web while holding the threads in position for completion of the threads-to-web bonding. Apparatus is disclosed for carrying out the method.

3,822,160

# METHOD AND APPARATUS FOR FORMING A MITERED CORNER IN A FLEXIBLE ELASTOMERIC STRIP

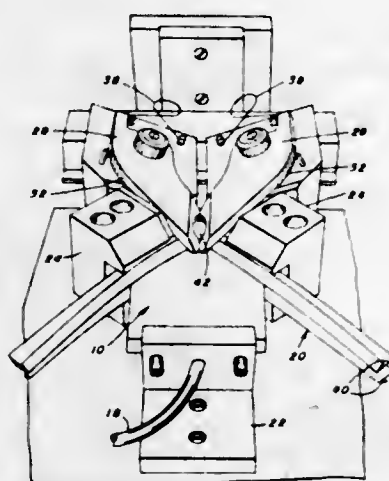
Robert L. La Barge, Ben Avon, and Russell G. Painter, Arnold, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 30, 1972, Ser. No. 257,964

Int. Cl. B29c 17/02, 17/08

U.S. Cl. 156—212

7 Claims



Apparatus and a method for forming a mitered corner in an unnotched channel-shaped strip of flexible elastomeric material are provided wherein such a strip is positioned over a mandrel having a contoured portion on it in the shape of the mitered corner to be formed, the mandrel is moved against support blocks to form a bend in the

strip and a loop in the side flange of the strip, hot air is forced against inside surfaces of the loop to heat the elastomeric material to a plastic adhesive state, and blades are closed against the loop of material to weld abutting surfaces together and thereafter sever excess material from the welded corner at completion of the closing of the blades.

3,822,161

# METHOD OF PRODUCING A LAMINATED THERMOPLASTIC FOAM-FILM RECEPTACLE

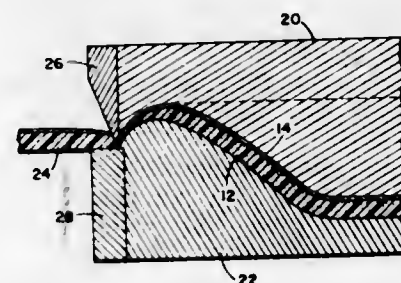
Donald Andrew Haase, Penfield, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Original application Jan. 5, 1971, Ser. No. 104,046, now Patent No. 3,684,633. Divided and this application May 23, 1972, Ser. No. 256,135

Int. Cl. B29c 17/10

U.S. Cl. 156—245

6 Claims



A disposable plastic dish comprised of a thin lamina of thermoplastic film superimposed upon a thermoplastic foam lamina is produced by thermoforming a substantially uniform thickness laminated stock material within complementary shaped male and female mold parts to produce a dish having an outwardly extending tapered rim at its upper periphery, the foam of the rim being compressed to a greater density than the foam of the remainder of the dish to strengthen the edge of the dish. The stock material is preferably preheated prior to thermoforming.

3,822,162

# PROCESS FOR MANUFACTURING HIGH-LOFT, NONWOVEN FABRIC

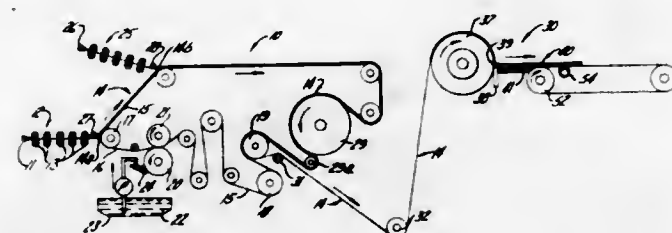
Robert J. Stampf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of application Ser. No. 31,225, Apr. 23, 1970, now Patent No. 3,709,768, which is a continuation-in-part of application Ser. No. 856,793, Sept. 10, 1969, now Patent No. 3,720,554. This application July 10, 1972, Ser. No. 270,469

Int. Cl. B32b 31/12

U.S. Cl. 156—279

65 Claims



A method of making a high-loft, nonwoven fabric with a substantially continuous backing layer of adhesive and a multiplicity of fibers looped outwardly from the backing, by first embedding a web of fibers in a layer of adhesive and then gathering the adhesive while softened into a substantially continuous backing layer while simultaneously looping the fibers outwardly from the backing. In certain instances, the loops may be subsequently shorn,

the backing may be stretched or perforated, or the fabric may be laminated to an additional backing or backings to change the final characteristics of the product.

3,822,163

# LABELING MACHINE

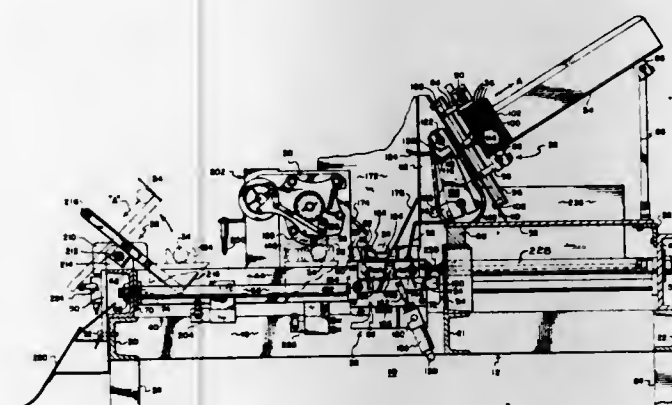
Roger J. Bilotti, Chicago, Ill., assignor to Joanna Western Mills Company, Chicago, Ill.

Filed May 8, 1972, Ser. No. 251,286

Int. Cl. B32b 31/00; G05g 15/00

U.S. Cl. 156—351

15 Claims



Apparatus for the nonadhesive application of sheet material wrappers, labels, coupons and the like for holding rolls of sheet material such as a shade roll in a rolled condition comprising roll support means for receiving and supporting a roll of sheet material, wrapping means on said support means for receiving wrappers in a flat condition and including a pair of pivotally mounted jaws movable between an open, wrapper receiving position and a closed position for applying or wrapping said wrapper around the shade roll. Applicator means is provided for applying a short length of adhesive strip across overlapping edge portions of the wrapper which is coiled around the shade roll, upon relative movement between the applicator means and the wrapping means. Ejector means is provided for opening said jaws and removing the adhesively secured wrapped or labeled shade roll from said support means.

3,822,164

# APPARATUS FOR SEALING PLASTIC BAGS

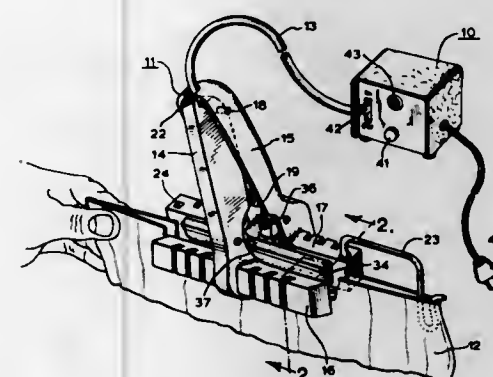
Joseph J. Guido, Hinsdale, and James R. Anderson, La Grange, Ill., assignors to Co-Poly-Ex Corporation, Elgin, Ill.

Filed Nov. 24, 1971, Ser. No. 201,830

Int. Cl. B32b 31/20

U.S. Cl. 156—358

15 Claims



A portable hand-held impulse sealer for plastic bags or the like wherein a pair of complementary Nichrome-wire heating elements are heated upon actuation of the

sealer for a predetermined period of time to bond opposite edges of the open end of a plastic bag together. A spacer rod depending from the sealer head enables sealing to be efficiently accomplished by a single operator by drawing the edges of the bag together with the portions to be bonded positioned between the heating elements of the sealer. The duration of the heat cycle is automatically controlled by a novel solid-state triac timing circuit which can be adjusted to accommodate various kinds and thicknesses of material. A novel method for using the sealer to seal a plastic bag is also disclosed.

3,822,165

# SHAPING DRUM

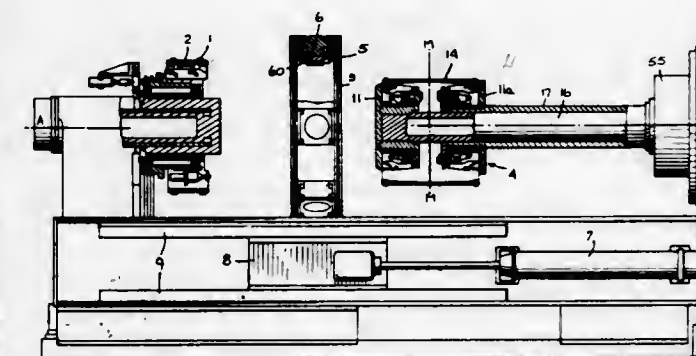
William C. Habert, Fraser, Mich., assignor to Uniroyal Inc., New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,265

Int. Cl. B29h 17/16

U.S. Cl. 156—415

10 Claims



A tire building machine having a shaping drum formed from two variably spaced housings coaxially disposed with respect to each other and having means for direct inflation of a first stage carcass supported thereon. Each housing having fingers disposed around its circumferences which controls the position of an elastomeric bladder for sealing by engaging the beads of the carcass.

3,822,166

# APPARATUS FOR CONTROLLING AND TRANSFERRING CROSS-LAID SHEETS

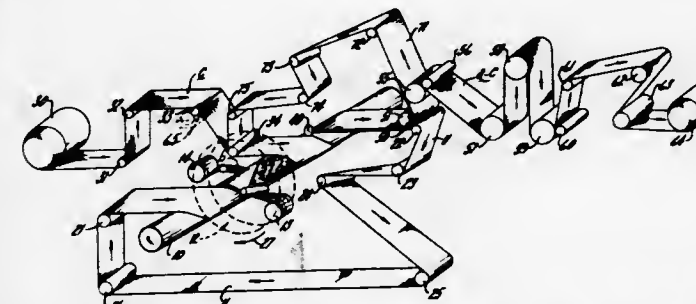
Dean K. Anderson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Original application Feb. 28, 1969, Ser. No. 803,245, now Patent No. 3,616,067. Divided and this application July 29, 1971, Ser. No. 167,433

Int. Cl. B65h 81/00

U.S. Cl. 156—426

4 Claims



A method and apparatus for making multi-ply, cross-laid material is disclosed. The ply of material to be cross-laid is deposited by a rotatable carrier disposed about a mandrel on which a continuous carrier belt is helically wound. Another ply of material is helically wound on top of the cross-laid ply in advance of a slitter and, after slitting, the plies are separated from the carrier belt with the aid of a vacuum roll and directed into the



nip of a pair of combining rolls. In its preferred embodiment, an upper hold down belt is also helically wound on the last turn of the mandrel.

3,822,167

# **APPARATUS FOR PROVIDING RESISTANT HOLLOW CYLINDRICAL BODY MEMBERS**

Aldo Piola, Villa Marise, Inverigo, Italy 22044

Filed Mar. 3, 1972, Ser. No. 231,591

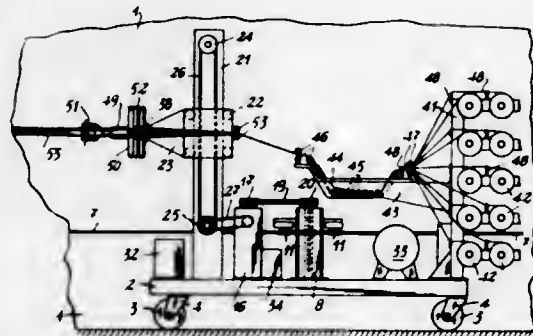
Claims priority, application Italy, Mar. 10, 1971,

21,550/71

Int. Cl. B65h 81/00

U.S. Cl. 156—443

6 Claims



An apparatus by which resistant hollow cylindrical body members are provided by a trolley which rotates about a vertical cylindrical mold and distributes thread coils or glass webs impregnated with resin containing polymerizing catalysts on said mold. The distribution of threads in the form of coils is effected by a slide carried on the trolley and continuously upwards and downwards reciprocating.

3,822,168

# **DRIVE SYSTEM FOR BAG MACHINE**

Robert J. Wech, Green Bay, Wis., assignor to

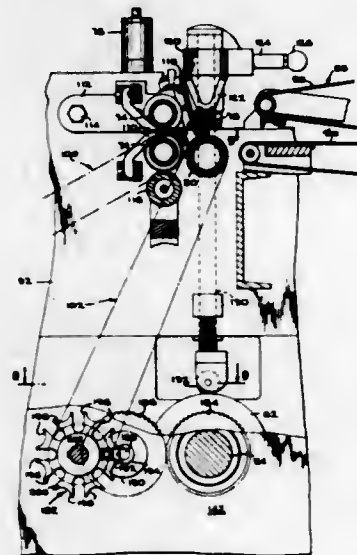
FMC Corporation, San Jose, Calif.

Filed Mar. 30, 1972, Ser. No. 239,495

Int. Cl. B32b 31/00

U.S. Cl. 156—515

6 Claims



A bag making machine of the type adapted to handle thermoplastic web material and produce side weld bags is provided with a drive system which isolates the inertia of various parts from the common drive motor so as to retain the present accuracy of web registration at the various processing stations, but with a higher production rate of finished bags, or alternatively to provide a wider than

usual bag machine, or both. The draw rolls and seal roll are individually driven to minimize the torque demands on the clutch and brake which control development, sealing and severing of the web, and in the disclosed embodiment a Geneva drive is provided for the seal roll.

3,822,169

# **ULTRASONIC FILM SPLICING APPARATUS**

Ray E. Gardner, Rochester, N.Y., assignor to

Eastman Kodak Company, Rochester, N.Y.

Original application June 16, 1969, Ser. No. 833,438, now

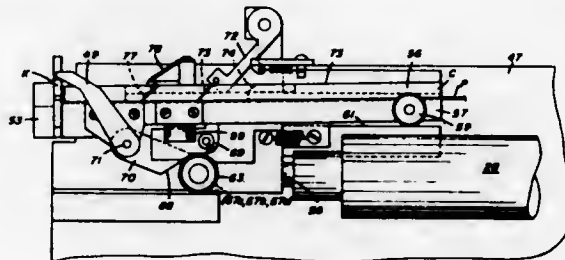
Patent No. 3,647,599. Divided and this application

Nov. 8, 1971, Ser. No. 196,589

Int. Cl. B32b 31/04

U.S. Cl. 156—545

3 Claims



Apparatus for ultrasonically splicing together end-to-end two lengths of moving picture film or the like with a patch of splicing tape therebetween, comprising an ultrasonic horn, a stage for the lengths of film which is movable toward and away from the horn, tape feeding mechanism for intermittently feeding tape from a roll into position on the surface of said horn, and mechanism for cutting a patch of the desired width from the end of said tape. The stage and the horn are provided with vacuum apertures for holding the films and the patch in place. An automatic control system acts to perform the operating steps in the necessary sequence.

3,822,170

# **MOLDED DECORATIVE ACCESSORIES FOR JACK-O'-LANTERNS**

James J. Smolen, 6035 Yarwell, Houston, Tex. 77035

Continuation-in-part of abandoned application Ser. No.

113,137, Feb. 8, 1971. This application Apr. 25, 1973,

Ser. No. 354,367

Int. Cl. A47g 35/00

U.S. Cl. 161—12

4 Claims

The specification discloses a jack-o'-lantern made of a pumpkin wherein the eyes, nose, ears, mouth and other decorative features are formed of molded flexible plastics material and are provided with means for providing attachment to a pumpkin to mount such decorative features thereon.

3,822,171

# **ARTIFICIAL FLOWER PETAL AND STEM**

Rose M. Bouillot, Mas le Gres 13, Saint-Remy-de

Provence, France

Filed Feb. 28, 1972, Ser. No. 229,676

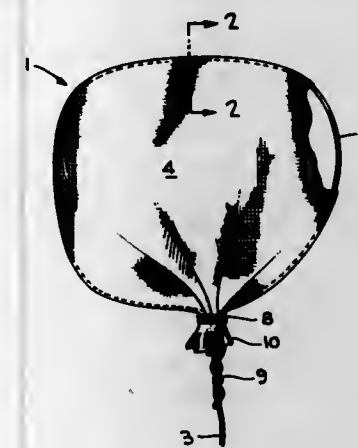
Int. Cl. A41g 1/00

U.S. Cl. 161—29

1 Claim

An artificial flower comprising a plurality of flower members or petals, each member comprising a deformable support member having a generally straight section, a looped section and a base section joining the looped section to one end of the straight section; a stretchable material completely covering the looped section with the border of said material being gathered about the base section, and means for binding the border to the base section; and means for binding a plurality of artificial flower members together. The process comprises forming a plu-

rality of flower members by shaping deformable strands to form a support member having a generally straight section, a looped section and a base section, covering the looped section with a stretchable covering material, gathering the border of this covering material about the



base section, binding the border to the base section, deforming the support member so that the individual flower members resemble flower petals, assembling the plurality of flower members and binding the individual flower members together.

3,822,172

# **DOUBLE GLAZING UNIT BONDED TOGETHER BY A BLEND OF RESINS**

Robert Rullier, Paris, France, assignor to Saint Gobain

Industries, Neuilly-sur-Seine, France

Filed Dec. 14, 1972, Ser. No. 314,919

Claims priority, application France, Dec. 16, 1971,

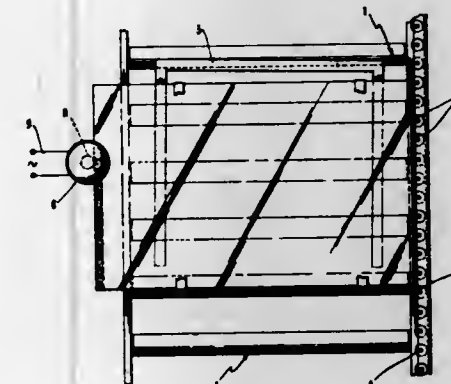
7145236

Int. Cl. B32b 1/04, 17/10; C03c 27/10; C08f 15/00;

E06b 3/24

U.S. Cl. 161—45

6 Claims



A panel in the form of a double glazing unit having two sheets of glass spaced in parallel relation and sealed to form a cavity, and bonded together by a blend of resins having good adhesion to the glass and a compatible coefficient of expansion, said blend containing as primary ingredients an ionomer resin and a terpene ester, such as colophony ester and which may include additionally a butyl rubber or polyisobutylene and ethylene-vinyl copolymer, together with adjuvants including an antioxidant and an ultra violet filter agent and a filler. A method of making the laminate by applying the blend of resins to the glass is included. The blend of resins is also disclosed.

3,822,173

# **NEEDED FELT FLOORING**

Adolf Graber and Bohoslav Tecl, Weinhelm, Germany,

assignors to Firma Carl Freudenberg, Hohnweg, Ger-

many

Filed Dec. 29, 1972, Ser. No. 319,832

Claims priority, application Germany, Jan. 14, 1972,

P 22 01 612.2

Int. Cl. D03d 27/00; D04h 11/00

U.S. Cl. 161—62

13 Claims



Needled felt flooring, with a velour-like surface, comprising a layer of strip material disposed over a fibrous needed sheet, said strip material having a layer of a second fibrous sheet disposed thereover, the fibers of which pass through the strip material and the needed fibrous sheet disposed therebeneath, forming a pile surface of single fibers of equal length; a method of preparing a needed felt flooring is also disclosed.

3,822,174

# **IMITATION LEATHER MATERIAL**

Josef Hefe, Grafelfing, Germany, assignor to Kufner

Textilwerke KG, Munich, Germany

Filed Mar. 20, 1972, Ser. No. 236,058

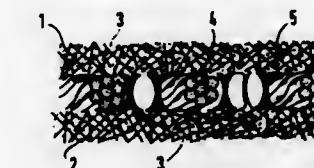
Claims priority, application Germany, Mar. 22, 1971,

P 21 13 790.6

Int. Cl. D03d 27/00

U.S. Cl. 161—82

12 Claims



This invention provides an imitation leather having improved porosity and capacity to absorb moisture. The material of this invention comprises at least one layer of a textile sheet material each sandwiched between two layers of fibrous flock permeated with a binding agent, the textile sheet material also being permeated by a binding agent and the flock layers being held together by a flock binder material.

3,822,175

# **BONDABLE ADHESIVE COATED POLYIMIDE FILM AND LAMINATES**

Edward L. Yuan, Philadelphia, Pa., assignor to E. I. du

Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application July 12, 1971, Ser. No.

161,871, now Patent No. 3,728,150. Divided and this

application Feb. 9, 1973, Ser. No. 331,209

Int. Cl. B44d 1/00

U.S. Cl. 161—93

11 Claims

Caustic treated polyimide film coating with an acrylic adhesive and laminate articles made therefrom.







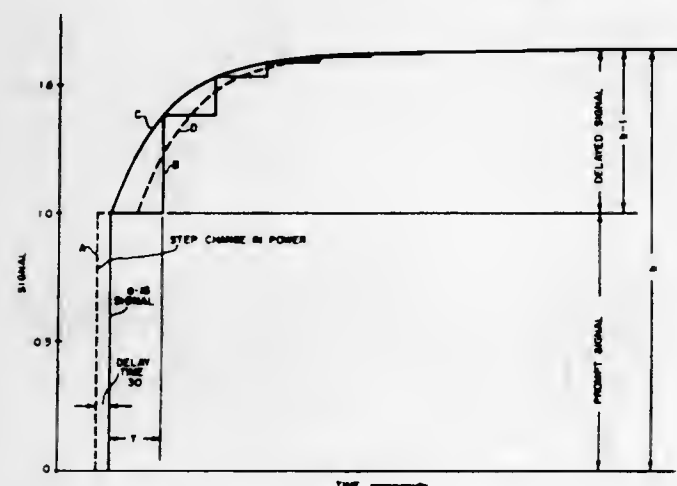
causing the aqueous slurry of fibers to flow at a predetermined velocity in a thin, flat, sheet-like, laminar, planar configuration; angularly deflecting the flowing aqueous slurry of fibers; angularly discharging the aqueous slurry of fibers upon a moving forming surface having a predetermined velocity; and forming thereon a foraminous, single-layer, pseudo-interwoven fibrous structure in the form of a randomly intermixed crossed lattice.

3,822,184

**N<sup>16</sup> REACTOR POWER MEASURING SYSTEM**  
Harald H. Weiss, Vienna, Austria, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Dec. 30, 1970, Ser. No. 102,617  
Int. Cl. G21c 17/02

U.S. Cl. 176—19

5 Claims



An N<sup>16</sup> reactor power measuring system is disclosed herein for measuring the thermal power of a nuclear reactor. The system includes a build-up simulator in a feedback loop to compensate for the incomplete decay of the N<sup>16</sup> in the coolant loop before the coolant is returned to the reactor.

3,822,185

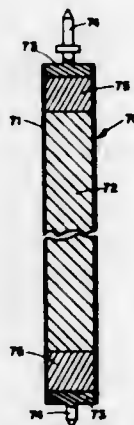
### FUEL ELEMENT FOR A COMPACT POWER REACTOR

Joseph R. Wetch, Woodland Hills, and Herman M. Dieckamp and Lewis A. Wilson, Canoga Park, Calif., assignors to the United States Atomic Energy Commission  
Original application May 4, 1960, Ser. No. 26,904.  
Divided and this application Mar. 28, 1961, Ser. No. 109,475

Int. Cl. G21c 3/02, 3/20

U.S. Cl. 176—70

4 Claims



1. A nuclear reactor fuel element adapted to operate at high temperatures consisting essentially of a mixture of zirconium hydride and fissionable fuel, a cladding

enclosing said mixture, and a boron-free ceramic coating on the inside surface of said cladding to minimize diffusion of hydrogen out of the fuel element.

3,822,186

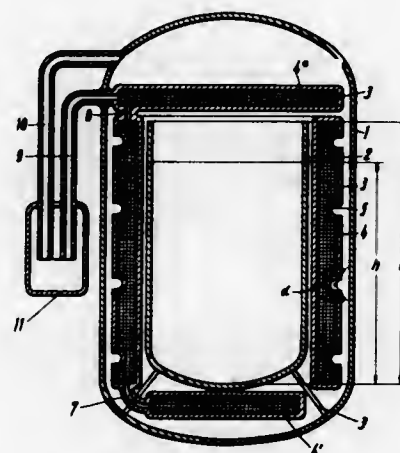
### PRESSURE VESSEL

Gundolf Rajakovic, Wien, Austria, assignor to Gebr. Boehler & Co. AG., Kepfenberg, Austria  
Filed Aug. 9, 1971, Ser. No. 169,950  
Claims priority, application Austria, Aug. 21, 1970, 7,586/70

Int. Cl. G21c 13/02

U.S. Cl. 176—87

6 Claims



An inner container has an inner bottom and defines an inner space and is adapted to hold a liquid coolant in said inner space to a predetermined level. An outer container contains said inner container and has an outer bottom spaced below said inner bottom. The outer container defines with said inner container an outer space extending below and around said inner container. A solid heat-insulating layer extends in said outer space below and around said inner container and upwardly at least to said predetermined level.

3,822,187

### CULTIVATION OF MICRO-ORGANISMS

Jean Amandric du Chaffaut, 39 Boulevard Saine-Lucie, 13 Marseille 7e, France, and Bernard Maurice Laine, 4 Boulevard de Touraine, 13 Lanera, France  
No Drawing. Continuation of abandoned application Ser. No. 777,474, Nov. 28, 1968. This application Mar. 3, 1972, Ser. No. 231,712  
Claims priority, application Great Britain, Nov. 27, 1967, 53,744/67

Int. Cl. C12b 1/00

U.S. Cl. 195—28 R

9 Claims

A two stage continuous process for the production of a micro-organism by cultivation on a hydrocarbon substrate and for improving a hydrocarbon feedstock, wherein an essential aqueous phase nutrient is either absent from the second phase or present in insufficient quantity to permit unimpeded growth. Preferably additional water is present in the second stage.

3,822,188

### METHOD OF PRODUCING 1,4'-DIHYDROXY-3-n-PENTYL-6,6,9-TRIMETHYL-6a,7,10,10a-TETRAHYDRODIBENZO[b,d]PYRAN

Earl Elmer Fager, Lake Villa, and Norman Earl Wildburg, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.  
No Drawing. Original application Oct. 19, 1972, Ser. No. 298,900. Divided and this application Aug. 1, 1973, Ser. No. 384,554

Int. Cl. C07c 67/00

U.S. Cl. 195—51 R

4 Claims

The compound 1,4'-dihydroxy-3-n-pentyl-6,6,9-trimethyl-6a,7,10,10a-tetrahydrodibenzo[b,d]pyran,

which can be prepared by microbial transformation of 1-hydroxy-3-n-pentyl-6,6,9-trimethyl-6a,7,10,10a-tetrahydrodibenzo[b,d]pyran. The compound is useful as an anti-depressant agent.

3,822,189

### ENZYMATIC TIME-TEMPERATURE INDICATING METHODS AND DEVICES

Sven Ivan Arvid Tormarck, Malmo, Sweden, assignor to Food Control AB, Malmo, Sweden  
Filed Dec. 8, 1972, Ser. No. 313,316  
Claims priority, application Sweden, Dec. 10, 1971, 15,855/71

Int. Cl. G01n 31/14

U.S. Cl. 195—103.5 R

9 Claims

Enzymatic time-temperature indicating method and device utilizing an enzyme and its substrate which react with each other in a reaction zone to give a reaction product that is indicated by the visible change of an indicating substance and, to adjust the time needed for visible change at high temperatures, a source of said reaction product supplying an additional amount of reaction product to the reaction zone in response to time and temperature.

3,822,190

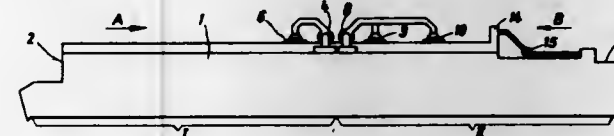
### CALCINING OF CARBON SUBSTANCES AND CARBONACEOUS ROCKS IN A TUNNEL KILN

Karl Heinz Fischer, Newumhof, near Kraftshof, Germany, assignor to Ludwig Riedhammer GmbH  
Filed Oct. 11, 1967, Ser. No. 674,617  
Claims priority, application Germany, Nov. 16, 1966, R 44,589

Int. Cl. C10b 47/20

U.S. Cl. 201—15

5 Claims



A method is provided for calcining carbon substances and carbonaceous rocks in a tunnel kiln wherein a substantially oxygen free atmosphere is maintained throughout the kiln while feeding an oxygen free scavenging gas under a slight excess pressure into the calcining channel, and withdrawing the gas and binding agent vapors from the channel in that region of the kiln where the largest amount of binding agent vapors occur.

3,822,191

### DOOR CLEANER FOR COKE OVEN

Nagayoshi Komuro, 28-2, 1-chome, Asahicho, Nerima-ku, Tokyo, Japan  
Filed Aug. 25, 1972, Ser. No. 283,922  
Claims priority, application Japan, Apr. 10, 1972, 47/41,385

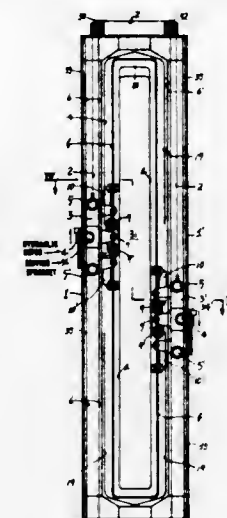
Int. Cl. B23d 79/00

U.S. Cl. 202—241

16 Claims

The door cleaner is capable of automatically scraping a door's sloping edge, knife edge and recessed inside surface to remove tar and the like adhered thereto. The cleaner comprises a substantially rectangular support frame arranged to surround a coke oven door sealing member. A pair of carriers are mounted on the frame and engage with a guide thereon for movement along the frame. Each carrier has a motor and reduction gearing driving a respective sprocket engaged with a fixed chain on the frame, to move the carriers along the frame, the two carriers being interconnected by another chain so that they move in respective opposite directions. Each carrier

has a pair of scraper devices thereon each pivotally mounted at a respective end thereof and extending inwardly from the carrier. A cutter device is mounted on each carrier at the inner side thereof and includes cutter means rotatable about horizontal axes extending substantially



parallel to the adjacent sloping edge surface of the sealing member. The cutter device is pivoted intermediate its ends, and has a rotary cutter on each end, and the device is controlled, by a hydraulic rotary cylinder, to engage either the upper or the lower cutter with a door surface.

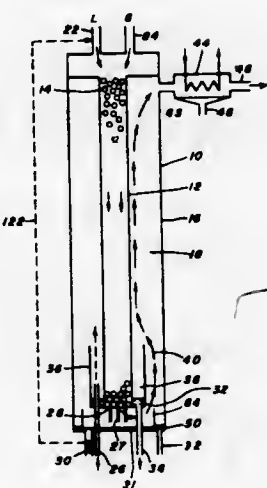
3,822,192

### EVAPORATIVE METHOD

Melvin H. Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.  
Filed Dec. 8, 1971, Ser. No. 206,086  
Int. Cl. B01d 1/06, 1/10, 1/14

U.S. Cl. 203—49

25 Claims



The method of evaporation featuring humidification is effected in a chamber maintained at a downwardly increasing temperature gradient. The liquid being treated and a vapor carrier gas are passed downwardly through the chamber where the carrier gas is enriched in vapor from the liquid. The enriched carrier gas exiting from the bottom of the chamber is moved upwardly alongside the chamber and in heat transfer relation with the fluids within the chamber. Heat is applied to the bottom portions of the chamber to assure the desired temperature gradient. Condensation occurs on the outside of the chamber. This condensate and the concentrated liquid can be recovered. The heated liquid concentrate exiting the bottom of the chamber may be further treated.



3,822,193

**PROCESS AND APPARATUS FOR MAINTAINING A DIVIDED ACCUMULATOR**

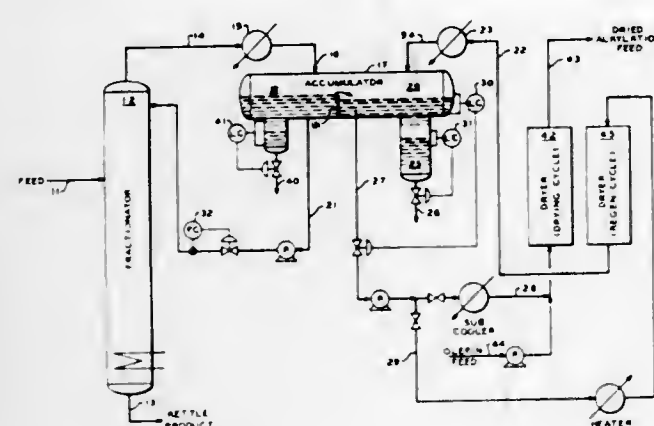
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 24, 1971, Ser. No. 183,472

Int. Cl. B01d 3/00

U.S. Cl. 203—39

9 Claims



A method is provided whereby liquid paraffin is accumulated and distributed from a vessel divided internally by a weir, so that two disparate streams can be maintained in the vessel with mixing of inlet materials on one side of the weir while maintaining an unmixed material on the other side of the weir. In one embodiment of the invention isobutane reflux liquid is maintained on one side of the weir and overflowed into a second zone where it is mixed with the wet effluent from a feed stream drier which contains isobutane, olefins, and water. Free water is trapped from the mixed stream and decanted from this zone.

3,822,194

**ACID ZINC ELECTROPLATING**

John Derek Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

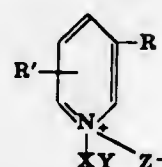
No Drawing. Filed June 28, 1971, Ser. No. 157,662

Int. Cl. C23b 5/12, 5/46

U.S. Cl. 204—55 R

12 Claims

Acid zinc electroplating baths at pH 2.5 to 5.5 are provided which use as additives compounds with the general formula:



wherein

R is —CONH<sub>2</sub>, —CN, —CONHNH<sub>2</sub>, —COOH or —COOR' where R' is an alkyl group of 1 to 4 carbon atoms,

R' is hydrogen, halogen or an alkyl group of 1 to 4 carbon atoms,

X is an alkyl group of 1 to 8 carbon atoms,

Y is —COOH, —COO<sup>-</sup>, —SO<sub>3</sub>H, —SO<sub>3</sub><sup>-</sup> or —CONH<sub>2</sub>, and

Z<sup>-</sup> is a halide ion or is absent when Y is —COO<sup>-</sup> or —SO<sub>3</sub><sup>-</sup>.

3,822,195

**METAL PRODUCTION**

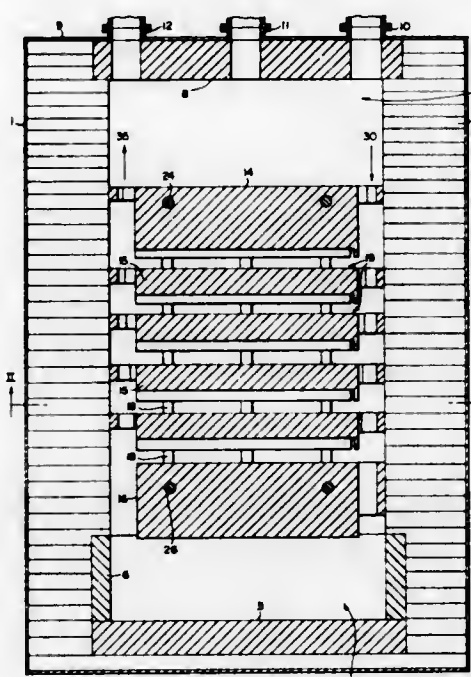
M. Benjamin Dell, Pittsburgh, Warren E. Haupin, Lower Burrell, and Allen S. Russell, New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 8, 1971, Ser. No. 178,650

Int. Cl. C22d 3/00, 3/08, 3/12

U.S. Cl. 204—64

16 Claims



Metal such as aluminum is produced electrolytically from the metal chloride dissolved in molten solvent of higher decomposition potential, in a cell which includes an anode, at least one intermediate bipolar electrode and a cathode in superimposed relationship defining inter-electrode spaces, with bath flow through the inter-electrode spaces effecting removal therefrom of metal produced, and permitting accumulation of metal by settling from the outflowing bath.

3,822,196

**FABRICATION OF SOFT PLASTIC CONTACT LENS BLANK AND COMPOSITION THEREFOR**

Kenneth F. O'Driscoll, Williamsville, and Allan A. Isen, Buffalo, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Original application Nov. 30, 1969, Ser. No. 880,828, now Patent No. 3,700,761. Divided and this application Aug. 25, 1972, Ser. No. 283,735

Int. Cl. B01j 1/10; C08d 1/22; C08f 33/04

U.S. Cl. 204—159.16

2 Claims

Graft or block copolymers of hydroxy alkyl methacrylate esters and polyvinyl pyrrolidone are (1) cast in a shaping mold as a monomer-polymer dispersion, polymerized to a solid at 40–60° C. in the presence of low and medium temperature free radical initiators, (2) the solid taken out of the mold and heated to 90–120° C., and then post-polymerized by (3) radiation while dry and by (4) hydrogen peroxide treatment to form hygroscopic, solid, shaped masses which may be cut in the dry state, after step (1), into contact lenses. The lenses may be equilibrated in the wet state by hydrating with normal saline solution. The lenses may be maintained by treatment with hydrogen peroxide. Steps (3) and (4) toughen the lens, increase its elasticity and its elastic recovery and improve its dimensional stability. From 20–45% by weight of polyvinyl pyrrolidone imparts hygroscopic and unusual water-swelling characteristics. The

3,822,198

**BREAK RESISTANT MEMBRANE**

Friedrich G. K. Bauke, Mainz, Germany, assignor to Jenaer Glaswerk, Schott &amp; Gen.

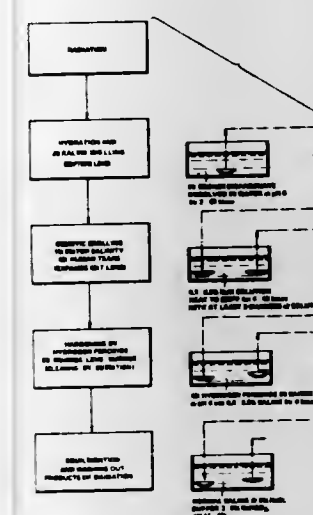
Filed Aug. 6, 1971, Ser. No. 169,674

Claims priority, application Germany, Aug. 13, 1970, P 20 40 200.0

Int. Cl. G01n 27/46

U.S. Cl. 204—195 M

7 Claims



vinyl pyrrolidone incorporation, the lens is readily cleaned after use in the eye with dilute hydrogen peroxide to rid it of imbibed muco-protein, catalase and the like.

3,822,197

**DEVICE FOR EXTRACTING ELECTROPHORETICALLY SEPARATED SUBSTANCES**

Stephan Hubertus Anton Nees, Bochum, and Wilhelm Schmidt, Marburg, Germany, assignors to Color Messtechnik GmbH, Lorch, West Germany

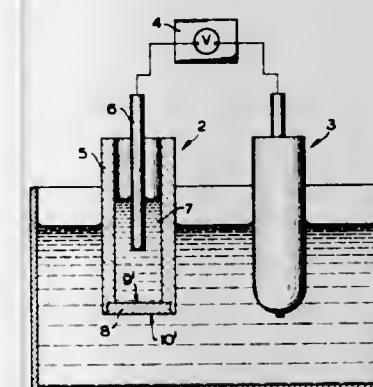
Filed Sept. 6, 1972, Ser. No. 286,767

Claims priority, application Germany, Sept. 6, 1971, P 21 44 483.7

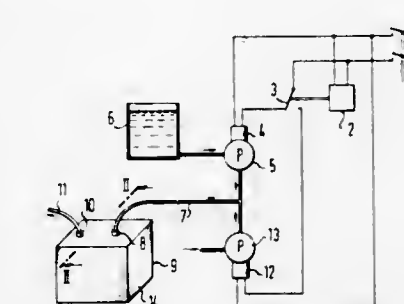
Int. Cl. B01k 5/00

U.S. Cl. 204—299

21 Claims



A process and device for carrying out the extraction of electrophoretically separated substances by means of a flowing extraction liquid which comprises a substantially perpendicular separating chamber having a substantially elongated rectangular cross section, an extraction chamber comprising a plate having an opening, the longitudinal and transverse measurements of said extraction chamber corresponding substantially to the inside measurements of the cross section of said separating chamber, the front sides of said separating chamber having a continuous channel for the feeding in and discharge of said extraction liquid toward and away from said extraction chamber, said channels meeting said plate perpendicularly and conduit means in said chamber for the feeding in and discharge of the extraction liquid.



Membranes for use in electrodes for the measurement of ion concentrations wherein the membranes have at least two layers of different materials, such as a membrane having a layer of impervious polycrystalline AgCl attached to a layer of impervious polycrystalline AgBr.

3,822,199

**ELECTRODE**

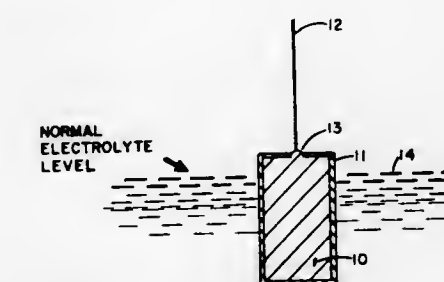
James R. Luck, Burnsville, and Thomas N. Zenk, Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 5, 1972, Ser. No. 241,283

Int. Cl. B01k 3/06; G01n 27/30

U.S. Cl. 204—195 M

11 Claims



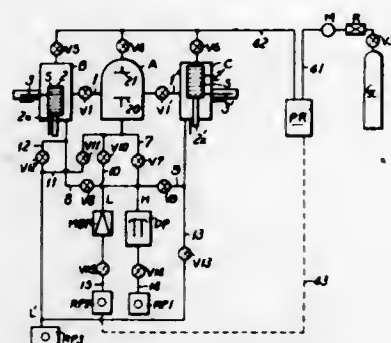
An improved specific-ion measuring electrode for the electrolytic determination of fluoride ion activity in aqueous solution has as its ion-sensitive element an inner electrode which is covered with a layer of polymer membrane which both exhibits diffusion-limiting properties and contains pH biasing groups which exhibit acidic properties in aqueous solution, thereby both limiting the consumption of the aluminum electrode in the determination reaction and eliminating the long-standing requirements of both constantly agitating the measured solution and buffering that solution to maintain a constant pH. Preferred membranes are sulfonated, cross-linked polyvinyl aromatic materials such as polystyrene. A method of making the electrode is also disclosed which includes in situ polymerization of the monomer and incorporation of the acidic groups thereafter in the process.



### 3,822,200 APPARATUS FOR PRODUCING SPUTTERED FILMS

Tsunehiko Endo, 1716 Yahara 2-chome, Nerima-ku, Tokyo, Japan  
Original application July 9, 1971, Ser. No. 161,168, now Patent No. 3,776,830. Divided and this application Aug. 8, 1972, Ser. No. 278,724  
Int. Cl. C23c 15/00  
U.S. Cl. 204—298

4 Claims

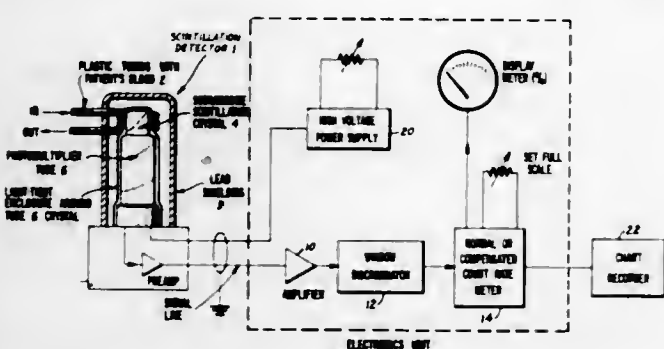


A process for producing sputtered films and an apparatus for carrying out said process in which substrates are transferred between a sputtering chamber and one of at least two preliminary chambers both of which sputtering and one preliminary chambers are maintained under the same pressure and gas atmospheric conditions, said substrates are sputtered films thereon while they are disposed in the sputtering chamber and during the transfer and sputtering of said substrates the other of said preliminary chambers is charged with a new supply of substrates to be sputtered films thereon and evacuated so that the last-mentioned preliminary chamber is ready for a subsequent sputtering cycle whereby substrates are continuously sputtered.

### 3,822,201 METHOD AND APPARATUS FOR RENAL DIALYSIS MONITORING

John R. Waters, Towson, Md., assignor to William H. Johnston Laboratories, Inc., Baltimore, Md.  
Filed Oct. 7, 1971, Ser. No. 187,514  
Int. Cl. B01d 13/00, 31/00  
U.S. Cl. 210—22

12 Claims



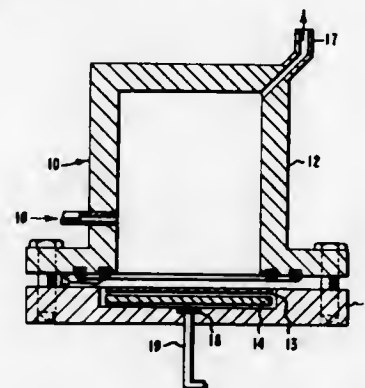
The application discloses method and apparatus for monitoring the progress of renal dialysis, i.e., removal of impurities from the bloodstream. A radioactively labelled glomerular substance is injected into the bloodstream. The radioactive substance is dialyzed from the bloodstream at substantially the same rate as the impurities. The exact relationship between the rates of removal of impurities and of the radioactive substance is determined experimentally. A detector is arranged to monitor the amount of radioactive material remaining in the bloodstream and to present a continuous readout showing the fraction

of the initial radioactively labelled substance (and thereby the fraction of impurities) remaining in the bloodstream. The detection meter is initially calibrated to read 100% at the start of the dialysis procedure; dialysis is continued until a suitable reading such as 30% (meaning the level of remaining radioactive substance is 30% of the original level) is reached. A typical radioactive isotope material suitable for use as a labelling material is  $^{113m}\text{In}$  or  $^{99m}\text{Tc}$ ; a suitable glomerular substance suitable for use as a carrier is DTPA (diethyltriaminepentaacetic acid).

### 3,822,202 HEAT TREATMENT OF MEMBRANES OF SELECTED POLYIMIDES, POLYESTERS AND POLYAMIDES

Harvey Herbert Hoehn, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Nov. 2, 1972, Ser. No. 303,210  
Int. Cl. B01d 13/00  
U.S. Cl. 210—23

32 Claims

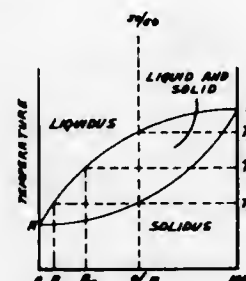


Certain polymeric membranes are heated at elevated temperatures to improve their gas separation abilities.

### 3,822,203 CHROMATOGRAPHIC TECHNIQUES PROVIDING VARIABLE-SELECTIVITY STATIONARY PHASE

Raymond Amino, Plainville, Mass., and Peter F. McCrea, Cranston, R.I., assignors to The Foxboro Company, Foxboro, Mass.  
Continuation of abandoned application Ser. No. 15,131, Feb. 27, 1970. This application Oct. 10, 1972, Ser. No. 295,863  
Int. Cl. B01d 15/08  
U.S. Cl. 210—31 C

10 Claims

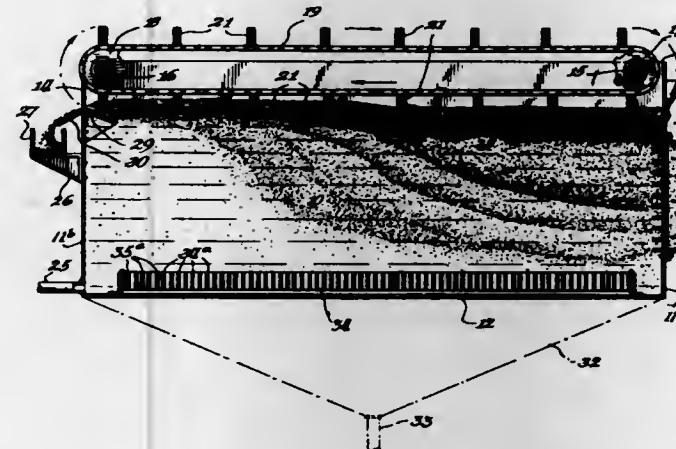


Techniques for obtaining substantial changes in the specificity of a chromatographic separation column by changing the temperature of the sorbent material. In a disclosed illustration, the sorbent comprises a solid solution of two substances having a relatively broad thaw-melt region, the substances further being selected to possess different degrees of selectivity toward various classes of solutes. The technique can be used to obtain optimized separation of components, and to provide a basis for permitting identification of components.

### 3,822,204 METHOD AND APPARATUS FOR SEPARATION OF SLUDGE

Fumio F. Sako, San Jose, and Stephen S. Chandler, Los Altos, Calif., assignors to FMC Corporation  
Continuation of abandoned application Ser. No. 584,774, Oct. 6, 1966. This application June 12, 1970, Ser. No. 45,882  
Int. Cl. B03d 1/00; C02c 1/28  
U.S. Cl. 210—44

21 Claims



An apparatus for separating a sludge-containing liquid medium produced by the processing of sewage into a clarified liquid and a sludge concentrate. Companion electrodes in the bottom of the container produce gas by electrolysis of water which rises as dispersed bubbles and upon occlusion to sludge particles floats the particles to the liquid surface. Sludge concentrate floating adjacent the surface of the liquid medium is moved out of the container by a skimmer and clarified liquid is discharged from the lower portion of the container.

### 3,822,205 METHOD OF CLEARING WASTE COLORED AQUEOUS LIQUID

Seiburo Oohara, Kyoto, and Kazuhiko Nakashima, Osaka, Japan, assignors to Kanebo Ltd., Tokyo, Japan  
No Drawing. Filed Apr. 18, 1973, Ser. No. 352,269  
Claims priority, application Japan, Apr. 25, 1972, 47/41,613; May 8, 1972, 47/45,228  
Int. Cl. C02c 5/02  
U.S. Cl. 210—52

12 Claims

Waste colored aqueous liquid containing non-anionic coloring substance is cleared by coagulating the non-anionic coloring substance with a coagulating agent containing condensation products of sulfonated dihydroxydiphenylsulfones or sulfonated dihydroxydiphenyls with lower aliphatic aldehydes or sulfonated condensation products of dihydroxydiphenylsulfones or dihydroxydiphenyls with lower aliphatic aldehydes, and removing the coagulated dye from the waste aqueous liquid.

### 3,822,206 PREPARATION OF SOLID FIRE-FIGHTING COMPOSITIONS

David Curran, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England  
Filed Nov. 13, 1972, Ser. No. 305,656  
Claims priority, application Great Britain, Dec. 7, 1971, 56,742/71  
Int. Cl. A62d 1/00  
U.S. Cl. 252—2

14 Claims

A solid fire-extinguishant composition is prepared by reacting urea and a carbonic salt of sodium or potassium wherein the reaction mixture is in the form of a solution or slurry in a liquid which is a solvent for at least one of

the reactants. The solution or slurry is then evaporated. The active component of the extinguishant which is prepared has the empirical formula  $\text{MC}_2\text{N}_2\text{H}_2\text{O}_2$ , wherein M is sodium or potassium.

### 3,822,207 FIRE-FIGHTING

Robert David Howard and Donald Lomas, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England  
No Drawing. Filed June 27, 1972, Ser. No. 266,727  
Claims priority, application Great Britain, July 15, 1971, 33,308/71  
Int. Cl. A62d 1/00  
U.S. Cl. 252—8

11 Claims

Chloropentafluoroethane is a general purpose fire extinguishing agent of low toxicity. In a mixture with other halogenated alkanes, especially bromochlorodifluoromethane and bromotrifluoromethane, very effective extinguishing compositions may be made giving low concentrations of breakdown products in use against liquid fuel fires.

### 3,822,208 ELECTRIC CONTACT GREASE

Akira Inami, Hirakata, Sanichi Shida, Nara, Mikio Haga, Hirakata, and Kotaro Kariya, Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Apr. 2, 1973, Ser. No. 346,794  
Claims priority, application Japan, May 25, 1972, 47/52,242  
Int. Cl. C10m 7/24, 7/32  
U.S. Cl. 252—42.1

1 Claim

An electric contact grease consisting essentially of:

- a major amount of di-2-ethyl-hexyl sebacate,
- from 0.5 to 40.0 percent by weight of polyoxypropylene butyl ether,
- from 0.2 to 5.0 percent by weight of an amino compound as an antioxidant,
- from 9 to 18 percent by weight of lithium stearate.

### 3,822,209 LUBRICANT ADDITIVES

Gordon G. Knapp, Southfield, and Norman A. Le Bel, Detroit, Mich., assignors to Ethyl Corporation, Richmond, Va.  
No Drawing. Filed Feb. 1, 1966, Ser. No. 523,886  
Int. Cl. C10m 1/32, 1/38; C07c 87/26; C07d 51/70  
U.S. Cl. 252—47

16 Claims

High molecular weight allylic amines are made by halogenating high molecular weight alpha or beta olefins followed by reaction with ammonia or a primary or secondary monoamine. The products are dispersants for lubricating oil.

### 3,822,210 FINE SPINEL-TYPE FERRITE PARTICLES FEATURING HIGH DISPERSIBILITY AND THE PROCESS OF MANUFACTURE OF SAME

Keizo Iwase, 52 Tadekura-cho, Shimogamo; Toshio Takada, 1 Nishisenouchi-cho, Kitashirakawa; and Masao Kiyama, 12-67 Shobuen-cho, Kamikamo, Kita-ku, all of Kyoto, Japan  
Continuation of application Ser. No. 871,542, Nov. 9, 1969, which is a continuation of application Ser. No. 528,747, Feb. 21, 1966, both now abandoned. This application Aug. 10, 1972, Ser. No. 279,317  
Int. Cl. C04b 35/32, 35/38  
U.S. Cl. 252—62.64

18 Claims

Spinel-type single-crystal ferrite particles are provided of substantially isotropic shape containing iron and at least one kind of divalent metal other than iron, the ratio of the total number of iron atoms to the divalent metal atoms being at least 2 to 1, the average particle size ranging from about 0.05 to 1.0 micron. The ferrite crystals



are made by admixing an aqueous solution containing ferrous ions and the divalent metal ions with 0.55 to 3 mol equivalents, relative to acid in the solution, of an alkali to obtain a suspension of the hydroxides at a pH of more than 6.5 and thereafter bubbling an oxidizing gas into the suspension maintained at 60° C. to 90° C. until the hydroxides disappear and ferrite particles are formed.

3,822,211

## FISHERMAN'S SOAP

La Verne N. Morton, Paton, Iowa, assignor to American Leisure Products, Inc.

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,816

Int. Cl. A01k 85/00; C11d 7/44, 9/38

U.S. Cl. 252—132

3 Claims

A fisherman's soap composition is described herein consisting essentially of soap, anise oil, mulberry juice and cinnamon. The ingredients are present in the relative proportions of 100 pounds of soap, 4 to 8 ounces of anise oil, 3 to 6 ounces of mulberry juice and 1 to 5 ounces of cinnamon. The soap may be used by a fisherman to wash bait for preventing excessive human scent from remaining on the bait and for providing the bait with sufficient anise oil and cinnamon to substantially help in attracting fish to the bait. The fisherman may also use the soap to wash his hands to prevent human scent from being applied to the bait.

3,822,212

## CLEANSING OF DENTURES

Kenneth V. Bryant and Bill W. Eddleman, Arlington, Tex., assignors to John A. Freeman, Kenneth V. Bryant and Bill W. Eddleman, trustees

Filed Nov. 3, 1971, Ser. No. 195,388

Int. Cl. A61k 7/16; C11d 7/08, 7/50

U.S. Cl. 252—136

7 Claims



Method and apparatus for cleaning dentures characterized by removing the dentures from the mouth, spraying a denture cleaning solution on the dentures, brushing and rinsing the dentures and returning them to the mouth of the wearer such that no time has to be lost soaking the dentures to effect cleaning thereof. Also disclosed are preferred embodiments delineating specific denture cleaning solutions and apparatus for spraying the denture cleaning solution onto the dentures.

3,822,213

## HALOGENATED HYDROCARBON COMPOSITIONS AND USES THEREOF

Peter Graham Johnson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 14, 1972, Ser. No. 218,017

Claims priority, application Great Britain, Jan. 21, 1971, 2,866/71

Int. Cl. C11d 7/22

U.S. Cl. 252—162

8 Claims

A cleaning composition which is a water-in-oil emulsion comprising one or more halogenated hydrocarbon solvents, from 5% to 70% by weight of water and a surface-active agent or mixture of surface-active agents free from fatty acids and salts thereof of which the 1% by weight solution in trichloroethylene has an interfacial tension against water of less than 10 dynes/cm. and a contact angle advancing against water on a polished stainless steel substrate which is lower than the contact angle of trichloroethylene and differs therefrom by not more than 30 degrees.

3,822,214

## PLASTIC ORNAMENT AND COMPOSITION FOR FORMING THE SAME

Charles W. Juby, 901 Washington St., Wilmington, Del. 19801

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,488

Int. Cl. C09k 1/02

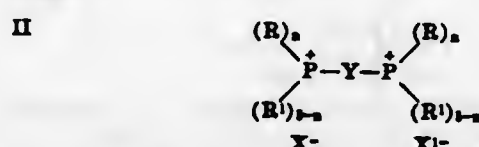
U.S. Cl. 252—301.3 R

3 Claims

A plastic ornament in the form of a luminescent reflector which glows in the dark and may be directly placed in contact with a light bulb without plastic deformation from the heat generated therein is disclosed. The chemical composition which gives this article these properties is comprised of (a) from 75–85 parts by weight of a high heat resistant polystyrene, (b) from 3 to 5 parts by weight of a 1:1 butadiene styrene copolymer, (c) from 5 to 8 parts by weight of a mixture of 99.99 parts zinc sulfide and from about 100 to 200 parts per million of copper sulfide and (d) from about 5 to 15 parts by weight of either a monophosphonium halide of the formula:



wherein R, R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are lower alkyl groups or alkenyl, cyano, hydroxy, carboxy substituted alkyl, aryl, aralkyl, imidazolyl, vinyl, halo, polyhalo, nitro substituted aralkyl, dialkylaminoalkyl, carboxalkoxyalkyl, carboxyalkenyl, carboxalkoxyalkenyl, and X is bromine, chlorine or iodine or a diposphonium halide of the formula:



wherein R and R<sup>1</sup> represents a radical such as aryl, alkyl, cyano, hydroxy substituted alkyl, or alkenyl, Y represents an alkylene radical, or an arylene, an unsaturated alkylene radical, or an oxoalkylene radical and X and X<sup>1</sup> each represent a bromine, chlorine or iodine radical, either alone or admixed with an equal part of hexabromobenzene.

3,822,215

## PHOSPHOR RARE EARTH OXYCHLORIDE COMPOSITIONS

William Henry Grodkiewicz, Murray Hill, Shobha Singh, Summit, and Le Grand Gerard Van Uiter, Morris Township, County of Morris, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original application Apr. 16, 1969, Ser. No. 822,847, now Patent No. 3,659,136. Divided and this application Jan. 24, 1972, Ser. No. 220,143

Int. Cl. C09k 1/08

U.S. Cl. 252—301.4 H

1 Claim

A class of compounds is found particularly effective for up-conversion of infrared radiation to light of visible wavelengths. These compounds, exemplified by the oxychlorides and fluorochlorides, contain the ion pair Yb<sup>3+</sup>—Er<sup>3+</sup>, Yb<sup>3+</sup>—Ho<sup>3+</sup>, Yb<sup>3+</sup>—Tm<sup>3+</sup> or mixtures thereof.

3,822,216

## ACID OR MINERAL ANION STABILIZATION OF SILICA SOLS

David P. Schaefer, Hinsdale, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,691

Int. Cl. B01j 13/00; C01b 33/14

U.S. Cl. 252—313 S

5 Claims

In the stabilization of highly concentrated sols of the silica type ranging from 35–50% concentration, which have been subjected to sequential double deionization through cationic and anionic beds, the addition to the sol of a small amount of an anion of an inorganic acid amounting to 0.01 to 0.15 weight percent of the anion based upon a 50% silica sol product. The specific anion is selected from sulfuric, phosphoric, hydrochloric, and nitric and is added directly or obtained by utilization of impurities in the silica sol and omission of anion bed treatment. The stabilization effectively prevents gelation during subsequent alkalization as in the preferred ammoniation.

3,822,217

## FOAM FORMING DEVICE

Eugene D. Rogers, Chula Vista, Calif.

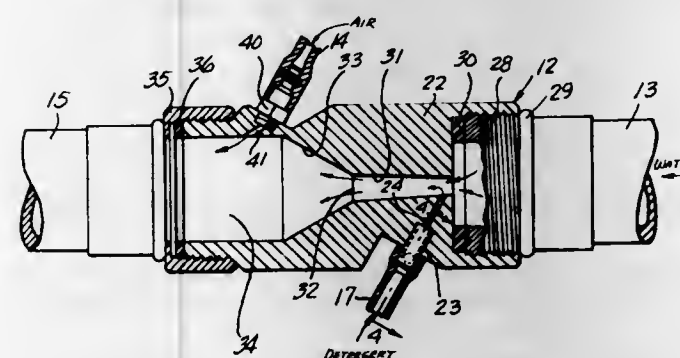
(3318 Kennelworth Lane, Bonita, Calif. 92002)

Continuation-in-part of application Ser. No. 203,174, Nov. 30, 1971, which is a continuation-in-part of application Ser. No. 73,324, Sept. 18, 1970, both now abandoned. This application Feb. 9, 1973, Ser. No. 331,261

Int. Cl. A62c 5/04; B01d; B01f

U.S. Cl. 252—359 E

25 Claims



Foam forming apparatus consisting of a handle having a water supply line connected thereto and having an expanded venturi passage leading to an outlet chamber. The conduit has an inlet check valve for detergent at the narrow end of the venturi passage, which provides suction for drawing detergent into the incoming stream of water. A source of compressed air is connected through a fitting

to the outlet chamber where the air is mixed with the water and detergent and generates foam. A booster pump may be employed in the assembly ahead of the air inlet fitting.

3,822,218

## PRODUCTION OF ACTIVATED CARBON FROM RUBBER AND A CARBONACEOUS BINDER

Mack P. Whittaker, Stamford, Conn., and Lloyd I. Grindstaff, Elizabethton, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,098

Int. Cl. C01b 31/08

U.S. Cl. 252—421

7 Claims

A dense, solid pellet of carbon suitable for activation is prepared from scrap rubber, tires, and other rubber vulcanizates by adding a carbonaceous binder to the rubber prior to destructive distillation thereof.

3,822,219

## CATALYST COMPOSITION

Conrad W. Kaminski, Gastonia, N.C., and Jerome F. Eastham, Memphis, Tenn., assignors to Gulf Resources & Chemical Corporation, Houston, Tex.

No Drawing. Original application July 13, 1970, Ser. No. 57,820, now Patent No. 3,742,077, dated June 26, 1973. Divided and this application Aug. 30, 1972, Ser. No. 284,778

Int. Cl. B41j

U.S. Cl. 252—431

19 Claims

Hydrocarbon-soluble organometallic complexes of metals of Groups I and IIa of the Periodic System, exemplified by complexes of di-*n*-butylmagnesium with *n*-butyllithium or *n*-butylpotassium, said complexes being useful as anionic catalysts in connection with polymerizations of monomers such as, for instance, those of conjugated dienes exemplified by isoprene and of 1,3-butadiene, and as catalysts in connection with telomerizations such as, for instance, the telomerization of benzene or toluene with isoprene or 1,3-butadiene.

3,822,220

## PREPARATION OF CATALYSTS

Preston Leonard Veltman, Severna Park, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,010

Int. Cl. B01j 11/06, 11/32, 11/40

U.S. Cl. 252—458

5 Claims

Inorganic oxide catalyst supports are coated with catalytically active metals by a process which involves first forming a semi-conductive coating of carbon on the substrate and then contacting the coated substrate with a solution of the catalytically active metal ions under electrolysis conditions. The catalytically active metal deposits on the surface of the carbon coated surface in a thin, uniform layer. The carbon may then be removed by conventional oxidation techniques.

3,822,221

## NOVEL HYDROREFORMING CATALYSTS

Joseph Edouard Weisang and Philippe Engelhard, Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Continuation-in-part of application Ser. No. 11,325, Feb. 13, 1970, now Patent No. 3,700,588, dated Oct. 24, 1972. This application Mar. 15, 1972, Ser. No. 234,875 Claims priority, application France, Mar. 24, 1971, 7110459

The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed

Int. Cl. B01j 11/08, 11/22

U.S. Cl. 252—466 PT

3 Claims

Novel catalysts suitable for hydrorefining comprising of alumina, tin or lead and platinum and iridium; a



catalyst of alumina, on which tin metal in a particular manner has been first deposited and thereafter platinum has been deposited thereon, is especially advantageous.

# ERRATUM

For Class 252—527 see:  
Patent No. 3,822,312

3,822,222

## DETERGENT COMPOSITION

Robert Pettigrew, Wirral, and Peter Thimington, Lacey, near Grimsby, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed July 3, 1972, Ser. No. 268,310  
Claims priority, application Great Britain, July 7, 1971, 31,889/71

Int. Cl. C11d 1/04, 1/22

U.S. Cl. 252—558

9 Claims

A fabric-washing detergent composition incorporates, as a detergency builder, from 5 to 70% by weight of a water-soluble or water-dispersible salt of a substantially linear C<sub>10</sub> to C<sub>20</sub> alpha-hydroxy monocarboxylic acid.

3,822,223

## PREPARING POLYURETHANES WITH A DIALKYL TIN CARBOXYLATE/TERTIARY AMINE CATALYST COMBINATION

Paul G. Gemeinhardt, Pittsburgh, Pa., and J. W. Britain, New Martinsville, W. Va., assignors to Baychem Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 627,626, Apr. 3, 1967, which is a continuation-in-part of application Ser. No. 575,899, Aug. 29, 1966, which is a continuation of application Ser. No. 193,857, May 10, 1962, which is a continuation of application Ser. No. 835,456, Aug. 24, 1959, all now abandoned, which in turn is a continuation-in-part of application Ser. No. 771,242, Nov. 3, 1958, now Patent No. 3,397,158. This application Jan. 6, 1971, Ser. No. 104,466

Int. Cl. C08g 22/34, 22/46

U.S. Cl. 260—2.5 AC

13 Claims

A polyurethane foam is prepared by a process in which a polyalkylene ether polyol is reacted with an organic polyisocyanate with a catalyst which combines an organo-tin compound with a tertiary amine.

3,822,224

## PROCESS OF PREPARING VESICULATED CROSS-LINKED POLYESTER RESIN GRANULES

John Gillan, Nobel Park, Victoria, and Robert William Kernshaw, South Blackburn, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Continuation of abandoned application Ser. No. 98,169, Dec. 14, 1970. This application Aug. 22, 1972, Ser. No. 282,656

Claims priority, application Australia, Dec. 22, 1969, 65,645/69

Int. Cl. C08g 53/08

U.S. Cl. 260—2.5 N

8 Claims

A process of preparing vesiculated cross-linked polyester resin granules in which a solution in an essentially water-insoluble polymerisable unsaturated monomer of an unsaturated carboxylated polyester resin is suspended as discrete globules in an aqueous continuous phase in the presence of from 0.3 to 10.0 equivalents per carboxyl group of a base having a dissociation exponent of less than 8 and polymerisation initiated to cross-link the poly-

ester resin, the process being further characterised in that the said unsaturated polyester resin must be soluble in xylene in the weight proportion in which it is to be used in the process as a solution in the unsaturated monomer and when 5% by weight of an aqueous ammonia solution the ammonia content of which is one molar equivalent based on the acid value of the resin is stirred into the said xylene solution of polyester resin there is formed spontaneously therein a dispersion of aqueous liquid droplets essentially of less than 5 micron diameter which dispersion remains stable for at least 30 minutes.

3,822,225

## METHOD OF ELASTOMER STABILIZATION AND PRODUCTS THEREFROM

David V. Braddon, Charleston Heights, and Sten I. Falkenhag, Mount Pleasant, S.C., assignors to Westvaco Corporation, New York, N.Y.

No Drawing. Filed Sept. 14, 1972, Ser. No. 288,907

Int. Cl. C08c 13/08; C08d 11/04

U.S. Cl. 260—17.5

10 Claims

Stabilizing compositions comprising at least one triaryl phosphite, trialkyl phosphite or mixtures thereof and at least one modified lignin, the weight ratio of the phosphite to modified lignin is from 97/3 to 10/90. The modified lignins are produced by heat treating lignins in the presence of a nucleophile, such that a portion of the original guaiacyl structures are converted to catechols via a demethylation reaction. Elastomers may be protected against atmospheric degradation by the addition thereto of 0.01 to 5.0 parts by weight, preferably 0.25 to 2.0 parts, per 100 parts of elastomer of the stabilizing composition.

3,822,226

## CURABLE POLYISOCYANATE AND PHENOLIC ADDITION PRODUCTS AND PROCESS FOR CURING WITH TERTIARY AMINE

David D. Taft and Roger A. Schmidt, Columbus, Ohio, assignors to Ashland Oil Inc., Ashland, Ky.

No Drawing. Filed May 4, 1972, Ser. No. 250,121

Int. Cl. C08g 22/08

U.S. Cl. 260—18 TN

24 Claims

Novel low cost compositions suitable for a number of coating, filling, binder, and other applications and process for preparing same comprising mixing a polyisocyanate and phenolic addition product formed by reacting phenolic compounds with certain unsaturated materials and then curing the mixture rapidly at room temperature in the presence of a tertiary amine to crosslink the materials.

3,822,227

## HOMOGENEOUS MIXTURES OF POLYAMIDES AND POLYOLEFINS

Karl Heinz Hermann and Kurt Schneider, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 167,813, July 30, 1971. This application Jan. 18, 1973, Ser. No. 324,602

Claims priority, application Germany, Aug. 1, 1970, P 20 38 317.9

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 A

3 Claims

The present invention relates to a homogeneous mixture of polyamide, polyolefin and an oxidised wax and the preparation of said mixture.

3,822,228

## FLUORO-CHEMICAL SURFACTANTS FOR LATEX PAINTS

Robert G. Petrella, Glenolden, and Michael Langsam, Allentown, Pa., assignors to Air Products and Chemicals Inc., Allentown, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 875,590, Nov. 10, 1969. This application Feb. 2, 1972, Ser. No. 222,976

Int. Cl. C08f 3/92, 15/36

U.S. Cl. 260—29.6 F

11 Claims

Improved stain and dirt release properties are obtained in latex paint compositions by incorporating therein a fluorochemical composition having highly desirable surface active properties. The salt derivatives of such fluorochemical compositions have been found to provide the most desirable paint compositions.

3,822,229

## AQUEOUS BINDER COMPOSITIONS BASED ON CURABLE LIQUID SYNTHETIC RESIN, CURING AGENT THEREFOR, HYDRAULIC CEMENT AND PLASTICIZING AGENT

Elmer L. McMaster, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 10, 1972, Ser. No. 305,450

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 S

14 Claims

Plastic, aqueous binder compositions based on an ambient temperature curable liquid synthetic resin and an ambient temperature curing agent therefore, a hydraulic cement and sufficient water to cure the cement, and a plasticizing agent for the composition comprising an aqueous dispersion of (1) a film-forming carboxyl-containing polymer and (2) a six-membered carbocyclic compound having two vicinal carbonyl substituents; which dispersions, after being dried, are redispersible in water.

3,822,230

## COPOLYMERIC LATEXES MADE WATER-REDISPERSIBLE BY PRESENCE OF SIX-MEMBERED CARBOCYCLIC COMPOUND HAVING TWO VICINAL CARBOXYL SUBSTITUENTS

Alfred R. Nelson, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 234,319, Mar. 13, 1972. This application Jan. 22, 1973, Ser. No. 325,250

Int. Cl. C08f 15/40

U.S. Cl. 260—29.6 H

20 Claims

Latex compositions, which after being dried are redispersible in water, comprise aqueous dispersions of film-forming carboxyl-containing polymers and a six-membered carbocyclic compound having two vicinal carboxyl substituents and which is soluble in aqueous alkaline media. The dried compositions after being redispersed in water provide reconstituted latexes which have approximately the same particle size as the original latex. Representative compositions are a blend of the disodium salt of 1,2,3,6-tetrahydrophthalic acid and a latex of a copolymer of styrene, butadiene and acrylic acid as well as dried films or dried powders obtained therefrom. The compositions are obtained by mixing the carbocyclic compound with the latex constituents either before, during or after preparation of the latex or are obtained by in situ formation of the carbocyclic compound during emulsion polymerization.

3,822,231

## PRODUCTION OF POLYAMINO ACID SOLUTION IN ALCOHOLIC SOLVENTS

Yasuo Fujimoto, Yokohama, and Keizo Tatsukawa and Akio Matsunaga, Tokyo, Japan, assignors to Kyowa Hakko Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,748

Claims priority, application Japan, Sept. 6, 1971, 46/68,111; Feb. 24, 1972, 47/18,498

Int. Cl. C08g

U.S. Cl. 260—30.4 N

28 Claims

A unique polyamino acid solution is obtained by dissolving a polyamino acid in a solvent system containing at least one solvent selected from the group consisting of furfuryl alcohol, 1,3-dichloro-2-propanol, and 2,3-dichloro-1-propanol.

3,822,232

## COLD-SETTING COATING COMPOSITION BASED ON CARBOXYL-CONTAINING VINYL POLYMER

Ching Yun Huang, Minoo, Naomitsu Takashima, Fujisawa, Senzo Shimizu, Chigasaki, Masahiro Shimol, Hiratsuka, Masuya Ikegami, Chigasaki, Naoki Iwasaki, Hiratsuka, and Rokuro Fujita, Chigasaki, Japan, assignors to Mitsubishi Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,669

Claims priority, application Japan, Dec. 29, 1971, 47/3,114

Int. Cl. C08f 45/28, 45/30, 45/36

U.S. Cl. 260—31.2 MR

11 Claims

A cold-setting coating composition of one-package type comprising (1) a copolymer of at least one ethylenic or diene monomer and at least one  $\alpha,\beta$ -ethylenically unsaturated carboxylic acid, (2) a complex compound of (a) an alkyl or alkenyl titanate with (b) at least equimolar amount of a  $\beta$ -diketone or its mixture with at least one other keto-enol tautomeric compounds containing at least 0.5 mole of  $\beta$ -diketone, the ratio of said complex compound to the carboxyl group of said copolymer being 0.1 to 5.0 moles of the former to one equivalent of the latter; or a mixture of (a) an alkyl or alkenyl titanate and (b) at least equimolar amount of a keto-enol tautomeric compound, the ratio of the (a) component to the carboxyl group of said copolymer being 0.1 to 5.0 moles of the former to one equivalent of the latter, and (3) a non-aqueous solvent. The cured film obtained from the said coating composition is excellent in resistance to weathering, solvents, and chemicals as well as in adhesion, gloss, and hardness.

3,822,233

## SYNERGISTIC ORGANOTIN STABILIZER COMPOSITIONS AND RESINS STABILIZED THEREWITH

Christian H. Stapfer, Newtown, Pa., assignor to Cincinnati Milacron Chemicals Inc., Reading, Ohio

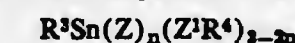
No Drawing. Continuation-in-part of application Ser. No. 780,888, Dec. 3, 1968, now Patent No. 3,630,993, dated Dec. 28, 1971. This application Oct. 13, 1971, Ser. No. 189,038

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 K

10 Claims

An improved stabilized composition comprises a synergistic combination of an organic thioanhydride and a monohydrocarbyl tin compound of the formula



wherein R<sup>3</sup> is a hydrocarbyl radical having 1 to 12 carbon atoms, Z and Z<sup>1</sup> are either oxygen or sulfur, R<sup>4</sup> is hydro-



gen or an organic radical bonded to Z<sup>1</sup> by a carbon atom and *n* is a number from 0 to 1.5 varying in increments of ½.

Halide containing resins stabilized with these compositions exhibit improved resistance to the development of early color during processing.

3,822,234

# VINYL CHLORIDE POLYMERS CONTAINING ALKALI METAL ZINC FERROCYANIDES

Arthur W. McRowe, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 19, 1973, Ser. No. 407,865  
Int. Cl. C08f 45/56

U.S. Cl. 260—45.75 R

7 Claims

Vinyl chloride polymers are compounded with alkali metal zinc ferrocyanides to provide improved flame resistance and reduce smoke production.

3,822,235

# METHOD OF PRODUCING LIGHT-SENSITIVE EPOXY RESINS

Donald Noel Hunter, Great Bookham, and Peter William Mayor, Hounslow, England, assignors to U.S. Philips Corporation

No Drawing. Filed Apr. 20, 1972, Ser. No. 245,783  
Claims priority, application Great Britain, Apr. 30, 1971, 12,344/71

Int. Cl. C08g 30/04

U.S. Cl. 260—47 EP

14 Claims

A light-sensitive polymer produced by reacting an epoxide resin with *p*-azidobenzoic acid or an esterifiable derivative thereof.

3,822,236

# PROCESS FOR PREPARATION OF CHELATE POLYMERS

Sidney Alan Barker and John Frederick Kennedy, Birmingham, and John Epton, Stourbridge, England, assignors to Aspro-Nicholas Limited, Slough, England

No Drawing. Filed Aug. 18, 1972, Ser. No. 281,855  
Claims priority, application Great Britain, Sept. 1, 1971, 40,860/71

Int. Cl. C08f 7/02, 19/00

U.S. Cl. 260—47 UA

11 Claims

Ethylenically unsaturated monomers having chelating sites defined by adjacent hydroxy and carboxylic acid groups are polymerized by free-radical techniques with the monomer chelated with a metallic or the like ion and/or in the presence of an alkali, preferably at about pH 9. Examples of chelating ions are titanous and borate ions and examples of polymerized monomers are N-acryloyl-aminosalicylic acids.

3,822,237

# REACTION PRODUCTS OF POLYEPOXIDE AND EXCESS DI-2-OXAZOLINE

John A. Alford, Ben A. Tefertiller, Jr., and Donald A. Tomalla, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 191,786, Oct. 22, 1971. This application Aug. 17, 1973, Ser. No. 383,401

Int. Cl. C08g 30/14

U.S. Cl. 260—47 EN

5 Claims

This invention concerns linear, curable polymeric materials prepared by reaction of a polyepoxide with an excess of di-2-oxazoline, and to cured products produced therefrom which are particularly suited as self-adherent corrosion and chemical resistant coatings for metals.

3,822,238

# HYDROPHILIC POLYURETHANE POLYMERS

Edgar Allan Blair, Princeton, and Donald Edward Hindgin, Princeton Junction, N.J., assignors to Princeton Polymer Laboratories, Inc., Plainsboro, N.J.

No Drawing. Filed Aug. 2, 1972, Ser. No. 277,361  
Int. Cl. C08g 22/08, 22/44

U.S. Cl. 260—75 NK

12 Claims

Water absorptive polyurethane polymers prepared from resins having a low ratio of carbon to oxygen to nitrogen or having ionic, quaternary ammonium or salt groups in the resin backbone and a low amount of isocyanate. The water absorptivity of the polyurethane polymers is about 10%, preferably above 20%, and these polymers may range to completely gel-like, high water absorptive polymers; these polymers are useful as coatings, membranes, etc.

3,822,239

# PROCESS FOR PREPARING LINEAR POLYESTERS

Kazuya Shimura, Kazuo Ito, Shunichi Takashima, Mizuo Shindo, and Yoshihiro Shimoshinbara, Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed May 3, 1971, Ser. No. 139,959  
Claims priority, application Japan, June 2, 1970, 45/46,918; June 3, 1970, 45/47,871, 45/47,872; June 9, 1970, 45/49,710; June 11, 1970, 45/50,613, 45/50,614; June 30, 1970, 45/57,029; Oct. 20, 1970, 45/92,294; Oct. 21, 1970, 45/92,642

The portion of the term of the patent subsequent to May 8, 1990, has been disclaimed  
Int. Cl. C08g 17/015

U.S. Cl. 260—75 R

8 Claims

A process for preparing linear polyesters wherein polycondensation of glycol terephthalates is performed in the presence of antimony-containing catalyst and a compound selected from  $\alpha$ -hydroxycarboxylic acid;  $\alpha,\beta$ -dicarboxylic acid; sulfur-containing derivative of  $\alpha$ -hydroxycarboxylic acid or  $\alpha,\beta$ -dicarboxylic acid; and derivatives thereof such as ester, amide, acid anhydride, mixed acid anhydride or acid halide. Resultant polyesters exhibit excellent whiteness and transparency and therefore, are particularly useful for textile fibers and films.

3,822,240

# COATING POWDERS BASED ON $\epsilon$ -CAPROLACTAM-BLOCKED POLYISOCYANATES

Karl Schmitt and Josef Disteldorf, Herne, and Felix Schmitt, Wanne-Eickel, Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,700  
Claims priority, application Germany, Feb. 8, 1971, P 21 05 777.2

Int. Cl. C08g 22/10, 22/32

U.S. Cl. 260—77.5 TB

7 Claims

Polyurethane forming coating powders for application by powder coating processes have a grain size of 0.25 mm. or less and include  $\epsilon$ -caprolactam blocked polyisocyanates and hydroxyl containing, aromatic polycarboxylic acid based polyesters.

3,822,241

# VULCANIZATION OF EPIHALOHYDRIN POLYMERS

Hiroshi Hani, Bunji Amemiya, Ginsoke Tanaka, Hiroshi Kawahara, and Minoru Yamada, Kanagawa-ken, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Original application June 5, 1970, Ser. No. 43,691, now Patent No. 3,700,650. Divided and this application June 8, 1972, Ser. No. 261,040

Int. Cl. C08c 17/28; C08d 13/28; C08g 30/10

U.S. Cl. 260—79

9 Claims

Epihalohydrin polymers, or epihalohydrin polymer-sulfur curable rubber systems, are vulcanized in the pres-

ence of a novel cross-linking formulation consisting essentially of (1) basic lead sulfate or basic lead sulfite, (2) at least one member selected from the group consisting of 2-mercaptoimidazolines, 2-mercaptopyrimidines, and thioureas, and (3) sulfur, if rubber is present.

3,822,242

# MANUFACTURING PROCESS FOR ALTERNATING COPOLYMER OF BUTADIENE AND ACRYLONITRILE BY SUSPENSION POLYMERIZATION

Akira Ohnishi, Koichi Irako, Keisuke Yamamoto, and Yoshio Yokomizo, Tokyo, Fumio Odaka, Kawagoe, Takahiro Kawagoe, Tokorozawa, and Yoshihiro Hayakawa, Takao Aoki, Akira Yamamoto, Motoichi Kikuchi, and Ryoza Sakata, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed July 27, 1971, Ser. No. 166,625

Claims priority, application Japan, July 28, 1970, 45/65,392; Aug. 13, 1970, 45/70,407

Int. Cl. C08d 1/14, 1/07

U.S. Cl. 260—82.5

13 Claims

A invention lies in a process for manufacturing an alternating copolymer of butadiene and acrylonitrile in suspension phase under the following conditions in combination. In the first place, the catalyst system comprises in combination (A) (1) at least one of organoaluminum halides or (2) at least two of aluminum and zinc compounds in combination, and (B) a vanadium compound soluble in a hydrocarbon. Secondly the suspension medium is any one selected from the group consisting of (i) saturated aliphatic hydrocarbons, (ii) saturated alicyclic hydrocarbons, (iii) saturated hydrocarbon halides and (iv) aromatic hydrocarbons each of which has a boiling point lower than 150° C. The accumulative total of the products of the square root of the coherent energy density and of the volume fraction with respect to each of the monomers and the medium must fall in the range of 6 to 9.1. Finally it is necessary to add a stabilizer as comprising at least one selected from the group consisting of aliphatic and alicyclic zinc carboxylates having 8 to 24 carbon atoms and an inactive inorganic powdery material of a dimension smaller than 100 $\mu$ .

3,822,243

# SURFACE-COATING COMPOSITIONS CONTAINING 1,1-DIALKYL-2-(SUBSTITUTED INDAZOLYL-N'-METHYL)HYDRAZINES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

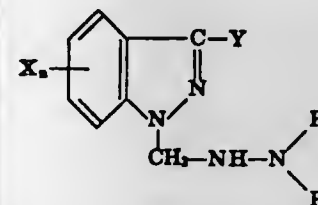
No Drawing. Continuation-in-part of application Ser. No. 201,166, Nov. 22, 1971, now Patent No. 3,766,207, which is a continuation-in-part of application Ser. No. 141,999, May 10, 1971, now Patent No. 3,741,979. This application June 15, 1973, Ser. No. 370,546

Int. Cl. C09d 3/26, 5/14

U.S. Cl. 260—89.1

10 Claims

Compounds that have the structural formula



wherein X represents halogen, nitro, amino, acetamino, aroylamino, or (halobenzyldene)amino; Y represents hydrogen or halogen; each R represents a lower alkyl group; and *n* represents an integer in the range of zero to 2 are used to protect surface-coating compositions from de-

terioration resulting from attack by fungi and bacteria. Illustrative of these compounds is 1,1-dimethyl-2-(5,6-dinitroindazolyl-N'-methyl)hydrazine.

3,822,244

# PROCESS FOR THE CROSSLINKING OF POLYSTYRENE

Jean Peyrot, Le Havre, France, assignor to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Feb. 11, 1972, Ser. No. 225,623

Claims priority, application France, Feb. 15, 1971, 7105040

Int. Cl. C08f 7/04, 27/02

U.S. Cl. 260—93.5 A

8 Claims

Process, and product of the type resulting therefrom, of crosslinking polystyrene to give a solid non-gelatinous product preferably of approximately the same particle size as the original non-crosslinked polystyrene, derived by chloromethylation of at least a part of the benzene rings of the polystyrene macromolecule by means of chloromethyl methyl ether, followed by methane bridge crosslinking resulting from dehydrochlorination, all carried out in the presence of a nonsolvent for polystyrene (being a solvent for the chloromethyl methyl ether) and a Friedel-Crafts catalyst and where the concentration of the chloromethyl methyl ether in the said nonsolvent is at any given moment less than that which would cause the polystyrene in the reaction to change size either by agglomeration of particles or by going into solution (to any significant degree).

3,822,245

# OPIUM ALKALOID SPECIFIC ANTIBODIES

Sidney Spector, Livingston, N.J., and Charles W. Parker, St. Louis, Mo., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Mar. 8, 1971, Ser. No. 122,204, now Patent No. 3,709,868, which is a continuation-in-part of abandoned application Ser. No. 36,999, May 13, 1970. Divided and this application Mar. 20, 1972, Ser. No. 236,178

Int. Cl. A61k 23/00; C07g 7/00

U.S. Cl. 260—112 B

3 Claims

Opium alkaloid antigens are prepared by coupling opium alkaloid haptens to immunogenic carrier materials. In preferred embodiments proteins are used as carrier materials and the coupling is effected through the carboxyl group of a carboxy lower alkyl derivative of the phenolic hydroxy group of said alkaloid and a free amino group on the protein thereby yielding a covalent peptide bond. The resulting antigens produce immunological effects when injected into host animals, including the formation of opium alkaloid specific antibodies. These specific antibodies are useful in bioanalytical techniques for the assay of opium alkaloids in biological fluids.

3,822,246

# AZO COMPOUNDS CONTAINING AN IMIDOALKANOYLAMINO GROUP

Max A. Weaver and Herman S. Pridgen, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 15, 1972, Ser. No. 253,581

Int. Cl. C09b 29/08, 29/36

U.S. Cl. 260—152

7 Claims

Azo compounds consisting of a disperse dye, phenyl diazo component and an aniline coupling component substituted with an imidoalkanoylamino group produce yel-



low to blue shades on polyester fibers and exhibit excellent fastness to light and resistance to sublimation.

3,822,247

# QUATERNIZED 1 - METHYL - 2 - PHENYL - 3-INDOLYL-AZO-GUANAZOLYL-AZO - 1-METHYL-2-PHENYL-3-INDOLES

Minoru Ozutsumi, Shigeo Maeda, and Yoshinori Kawada, Kitaku, Tokyo, Japan, assigns to Hodogaya Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,953

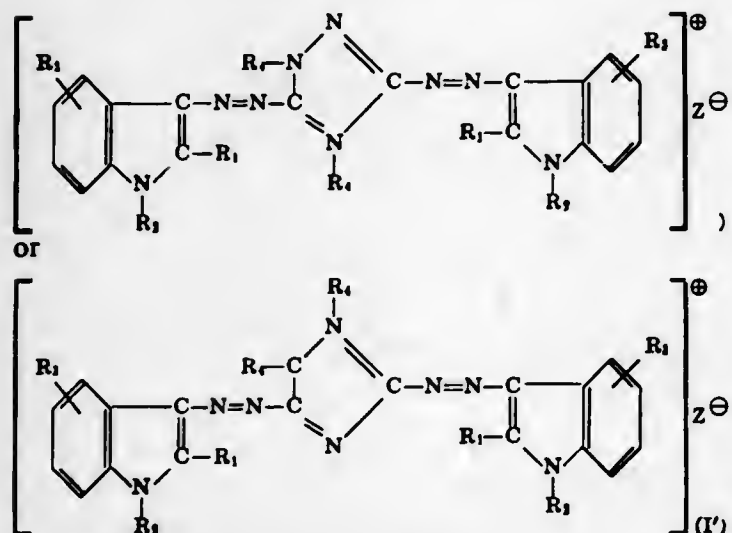
Claims priority, application Japan, May 15, 1969, 44/36,193

Int. Cl. C09b 35/34; D06p 3/76

U.S. Cl. 260—157

6 Claims

Basic disazo dyes which are useful for dyeing polyacrylonitrile fiber characterized by the formula:



wherein  $R_1$  is a lower alkyl radical or a substituted or non-substituted phenyl;  $R_2$  represents a hydrogen atom or a lower alkyl radical;  $R_3$  represents a hydrogen or halogen atom or a lower alkyl or lower alkoxy radical;  $R_4$  represents a lower alkyl or a benzyl radical;  $Z^\ominus$  represents an anion which dyes color said polyacrylonitrile fibers in various brilliant shades of red which are characterized by high fastness to sunlight, good wash resistance, good rub resistance and good heat stability.

3,822,248

# 1-HYDROXY - 4 - (PENTAFLUOROPHENOXY)-N-[ $\beta$ -(4-[ $\alpha$ -(2,4-DI-4-AMYLPHENOXY) ACETAMIDO] PHENYL)ETHYL]-2-NAPHTHAMIDE

Anthony Loria, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 798,228, Sept. 30, 1968, which is a division of application Ser. No. 483,807, Aug. 30, 1965, now Patent No. 3,476,563. This application Sept. 27, 1971, Ser. No. 184,182

Int. Cl. C07c 103/26

U.S. Cl. 260—207

4 Claims

Couplers containing at least one 4-hydroxy-3-carbamyl-1-naphthyl group wherein the hydrogen atom of the one position of said naphthyl group has been replaced with an aryloxy group are used advantageously in color photography to form cyan dye images. The immediate couplers that are diffusible are used to advantage in cyan color developer solutions while the immediate couplers that are non-diffusible are advantageously incorporated in cyan dye-forming photographic emulsion layers.

## 3,822,249 METHOD FOR MANUFACTURE OF KETOSE SUGARS

Leon Tumerman, Deerfield, and Jules H. Guth, Mount Prospect, Ill., assigns to Kraftco Corporation, New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,437

Int. Cl. C13k 9/00

U.S. Cl. 260—209 R

10 Claims

The invention is directed to a method for manufacture of ketose sugars from aldose sugars by heating a solution of the aldose sugar in the presence of an alkali or alkaline earth aluminate catalyst so as to convert the aldose sugar to a ketose sugar in high yields. Thereafter, the ketose sugar is recovered from the reaction mixture by treatment with a suitable agent.

3,822,250

## THERMO-GELABLE POLYSACCHARIDE

Hiroshi Kimura, Kyoto, Shigehiko Sato and Tatsuo Nakagawa, Osaka, Hiroshi Nakatani, Kyoto, Akihiko Matsukura, Osaka, Takashi Suzuki, Hyogo, Mitsuko Asai and Tsuneo Kanamaru, Osaka, Motoo Shibata, Kumamoto, and Saburo Yamatodani, Osaka, Japan, assigns to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Original application Mar. 22, 1971, Ser. No. 126,999, now Patent No. 3,754,925. Divided and this application June 27, 1972, Ser. No. 266,747

Claims priority, application Japan, Mar. 24, 1970, 45/24,696; Apr. 7, 1970, 45/29,533, 45/29,534

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

7 Claims

A thermo-gelable  $\beta$ -1,3 glucan-type polysaccharide is made by the aerobic cultivation of certain microorganisms. It generally resembles the known thermally gelable  $\beta$ -1,3 glucan known as "curdlan" but possesses definite advantages thereover, particularly when used in the food industry. Also, it may be used advantageously as a substitute for agar in various foods.

3,822,251

## NITRATION

John J. Vrolyk, Northridge, and Randall D. Sheeline, Woodland Hills, Calif., assigns to Rockwell International Corporation

Filed Dec. 28, 1970, Ser. No. 101,692

Int. Cl. C07d 55/50, 55/60

U.S. Cl. 260—239 HM

1 Claim

A process is provided for reacting two or more chemical reactants in which the reactants are dispersed, under turbulent mixing conditions, in an inert liquid carrier which is essentially a non-solvent for the reactants and then reacted at a temperature below the boiling point of the liquid carrier while the turbulent conditions are maintained.

3,822,252

## 3-AZETIDINOLS

Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation of abandoned application Ser. No. 741,205, June 28, 1968. This application Mar. 20, 1972, Ser. No. 236,508

Int. Cl. C07d 25/00

U.S. Cl. 260—239 A

2 Claims

Described herein is the simple compound 3-azetidinol and the 2-monoalkyl and 2,4-dialkyl derivatives thereof. These compounds are useful intermediates in the preparation of other azetidines and are also useful *per se* as mild analgesics.

2,822,253

## PROCESS FOR THE PREPARATION OF $\Delta^4$ -3,20-DIKETO - 6,6-DIFLUORO-11 $\beta$ ,16 $\alpha$ ,17 $\alpha$ ,21-TETRA-HYDROXYPREGNENE 16,17-KETALS

William Charles Ripka, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 31,001, Apr. 22, 1970. This application Jan. 11, 1971, Ser. No. 105,666

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 D

10 Claims

A  $\Delta^4$ -3,2-diketo-6,6-difluoro - 11 $\beta$ ,16 $\alpha$ ,17 $\alpha$ ,21 - tetrahydroxypregnene 16,17-ketal is prepared by a process involving the addition of NOF or a mixture of NOF with NOBF<sub>4</sub> to the appropriate  $\Delta^4$ -pregnane 16,17-ketal in which the 3- and 21-hydroxyls are protected by acylation; hydrolysis of the resulting 5 $\alpha$ -fluoro-6-nitrimino-steroid to the 5 $\alpha$ -fluoro-6-ketosteroid; fluorination of the C-6 position with SF<sub>6</sub>; hydrolysis of the 3- and 21-acyloxy groups; selective acetylation of the 21-hydroxyl; oxidation of the 3-hydroxyl to the 3-ketone; dehydrofluorination in the C-4 to C-5 positions; and microbiological hydroxylation at C-11. Steroids of the above reaction sequence are useful anti-inflammatory and glucocorticoid agents, and particularly those obtained by dehydration at the C-9 and C-10 positions followed by preparation of 9 $\alpha$ -bromo-11-hydroxy, conversion of the latter to 9,11-oxo and this to 9 $\alpha$ -fluoro-11 $\beta$ -hydroxy. The latter can further be oxidized to produce a double bond in the 1,2-position.

3,822,254

## SYNTHESIS OF 25-HYDROXYCHOLESTEROL

John Joseph Partridge, Jr., and Milan Radoje Uskokovic, Upper Montclair, N.J., assigns to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed May 21, 1973, Ser. No. 362,569

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 R

40 Claims

25-Hydroxycholesterol, an intermediate in the preparation of biologically important metabolites of Vitamin D<sub>3</sub> is synthesized in a multi-step process from stigmasterol.

3,822,255

## TETRAHYDRO - 1 - [(5 - NITROFURFURYLIDENE) AMINO]SUBSTITUTED-2-(1H)-PYRIMIDINONES

Harry R. Snyder, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,075

Int. Cl. C07d 51/36

U.S. Cl. 260—240 A

1 Claim

The title compounds are useful as antibacterial agents and are adapted to be combined in various forms to provide compositions useful for combatting bacterial contamination.

3,822,256

## CRYSTALLINE MONOHYDRATES OF SODIUM AND POTASSIUM CEPHALEXIN

Edmund Stanley Granatek, Syracuse, Frederick Lanny Grab, Fayetteville, and Frank Domenick Rava, Auburn, N.Y., assigns to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 8, 1972, Ser. No. 260,885

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

3 Claims

Crystalline sodium and potassium cephalixin monohydrates were prepared and found to be stable, useful forms of cephalixin.

3,822,257

## PRODUCTION OF 2,1,3-BENZOTHIADIAZIN-4-ONE-2,2-DIOXIDES

Gerhard Hamprecht, Mannheim, Karl-Heinz Koenig, Frankenthal, and Gerhard Bolz, Ludwigshafen, Germany, assigns to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,341

Int. Cl. C07d 93/30

U.S. Cl. 260—243 R

9 Claims

Production of 2,1,3-benzothiadiazin-4-one-2,2-dioxides by cyclization of an o-sulfamidobenzoic acid in the presence of phosgene and a disubstituted carboxamide or a tertiary amine at a temperature of not more than 50° C. The products are plant protection agents and starting materials for the production of dyes and plant protection agents.

3,822,258

## 4-HYDROXY - 3-(3-ISOXAZOLYL-CARBAMOYL)-2H-1,2-BENZOTHIADIAZINE 1,1-DIOXIDES AND PROCESS FOR THEIR PRODUCTION

Harold Zinnes, Rockaway, Martin L. Schwartz, Gillette, and John Shavel, Jr., Mendham, N.J., assigns to Warner-Lambert Company, Morris Plains, N.J.

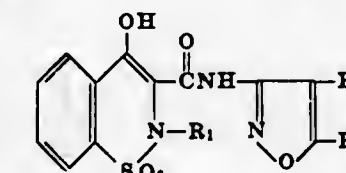
No Drawing. Continuation-in-part of application Ser. No. 333,821, Feb. 20, 1973, which is a division of application Ser. No. 119,967, Mar. 1, 1971, now abandoned. This application Apr. 30, 1973, Ser. No. 356,026

Int. Cl. C07d 93/02

U.S. Cl. 260—243 R

6 Claims

Compounds having the following structural formula are disclosed:



wherein  $R_1$  is hydrogen or methyl and  $R_2$ , and  $R_3$  are hydrogen or alkyl. These compounds are useful as anti-inflammatory agents, antipyretics, analgesics.

3,822,259

## 7-PHENYL-1H[1,3]-OXAZINO[3,2-a][1,4]BENZODIAZEPINE-1,3(2H)-DIONES

Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

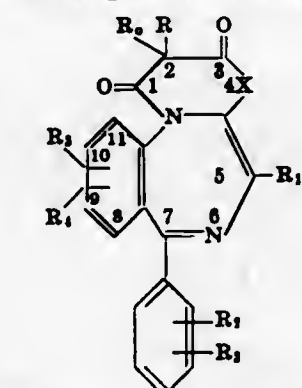
No Drawing. Filed Nov. 2, 1971, Ser. No. 194,913

Int. Cl. C07d 87/16

U.S. Cl. 260—244 R

3 Claims

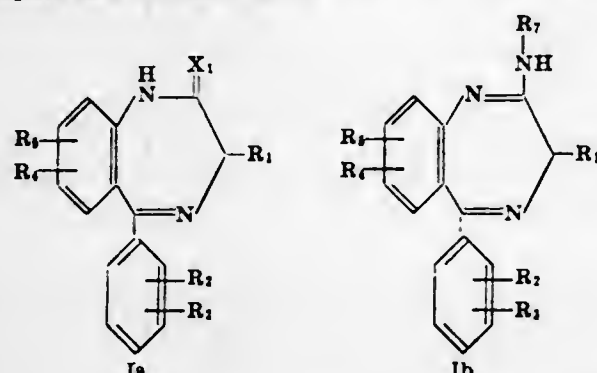
A 7-phenylbenzodiazepine of formula II:



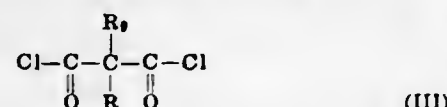
wherein X is selected from the group consisting of oxygen, sulfur, and  $>N-R_4$  in which  $R_4$  is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, acetyl, and propionyl, wherein R and  $R_0$  are selected from the group



consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; wherein  $R_1$  is selected from the group consisting of hydrogen, alkyl as defined above, acetoxy and propionyloxy; and wherein  $R_2$ ,  $R_3$ ,  $R_4$ , and  $R_5$  are selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, amino, and alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino in which the carbon moiety is of 1 to 3 carbon atoms, inclusive, and dialkylamino in which alkyl is defined as above, is prepared from the corresponding 2-substituted benzodiazepine of formulae I or Ia



wherein  $X_1$  is oxygen or sulfur,  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ , and  $R_5$  are defined as above,  $R_7$  is hydrogen, or alkyl defined as above, by reaction with a malonyl dichloride III



wherein  $R_0$  and  $R$  are hydrogen, or alkyl as defined above.

The new products of formula II including their pharmacologically acceptable acid addition salts are useful as sedatives, hypnotics, anticonvulsants, tranquilizers, and muscle relaxants in mammals and birds. Also as feed additives for increasing growth rate and feed efficiency of livestock and poultry.

### 3,822,260 6-(CYANOPHENYL)-4,5-DIHYDRO-3(2H)-PYRIDAZINONES

William Vincent Curran, Pearl River, and Adma Schneller Ross, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 79,670, Oct. 9, 1970. This application June 5, 1972, Ser. No. 259,723

Int. Cl. C07d 51/04

U.S. Cl. 260—250 A 9 Claims  
This disclosure describes compounds of the class of 6-(*o*, *m*-, or *p*-cyanophenyl)-4,5-dihydro-3(2H)-pyridazinones useful as hypotensive agents.

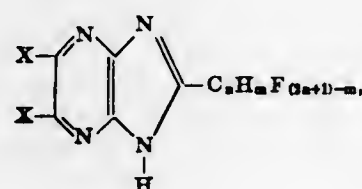
### 3,822,261 5,6-DIHALO-2-FLUOROALKYL-1H-IMIDAZO(4,5-b)PYRAZINES

Yulan C. Tong, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,966

Int. Cl. C07d 51/76

U.S. Cl. 260—250 R 4 Claims  
Compounds of the formula



wherein  $X$  is Cl, Br or F (the same in each occurrence),  $n$  is 1 to 3 and  $m$  is 0 or 1, have been found especially useful as herbicides.

### 3,822,262 PHENYL ACETYLIMINO-IMIDAZOLINES AND -HEXAHYDROPYRIMIDINES

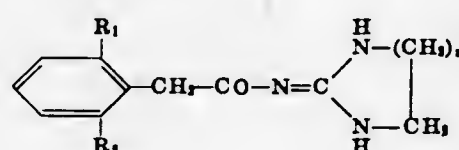
John B. Bream, Redbourn, England, and Claude W. Picard, Berne, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Feb. 9, 1970, Ser. No. 9,973, now Patent No. 3,634,508. Divided and this application Oct. 13, 1971, Ser. No. 188,939

Claims priority, application Switzerland, Feb. 20, 1969, 2,575/69; Mar. 27, 1969, 4,691/69; Nov. 7, 1969, 16,575/69

Int. Cl. C07d 51/18

U.S. Cl. 260—256.4 H 2 Claims  
Compounds of the formula:



in which

$R_1$  is hydrogen, chlorine or methyl,  $R_2$  is chlorine or methyl, and

$n$  is 1 or 2,

and pharmaceutically acceptable acid addition salts thereof.

The compounds are useful in the treatment of hypertension.

### 3,822,263 REACTIVE ANTHRAQUINONE DYESTUFFS CONTAINING A FLUOROPYRIMIDINYL GROUP

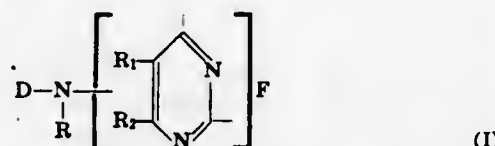
Hans-Samuel Bieri, Burscheid, and Erich Klauke, Odenthal-Hohnenburg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 1, 1967, Ser. No. 664,943, now Patent No. 3,669,951. Divided and this application June 3, 1971, Ser. No. 149,768

Int. Cl. C07d 51/42

U.S. Cl. 260—256.5 R 19 Claims

The present invention relates to valuable new reactive dyestuffs of the general constitution



in this formula D denotes the radical of an organic dyestuff,  $R$  is hydrogen or a lower alkyl group,  $R_1$  is hydrogen or a substituent,  $R_2$  means hydrogen, halogen, optionally substituted alkyl, alkenyl, aralkyl or aryl radicals or carboxylic acid ester, carboxylic acid amide, alkyl-sulphone and arylsulphone groups, and  $F$  is a fluoro substituent.

### 3,822,264 CERTAIN 2,4-DIAMINO-5-BENZYL-6-ALKYLTHIOPYRIMIDINES

Barbara Roth, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,400  
Claims priority, application Great Britain, Apr. 16, 1971, 9,640/71

Int. Cl. C07d 51/40

U.S. Cl. 260—256.5 R 39 Claims

This invention is directed to 2,4-diamino-5-benzylpyrimidine compounds having a 6-alkyl thio group and

to methods of converting this compound to 2,4-diamino-5-benzylpyrimidine compounds having useful antibacterial and other useful properties as intermediates.

### 3,822,265 PHENAZINE DERIVATIVES

Willy Leimgruber, Montclair, and Manfred Weigle, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 596,794, Nov. 25, 1966. This application May 14, 1969, Ser. No. 824,695

Int. Cl. C07d 51/80

U.S. Cl. 260—267 7 Claims

$N$ -mono- and  $N,N'$ -dioxides of dialkoxyphenazines are prepared by oxidation of the appropriate dialkoxyphenazines. The corresponding mono- and di-hydroxyalkoxyphenazines are prepared by selective ether cleavage of the dialkoxy compounds or by selective mono- or di-alkylation of the dihydroxy or protected mono-hydroxy compounds. The phenazine  $N,N'$ -dioxides possess useful antimicrobial properties.

### 3,822,266 [3-(1-PIPERAZINYL)-2-HYDROXY-PROPOXY] ACETANILIDES

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Dec. 4, 1969, Ser. No. 882,297, now Patent No. 3,701,777, dated Oct. 31, 1972. Divided and this application July 7, 1972, Ser. No. 269,658

Claims priority, application Switzerland, Dec. 24, 1968, 19,269/68

Int. Cl. C07d 51/70

U.S. Cl. 260—268 R 2 Claims

Substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propylthio]anilines prepared, inter alia, by the reaction of the correspondingly substituted propoxy or propyl-thio anilines and  $N$ -phenyl-piperazines, are described. The end products, i.e., the substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio] anilines are useful as hypotensive agents. The [3-(1-piperazinyl)-2-hydroxy-propoxy]acetanilides are specifically claimed.

### 3,822,267 1 SUBSTITUTED 4 PIPERAZINO CYCLOALKYLTHIAZOLES

Dieter Sorg, Bern, Switzerland, assignor to Wander Ltd. (also known as Wander AG), Bern, Switzerland

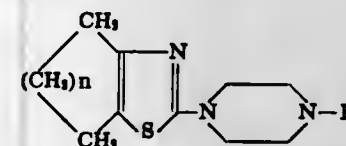
No Drawing. Filed July 28, 1972, Ser. No. 276,260

Claims priority, application Switzerland, Aug. 3, 1971, 11,373/71; June 15, 1972, 8,975/72

Int. Cl. C07d 51/70

U.S. Cl. 260—268 BC 14 Claims

The present invention concerns cycloalkylthiazole compounds of the formula:



wherein  $n$  is an integer of 1 to 4 and  $R$  is hydrogen, alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, alkoxy carbonyl, alkanoyl, alkanoyloxyalkyl or benzyl.

The compounds exhibit a stimulating effect on mental alertness.

### 3,822,268 LYSERGIC ACID AMIDES

Erzsébet Magó, nee Karácsony, Tibor Balogh, József Bori, Sándor Bajusz, Imre Moravcsik, Sándor Elek, István Polgári, and László Lowinger, Budapest, Hungary, assignors to Kórházi Gyógyszerárnyaló

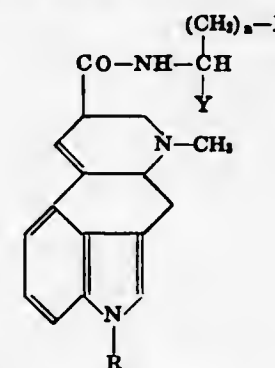
No Drawing. Continuation-in-part of abandoned application Ser. No. 721,860, Apr. 16, 1968. This application July 12, 1971, Ser. No. 161,975

Claims priority, application Hungary, Apr. 20, 1967, GO-1,012; Sept. 15, 1967, GO-1,028

Int. Cl. C07d 43/20

U.S. Cl. 260—285.5 1 Claim

Lysergic acid amides of the formula



in which  $X$  is hydroxyl, thioalkyl, phenyl, hydroxyl-substituted phenyl, indolyl or imidazolyl,  $Y$  is hydrogen or methylol,  $n$  is 1-3 and  $R$  is hydrogen or methyl, e.g. d-lysergic acid-2-amido-1-hydroxy-3-(4'-hydroxy-phenyl)-propane, have a specific antiserotonine effect and are free of other effects on the central and vegetative nervous systems.

### 3,822,269 6-AMINOALKYLAMINO-HEXAHYDROPHEN-ANTHRIDINES USEFUL AS ANTIARRHYTHMIC AGENTS

Claude Jeanmart, Brunoy, Mayer Naoum Messer, Bievres, and Pierre Simon, Montrouge, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed July 6, 1972, Ser. No. 269,469

Claims priority, application France, July 8, 1971, 7124995

Int. Cl. C07d 39/02

U.S. Cl. 260—286 A 7 Claims

1,2,3,4,4a,10b - Hexahydrophenanthridine derivatives with an aminoalkylamino substituent  $\text{—NH—A—NR}_1\text{R}_2$  (wherein  $A$  is alkylene of 1 through 5 carbon atoms and  $\text{—NR}_1\text{R}_2$  is dialkylamino or a 5- or 6-membered mononuclear heterocyclic group) in the 6-position of the phenanthridine ring possess pharmacodynamic properties and are especially useful as antiarrhythmic agents.

### 3,822,270 PYRYLIUM DYES HAVING A FUSED, RIGIDIZED NITROGEN-CONTAINING RING

George A. Reynolds, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 170,349, Aug. 9, 1971. This application Apr. 17, 1972, Ser. No. 244,916

Int. Cl. C07d 39/00

U.S. Cl. 260—287 R 4 Claims

A class of pyrylium dyes, having at least one rigidized, nitrogen-containing heterocyclic ring fused thereto is described. The rigidized dyes are useful as components in laser media.



3,822,271

**METHYLATION PROCESS**

Seymour J. Lapporte, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,303

Int. Cl. C07c 1/12; C07d 31/20

U.S. Cl. 260—290 R 7 Claims

Alkyl substituted benzenes, aniline, and pyridine and alkyl substituted aniline and pyridine compounds are methylated by a mixture of carbon dioxide and hydrogen in a reaction catalysed by hydrogen reduced oxides or borides of cobalt and/or nickel. Reaction conditions include a temperature in the range 150–450° C. and a pressure in the range 1.7 to 70 atmospheres.

3,822,272

**SUBSTITUTED PHOSPHOROUS CONTAINING ALKYL THIO METHYL CARBOXYLATES**

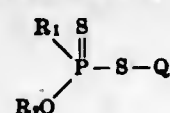
Charles Kezerian, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Nov. 8, 1967, Ser. No. 681,576, now Patent No. 3,562,362. Divided and this application Sept. 2, 1970, Ser. No. 69,089

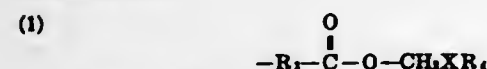
Int. Cl. C07d 29/36

U.S. Cl. 260—293.85 1 Claim

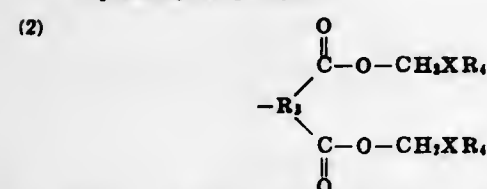
Certain substituted phosphorous containing alkyl thio methyl carboxylates of the formula



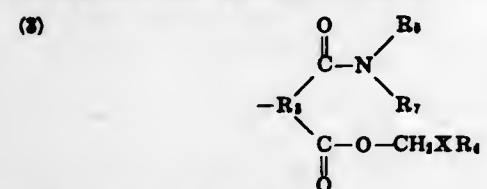
in which Q is:



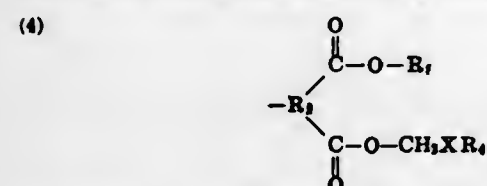
$R_2$  is alkylene,  $C_1-C_4$ ;  
X is sulfinyl or thio and  
 $R_4$  is alkyl,  $C_1-C_4$ ; or



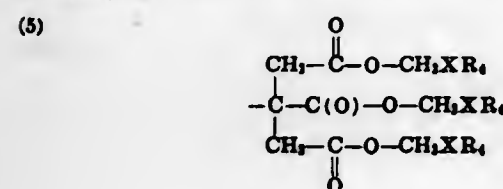
in which X and  $R_4$  are as defined and  $R_5$  is a trivalent saturated hydrocarbon,  $C_1-C_3$ ; or



in which X,  $R_4$  and  $R_5$  are as defined and  $R_6$  and  $R_7$  are hydrogen, alkyl  $C_1-C_4$ , aryl, halo or cyano substituted alkyl or aryl or tetrahydrofurfuryl or when  $R_6$  and  $R_7$  are taken together, an alkylene,  $C_2-C_4$ , ethyleneoxy-ethylene or ethylenethioethylene groups; or



in which X,  $R_4$  and  $R_5$  are as defined and  $R_6$  is alkyl  $C_1$  to  $C_3$  or halogen, aryl, haloaryl substituted derivatives thereof; or



in which X and  $R_4$  are as defined and the use of these compounds as insecticides and acaricides.

3,822,273

**4,4'-DISULPHOXY-DIPHENYL-(2-PYRIDYL)-METHANE DERIVATIVES**

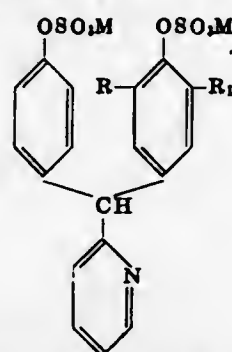
Tiberio Bruzzese, Milan, Italy, Italy, assignor to SPA-Società Prodotti Antibiotici S.p.A.

No Drawing. Filed Sept. 11, 1972, Ser. No. 288,076  
Claims priority, application Great Britain, Sept. 17, 1971, 43,431/71

Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 R 2 Claims

There is provided a new process for the preparation of 4,4'-disulphoxy-diphenyl-(2-pyridyl)-methane derivatives of the general formula:



wherein M is an inorganic or organic cation and R and  $R_1$ , which may be the same or different, are hydrogen or halogen atoms or alkyl, aralkyl or aryl radicals. Those compounds in which R and  $R_1$  are not both hydrogen atoms are new.

3,822,274

**PROCESS FOR DIELS-ALDER PRODUCT**

Elbert E. Harris, Westfield, and Robert Currie, Scotch Plains, N.J., assignors to Merck &amp; Co., Inc., Rahway, N.J.

No Drawing. Continuation of application Ser. No. 131,828, Apr. 6, 1971, which is a continuation-in-part of application Ser. No. 762,158, Sept. 24, 1968, both now abandoned. This application Feb. 26, 1973, Ser. No. 335,618

Int. Cl. C07d 31/46

U.S. Cl. 260—294.9 5 Claims

An improved process for preparing Diels-Alder adducts which are useful pyridoxine intermediates, by reacting an oxazole with a 2-butene dienophile in the presence of an acid binding agent.

3,822,275

**PROCESS FOR PRODUCING 3-INDOLYL ALIPHATIC ACID COMPOUNDS**

Hisao Yamamoto, Nishinomiya, and Masaru Nakao, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

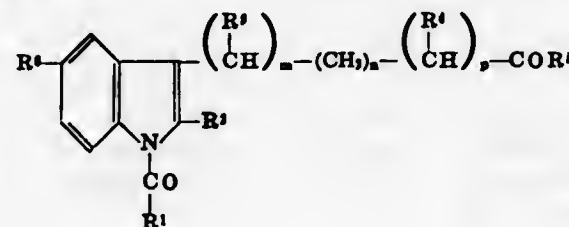
No Drawing. Application June 23, 1969, Ser. No. 838,037, now Patent No. 3,629,284, which is a continuation of abandoned application Ser. No. 541,967, Apr. 12, 1966. Divided and this application July 29, 1970, Ser. No. 64,841

Claims priority, application Japan, Apr. 26, 1965, 40/24,928; Dec. 8, 1965, 40/72,793; Jan. 31, 1966, 41/5,754; Feb. 7, 1966, 41/7,276, 41/7,277

Int. Cl. C07d 27/56

U.S. Cl. 260—295 B 3 Claims

N-acyl-3-indolylaliphatic acid compounds represented by the formula,



3,822,278

**N-CYCLOPROPYL-PYRIDYL CARBOXAMIDE DERIVATIVES**

Claude Dufour, 4 Rond-Point Saint James, 92 Neuilly, France

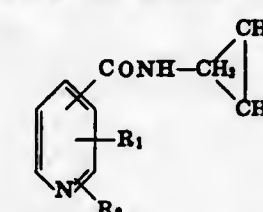
No Drawing. Continuation-in-part of application Ser. No. 238,963, Mar. 28, 1972, which is a continuation of application Ser. No. 807,395, Mar. 14, 1969. This application Dec. 26, 1972, Ser. No. 318,651

Claims priority, application France, Dec. 24, 1971, 7146688

Int. Cl. C07d 31/44

U.S. Cl. 260—295 AM 14 Claims

Compounds having the formula:



wherein  $R_1$  is an alkoxy group of 1 to 6 carbon atoms and  $R_2$  is an aryloxy group of 6 carbon atoms which may be substituted. These compounds are useful in the treatment of diseases of the nervous systems in humans and animals, e.g. mice.

3,822,279

**PREPARATION OF 2,2'-BIPYRIDYLS**

John Anthony Joy and David Cyril Marshall, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 12, 1972, Ser. No. 261,993

Int. Cl. C07d 31/42

U.S. Cl. 260—296 D 7 Claims

In the preparation of 2,2'-bipyridyl or alkyl-substituted 2,2'-bipyridyls from pyridine or alkylpyridines in contact with hot Raney nickel catalyst, the optimum yields are obtained when the Raney nickel is prepared from nickel-aluminum alloys consisting essentially of between 52 and 56% of nickel and between 48 and 44% of aluminium.

3,822,280

**CERTAIN DIAZOLYL UREAS**

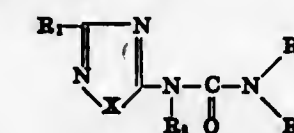
Hans Moser, Basel, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,446

Int. Cl. C07d 91/60

U.S. Cl. 260—306.8 D 12 Claims

New ureas of the Formula



wherein

$R_1$  represents a lower  $\alpha$ -halogen alkyl radical,  
 $R_2$  and  $R_3$  each independently represent hydrogen or a lower alkyl radical,  
 $R_4$  represents a lower alkyl radical that is unsubstituted or substituted by cyano or alkoxy, a cycloalkyl radical or alkynyl radical,  
X represents oxygen or sulphur,

and processes for their preparation are given. These ureas have herbicidal activity and compositions containing them

wherein  $R^1$  is an unsubstituted or  $C_1-C_3$  alkyl-,  $C_1-C_3$  alkoxy- or halogen- substituted phenyl, or an unsubstituted pyridyl, thenyl or furyl,  $R^2$  is methyl,  $R^3$  is hydrogen atom,  $R^4$  is hydrogen atom,  $R^5$  is  $C_1-C_3$  alkoxy or hydroxy group,  $R^6$  is  $C_1-C_3$  alkyl,  $C_1-C_3$  alkoxy or a halogen atom, and  $m$ ,  $n$  and  $p$  are 0 or 1, are produced by reacting an  $N^1$ -acylated phenylhydrazine compound with an aliphatic acid compound in a high yield. Typical examples include N - nicotinoyl-2-methyl-5-methoxy-3-indolylacetic acid, N - (p-chlorobenzoyl)-2,5-dimethyl-3-indolylacetic acid and N-(p-methylbenzoyl) - 2 - methyl-5-methoxy-3-indolylacetic acid, all of which exhibit excellent anti-inflammatory properties with low toxicity on the basis of standard laboratory animal tests.

3,822,276

**CERTAIN PYRIDYL ACYLAMIDES**

Alex Meisels, Basel, and Emilio Schott, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application June 9, 1969, Ser. No. 834,596, now Patent No. 3,555,035, which is a continuation of application Ser. No. 610,804, Jan. 23, 1967, which in turn is a continuation-in-part of application Ser. No. 474,167, July 22, 1965, both now abandoned. Divided and this application Sept. 3, 1970, Ser. No. 69,428

Claims priority, application Switzerland, July 31, 1964, 10,068/64; July 2, 1965, 9,322/65

The portion of the term of the patent subsequent to Feb. 2, 1999, has been disclaimed

Int. Cl. C07d 31/44

U.S. Cl. 260—295 AM 3 Claims

The compounds are of the class of unsaturated fatty acid pyridyl amides which possess antiviral and tumor growth inhibiting properties. Illustrative examples of such compounds are N-(5-methyl-2-pyridyl)-linolamide and N-(5-methyl-2-pyridyl)-linolenamide.

3,822,277

**CERTAIN PYRIDYL CYCLOPROPYLAMIDES**

Claude Dufour, 27 Rue Delaborde, 92 Neuilly-sur-Seine, France

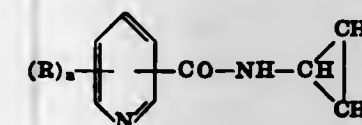
No Drawing. Continuation of abandoned application Ser. No. 807,395, Mar. 14, 1969. This application Mar. 28, 1972, Ser. No. 238,963

Claims priority, application Monaco, Nov. 13, 1967, 727; France, Feb. 5, 1968, 138,762; Apr. 3, 1968, 146,807; Apr. 12, 1968, 148,138; Nov. 25, 1968, 175,185; Dec. 4, 1968, 176,511

Int. Cl. C07d 31/44

U.S. Cl. 260—295 AM 11 Claims

Compounds having the formula:



wherein R is a member selected from the group consisting of hydrogen, halogen, hydroxyl acyl groups of 1 to 4 carbon atoms, carboxylic acid groups, carboxylic acid ester groups, amido groups, sulfonic acid groups, sulfonamido groups and hydrocarbon groups of 1 to 8 carbon atoms and n is 0, 1 or 2. The unsubstituted derivatives are useful in the treatment of arterial hypertension, and the substituted derivatives are particularly useful as diuretics, hypotensive agents, sedatives and as anorectic agents.



can be used for the control of gramineous and dicotyledonous weeds.

3,822,281

**PROCESS FOR THE PRODUCTION OF N-CARBOXY ANHYDRIDES OF GLUTAMIC ACID- $\gamma$ -ESTERS**  
Yasuo Fujimoto, Keizo Tatsukawa, and Masayuki Teranishi, Machida, and Yoichi Kotwa, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 762,617, Sept. 25, 1968. This application Jan. 4, 1972, Ser. No. 215,431

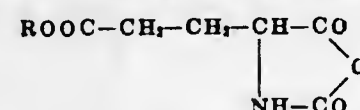
Claims priority, application Japan, Oct. 6, 1967, 42/64,006

Int. Cl. C07d 85/34

U.S. Cl. 260—307 B

9 Claims

A process for the preparation of N-carboxy anhydrides of glutamic acid- $\gamma$ -esters having the general formula:



wherein R is an ester residue, which comprises suspending a glutamic acid- $\gamma$ -ester in a mixed solvent consisting essentially of an aromatic hydrocarbon component and an ether component and reacting with phosgene at an elevated temperature. The products can be polymerized to useful polyglutamic acid- $\gamma$ -esters.

3,822,282

**HERBICIDAL AND/OR FUNGICIDAL 5-POLYHALOETHYLIMINO- AND 5-POLYHALO-VINYLMINO-2,4-IMIDAZOLIDINEDIONE**

Malcolm Scott Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed Mar. 29, 1972, Ser. No. 239,357

Int. Cl. C07d 49/32

U.S. Cl. 260—309.5

10 Claims

5-(1-hydroxy - 2,2,2 - trihaloethylimino)-, 5-(1,2,2,2-tetrahaloethylimino)- and 5 - (polyvinylhaloethylimino)-2,4-imidazolidinediones and their use as herbicides and/or fungicides.

3,822,283

**4-NITROPYRAZOLE-5-CARBOXAMIDOXIMES**

Hans Bruderer, Benken, Rolf Riche, Mohlin, and Rudolf Ruegg, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 11, 1972, Ser. No. 296,691

Int. Cl. C07d 49/18

U.S. Cl. 260—310 R

16 Claims

Substituted 4-nitropyrazole-5-carboxamidoximes and substituted 3-(4-nitropyrazol-5-yl)-4,5-dihydro-1,2,4-oxadiazoles, prepared, inter alia, from the correspondingly substituted 4-nitro-5-cyano-pyrazoles, are described. The end products of the invention possess psychosedative activity and are therefore useful as tranquilizing agents.

3,822,284

**1- AND 3-SUBSTITUTED (3,5-DI-t-BUTYL-4-HYDROXYBENZYL) CARBAZOLE**

William F. Werzner, Wood River, Ill., and James R. Miller, Florissant, Mo., assignors to Shell Oil Company  
No Drawing. Continuation-in-part of application Ser. No. 55,607, July 16, 1970, now Patent No. 3,673,091. This application June 15, 1972, Ser. No. 263,013

Int. Cl. C07d 27/68

U.S. Cl. 260—315

4 Claims

Novel compounds resulting from the reaction of hindered phenols, such as 3,5-di-t-butyl-4-hydroxybenzyl alcohol, with various aryl amines or carbazole are effective oxidation inhibitors for lubricants.

3,822,285

**9-( $\gamma$ -AMINOPROPYL)-3-AMINOCARBAZOLE**

Wolfgang Werner, Mannheim-Vogelstang, Peter Vogel, Weinheim, Hugo Tiedemann, Mannheim-Wallstadt, and Werner Guthlein, Mannheim-Neckarau, Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

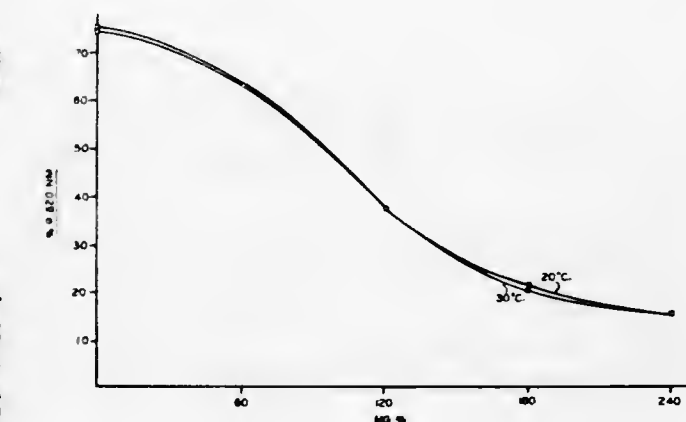
Filed Jan. 24, 1973, Ser. No. 326,205

Claims priority, application Germany, Feb. 8, 1972, P 22 05 733.6

Int. Cl. C07d 27/68

U.S. Cl. 260—315

4 Claims



9 - ( $\gamma$  - aminopropyl) - 3 - aminocarbazole, when incorporated into indicator compositions also comprising oxidation indicators such as o-tolidine for the enzymatic detection of glucose, results in outstandingly stable indicator compositions and not adversely effected by normally interfering components in the test sample.

3,822,286

**EMULSION PROCESS FOR SULFOLENE AND SULFOLANE PRODUCTS**

Herbert J. Goldstein, Rockaway, and Hsiao-Jun Li, Morristown, N.J., assignors to Texas-U.S. Chemical Company, Parsippany, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 825,385, May 16, 1969. This application Oct. 26, 1971, Ser. No. 192,634

Int. Cl. C07d 63/00, 63/12

U.S. Cl. 260—332.1

1 Claim

Sulfolene, a typical conjugated diene cyclic sulfone, is prepared by emulsifying butadiene in water in the absence of oxygen or with an antioxidant present, and thereafter reacting the emulsion with sulfur dioxide under high pressure, for a period sufficient to complete reaction with the butadiene, whereby yields approaching quantitative are obtained.

3,822,287

**PROCESS FOR PREPARATION OF SUBSTITUTED 3,4-(DIPHENYL)CHROMANS**

James W. Bolger, Canoga Park, Calif., assignor to Rexall Drug and Chemical Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 817,142, Apr. 17, 1969. This application June 8, 1972, Ser. No. 260,849

Int. Cl. C07d 7/24

U.S. Cl. 260—326.5 D

24 Claims

Substituted 3,4-diphenylchromans in *trans* configuration are obtained by a process wherein a 2,2-bis(lower alkyl)-3-phenyl-4-(hydroxyphenyl)chromene is hydrogenated, providing a *cis*-2,2-bis(lower alkyl)-3-phenyl-4-(hydroxyphenyl)chroman which is reacted with a primary, secondary or tertiary lower haloalkylamine to form the corresponding *cis*-2,2-bis(lower alkyl)-3-phenyl-4-(amino or substituted aminoalkoxyphenyl)chroman, followed by the step of transforming the *cis* isomer to the *trans* configuration by means of a base-catalyzed rearrangement.

3,822,288

**EPISULPHIDE PREPARATION PROCESS**

Yves Labat, Pau, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,432

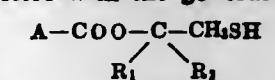
Claims priority, application France, May 7, 1971, 7116663

Int. Cl. C07d 59/00

U.S. Cl. 260—327 E

15 Claims

A process for preparing organic episulphides from mercapto-alkyl esters with the general formula



where A—COO— is an ester radical and R<sub>1</sub> and R<sub>2</sub>, which are identical or different, are hydrogen, hydrocarbon radicals such as alkyls, aryls, aralkyls, alkaryl, cycloalkyls or others, characterized by decomposition of the mercapto-alkyl ester occurs in the gas phase, in the presence of a dehydration catalyst, at temperatures of between 180 and 300° C., and preferably in the presence of a solvent.

3,822,289

**SYNTHESIS OF THIOPHENS**

Nicholas R. Clark, Cannock, and William E. Webster, Knosall, near Stafford, England, assignors to Synthetic Chemicals Limited, Marley, England

No Drawing. Filed May 15, 1972, Ser. No. 253,066

Claims priority, application Great Britain, May 5, 1972, 17,574/72

Int. Cl. C07d 63/00

U.S. Cl. 260—332.8

13 Claims

Thiophens are made by reacting organic compounds having a consecutive chain of at least four carbon atoms with carbon disulphide or carbonyl sulphide in a vapour phase reaction in the presence of a catalyst.

3,822,290

**4,7-DIHYDRO-2-ISOPENTYL-2-METHYL-1,3-DIOXEPIN**

Robert F. Tavares, Cedar Grove, N.J., Jack Agran, Brooklyn, N.Y., and William M. Easter, Hasbrouck Heights, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Mar. 15, 1973, Ser. No. 341,628

Int. Cl. C07d 17/00

U.S. Cl. 260—338

1 Claim

An unsaturated ketal, 4,7-dihydro-2-isopentyl-2-methyl-1,3-dioxepin prepared by the condensation of 2-butene-1,4-diol with 5-methyl-2-hexanone is useful as an odorant for perfume.

3,822,291

**4,7-DIHYDRO-2-(3-PENTYL)-1,3-DIOXEPIN**

Robert F. Tavares, Cedar Grove, N.J., Jack Agran, Brooklyn, N.Y., and William M. Easter, Hasbrouck Heights, and Leslie Blum, Dumont, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Mar. 16, 1973, Ser. No. 342,122

Int. Cl. C07d 17/00

U.S. Cl. 260—338

1 Claim

An unsaturated cyclic acetal, 4,7-dihydro-2-(3-pentyl)-1,3-dioxepin, prepared by the condensation of 2-butene-1,4-diol with 2-ethyl-1-butanal is useful as a flavor agent for foods and an odorant for perfumes.

3,822,292

**PREPARATION OF NAPHTHALIDE PSEUDO ACID COMPOUNDS**

Michael Feingold, Woburn, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Nov. 6, 1972, Ser. No. 304,248

Int. Cl. C07d 7/06

U.S. Cl. 260—343.2 R

8 Claims

Naphthalide pseudo acid compounds useful in the preparation of indicator dyes are obtained by a new process wherein a naphthalic anhydride and phosphorus pentachloride are reacted to form a 1,8-naphthalyl di-

chloride which is complexed in situ with a Friedel-Crafts catalyst and then condensed in situ with a 1-naphthol having a free para position to yield the corresponding 3-hydroxy-3-(4'-hydroxy - 1 - naphthyl)naphthalide-1,8 pseudo acid.

3,822,293

**PROCESS FOR THE PREPARATION OF 3-(3'-CARBOALKOXY - 4' - ACETOXY - 1'-NAPHTHYL)-3-(4'-HYDROXY-1'-NAPHTHYL)NAPHTHALIDE**

Henry Bader, Newton Center, Michael H. Feingold, Pinehurst, Susan C. January, Wellesley Hills, and John W. Sparks, Boston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 293,036, Sept. 28, 1972. This application Dec. 1, 1972, Ser. No. 311,681

Int. Cl. C07d 7/00

U.S. Cl. 260—343.2 R

10 Claims

This invention relates to an improved method of synthesizing certain 1-naphthol naphthalides by conducting the reaction of a 3-acetoxy-3-(4'-acetoxy-1'-naphthyl)naphthalide and a 1-naphthol in acetonitrile and a lower boiling co-solvent, removing substantially all of the co-solvent and isolating and purifying the condensation product prior to converting the condensation product to the naphthalide dye product.

3,822,294

**3-ACETOXY-3-(3' - CARBOMETHOXY-4'-ACETOXY-1' - NAPHTHYL)NAPHTHALIDE - 1,8 AND A METHOD FOR ITS PREPARATION**

Efthimios Chinopoulos, Cambridge, and Paul S. Huyffer, West Boxford, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 216,254, Jan. 7, 1972. This application Dec. 1, 1972, Ser. No. 311,682

Int. Cl. C07d 1/06

U.S. Cl. 260—343.2 R

12 Claims

This invention relates to the synthesis of 1-naphthol naphthalide and then converting the 4'-acetoxy to a 4'-acetoxy - 1' - naphthyl)naphthalide intermediate and a 1-naphthol to yield the corresponding 3,3-disubstituted naphthalide and then converting the 4'-acetoxy to a 4'-hydroxy group to give the dye product.

3,822,295

**2,3-DIHYDRO - 2,2-DIMETHYL-7-BENZOFURANYL SODIUM AND A METHOD FOR ITS PREPARATION, AND ITS USE IN THE PREPARATION OF CARBOFURAN**

Alexander Serban, Doncaster, Victoria, and Phillip Knox Engel, Tullamarine, Victoria, Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

No Drawing. Filed Nov. 16, 1972, Ser. No. 307,204

Claims priority, application Australia, Dec. 2, 1971, 7,255/71

Int. Cl. C07d 5/14

U.S. Cl. 260—346.2 R

9 Claims

A new compound, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl sodium and methods of making it are described. The new compound is useful for preparing chemicals, particularly carbofuran.

3,822,296

**1-TRIFLUOROMETHYL-1,2-EPOXYETHYL-1-PHOSPHONIC ACID AND ITS SALTS**

Burton G. Christensen, Scotch Plains, Thomas R. Beattie, North Plainfield, and Donald W. Graham, Menlo Park, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Jan. 23, 1969, Ser. No. 793,590, now Patent No. 3,657,282, dated Apr. 18, 1972. Divided and this application Jan. 6, 1972, Ser. No. 215,917

Int. Cl. C07f 9/38

U.S. Cl. 260—348 R

1 Claim

Novel substituted epoxyethylphosphonic acids and derivatives thereof are prepared by oxidation of the cor-



responding vinyl compounds or by treating a 1,2-disubstituted ethylphosphonic acid compound with a reagent capable of effecting epoxide ring closure. The new substituted epoxy-ethylphosphonic acid compounds and derivatives such as their salts are antibacterials which inhibit the growth of gram-positive and gram-negative bacteria.

3,822,297

### 3 $\alpha$ -HYDROXY-19-NOR-5 $\alpha$ -PREGNANE-11,20-DIONE AND A METHOD FOR ITS PREPARATION

Gordon Hanley Philipps, Wembley, and Leslie Stephenson, Hanwell, London, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Nov. 10, 1972, Ser. No. 305,245  
Claims priority, application Great Britain, Nov. 11, 1971, 52,466/71

Int. Cl. C07c 167/00, 169/00

U.S. Cl. 260—397.45

1 Claim

The invention provides a new anaesthetic substance, namely, 3 $\alpha$ -hydroxy-19-nor-5 $\alpha$ -pregnane-11,20-dione, and a method for its manufacture whereby (a) 19-nor-5 $\alpha$ -pregnane-3,11,20-trione is reduced, e.g. using an iridium catalyst reduction system or (b) 3 $\alpha$ -hydroxy-19-nor-5 $\alpha$ -pregnane-16-one-11,20-dione is hydrogenated. The invention also includes pharmaceutical compositions containing the new compound and a method of inducing anaesthesia by administration of the new compound.

3,822,298

### PREPARATION OF 3 $\alpha$ -HYDROXY-5 $\alpha$ -STEROIDS

John Charles Clayton, 138 Twyford Road, Harrow, Middlesex, England; Peter James Faulkner, 8 Crispin Way, Farnham Common, Slough, Buckinghamshire, England; William Reginald Jones, 35 Barbican Road, Greenford, Middlesex, England; and Gordon Hanley Philipps, 8 Sudbury Hill Close, Wembley, Middlesex, England

No Drawing. Filed Nov. 10, 1972, Ser. No. 305,246  
Claims priority, application Great Britain, Nov. 11, 1971, 52,465/71

Int. Cl. C07c 169/32

U.S. Cl. 260—397.4

19 Claims

The invention provides a novel process for the preparation of 3 $\alpha$ -hydroxysteroids which process comprises reducing a 3-oxo-5 $\alpha$ -steroid in the presence of an organic base using an iridium catalyst reduction system prepared from a trivalent phosphorus compound, an iridium compound and water in the presence or absence of said steroid.

The invention also includes as a new compound 3 $\alpha$ -hydroxy-19-nor-5 $\alpha$ -pregnane-20-one.

3,822,299

### REACTION PRODUCT OF AN ALKYLENE OXIDE CONDENSATE AND SULPHUR

Thomas Craig Lukeman, Ascot Vale, Victoria, and Robert Edward Bohm, Doncaster, Victoria, Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,182  
Claims priority, application Australia, Oct. 3, 1969, 61,849/69

Int. Cl. C08h 3/00, 9/02

U.S. Cl. 260—399

4 Claims

The reaction product of sulphur and the alkylene oxide condensate of at least one compound R—L—H wherein R is an olefinic chain having at least 9 carbon atoms in the chain, L is a linking group and H is an alkylene-oxide reactive hydrogen atom.

3,822,300

### PROCESS FOR THE PRODUCTION OF $\alpha,\beta$ -UNSATURATED CARBOXYLIC ACIDS

Rainer Osberghaus, Düsseldorf-Urdenbach, Rainer Mehren, Wesel-Lackhausen, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie GmbH, Düsseldorf-Holthausen, Germany

No Drawing. Filed May 1, 1972, Ser. No. 249,377  
Claims priority, application Germany, May 3, 1971, P 21 21 635.3

Int. Cl. C08h 17/36

U.S. Cl. 260—413

11 Claims

A process for the production of long chain  $\alpha,\beta$ -unsaturated carboxylic acids comprises reacting a  $\beta$ -hydroxy nitrile with an aqueous mineral acid, and thermolyzing the resultant product.

3,822,301

### 2-(5-NITROFURYL VINYL)-4-METHYL-5-ACETYLTHIAZOLE DERIVATIVES AND ANTIMICROBIAL AGENTS CONTAINING SAME

Saburo Ueno, Takao Kawasaki, Daleku Imamura, Yoshiaki Ohnaka, Kouji Satomi, Akio Sasaki, and Osamu Ohtaka, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,120  
Claims priority, application Japan, May 4, 1971, 46/29,545, 46/29,546, 46/29,547

Int. Cl. C07d 5/30

U.S. Cl. 260—240 A

7 Claims

2-(5-nitrofurylvinyl)-4-methyl-5-acetylthiazole derivatives are prepared by reacting 2-(5-nitrofurylvinyl)-4-methyl-5-acetylthiazole with a hydroxylamine, a semicarbazide, a thiosemicarbazide or an acid addition salt of aminoguanidine. An oxime acetate derivative is prepared directly from 5-nitrofurfural or its diacetate by reacting it with 2,4-dimethyl-5-acetylthiazole oxime in the presence of acetic anhydride.

3,822,302

### 1-(BIS(2-HYDROXYPROPYL)NITRILIOETHYLENE)-5-STIBA-1-AZA-4,6-DIOXACYCLOOCTYL ANTIMONY-ETHER

Woodrow E. Kemp, Pittsburgh, Pa., assignor to Koppers Company, Inc.

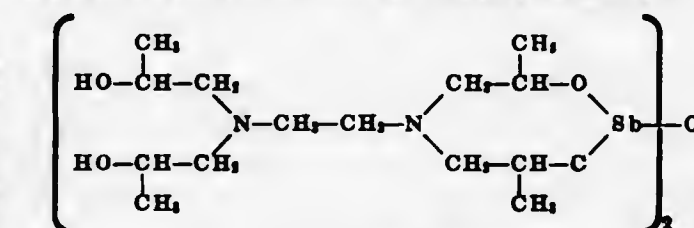
No Drawing. Original application Jan. 26, 1972, Ser. No. 221,082, now Patent No. 3,764,378. Divided and this application July 16, 1973, Ser. No. 379,268

Int. Cl. C07f 9/90

U.S. Cl. 260—446

1 Claim

A wood preservative composition comprised of creosote in which is dissolved the novel antimony containing compound 1-(bis(2-hydroxypropyl)nitriloethylene)-5-stiba-1-aza-4,6-dioxacyclooctyl Sb-ether whose structure is



3,822,303

### TRIMETHYL SILYL ESTERS OF PROSTAGLANDIN E ACIDS AND ESTERS AND PROCESS THEREFOR

Ernest W. Yankee, 6828 Rothbury, Portage, Mich. 49452

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,667

Int. Cl. C07f 7/18

U.S. Cl. 260—448.8 R

14 Claims

Prostaglandin E acids and esters with a methyl or an ethyl substituent at the C-15 position are obtained in im-

proved yields by selectively silylating the corresponding prostaglandin F, compounds at the C-11 position, oxidizing the C-9 hydroxyl to an oxo group, and then removing the silyl group or groups by hydrolysis.

3,822,304

### CYANO SUBSTITUTED AMIDINES

Jean-Claude Petitpierre, Kaiseraugst, and Claus Weis, Ariesheim, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

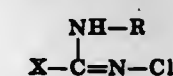
No Drawing. Filed Aug. 10, 1972, Ser. No. 279,409  
Claims priority, application Switzerland, Sept. 3, 1971, 12,945/71; July 11, 1972, 10,361/71

Int. Cl. C07c 121/42, 121/46

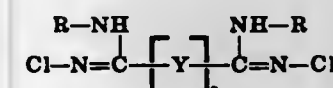
U.S. Cl. 260—464

7 Claims

New N-chloro-amidines, their manufacture and utility in combating i.a. phytopathogenic fungi. The compounds correspond to the formula



or



wherein R represents hydrogen, alkyl or cycloalkyl, X represents —C=N, —CCl<sub>2</sub> or —CCl<sub>2</sub>—C=N, Y represents —CCl<sub>2</sub>— and n represents 0 or 1.

3,822,305

### MONOSTYRYL-NAPHTHONITRILES

Ulrich Pintchovius, Hattersheim, Erich Schinzel, Hofheim, Taunus, and Gunter Roach, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,175  
Claims priority, application Germany, Dec. 8, 1970, P 20 60 228.2

Int. Cl. C07c 121/62

U.S. Cl. 260—465 D

5 Claims

Monostyryl-1-naphthalenes and analogous compounds having a naphthalene, thiophene, furane or pyridine nucleus instead of the phenyl moiety of the styryl residue, which are obtained by the Horner synthesis, are useful as optical brighteners.

3,822,306

### PRODUCTION OF $\alpha$ -N-FORMYLAMINO ACID COMPOUNDS

Friedrich Becke, Heidelberg, and Peter Faessler, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,208  
Claims priority, application Germany, Oct. 6, 1969, P 19 50 280.8

Int. Cl. C07c 121/02

U.S. Cl. 260—465.4

6 Claims

Production of  $\alpha$ -N-formylamino acid compounds by reacting cyanohydrins with formamide in the presence of acids at elevated temperature. The compounds obtainable by the process of the invention are valuable starting materials for the production of dyes and pesticides.

3,822,307

### N-METHYL PHENYLCARBAMATES

Keimei Fujimoto, Kyoto, Taizo Ogawa, Iruma-gun, Yoshio Okuno and Katsuzo Kamoshita, Toyonaka, Shinji Nakai, Takarazuka, Norio Kotera, Amagasaki, and Kosuke Shigehiro, Nishinomiya, Japan, assignors to Sumitomo Chemical Co., Ltd.

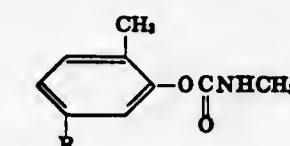
No Drawing. Continuation of abandoned application Ser. No. 762,997, Sept. 26, 1968. This application Feb. 29, 1972, Ser. No. 230,509

Int. Cl. C07c 125/06

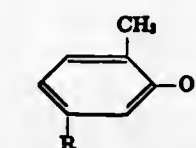
U.S. Cl. 260—479 C

3 Claims

A carbamate compound of the formula:



wherein R is sec.-butyl or tert.-butyl, which is prepared by reacting a hydroxyl compound of the formula:



wherein R is as defined above with phosgene and then reacting the resultant carbonyl chloride compound with methylamine or by reacting the said hydroxyl compound with methyl isocyanate. The carbamate compound is useful as an insecticidal agent of high safety.

3,822,308

### PROCESS FOR THE PRODUCTION OF VINYL ESTERS

Walter Kronig and Gerhard Scharfe, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 795,027, Jan. 29, 1969. This application Mar. 13, 1972, Ser. No. 234,322

Int. Cl. C07c 67/04

U.S. Cl. 260—497 A

14 Claims

Improvement in a process for the production of vinyl esters by reacting ethylene, lower carboxylic acids with 2 to 4 carbon atoms and oxygen in the gas phase at elevated temperature and normal or elevated pressure, in the presence of supported catalyst consisting essentially of palladium, gold and an alkali metal acetate on a silicic acid support, which improvement comprises preparing the catalyst by treating the support, simultaneously or successively or in combination with a solution A and a solution B, the solution A containing dissolved salts of palladium and gold and the solution B containing compounds which are able to react on the catalyst support with the noble metal salts of the solution A to form water-in-soluble noble metal compounds which are substantially free of halogen, sulphur and nitrogen; impregnating the catalyst support with the solutions A and B or with the combined solution of A and B in quantities which correspond to from 1 to 110% of the absorptive capacity of the catalyst support for these solutions: subjecting the catalyst support impregnated with the solutions A and B to a time/temperature-treatment which is such that 95% at least of the impregnated palladium and 95% at least of the impregnated gold is transformed into water-insoluble noble metal compounds, treating the water-insoluble noble metal compounds with a reducing agent to convey those com-



pounds substantially into the corresponding noble metals and removing the water-soluble compounds which are contained in the catalyst by washing; and applying an alkali metal compound before or after the treatment with the reducing agents, the alkali metal compounds consisting of alkali metal carboxylates or of alkali metal compounds which are wholly or in part transformed into alkali metal carboxylates under the reaction conditions.

3,822,309

 **$\alpha$ -PHENYL-FATTY ACID COMPOUNDS**

Alberto Rossi, Oberwil, Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

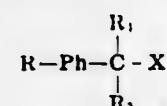
No Drawing. Continuation-in-part of abandoned application Ser. No. 862,443, Sept. 30, 1969. This application Nov. 23, 1970, Ser. No. 92,327

Claims priority, application Switzerland, Oct. 11, 1968, 15,240/68; Nov. 6, 1968, 16,569/68; May 8, 1969, 7,083/69; Aug. 21, 1969, 12,707/69

Int. Cl. C07c 63/52, 65/00

U.S. Cl. 260—515 R

Compounds of the formula



in which X represents a free carboxyl group or in the second place an esterified or amidated carboxyl group; R represents a 1-cycloalkenyl residue; Ph represents an ortho-phenylene residue or especially a para-phenylene residue; and  $R_1$  and  $R_2$  each represents a hydrogen atom or a monovalent or together a divalent aliphatic or araliphatic hydrocarbon residue, e.g. the  $\alpha$ -[p-(1-cyclohexenyl)-phenyl]-propionic acid, are useful as analgetic and antiinflammatory agents.

3,822,310

**SUBSTITUTED INDENYL ACETIC ACIDS**

Tsung-Ying Shen, Westfield, Howard Jones, Holmdel, and Michael W. Fordice, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,630

Int. Cl. C07c 147/14

U.S. Cl. 260—515 A

5 Claims

New substituted indene acids and non-toxic pharmaceutically acceptable amides, esters and salts derived therefrom. The substituted indene acids disclosed herein have anti-inflammatory, anti-pyretic and analgesic activity. Also included herein are methods of preparing said indene acid compounds, pharmaceutical compositions having said indene acid compounds as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

3,822,311

**PROCESS FOR THE PRODUCTION OF 2,5-DICHLORO-3-NITRO-BENZOIC ACID**

Karlfrid Wedemeyer and Rudolf Helm, Cologne, and Dieter Pawellek, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 8, 1973, Ser. No. 339,254

Claims priority, application Germany, Mar. 22, 1972, P 22 13 799.1

Int. Cl. C07c 79/46

U.S. Cl. 260—515 A

13 Claims

2,5-dichloro-3-nitro-benzoic acid is produced by reacting 5-chloro-3-nitro-salicylic acid with an excess of a chlorinating agent, preferably at the reflux temperature of the mixture, in the presence of a N,N-dialkylcarboxylic acid amide or a tertiary amine as a catalyst, and saponifying, under acid conditions, the acid chloride thereby produced, to yield the desired compound.

3,822,312

**CREAMY RINSING AGENT COMPOSITION**

Toshio Sato, Mamoru Katsumi, Osamu Kojima, and Tadao Hara, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

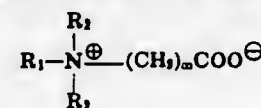
No Drawing. Filed Oct. 26, 1972, Ser. No. 301,103

Int. Cl. C11d 3/26, 3/36, 1/62, 7/32

U.S. Cl. 252—527

4 Claims

An aqueous creamy rinsing agent composition for wig and hair comprising as essential components (I) 1–7% of a quaternary ammonium salt having two long-chain alkyl groups having 16 to 22 carbon atoms; (II) 0.1–5% of an antistatic agent expressed by the following formula



wherein  $R_1$  stands for an alkyl group having 16 to 22 carbon atoms,  $R_2$  and  $R_3$  designate independently an alkyl group having 1 to 3 carbon atoms, and  $m$  is a number of from 1 to 4; (III) 0.5–10% of at least one compound selected from the group consisting of alcohols having up to 3 carbon atoms, glycols having up to 3 carbon atoms, glycerol, sorbitol, non-ionic surfactants containing no ethylene oxide units in the molecule or containing up to 10 moles of ethylene oxide units in the molecule, polyalkylene oxide compounds having a molecular weight of greater than 4000, and lower alkyl esters of higher fatty acids; and (IV) 0.05–1% of an inorganic or organic salt having electrolytic property.

3,822,313

**AMIDE PRODUCTION**

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application June 27, 1966, Ser. No. 560,859, now abandoned. Divided and this application May 22, 1969, Ser. No. 827,024

Int. Cl. C07c 103/08

U.S. Cl. 260—561 R

6 Claims

Production of amides by contacting a saturated hydrocarbon and/or unsaturated hydrocarbon with a nitrile and hydrogen fluoride with or without a reaction diluent such as sulfur dioxide, sulfolane and ammonium fluoride followed by hydrolysis to form the amides. The amides have utility as agricultural chemicals, for example, insecticides, herbicides, or fungicides.

3,822,314

**PROCESS FOR THE PREPARATION OF NITROXIMES AND NITROKETONES**

Michel Gay, Lyon, and Michel Houde, Oullins, France, assignors to Rhone-Poulenc SA, Paris, France

No Drawing. Filed July 22, 1970, Ser. No. 57,304

Claims priority, application France, July 23, 1969, 6925146

Int. Cl. C07c 131/00

U.S. Cl. 260—566 A

6 Claims

Nitroximes, which can be hydrolysed to nitroketones, are made by the nitrosation of vinyl-benzenes in a reaction medium comprising water and an organic solvent at least partially soluble therein.

3,822,315

**CYCLOALIPHATIC CROTONYL COMPOUNDS**

Erich Klein, Holzminden, Germany, assignor to Dragoco Spezialfabrik Konz. Riech- und Aromastoffe Gerberding & Co. GmbH, Holzminden, Germany

No Drawing. Filed May 24, 1971, Ser. No. 146,554

Claims priority, application Germany, Apr. 26, 1971, P 21 20 413.7

Int. Cl. C07c 49/48

U.S. Cl. 260—586 R

4 Claims

The invention provides new cycloaliphatic crotonyl compounds of the type of trans-2,4,4-trimethyl-1-crotonyl-cyclohex-2-ene wherein the 3-position of the cyclohexene

may contain a hydrogen or a lower alkyl. The invention provides a production of these compounds, and the use of these compounds as odoriferous agents for perfumes and other industries.

3,822,316

**PROCESS FOR PREPARING  $\alpha$ -METHYLACROLEIN**

Helmut Reiff, Cologne, and Dieter Dieterich, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 5, 1972, Ser. No. 250,532

Claims priority, application Germany, May 12, 1971, P 21 23 451.5

Int. Cl. C07c 47/20

U.S. Cl. 260—603 R

11 Claims

$\alpha$ -Methylacrolein is prepared by reacting 2-methylene-1,3-propane diol with a strong acid at a temperature of from 80° to 220° C.

3,822,317

**CERTAIN ETHER PEROXIDES DERIVABLE FROM  $\alpha$ -SUBSTITUTED VINYL ETHERS**

Antonio Joseph D'Angelo, Wilbur H. McKellin, and Orville Leonard Magell, Buffalo, N.Y., assignors to Pennwalt Corporation

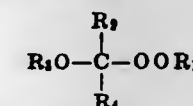
No Drawing. Filed Oct. 10, 1966, Ser. No. 585,296

Int. Cl. C07c 73/00

U.S. Cl. 260—610 R

5 Claims

The invention concerns ether peroxides having an ether oxygen and a peroxy group oxygen attached to a common carbon atom, that is:



where the R's are specified hydrocarbon radicals. Examples are: 2-methoxy - 2 - cumylperoxy propane; 1-methoxy - 1-*t*-butylperoxy - 3,3,5-trimethylcyclohexane; 2-methyl - 2 - *t* - butylperoxy-tetrahydropyran; and 1,3,5-tris[alpha(2 - isopropoxy - 2 - propylperoxy)isopropyl]benzene.

3,822,318

**OXIDATION OF ALIPHATIC AND ALICYCLIC HYDROCARBONS**

Arthur M. Brownstein, Cherry Hill, N.J., and David L. Kerr, Wilmington, Del., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed May 1, 1968, Ser. No. 725,944

Int. Cl. C07c 73/06

U.S. Cl. 260—610 B

6 Claims

Cuprous halide which has been activated by contact with an aromatic heterocyclic amine is an effective catalyst for the oxidation of aliphatic and alicyclic compounds.

3,822,319

**4-METHOXYPHENYL ETHER OF 4-m-TOLYL-1-PENTANOL**

Carl T. Redemann, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 7, 1972, Ser. No. 313,156

Int. Cl. C07c 43/20

U.S. Cl. 260—613 R

1 Claim

The invention is the 4-methoxyphenyl ether of 4-m-tolyl-1-pentanol. It has been found useful in controlling the insect pest *Heliothis obsoleta* by interfering with the laying of viable eggs.

3,822,320

**BERYLLIUM CHLORIDE MONOETHERATE**

Lz F. Lamoria, Bay City, and Paul F. Reigler, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 28, 1964, Ser. No. 423,638

Int. Cl. C07c 43/04

U.S. Cl. 260—614 R

1 Claim

1. Beryllium chloride monodiethyletherate.

3,822,321

**METHOD OF SYNTHESIZING DIOLS**

Jean Maurin, Montivilliers, and Claude Goupil, Manneville, France, assignors to Compagnie Francaise de Raffinage, Paris, France

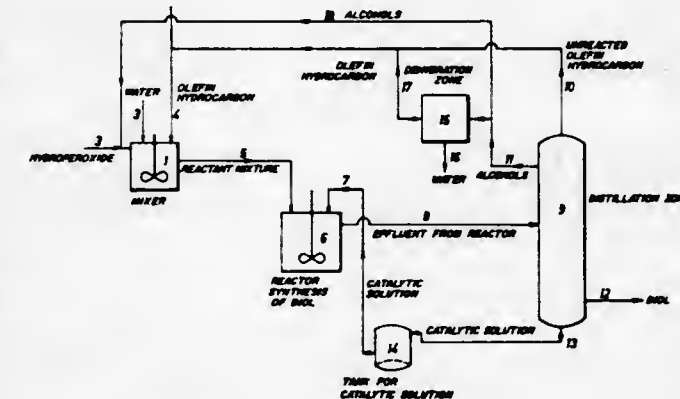
Filed Nov. 27, 1970, Ser. No. 92,985

Claims priority, application France, Nov. 26, 1969, 6940791

Int. Cl. C07c 1/20, 31/20

U.S. Cl. 260—635 H

5 Claims



An improved method of synthesizing vicinal diols from olefins giving higher yields by reaction with a hydroperoxide in the presence of an improved catalyst which latter can be readily recovered and reused. Also the improved catalyst which is a reaction product of a polyalcohol with a molybdenum compound such as molybdic acid or a molybdic salt.

3,822,322

**INTERMEDIATES FOR TRICYCLIC AMINES**

Gerald Rey-Bellet and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Apr. 23, 1970, Ser. No. 31,397, now Patent No. 3,736,351, which is a division of application Ser. No. 620,241, Mar. 3, 1967, now Patent No. 3,527,806. Divided and this application Feb. 9, 1973, Ser. No. 330,931

Int. Cl. C07c 25/18, 25/22

U.S. Cl. 260—649 R

2 Claims

5-(Aminopropylidene)-dibenzo[a,d]cycloheptenes having anti-depressant activity.

3,822,323

**PRODUCTION OF HIGHLY FLUORINATED CHLOROFLUOROMETHANES AND TETRAFLUOROMETHANE**

Volker Beyl, Leverkusen, Heinz Jonas, Opladen, Johann Nikolaus Meussdoerffer, Blecher, and Hans Niederprum, Monheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 4, 1972, Ser. No. 241,051

Claims priority, application Germany, Apr. 10, 1971, P 21 17 570.2

Int. Cl. C07c 17/00, 19/08

U.S. Cl. 260—653

9 Claims

The process for the production of chlorofluoromethanes and tetrafluoromethane which comprises contacting chlorine and hydrogen fluoride with a cyanogen compound selected from the group consisting of hydrogen cyanide, cyanogen chloride and dicyanogen at a temperature in excess of about 500° C., and separating chlorofluoromethanes and tetrafluoromethane from the reaction product. Preferably the reaction is carried out by passage of the reactants in gaseous state at a temperature of about 700 to 900° C. and a pressure of about 0.5 to 2 atmospheres absolute over a fixed-bed catalyst comprising graphite or active carbon with a residence time







ment, representing the actual guide passage to be produced, is made with the aid of a malleable material; the element is positioned in a mould which has the general shape of the outer contour of the device to be produced; a resin is cast inside this mould and onto the element, and the malleable material constituting the inner element is then eliminated with the aid of an agent which has no action on the resin.

3,822,336

# METHOD FOR FORMING A MASONRY WALL PANEL

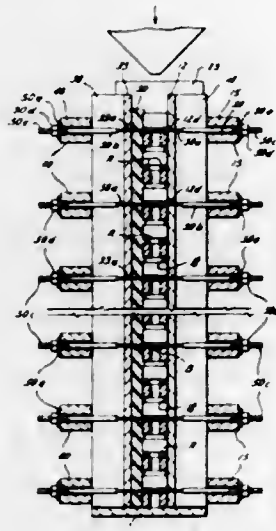
Gene B. Hazelwood, 5402 Garth Road, Baytown, Tex. 77540, and Howard C. Harris, 2955 Durwood, Houston, Tex. 77016

Filed Feb. 10, 1972, Ser. No. 225,177

Int. Cl. B32b 31/06

U.S. Cl. 264-261

7 Claims



A method for forming a masonry wall panel, wherein a plurality of bricks or similar wall-forming members are initially assembled in a substantially horizontal position in a predetermined pattern on a first clamping plate; reinforcing bars, rods or the like are disposed longitudinally and laterally so as to interfit with said bricks; a resilient layer is disposed over the surfaces of the bricks which are to serve as the wall exterior upon completion; the bricks are clamped in said predetermined pattern between the first clamping plate and a second clamping plate while still in the horizontal position; and thereafter the bricks in the clamped position are raised to a substantially vertical position and mortar is poured vertically between the first clamping plate and the resilient layer so as to fill the longitudinal and lateral spaces between the bricks; whereby upon the hardening of the mortar the bricks are in a pre-formed masonry wall panel which is removed from the clamping plates for mounting as a wall, or part of a wall, of a building or other structure.

3,822,337

# PROCESS FOR ELIMINATION OF AMMONIA AND HYDROGEN SULFIDE FROM GASES GENERATED IN COKE PLANTS AND GAS WORKS

Gunter Wunderlich, Sterkrader Str. 37, Bottrop, Germany; and Heinrich Weber, Lennastr. 2; Gustav Choulat, Paulstr. 63; and Dieter Landfeste, Clausstr. 3, all of Recklinghausen, Germany

Continuation-in-part of abandoned application Ser. No. 38,253, May 18, 1970. This application Jan. 24, 1972, Ser. No. 220,246

Claims priority, application Germany, May 24, 1969, P 19 26 629.6

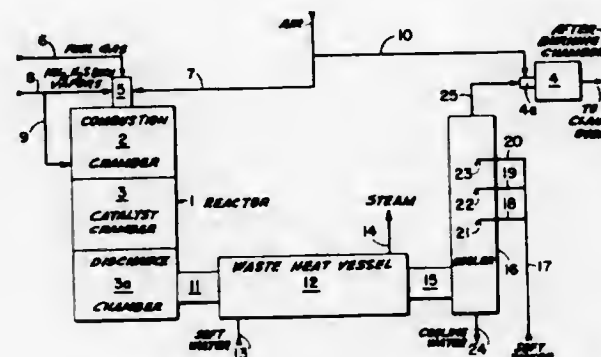
Int. Cl. B01d 53/34; C01b 2/04, 17/04

U.S. Cl. 423-224

11 Claims

The process of the invention relates to a multistage process for completely eliminating ammonia and hydro-

gen sulfide from coke oven gases, their condensates, desorption gases or damp vapors. This is accomplished by the combustion of ammonia so as to form nitrogen and water, and the combustion of hydrogen sulfide to form elementary sulfur in a novel multistage process in which the air, necessary for sustaining the combustion, is added to the above gases and vapors in several, preferably two, combustion stages and the gases from the combustion



stages are likewise cooled in at least two stages, with at least one cooling stage following the first combustion stage, and at least a second cooling stage following the second combustion stage. High pressure steam is obtained as a by-product from the process. The decomposition of  $\text{NH}_3$  in this process is complete, leading to generation of nitrogen and water, which are worked up separately, while  $\text{H}_2\text{S}$  and  $\text{SO}_2$  the latter formed during the process, are used for the recovery of elementary sulfur.

3,822,338

# METHOD OF PREPARING MASSIVE MONOCRYSTALLINE YTTRIUM TITANATE

Leon Merker, Metuchen, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed Oct. 12, 1972, Ser. No. 296,879

Int. Cl. C01f 17/00

U.S. Cl. 423-263

2 Claims

A massive, boule-shaped, single crystal of yttrium titanate is prepared by flame fusion of a finely divided yttrium titanate composition the bulk size of the single crystal boule so formed being such as to permit fabrication of optical elements such as lenses and prisms therefrom, and/or gem stones.

3,822,339

# METHOD FOR REMOVING SULFUR DIOXIDE FROM THE EXHAUST OF A COMBUSTION FURNACE

Minoru Mizuno, Yokohama, Masao Yoki, Yamato, and Kiyoshi Saito, Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1972, Ser. No. 256,145

Claims priority, application Japan, June 8, 1971, 46/39,800

Int. Cl. C01b 17/00; C01c 1/24, 3/00

U.S. Cl. 423-547

4 Claims

This method is characterized by the following steps: causing the exhaust gas of a combustion furnace containing  $\text{SO}_2$  and coke oven gas containing  $\text{NH}_3$  to contact two circulating solutions separately, in each of which there are dissolved ammonium sulfite, ammonium bisulfite and ammonium sulfate; circulating a portion of each of said two self-circulating solutions jointly; continuously drawing out a portion of said jointly circulating solutions; continuously supplementing a decrease of solutions in all the circulation systems with fresh water; and maintaining the pH value of each circulating solution at a level of about 6.5 by controlling the flow rates of said coke oven gas

and jointly circulating solution and the rate at which there should be drawn out a portion of said jointly circulating solution.

3,822,340

# CALCIUM SULFATE WHISKER FIBERS AND THE METHOD FOR THE MANUFACTURE THEREOF

James Joseph Eberl, Moylan, Edmund Thelen, Wayne, and Harold L. Heller, Narberth, Pa., assignors to Franklin Key, Inc., Valley Forge, Pa.

Filed Mar. 27, 1972, Ser. No. 238,048

Int. Cl. C01f 11/46

U.S. Cl. 423-555

5 Claims



Calcium sulfate whisker fibers are provided as well as a method for the manufacture thereof. The calcium sulfate fibers of this invention have excellent tensile strengths and are fire-proof. The calcium sulfate whisker fibers are especially useful as high strength reinforcements for shaped articles, as a fire-proofing and insulation material in construction of buildings in place of asbestos, and as additives for paper and the like.

3,822,341

# METHOD OF PRODUCING SULFUR FROM ACID GASES

Robert Sherwood Smith, Houston, Tex., assignor to Virgil H. Marsh, Silver Spring, Md.

Filed Sept. 1, 1972, Ser. No. 285,662

Int. Cl. C01b 17/04

U.S. Cl. 423-574

8 Claims

A process for producing sulfur from a gas containing a large amount of hydrogen sulfide. The process involves reacting oxygen and hydrogen sulfide with cooling so that the effluent therefrom is at a temperature between 550° to 650° F. Those reaction gases are reacted in a Claus reactor. The effluent gases leave at a temperature between 600° and 750° F. Liquid sulfur is removed from the gases by lowering the temperature of the gases to 270° to 320° F. in a condenser. The gases are further treated in a liquid-vapor contactor by means of chilled water, whereby the water vapor in the gases is removed. The temperature of the gases is raised to 425° to 500° F. by using the hot gases entering the above condenser as the heating means. The heated gases are subjected to reaction in a Claus reactor. Liquid sulfur is removed from the effluent gases by lowering the temperature of the gases to 270° C. to 320° F. in a condenser.

The cooled effluent gases can be admixed with the reaction gases from a reaction of oxygen and a gas rich in hydrogen sulfide. That admixture is then subjected to reaction in a Claus reactor, and liquid sulfur is removed from the effluent gases by lowering the temperature of the effluent gases to 270° to 320° F. in a condenser. A portion of the cooled effluent gas leaving the last condenser can be admixed with the reaction gases entering the first Claus reactor.

3,822,342

# PREPARATION OF NON-ETHER SOLVATED MACROCRYSTALLINE ALUMINUM HYDRIDE

Paul F. Reigler, Midland, and L. F. Lamoria, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 10, 1965, Ser. No. 513,061

Int. Cl. C01b 6/00

U.S. Cl. 423-645

4 Claims

1. In a process for preparing substantially non-ether solvated, macrocrystalline aluminum hydride by heating an ethereal aluminum hydride solution in a refluxing mixture of lithium aluminum hydride and an alkali metal borohydride in an ether-inert organic liquid solvent system the improvement which comprises;

slowly adding an ethereal solution of aluminum hydride maintained at a temperature of from about minus 5 to about minus 30° C. to a refluxing mixture of lithium aluminum hydride and an alkali metal borohydride in an ether-inert organic liquid solvent system maintained at a reflux temperature of from about 76 to about 80° C., said ethereal solution of aluminum hydride at a maximum being about 3 molar in aluminum hydride concentration, the quantities of lithium aluminum hydride:aluminum hydride:alkali metal borohydride in the reaction mixture having a ratio, on a molar basis, ranging from about 0.5:2:1 to about 1:8:1, and refluxing the reaction mixture for a period of time to provide precipitation of substantially non-ether solvated, macrocrystalline aluminum hydride in said reaction mixture.

3,822,343

# PHARMACEUTICAL TABLET

Stuart Anthony Hill, Worthing, Edwin Herbert Searle, Goring-by-Sea, and Barbara Jean Lister, Worthing, England, assignors to Beecham Group Limited, Middlesex, England

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,874

Claims priority, application Great Britain, Apr. 25, 1970, 19,963/70

Int. Cl. A61k 27/12; A61j 3/10

U.S. Cl. 424-22

10 Claims

A sustained release haematinic tablet is produced which comprises a porous matrix resin which is a sandarac resin or a copal resin, having interconnected ducts and pores, and a haematinic substance packed or contained in or dispersed throughout the ducts or pores.

3,822,344

# PHARMACEUTICAL COMPOSITIONS PROVIDING POTASSIUM CHLORIDE IN AQUEOUS SOLUTION

Alfred Eric Corker, Brighton, England, assignor to Arthur H. Cox & Co. Ltd., Brighton, England

No Drawing. Continuation of application Ser. No. 80,469, Oct. 13, 1970, now Patent No. 3,708,574, which is a continuation of abandoned application Ser. No. 722,544, Apr. 19, 1968. This application Feb. 14, 1972, Ser. No. 226,318

Claims priority, application Great Britain, Apr. 29, 1967, 19,796/67; Aug. 2, 1967, 45,471/67

The portion of the term of the patent subsequent to Jan. 2, 1990, has been disclaimed

Int. Cl. A61k 9/00

U.S. Cl. 424-44

2 Claims

Aqueous solutions containing potassium chloride, useful for the treatment of hypokalaemia, are obtained by dissolving in water or an aqueous medium compositions comprising a mixture of a solid, water-soluble hydrochloride of a physiologically innocuous nitrogen-containing organic compound, which dissociates on addition to water to yield an acid solution containing hydrochloric acid and the organic base, e.g. glycine hydrochloride, and



at least one of potassium bicarbonate and potassium carbonate.

3,822,345

## DENTIFRICE COMPOSITION

Leo Thomas Murray, East Brunswick, and Gerhard Martin Selzmann, Franklin Lakes, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 126,350, Mar. 19, 1971, which is a continuation-in-part of application Ser. No. 818,098, Apr. 21, 1969, both now abandoned. This application Aug. 25, 1971, Ser. No. 174,962

Int. Cl. A61k 7/16

U.S. Cl. 424—52 7 Claims  
Dentifrice composition containing a monofluorophosphate salt and as a polishing material at least a major amount of fine particle size alumina. Preferably the alumina is alpha alumina trihydrate and is mixed with insoluble alkali metal metaphosphate, the amount of said alumina being at least about equal of the amount of said alkali metal metaphosphate. This dentifrice retains a desirable level of soluble fluoride upon aging.

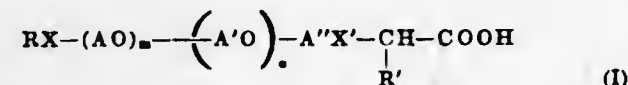
3,822,346

## COSMETIC COMPOSITIONS CONTAINING ANIONIC SURFACE ACTIVE AGENT CONTAINING MONO- OR POLYHYDROXYLATED MONO- OR POLY ETHER CHAINS AND A TERMINAL ACID GROUP

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France  
No Drawing. Continuation of abandoned application Ser. No. 749,580, Aug. 2, 1968. This application Apr. 24, 1972, Ser. No. 246,864

Int. Cl. A61k 7/00

U.S. Cl. 424—70 6 Claims  
A cosmetic composition comprises an aqueous solution of an anionic surface active agent having the formula



in which

R is selected from the group consisting of alkyl and alkenyl radicals having 8 to 22 carbon atoms and alkyl-aryl radicals having 12 to 22 carbon atoms;  
X and X' are each selected from the group consisting of oxygen, sulfur and sulfoxide;  
A is selected from the group consisting of ethylene, propylene and butylene;  
A' is selected from the group consisting of



and  $-CH_2CHOH-CH_2-$ ;

A'' is selected from the group consisting of



at least one of the radicals A' and A'' is



m and n represent numbers having a statistical average value between 0 and 10 inclusive;

R' is selected from the group consisting of hydrogen and a lower alkyl radical having from 0 to 2 carbon atoms; and

in which when m and n are both equal to zero, X' must be sulfoxide.

3,822,347  
MANUFACTURING PROCESS OF A DENTAL REMEDY AND DISINFECTANT

Tadakazu Takahashi, 4-12 Zaimokuza 3-chome, Kamakura, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 88,477, Nov. 10, 1970. This application Aug. 23, 1972, Ser. No. 282,979

Int. Cl. A61k 5/00

U.S. Cl. 424—78 7 Claims  
Manufacturing process of the dental remedy and disinfectant for dental diseases being characterized in the steps consisting of:  
reacting at least one phenol compound with formaldehyde or polymers thereof and with interesterification products of vegetable oils or vegetable resins in the presence of catalysts such as organic acids, inorganic acids, alkalis or salts thereof and amines with or without heating; then stopping said reaction when a viscous intermediate condensate is produced;  
leaving the reaction product standing still to cool, whereby oily material separates at the bottom of the reaction container;  
collecting the oily material;  
rinsing said oily material with water to refine; and dissolving the rinsed material into alcohol or other organic solvent.

3,822,348

## HORMONE-LIKE SUBSTANCE HAVING SERUM CALCIUM REDUCING PROPERTY

Teizo Higashi, Kanagawa, and Jinnoake Abe, Terno Take, Susumu Watanabe, and Masaru Otani, Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Shizuoka, Japan

Continuation-in-part of abandoned application Ser. No. 122,834, Mar. 10, 1971. This application July 17, 1972, Ser. No. 272,674

Claims priority, application Japan, Dec. 28, 1970, 46/124,444

Int. Cl. A61k 17/00

U.S. Cl. 424—95 17 Claims  
A hormone-like substance of polypeptide type having serum calcium reducing property in mammals, which is isolated from an eel, genus *Anguilla*, by extracting heart, particularly pericardial membrane and/or a tissue comprising vena cava attached to oesophagus near the heart with an extraction solvent, i.e. water, dilute organic acid, dilute mineral acid or a mixture of water, hydrophilic organic solvent and at least one of the dilute acids, and removing contaminating proteins from the resulting extract or from an extract liquid obtained by removing solids from said extract. The substance is useful for treatment of various metabolic osteological disease, for example, osteopetrosis and gerontological diseases. The eels used are preferably those bred in sea water or an aqueous sodium chloride solution similar in composition thereto.

3,822,349

## VASOCONSTRICTOR-ANTIHISTAMINE COMPOSITION FOR THE TREATMENT OF HYPERTROPHIED ORAL TISSUE

Carl M. Kostl, 704 Foxhall Road, Bloomfield Hills, Mich. 48013

No Drawing. Continuation-in-part of application Ser. No. 829,793, July 2, 1969, now Patent No. 3,574,859, which is a continuation-in-part of abandoned application Ser. No. 742,535, July 5, 1968. This application Mar. 19, 1971, Ser. No. 126,377

The portion of the term of the patent subsequent to Apr. 13, 1968, has been disclaimed  
Int. Cl. A61k 5/00, 7/16, 27/00

U.S. Cl. 424—54 9 Claims  
A composition in the form of a mouthwash or toothpaste for the treatment of hypertrophied and hyperplastic

oral tissue. The composition contains as essential ingredients thereof one or more alkaloids, such as the sympathomimetic amines, which are vasoconstrictors and effect vasoconstriction of the oral tissue and an antihistaminic agent which interferes with the access of histamine to the endothelial cells of the capillary membrane.

3,822,350

## ANTIBIOTIC 21,190 RP AND PROCESS FOR PREPARING SAME

Denise Mancy, Charenton, and Jean Florent and Jean Proudhomme, Paris, France, assignors to Rhone-Poulenc S.A.

Filed Nov. 27, 1972, Ser. No. 309,810

Claims priority, application France, Nov. 29, 1971, 7142683

Int. Cl. A61k 21/00

U.S. Cl. 424—118 9 Claims  
The new antibiotic 21,190 RP is prepared by cultivating the hitherto unknown microorganism *Streptomyces hygroscopicus* DS 23,230 (NRRL 3576) under aerobic conditions in an aqueous nutrient medium. The antibiotic is active against Gram-positive and some Gram-negative microorganisms. It can be used as a growth promoting agent for animals.

3,822,351

## COMPOSITIONS AND METHOD FOR CONTROLLING AEROBACTER AEROGENES

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Roger L. Justice, Warminster, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,200

Int. Cl. A01n 13/00

U.S. Cl. 424—131 10 Claims  
The present invention relates to certain processes and compositions useful for inhibiting and/or controlling the growth of slime in water and, in particular, water employed for industrial purposes. Water employed in the manufacture of pulp paper and water employed in cooling water systems, as well as other industrial waters, provide environments which are conducive to slime formation. The novel compositions of the present invention are mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems. The slime, of course, is objectionable from an operational and/or an aesthetic point of view. Specifically, the invention is directed to and the use of compositions comprising a combination of 3,3,4,4-tetrachlorotetrahydrothiophene-1,1-dioxide (or derivatives thereof) and bis(tri-n-butyl tin) oxide. The inventive compositions inhibit the growth of slime in water, or more specifically, possess biocidal activity against bacteria, fungi and/or algae.

3,822,352

## POULTRY FEED CONTAINING MYCELIUM OF STREPTOMYCES MEDIOLANI

Giovanni Franceschi and Arpad Grein, Milan, Italy, assignors to Societa Farmaceutici Italia, Milan, Italy

No Drawing. Original application Nov. 14, 1968, Ser. No. 775,949, now Patent No. 3,598,702, dated Aug. 10, 1971. Divided and this application Aug. 6, 1970, Ser. No. 61,863

Claims priority, application Italy, May 14, 1968, 16,443/68

Int. Cl. A61k 27/00

U.S. Cl. 424—195 1 Claim  
This invention relates to mycelium of *Streptomyces mediolani* which are useful as an additive to poultry feed for pigment-increasing purposes.

3,822,353

## METHODS FOR INCREASING DIURESIS

Richard J. Otten, Dresher, Pa., and William H. Reese, Jr., Sterling, Flo Ryer, Falls Church, and Robert J. Weir, Jr., McLean, Va., assignors to Amchem Products, Inc., Ambler, Pa.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,398  
Int. Cl. A61k 27/00

U.S. Cl. 424—222 6 Claims  
Pharmaceutical compositions containing (2-chloroethyl)phosphonic acid and related compounds are used to effect diuresis and related pharmacological activity.

3,822,354

## O-(METHYLCYCLOHEXYL)-S-METHYL-S-PHENYL-PHOSPHORODITHIOLATE FUNGICIDAL AND BACTERICIDAL AGENTS

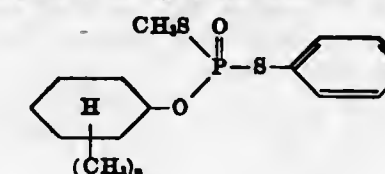
Shigeo Kishino, Yasuo Yamada, Yoshio Kurahashi, and Toyohiko Kume, Tokyo, Japan, assignors to Sun Chemical Corporation, New York, N.Y.

No Drawing. Original application July 9, 1972, Ser. No. 269,699, now Patent No. 3,781,386. Divided and this application Aug. 27, 1973, Ser. No. 392,143

Claims priority, application Japan, July 16, 1971, 46/52,393

Int. Cl. A01n 9/36

U.S. Cl. 424—225 9 Claims  
O - (methylcyclohexyl) - S - methyl - S - phenyl - phosphorodithiolates of the general formula



in which

n is 1 or 2,

which possess fungicidal and bactericidal properties.

3,822,355

## NOVEL ORAL CONTRACEPTIVE METHOD

Fred A. Kincl, New York, N.Y., assignor to Biological Concepts, Inc., New York, N.Y.

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,920

Int. Cl. A61k 17/00

U.S. Cl. 424—243 5 Claims  
A method for the control of the ovulatory cycle comprises administering orally to a woman during a period of at least about 28 days in consecutive sequence, beginning on the first day of menstruation, a placebo dosage daily for a period of 16 days, then once daily following ovulation and for the next succeeding 4 days a progestational substance in a dosage effective to inhibit the function of the corpus luteum, and then for the remaining days of the cycle orally administering once daily a progestational substance in a dosage between about 10% and about 40% of the previous dosage for a given progestational substance. The dosage units may be contained in numbered detachable sealed pockets of a strip type dispenser.

3,822,356

## USE OF ISOTHIOCYANOBENZOXAZOLES AND ISOTHIOCYANOBENZIMIDAZOLES AS ANTHELMINTICS

Paul Bremelsen and Alfred Margot, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application July 24, 1968, Ser. No. 747,122, now Patent No. 3,586,670. Divided and this application Feb. 1, 1971, Ser. No. 111,655

Int. Cl. A61k 27/00

U.S. Cl. 424—272 9 Claims  
Isothiocyano-substituted 2-phenyl- and 2-phenylalkyl-benzoxazoles and -benzimidazoles are disclosed as novel anthelmintic agents. Their production, their use in the control of helminths and compositions containing them







3,822,365

**COMPATIBLE FOUR CHANNEL FM SYSTEM**

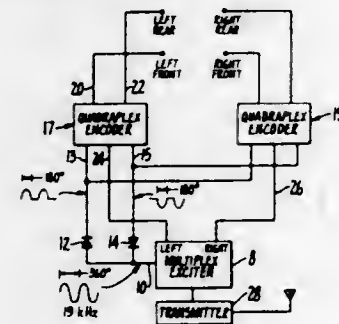
Louis Dorren, Millbrae, Calif., assignor to Matsushita Electric Corporation of America, New York, N.Y.

Continuation of Ser. No. 32,989, April 29, 1970, Pat. No. 3,708,623, which is a continuation-in-part of Ser. No. 13,902, Feb. 25, 1970, abandoned. This application Dec. 29, 1972, Ser. No. 319,939. The portion of the term of this patent subsequent to Jan. 2, 1990, has been disclaimed.

Int. Cl. H04h 5/00

U.S. Cl. 179-15 BT

14 Claims



A four channel FM system is described. In one embodiment the usual 19 kHz pilot signal is employed to switch between front and rear information, while in another, a 76 kHz switching signal is employed for this purpose.

3,822,366

**ONE CHANNEL CARRIER INTERCOM SYSTEM**

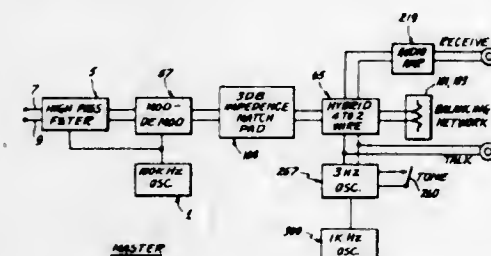
Orrin B. O'Dea, Garden Grove, and Luis Albert Arce, Lakewood, both of Calif., assignors to Jim C. Garrett, Long Beach; Robert H. Johnson, Marina Del Rey and Jack Shelton, Long Beach, all of Calif., part interest to each

Filed Oct. 10, 1972, Ser. No. 296,225

Int. Cl. H04j 1/18

U.S. Cl. 179-2.5 R

12 Claims



A telephone communication device includes a pair of portable units connectable by a pair of wires. A Master Unit has means for generating a 100 KHz carrier frequency while the Slave Unit has a carrier frequency amplifier and limiter for providing the same instantaneous carrier frequency for the Slave as is being generated by the Master. Modulator/Demodulator means are provided in each unit for transmitting and receiving a voice frequency and a tone generator signal for verification and path determination without disturbing subscriber conversation.

3,822,367

**METHOD AND APPARATUS FOR REMOTE TESTING OF A TRANSMISSION LINE**

Marion L. Humphrey, Bellwood, Ill., assignor to Allstate Insurance Company, Northbrook, Ill.

Filed Aug. 29, 1972, Ser. No. 284,525

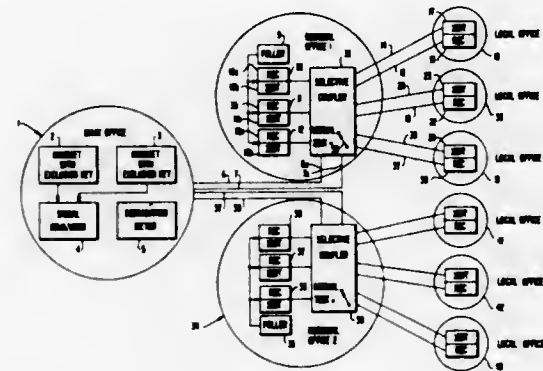
Int. Cl. H04b 3/46

U.S. Cl. 179-175.3 R

15 Claims

A method and apparatus for testing a plurality of private information transmission lines which connect a plurality of re-

gional offices with a plurality of local offices from a single location at a home office. A commercial telephone circuit link is established between the home office and the regional office associated with the transmission line to be tested by dialing the telephone number of the regional station at the home station on a commercial telephone handset. A selective coupling means is provided at each regional office for selectively coupling the information transmission lines at that office with



the commercial telephone lines at the office and hence providing a complete testing loop from the home office to the transmission lines and back to the home office. The coupling means includes means for matching the impedance of the commercial telephone lines and the private transmission lines, means for adjusting the levels of the signals entering and exiting from the regional office and means for selectively connecting any of a plurality of transmission lines to the commercial telephone lines.

3,822,368

**LOCK CONSTRUCTION**

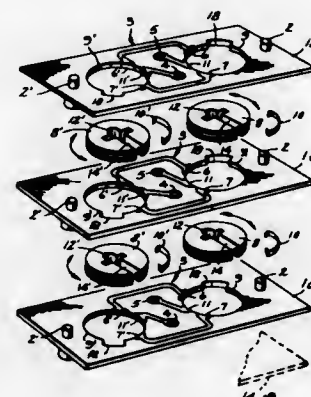
Robert Stephen Salzman, 27 Holbrook Dr., Stamford, Conn. 06906, and Gerald Martin Goldman, Knollwood Extension, Elmsford, N.Y. 10523

Continuation-in-part of Ser. No. 244,678, April 17, 1972, which is a continuation-in-part of Ser. No. 199,883, Nov. 18, 1971. This application Aug. 18, 1972, Ser. No. 281,649

Int. Cl. H01h 19/58, 21/78

U.S. Cl. 200-11 D

1 Claim



A lock construction comprising a plurality of circuit boards. The circuit boards are ganged together to form a connective circuit path. When a key is inserted and turned in the keyway of the lock, the connective path is altered. Only the correct key will allow entry. The circuit of the lock may either be an electrical circuit, or an analogous fluid circuit.

3,822,369

**FRANGIBLE, FLEXIBLE PRINTED CIRCUIT SENSOR FRACTURABLE BY DERAILED CABLE**

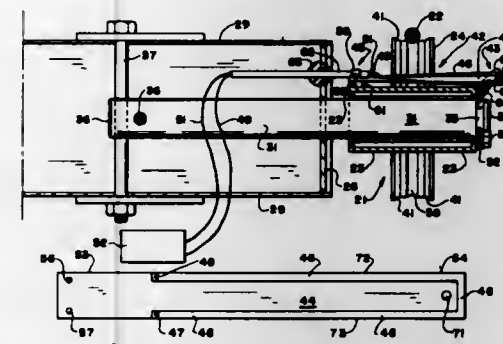
Jan K. Kunczynski, Tahoe City, Calif., assignor to Lift Engineering & Mfg., Inc., Carson City, Nev.

Filed June 29, 1973, Ser. No. 375,096

Int. Cl. H01h 35/00

U.S. Cl. 200-61.08

11 Claims



A cable derailment sensing device and method for use with pulley means having a cable carried thereby to detect derailment of the cable from the pulley means is disclosed. The sensing device includes a brittle frangible element positioned by mounting means for impact thereof by the cable upon derailment, and the frangible element carries an electrically conductive path thereon which is connected to electrical sensing circuitry. The brittle sensing element is formed of a material which is vibration and fatigue resistant and has sufficient durability to withstand accidental jarring. The electrically conductive path may be formed by printed circuit techniques on a surface of a frangible element such as a printed circuit board. The brittle frangible element is preferably prestressed by the mounting means to insure complete fracturing thereof upon impact by the cable.

3,822,370

**HYDRAULIC CONTROL MEANS WITH MAGNETIC FLOW SENSING SPOOL**

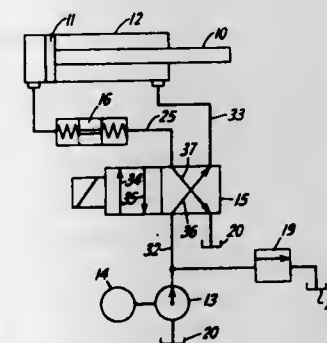
Olaf M. Olsen, Old Saybrook, and James D. Elliott, Essex, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,306

Int. Cl. H01h 35/40, 36/00

U.S. Cl. 200-81.9 M

2 Claims



A pair of reed switches are magnetically actuated by a flow sensing spool in the hydraulic circuit.

3,822,371

**SNAP-ACTION SWITCH**

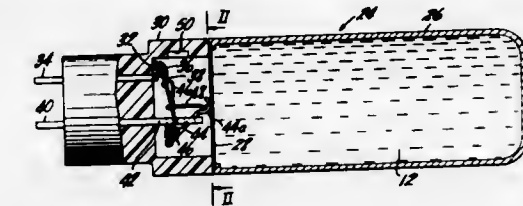
James W. Welsh, Summit, N.J., assignor to Standard Motor Products, Inc., Long Island City, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,524

Int. Cl. H01h 3/28, 13/64

U.S. Cl. 200-160

4 Claims



A switch exhibiting snap-action is disclosed in which the switch contact elements can assume one of their opposite states responsively to plural positionings of the switch actuator and hence plural input conditions.

3,822,372

**SWITCHING APPARATUS FOR SINGLE BUTTON HAND MICROPHONE**

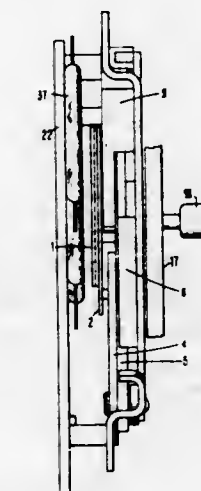
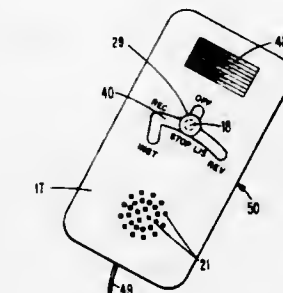
John Stephen Coenen, and Ronald Eugene Hunt, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1972, Ser. No. 311,033

Int. Cl. H01h 21/22

U.S. Cl. 200-157

11 Claims



A microphone switching apparatus for operating a recorder. The apparatus is incorporated into a hand microphone housing having a speaker, a microphone element, and an opening through which a control button for the apparatus extends. The apparatus is generally made up of a multi-region magnet movable along a path relative to a number of reed switches. Switching positions lie along the path which is defined by a slot in the apparatus frame corresponding to the opening in the housing. The control button is connected to a bolt which in turn is connected to the magnet. Movement of the button to



the various switching positions will result in a combination of the reed switches being picked and dropped by the magnet. The picking and dropping of the reed switches will provide operating signals to the recorder. Also, maintaining the control button at two of the switching positions requires operator control in that if the operator releases the button, it will spring back to a previous position. Springs indirectly acting against the magnet cause the button to spring back to the previous position. As to the remaining positions, springs also indirectly act against the magnet, but latching means will maintain the button in place in the absence of operator control.

3,822,373

# METHOD AND APPARATUS FOR FEEDING WIRE FOR WELDING

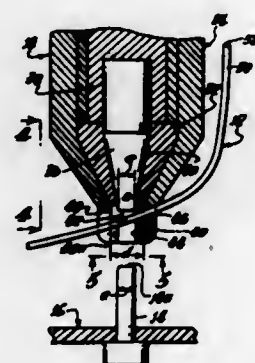
James C. Arnett, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 29, 1972, Ser. No. 284,757

Int. Cl. B23k 9/00

U.S. Cl. 219-56

10 Claims



Apparatus for welding a continuous insulated wire to numerous terminal pins of a circuit board, including a solid central electrode which presses the wire against the terminal pin to rupture the insulation and then weld the wire to the pin. A concentric second electrode has a pair of openings on diametrically opposite sides of the center electrode for closely guiding the wire across the face of the central electrode, one of the openings being a hole that completely surrounds the wire and the opposite opening being a slot which is open at its bottom end. After each point of the wire is welded to a terminal pin, the electrodes are lifted and then initially moved parallel to the axis of the wire portion that is welded to the previous terminal pin, and only then is the direction of electrode movement changed to carry it to the next terminal pin.

3,822,374

# ELECTRODE WIRE FEED MECHANISM FOR ELECTRO-EROSION MACHINES

Werner Ullmann, Locarno-Muralt; Victor Lammeler, Gerdela; Silvio Mattel; Arno Sieg, both of Locarno; Peter Marti, Locarno, and Giuseppe Rezzonico, Bellinzona, all of Switzerland, assignors to A.G. für Industrielle Elektronik AGIE, Locarno b. Locarno, Switzerland

Filed Aug. 30, 1972, Ser. No. 284,864

Claims priority, application Switzerland, Apr. 27, 1972, 6312/72

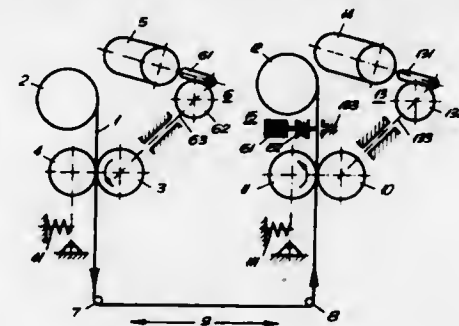
Int. Cl. B23k 9/16

U.S. Cl. 219-69 V

19 Claims

Feed rolls and drawing rolls advance the electrode wire around guide knobs defining the working length and isolate the working length from the irregularities of unwinding and rewinding. The feed rolls operate at constant speed and the drawing or takeup rolls operate either at constant torque or at a higher constant speed designed to provide a constant amount of elongation of the electrode wire, the latter conditions being used if the wire is subject to plastic deformation at working tension. The guide knobs have abrasion resistant sur-

faces to define the working position of the electrode wire and electrically conductive surfaces for applying electro-erosion



potential to the wire. Instead of rewinding used electrode wire on a takeup reel or gathering it in a rotating container, the used wire may be cut up for salvage or other disposal.

3,822,375

# DATA PROCESSING SYSTEM

Manamori Ozeki, Masakata Sawada, and Takeki Yamazaki, all of Tokyo, Japan, assignors to Nippon Kokuyo Tetsudo, Tokyo To, Japan

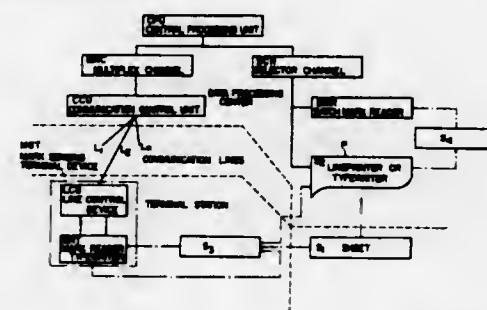
Continuation-in-part of Ser. No. 839,573, July 7, 1969, abandoned. This application Aug. 29, 1972, Ser. No. 284,617

Claims priority, application Japan, July 8, 1968, 43-47121

Int. Cl. G06k 3/02, 19/06; G06f 15/04; B41j 5/36; H04m 11/06

U.S. Cl. 235-61.9 R

2 Claims



Disclosure is made in connection with a data processing system, in which a mark reading-and-recording device consisting of a mark reading means and a mark recording means both included in one casing, a data processing device preferably provided in a separate station and operatively connected with the mark reading-and-recording device, and a sheet having a mark recording area and a print recording area to be recorded are provided, said system being operated in a manner such that the mark recording area of the sheet is further recorded with received data from the data processing device or with additional information locally originated, the information thus recorded being thereafter read out by the mark reading means in the mark reading-and-recording device and sent out to the data processing device, and the results processed in the data processing device are sent back to the mark reading-and-recording device and recorded in the print recording area of the sheet by the mark recording means provided therein.

3,822,376

# READING HEAD MOUNTING ARRANGEMENT FOR CARD READER

Jürgen Kok, Bedford, and John P. McCarthy, Hanover, both of Mass., assignors to Dymo Industries, Inc., San Francisco, Calif.

Filed June 8, 1973, Ser. No. 368,287

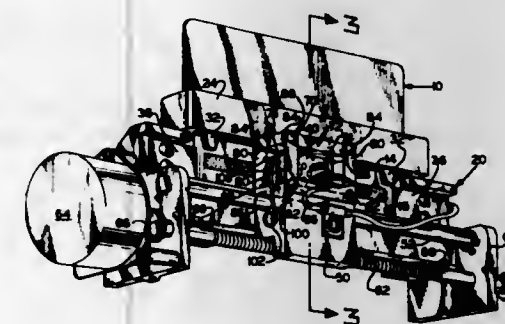
Int. Cl. G06k 7/01.5

U.S. Cl. 235-61.11 R

9 Claims

A card reader in which a data area on a card is scanned by movement of a reading head across a data area, the reading

head being carried by a movable carriage and coupled to the carriage by a plurality of parallel, resiliently flexible cantilever members extending between the carriage and the reading head and enabling displacement of the reading head relative



to the carriage in a direction normal to the data area to compensate for variations in the spacing between the data area and the fixed path of travel of the carriage while maintaining proper orientation of the reading head relative to the data area without introducing effective changes of reading speed.

3,822,377

# PARAMETER COMPENSATING CIRCUIT FOR FLOW METER

Edwin J. Beck, Bricktown, N.J., assignor to H-B Industries Inc., Port Monmouth, N.J.

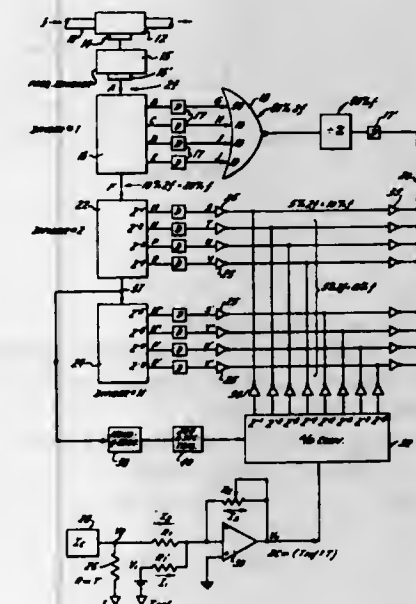
Continuation-in-part of Ser. No. 348,265, April 5, 1973. This

application June 22, 1973, Ser. No. 372,526

Int. Cl. G01f 15/02

U.S. Cl. 235-151.34

13 Claims



The present invention comprises a method of metering the volumetric flow of a fluid, wherein the fluid is represented by a pulse train having a frequency corresponding to the fluid's rate of flow. The present method serves to normalize the frequency to a predetermined reference parameter, thereby compensating for gravimetric changes occurring within the fluid. The basic steps of the present method include: dividing said pulse train into two subtrains; applying the output of one of said subtrains to an "N" stage binary divider; electronically comparing the corresponding parameter of said fluid to said predetermined reference parameter; generating an analog voltage that is proportional to the algebraic difference between said parameters; applying said analog voltage to an N stage analog-to-digital converter; applying the stage-by-stage output of said converter to each of the corresponding output stages of said binary divider; permitting a portion of the pulses of the output of said binary divider to pass to the other of said

two pulse subtrains, such that the total of (i) the passed pulses and (ii) the pulses comprising said other subtrain, equals 100% of the number of pulses in the initial pulse train, said 100% occurring when said algebraic difference equals zero; and allowing additional pulses of said divider to be either passed or inhibited in a quantity directly proportional to the relative respective positive or negative polarity of said algebraic difference between said parameters, thereby obtaining a total pulse output having a frequency that is gravimetrically compensated to the predetermined reference parameter.

3,822,378

# ADDITION-SUBTRACTION DEVICE AND MEMORY MEANS UTILIZING STOP CODES TO DESIGNATE FORM OF STORED DATA

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

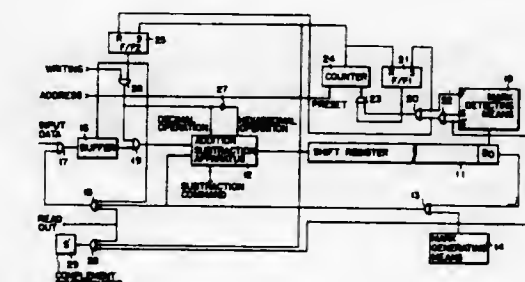
Filed Sept. 26, 1972, Ser. No. 292,403

Claims priority, application Japan, Sept. 29, 1971, 46-76158

Int. Cl. G06f 7/50

U.S. Cl. 235-176

10 Claims



An addition subtraction device utilized in connection with memory means, wherein the contents stored in the memory means is added to or subtracted from input data by the operation of the addition-subtraction unit, includes a shift register having a plurality of serially arranged addresses for storing information item such as words and for storing stop codes interposed between adjacent addresses. Further included is an addition-subtraction unit coupled to the input of the shift register and means for switching the operation of the addition-subtraction unit between a decimal operation for input decimal information and another form of operation for the stop codes. The addition-subtraction unit operates to convert a positive stop code into a complement stop code under the control of a borrow signal formed as a result of a subtraction operation and to convert a complement stop code into a positive stop code under the control of a carry signal formed as a result of an addition operation. Means is further provided for discriminating between the positive stop code and the complement stop code.

3,822,379

# RADIO FREQUENCY PULSE GENERATOR-CORRELATOR

Michael J. Brienza, Westport, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 15, 1972, Ser. No. 315,715

Int. Cl. G06g 7/19; G02f 1/18

U.S. Cl. 235-181

7 Claims

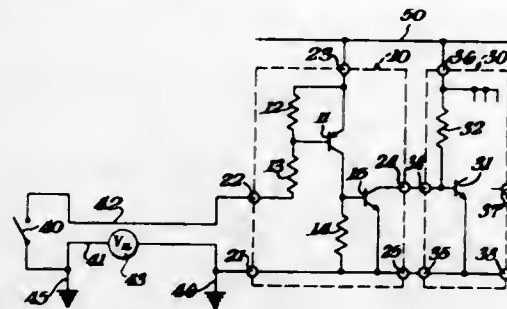
A source of continuous wave laser energy interrogates an interaction medium into which a source of acoustic pulses in the radio frequency (RF) range is injected. A variably coded birefringence is induced in the medium to cause conditions of resonant backscattering of the laser energy in the form of coded pulses. The backscattered pulses are optically heterodyned with the laser energy to provide a pure RF signal







switches in a high noise environment. Noise voltages that may be generated in chassis or common ground circuits leading to



the logic inputs, must reach a level almost as large as the switching circuit power supply voltage, to cause abnormal switching.

3,822,387

## CIRCUIT FOR RE-GENERATING A CURRENT

Cornelis Mulder, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

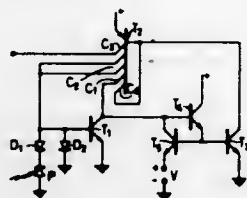
Filed June 2, 1972, Ser. No. 258,952

Claims priority, application Netherlands, June 16, 1971, 7108233

Int. Cl. H011 19/00

U.S. Cl. 307—299 B

8 Claims



Integrated circuit for measuring the short-circuit current of a photodiode, which circuit uses the combination of an npn current mirror and a multi-collector lateral pnp transistor the base of which is controlled via a current-amplifying npn transistor.

3,822,388

## STIRLING ENGINE POWER SYSTEM AND COUPLER

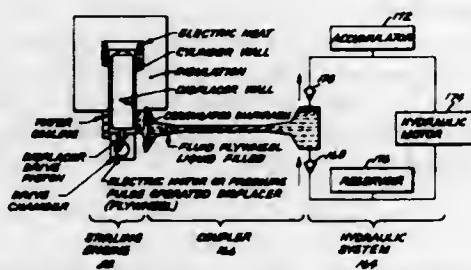
William R. Martini, Richland; Richard P. Johnston, and Maurice A. White, both of Kennewick, all of Wash., assignors to McDonald Douglas Corporation, Santa Monica, Calif.

Filed Mar. 26, 1973, Ser. No. 344,940

Int. Cl. H02a

U.S. Cl. 310—2

10 Claims



Stirling engine power system includes a displacer type Stirling engine producing an output of pressure pulses, load means to be driven by the output pulses, and a resonantly operated fluid coupler for coupling the output pulses suitably to the load means to drive the same. In one version of the power system, the load means is a piezoelectric generator driven to generate electrical output energy and the fluid cou-

pler is a mercury-filled tube with a flexible diaphragm at each end to separate the mercury from working gas of the engine and hydraulic fluid of the generator. In another version of the power system, the load means is a hydraulic system including a hydraulic motor load and the fluid coupler is a hydraulic fluid-filled tube with a diaphragm at one end to separate the hydraulic fluid from the engine gas.

3,822,389

## LIQUID COOLANT PRESSURIZING DEVICE FOR DYNAMOELECTRIC MACHINES

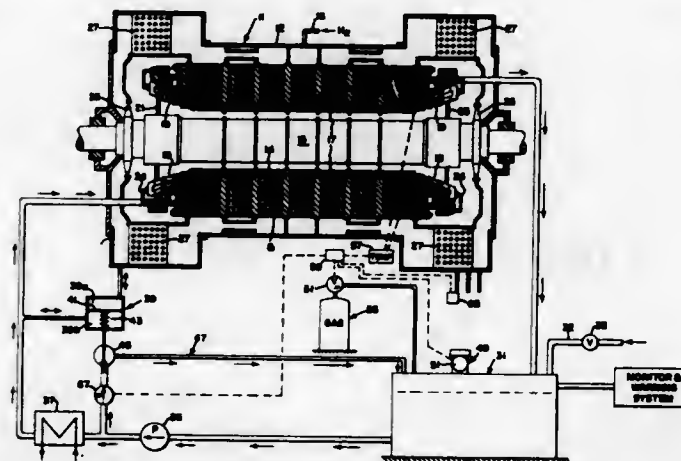
Henry W. Kudlack, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,391

Int. Cl. H02k 9/00

U.S. Cl. 310—53

6 Claims



A gas-cooled, liquid-cooled dynamoelectric machine, in one embodiment, includes a gas supply connected to a liquid coolant storage tank for providing a temporary static pressure increase throughout a liquid coolant system in response to transient dynamoelectric machine overload conditions. Overload conditions are detected by an electrical or thermal sensor connected to a valve actuator connected between the gas supply and the storage tank. The increase in the static pressure raises the boiling point of the liquid coolant throughout the liquid coolant system thereby increasing the heat removal capability of the liquid coolant system. Upon the cessation of the overload, the static pressure in the liquid coolant is reduced to its normal, steady-state, operating pressure.

3,822,390

## ADJUSTABLE-TORQUE MAGNETIC BRAKE

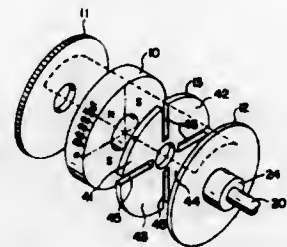
Gunnar H. Jansson, Aurora, Ohio, assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 10, 1973, Ser. No. 395,750

Int. Cl. H02k 49/10

U.S. Cl. 310—104

12 Claims



An adjustable-torque magnetic device for dynamically braking a reel, spool or other rotary element. The device utilizes a multipole permanent magnet with poles in the form of circular sectors, and a pair of spaced magnetic circuit discs located one-on-each-side-of and coaxial with the permanent magnet, one of the discs being operatively connected to the

rotary element. The circuit discs provide flux paths between pole sectors of opposite polarity and thus cause a magnetic drag resisting relative rotation. A flux gate is interposed between the permanent magnet and one of the circuit discs so that the braking torque may be adjusted by positioning the gate relative to the magnet between a maximum torque position wherein magnetic flux passes through the flux gate to and from the adjacent circuit disc, to a minimum torque position wherein a portion of the flux is shunted through the gate to bypass the adjacent circuit disc.

3,822,391

## ELECTRIC MOTOR WINDING

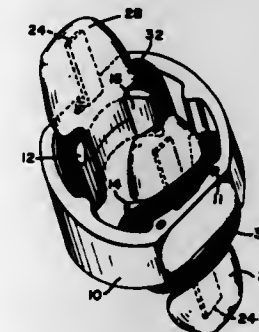
Grayson Brown, Riverside, Conn., assignor to Consolidated Foods Corporation, Old Greenwich, Conn.

Filed Jan. 11, 1973, Ser. No. 322,607

Int. Cl. H02k 3/00

U.S. Cl. 310—194

5 Claims



In accordance with the present invention there is provided improved winding retention means for the field coils in the stator of a rotary electric machine, particularly for coils which are wound in place on the field core by an automatic winding machine. As is well known, winding guides are temporarily secured at each axial end of each of the stator poles. The shuttles of the winding machine wind successive turns of wire around the poles and in the space between the latter and the winding guides. The retention means includes insulated flat steel wire or strips which are secured to the core as by extending through passages or slots formed in the core laminations. These strips extend out from opposite ends of the core and underneath the winding guides during the winding operation so as to support the coils after the winding guides have been removed and thereafter are bent around the coils so as to securely anchor the latter to the core and retain them in place.

3,822,392

## MEANS FOR POSITIONING A HEATING ELEMENT WITH A THERMIONIC CATHODE STRUCTURE

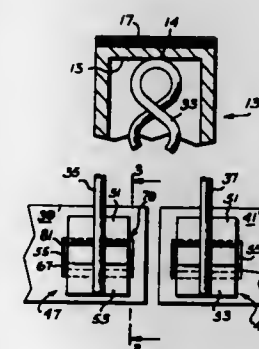
Robert J. Bowes, and John J. Miller, both of Seneca Falls, N.Y., assignors to GTE Sylvania Inc., Seneca Falls, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,772

Int. Cl. H01j 1/94, 19/48

U.S. Cl. 313—271

14 Claims



This relates to means for effecting positive and sustained positioning of a heating element within an end-emissive

cathode structure for utilization in a cathode ray tube electron gun. The orientation means is in the form of at least one heater positioning device located between a fixed heater support means and a connective extremity of the cathode heating element. The heater positioning device is formed of a bilaminate metallic material of predetermined flexure performance shaped to have an upper attachment portion at one end and a lower attachment portion at the opposite end thereof with an acutely curved bend of bilaminate strip forming a partial loop of the material therebetween. Such bilaminate material comprises a first lamina of an active metallic alloy contiguously bonded along a common interface to a second lamina of a passive alloy material. The active alloy portion, upon being subjected to a predetermined temperature during tube processing, undergoes a metallurgical phase transformation effecting a volume change therein. The definite modification of the shaping of the positioning device thus effected exerts positive and sustained positioning of the heater element within the cathode structure in a manner to provide uniform spacing between the end of the heating element and the closure portion of the cathode.

3,822,393

## ELECTRONIC STROBE

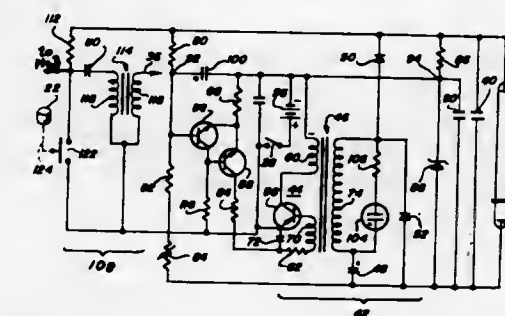
Zvi Y. Karpol, Bronx, N.Y., assignor to Berkey Photo, Inc., Paramus, N.J.

Filed Oct. 11, 1972, Ser. No. 296,628

Int. Cl. H05b 41/32

U.S. Cl. 315—241 P

7 Claims



An electronic strobe circuit for flash cameras or flash attachments in which a capacitive energy storage circuit is discharged into a flash tube to provide illumination in synchronism with the opening of the camera shutter. The strobe includes a charging circuit for gradually charging the storage circuit toward a predetermined charge level sufficient for illuminating the flash tube to a desired intensity upon opening of the shutter and a charge limiting circuit including a balanceable bridge coupled to the storage circuit and a detecting device for inhibiting operation of the charging circuit whenever the voltage across the flash tube reaches a desired level. The charge limiting circuit causes the storage circuit to be operated in an intermittent or pulsating manner when it reaches the desired flash voltage, the pulsating nature of the limiting circuit being additionally utilized to provide an audio-visual indication to the operator when the storage circuit is fully charged.

3,822,394

## DISCHARGE LAMP LIGHTING APPARATUS

Makoto Toho, Kyoto, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sept. 20, 1972, Ser. No. 290,556

Claims priority, application Japan, Sept. 30, 1971, 46-77409; Sept. 30, 1971, 46-77411; Feb. 29, 1972, 47-21300

Int. Cl. H05b 37/02

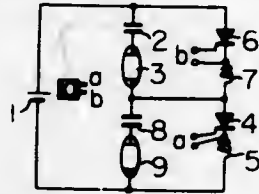
U.S. Cl. 315—228

7 Claims

A discharge lamp lighting apparatus adapted to two such lamps, comprising a pair of series circuits of inductance and thyristor and a pair of series circuits of condenser and discharge lamp. The respective series circuit of condenser and



discharge lamp are arranged to be in parallel with the respective thyristors which are connected in series with a DC source so that each discharge lamp will be lighted with a sine wave



form alternating current of a high frequency through each thyristor, and the respective inductances form series oscillation circuit with the respective condensers so as to provide an oscillatory lamp current to each discharge lamp.

3,822,395

### PORTABLE CIGARETTE LIGHTER WITH AN ELECTRO-MAGNETIC GENERATOR

Claus-Christian Cobarg, Steinbach, Taunus, and Gerhard Steuernagel, Darmstadt, Eberstadt, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt Am Main, Germany

Continuation of Ser. No. 102,218, Dec. 28, 1970, abandoned, Continuation of Ser. No. 790,058, Jan. 9, 1969, abandoned.

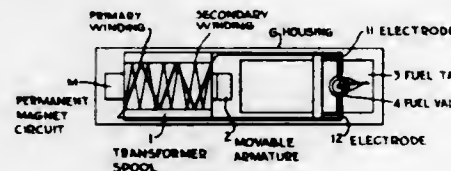
This application July 30, 1973, Ser. No. 383,806

Claims priority, application Germany, Jan. 10, 1968, 1632617

Int. Cl. F23q 3/01

U.S. Cl. 317-81

1 Claim



A cigarette lighter has a magnetic circuit in which the movement of an armature produces a spark in a coupled high voltage coil, the coil being of the type wound by the process known as pilgrim step process.

3,822,396

### ELECTRIC LOCKING AND UNLOCKING APPARATUS

Fumio Watase; Shunroku Nakachi; Seichi Kodera, and Mamoru Namikawa, all of Tokyo, Japan, assignors to Tokyo Magnetic Printing Co., Ltd., Tokyo, Japan

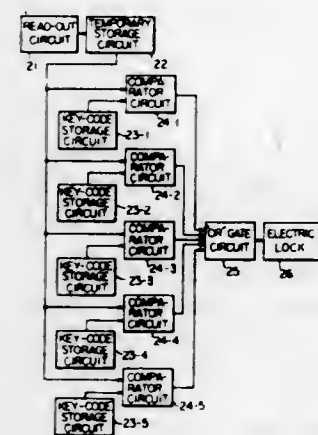
Filed Feb. 26, 1973, Ser. No. 335,582

Claims priority, application Japan, May 11, 1972, 47-45892; June 22, 1972, 47-61846; June 22, 1972, 47-61847

Int. Cl. E05b 49/00

U.S. Cl. 317-134

1 Claim



An apparatus for locking and unlocking electric lock with a magnetic key code signal recorded on a magnetic card is pro-

vided. The apparatus includes a storage device in which a predetermined signal specific to a particular lock associated is preliminarily stored, and the key code signal read out from the card inserted into a read-out device of the apparatus is compared with the predetermined signal at a logic operation device. Coincidence of the both signals at the logic operational device will actuate an associated control device for the electric lock so that the lock will be unlocked or locked depending on the locked or unlocked state of the lock.

3,822,397

### CAPACITOR PACKAGE WITH A SPLIT METAL-PLATE TERMINAL COVER

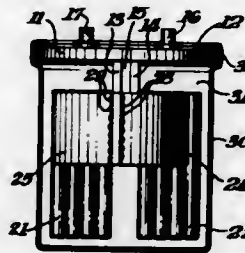
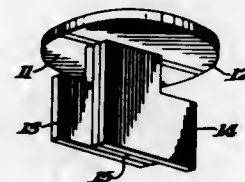
Henry F. Puppolo, North Adams, Mass., and John T. Ogilvie, Bennington, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 7, 1973, Ser. No. 358,208

Int. Cl. H01g 9/00

U.S. Cl. 317-230

10 Claims



An aluminum electrolytic capacitor is housed in an aluminum can whose cover is made of two aluminum plates lying in the same plane, and insulated from the can and from each other by insulative layers of butyl rubber. The capacitor foils are connected to a stripline which is composed of two aluminum plates separated by a layer of butyl rubber. Each stripline plate is at right angles to one of the cover plates.

3,822,398

### METHOD AND APPARATUS FOR TESTING RESISTIVITY OF REED RELAY CONTACTS

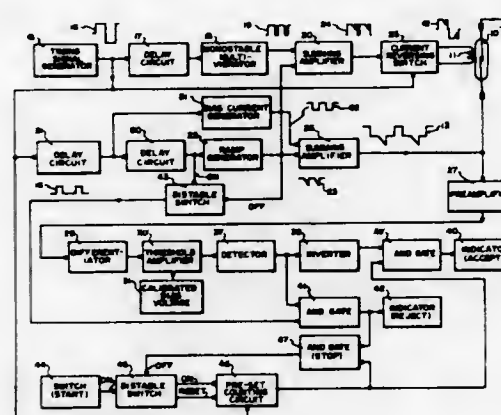
Richard Michael Rovnyak, Hanover Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 5, 1973, Ser. No. 412,860

Int. Cl. G01r 3/02

U.S. Cl. 324-28 RS

10 Claims



Signal generator circuits are connected to a reed switch under test to apply a linearly changing current superimposed

on a bias current level simultaneously to an operating coil and to its reed blades. Voltage developed across the contacts is amplified and differentiated while the changing current twists the blades as a result of magnetostriction. When the contacts are made through rough or contaminated areas as they are being moved by the twisting of the blades, the differentiated voltage exceeds a reference voltage and causes an indication of rejection.

3,822,399

### CIRCUITRY FOR DETECTING MAXIMUM VALUES OF A SIGNAL SEQUENCE

Karl Grund; Erich Courtin, both of Sindelfingen; Stefan Traub, Boblingen, and Helmut Zeeb, Kirchentellinsfurt, all of Germany, assignors to Hewlett-Packard GmbH, Bolingen, Germany

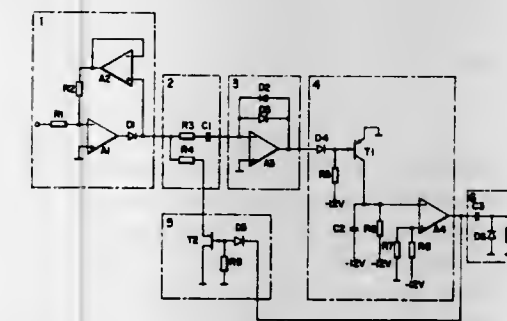
Filed Aug. 28, 1972, Ser. No. 284,315

Claims priority, application Germany, Sept. 2, 1971, 2143971

Int. Cl. G01r 19/16

U.S. Cl. 324-103 P

9 Claims



Circuitry for the determination of the instants of, and the time intervals between, maximum values of signals of varying amplitude and wave form includes an idealized diode connected to a capacitor. A discriminator responsive to the termination of the charging current to the capacitor actuates a delay circuit. If no greater amplitude appears during the delay period, a switch activates a pulse generator to deliver an impulse indicative of the instant the maximum value appeared.

3,822,400

### SOLID STATE PULSE INITIATOR FOR DEMAND METER

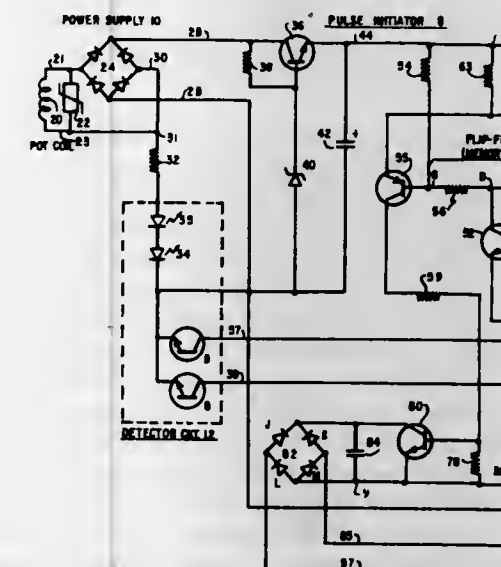
William W. Dunkel, Seneca, S.C., assignor to Sangamo Electric Company, Springfield, Ill.

Filed July 9, 1973, Ser. No. 377,619

Int. Cl. G01r 21/00; G01d 5/36

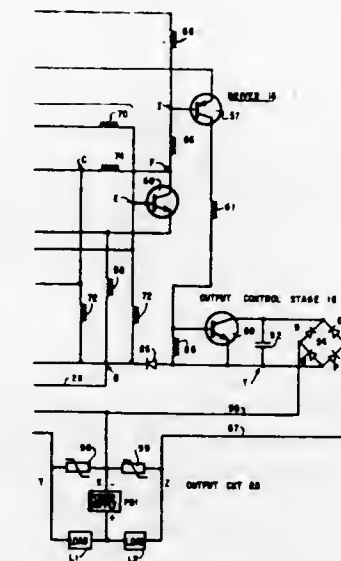
U.S. Cl. 324-103 R

15 Claims



A solid state pulse initiator circuit for providing electrical impulses to operate a recorder in the storage of information

relating to the consumption of power as measured by an electric demand meter. Detector means sense meter disc movement and operate a memory between two stable states. Two output semiconductors which are alternately enabled by the memory are connected to three output conductors which may



be selectively connected to a DC recorder with swinger high, a DC recorder with swinger low and an AC recorder. The pulse initiator circuit is referenced to the one of the output semiconductors which is conducting, and a high impedance is provided in both the source and return path of the base current for the nonconducting one of the semiconductors.

3,822,401

### MEAN SQUARE TRANSDUCER

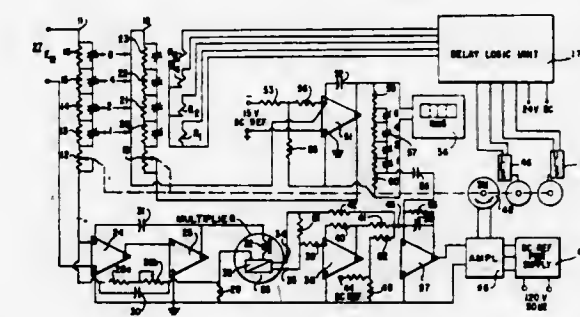
Harold F. Parker, Lee, Mass., assignor to General Electric Company, Philadelphia, Pa.

Filed July 6, 1971, Ser. No. 159,939

Int. Cl. G01r 15/10, 15/08

U.S. Cl. 324-132

6 Claims



Apparatus for measuring the root mean square of a signal by applying the signal across a resistance which is the input to an amplifier and controlling the resistance so that a constant level of current will always flow into a multiplier. The average output from the multiplier is compared with a fixed reference, and any error therebetween is effective through servo control mechanisms to vary the input resistance as necessary to reduce the error to zero. The input resistance is coupled to an output resistance and the value of the output resistance will be proportional to the voltage of the signal being measured.



3,822,402

**ADJUSTABLE LINEARITY ELECTRONIC TACHOMETER WITH PEAK READOUT**

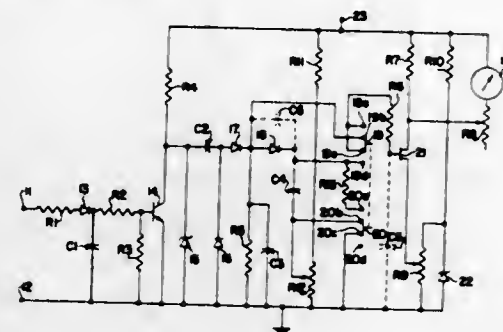
Gary W. Vest, 4480 Broadview Rd., Cleveland, Ohio 44109

Filed July 31, 1972, Ser. No. 276,523

Int. Cl. G01p 3/48

U.S. Cl. 324-169

12 Claims



An improved tachometer for measuring and indicating the speed rate of an internal combustion engine having an electrical ignition system. Electrical pulses from the ignition system are used to energize a transistor that switches on and off in response to each ignition pulse. The resulting square wave pulses in the transistor circuit are filtered to provide a D.C. voltage that varies non-linearly with engine speed. The D.C. voltage is impressed across a field-effect transistor with a response characteristic that varies non-linearly in a manner that balances the non-linearity of the D.C. voltage variation to produce a voltage across a meter, that varies essentially linearly or in an otherwise controlled manner with engine speed. A "memory" capacitor may be connected in parallel with the field-effect transistor input to be charged to a level representative of the maximum voltage impressed across the field-effect transistor input in response to the ignition system impulses and then at a later time be switched into the field-effect transistor input circuit to provide a meter readout of the stored maximum signal.

3,822,403

**APPARATUS AND METHOD FOR REPELLING SHARKS AND THE LIKE**

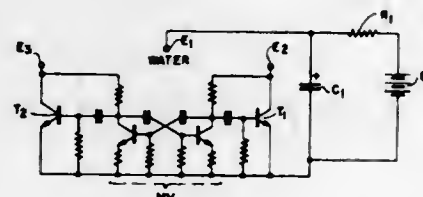
Robert E. Coleman, and Robert F. Hicks, 1140 Astoria Ave., both of Coral Gables, Fla. 33134, assignors to said Hicks, by said Coleman

Filed Sept. 27, 1971, Ser. No. 184,115

Int. Cl. A01k 61/00

U.S. Cl. 325-28

9 Claims



Apparatus and method for electromagnetically repelling elasmobranchii, such as sharks and the like, wherein an electric circuit, including a timing circuit, a plurality of spaced electrodes and a source of electrical energy, is connected in a housing and is energized upon submergence of said electrodes in a body of water, said electric circuit including means for rapidly pulsing a direct current between said electrodes to generate an electromagnetic field in the body of water to repel said sharks and the like.

3,822,404

**DIGITAL FILTER FOR DELTA CODED SIGNALS**

Alain Croisier, Cagnes-sur-Mer, and Vladimir Riso, Nice, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

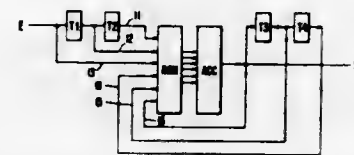
Filed Oct. 18, 1971, Ser. No. 189,974

Claims priority, application France, Oct. 29, 1970, 70.40291

Int. Cl. H04b 7/00

U.S. Cl. 325-38 B

2 Claims



A recursive digital filter comprising a digital accumulator for algebraically adding successive modified digital delta coded signals extracted from a memory medium, the memory medium storing said modified digital signals, the memory further being directly addressed by a predetermined number of digital signals fed back from the accumulator.

3,822,405

**CHANNEL SELECTING APPARATUS**

Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

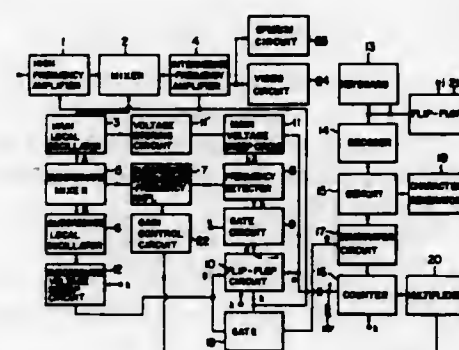
Filed Dec. 5, 1972, Ser. No. 312,325

Claims priority, application Japan, Dec. 10, 1971, 46-100528; Dec. 10, 1971, 46-100529; Dec. 10, 1971, 46-100530; Dec. 10, 1971, 46-100531; Dec. 10, 1971, 46-100532; Dec. 10, 1971, 46-100533; Dec. 10, 1971, 46-100534; Dec. 10, 1971, 46-100535

Int. Cl. H04b 1/34

U.S. Cl. 325-464

13 Claims



Channel selecting apparatus wherein it comprises two local oscillators each of which can oscillate with its frequency swept by a sweep voltage, the two local oscillators are so set as to alternately perform sweep initiation and sweep termination, the frequency interval between the sweep initiation and the sweep termination is made equal to a channel frequency interval or  $1/n$  ( $n$  being an integer) thereof, the number of times of the sweep initiation or sweep termination is counted, to detect that the operation has been performed by a desired number of times, the sweep of one of the local oscillators is stopped upon the detection, the sweep voltage at the stop is stored, it is applied to a variable reactance element to make the reception possible, a flip-flop is provided which is actuated upon entrance of two signals, and the operation of a circuit for storing the voltage is made by an OR signal between a signal [1] produced by the second one of the two signals and a signal [1] stopping the sweep after the detection of the desired number of times of the operation of the local oscillators.

3,822,406

**TELEMETERING REMOTE RECORDING UNIT**

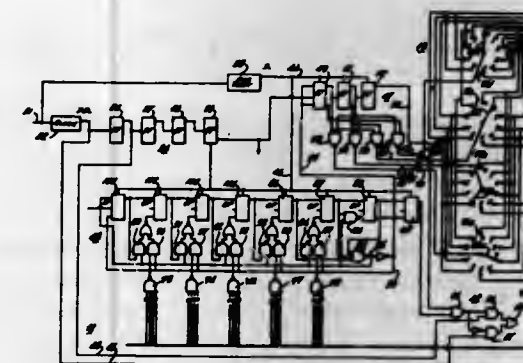
Ross Hugh Evans, Queens, N.Y.; Daniel Arron Seltzer, Cincinnati, Ohio, and Robert Leonard Young, Florence, Ky., assignors to Gammon-Calmet Industries Inc., Florence, Ky.

Division of Ser. No. 220,011, Feb. 24, 1972, which is a division of Ser. No. 103,067, Dec. 31, 1970. This application May 23, 1973, Ser. No. 363,026

Int. Cl. G11c 19/00

U.S. Cl. 328-37

4 Claims



A system is disclosed for reading utility meters over a switched telephone network. In the system, information, including a telephone number is stored on a first punch card and reproduced by a card duplicator on a second initially blank punch card. The information representing the telephone number in addition to being reproduced on the second card, is also entered into a storage register. The number in the storage register is called up by an automatic calling unit and pulsed out onto a switched telephone network. The switched telephone network activates a meter reading circuit at an appropriate location represented by the telephone number. The meter reading circuit generates signals indicative of the meter reading and sends them back over the switched telephone network to be stored in the same storage register where the telephone number was entered. When the complete meter reading signal is in the storage register, the card duplicator is again activated to now receive information from the storage register. This information is then punched onto a still blank area on the second punch card. Details of the storage register and the circuitry at the meter are also disclosed.

3,822,407

**MULTI-TONE ARPEGGIO SYSTEM FOR ELECTRONIC ORGAN**

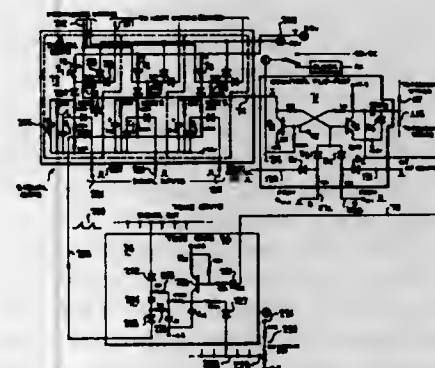
David A. Bunker, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Division of Ser. No. 171,879, Aug. 16, 1971, Pat. No. 3,718,748. This application Nov. 10, 1972, Ser. No. 305,271

Int. Cl. H03k 21/32

U.S. Cl. 328-42

19 Claims



An automatic arpeggio system for an electronic organ, in which playing of a chord, or a single note, turns on tone signal

gates for the played notes, and, at will, all octavely related notes, and initiates action of an asynchronous up-down multi-stage counter which sequentially reads out only the turned on gates, in sequence, either in an up-scan only, or up and then down. The gates lead to tone color filters, amplifiers and loudspeakers. Those counter stages which are selected to turn on gates are constrained to act as clock controlled bistable flip-flops, while the remainder act as monostable flip-flops with a time constant of the order of 30 microseconds, so that their set and reset involves inadequate time elapse to effect sounding of a note by closing of a tone gate.

3,822,408

**OPERATIONAL AMPLIFIER CLAMPING**

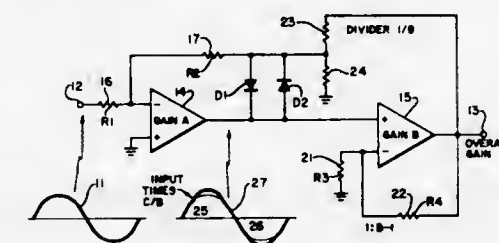
Joseph L. Veranth, Marlboro, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Feb. 20, 1973, Ser. No. 333,976

Int. Cl. H03f 1/36

U.S. Cl. 330-99

5 Claims



In an amplifier having a number of stages with feedback from the output to the input, the input stage is clamped at a level slightly beyond the point where the output level is clipped independent of the clipping level or extent of phase shift in the output stage to reduce the time for overload recovery.

3,822,409

**PHOTOSENSITIVE SOLID OSCILLATOR**

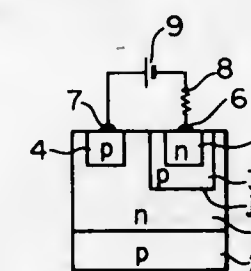
Toshiro Abe, and Keizi Kakite, both of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 148,309, June 1, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,336

Int. Cl. H03b 7/00

U.S. Cl. 331-66

15 Claims



A photosensitive solid oscillator which performs oscillation when a light irradiation is provided substantially at the side of main electrodes. The oscillator comprises a wafer consisting of a semiconductor material, a first impurity region of reverse conduction type to that of said semiconductor wafer and formed on the lower surface of the wafer, second and third impurity regions of reverse conduction type to that of the wafer and formed on two spaced parts of the upper surface of the wafer, a fourth impurity region of the same conduction type as the wafer and formed on the upper surface of one of said second and third impurity regions, first and second ohmic main electrodes provided respectively on the surfaces of said fourth impurity region formed on one of the second and third impurity regions and on the surface of the other one of said



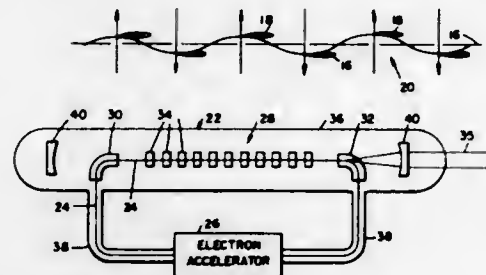
second and third impurity regions, and a DC voltage source is applied between said two main electrodes so that said voltage is in the reverse direction with respect to the junction between said wafer and said fourth impurity region on which the first main electrode is provided.

3,822,410

**STIMULATED EMISSION OF RADIATION IN PERIODICALLY DEFLECTED ELECTRON BEAM**  
John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306  
Filed May 8, 1972, Ser. No. 251,632  
Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

45 Claims



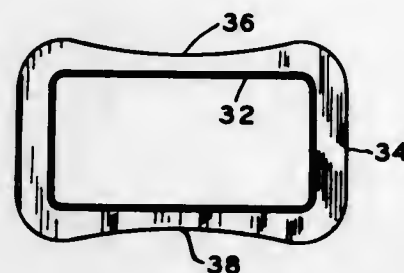
A tunable generator or amplifier of coherent radiation in the infrared, optical, ultraviolet and X-ray regions with the capability for operation at power levels in excess of a megawatt with high efficiency. A relativistic electron beam is periodically deflected by a transverse magnetic field defined by a linear array of magnets, adjacent magnets having opposing polarities. Each time the electron is deflected it emits a burst of radiation. The combination of the individual bursts yields a beam of radiation of comparatively small angular divergence and small spread in frequency. Due to the difference in the electrons' recoil during emission and absorption, the frequency at which absorption occurs for radiation in the electron beam is slightly higher than that for emission and gain is available due to the stimulated emission of radiation for operation at frequencies on the low frequency side of the spontaneously emitted radiation spectrum.

3,822,411

**CORRUGATED WAVEGUIDE CONSTRUCTION**  
Michel Merle, Palos Heights, Ill., assignor to Andrew Corporation, Orland Park, Ill.  
Filed May 6, 1971, Ser. No. 140,820  
Int. Cl. H01p 3/14

U.S. Cl. 333-95 A

8 Claims



Corrugated waveguide has a corrugation depth which is non-uniform around the tube from which it is formed to produce an inner shape formed by the corrugation troughs which is different from the outer shape formed by the corrugation crests. Embodiments are described for producing mechanical or electrical improvements of the performance of various prior art waveguide shapes.

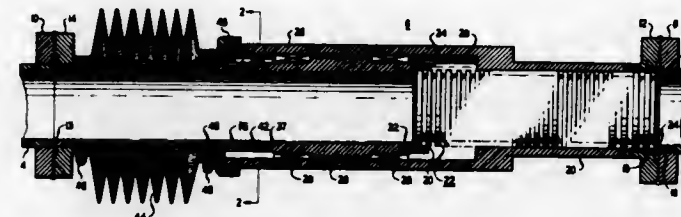
3,822,412

**WAVEGUIDE EXPANSION JOINT**  
James Walter Carlin, Branchburg Township, Somerset County, and Roger Joseph Colardeau, Florham Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 11, 1973, Ser. No. 368,618  
Int. Cl. H01p 1/06; F16l 27/12

U.S. Cl. 333-98 R

9 Claims



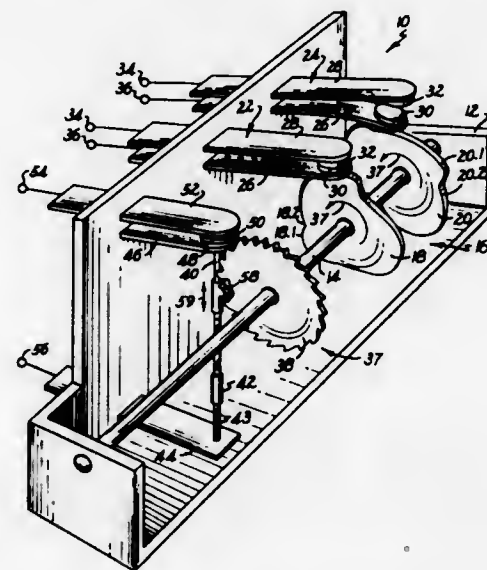
An expansion joint for a waveguide line comprises two telescoping tubular members and a bellows connecting the two members to allow relative movement therebetween while maintaining a uniform continuous electrical surface through the joint with the capability of supporting either positive or negative pressure with respect to atmospheric pressure.

3,822,413

**TIMING MECHANISM**  
Charles D. Flanagan, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Apr. 30, 1973, Ser. No. 355,850  
Int. Cl. H01h 61/02, 61/06

U.S. Cl. 337-127

6 Claims



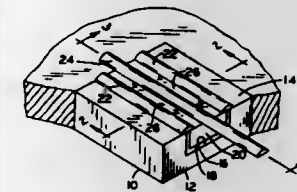
A timing mechanism for household appliances is shown to comprise a ratchet, sequence control means movable with the ratchet for regulating performance of appliance functions, and a pawl reciprocally movable for advancing the ratchet. A spring biases the pawl in one direction and an actuator element intermittently moves the pawl in the opposite direction against the spring bias. The actuator element is formed of a nickel-titanium alloy and is deformed from an original configuration to a second configuration as the pawl is moved in response to the spring bias. The actuator is adapted to abruptly return to its original configuration for moving the pawl in the opposite direction against the spring bias to advance the ratchet when the actuator alloy is heated above the transition temperature. Switch means are opened and closed as the pawl is moved, for electrically heating the actuator to its transition temperature and for alternately permitting the actuator to cool below its transition temperature.

3,822,414

**SIGNAL TRANSMITTING COMPONENT**  
Francis Jack Purchase, Kitchener, Ontario, Canada, assignor to Autotelic Industries, Ltd., Ft. Erie, Ontario, Canada  
Filed Apr. 19, 1972, Ser. No. 245,557  
Int. Cl. H01c 7/08

U.S. Cl. 338-15

15 Claims



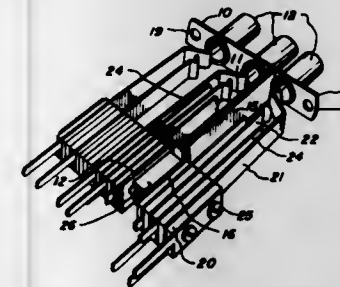
A component for emitting a detectable electrically developed signal at a signal emitting region in which a metal member is provided with a variable impedance connected thereto at a point spaced from the signal emitting region while the signal to be processed is supplied to the metal member through the impedance. The impedance is variable between high and low impedance conditions the signal transmission through the metal member is controlled. The variable impedance is in the form of a photosensitive resistor having a high ratio between the resistance when dark to the resistance when illuminated.

3,822,415

**ELECTRICAL JACK**  
James C. Deitch, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.  
Filed June 4, 1973, Ser. No. 366,363  
Int. Cl. H05k 1/18; H01r 17/18

U.S. Cl. 339-17 R

10 Claims



An electrical jack of the type adapted for side-by-side mounting in an electrical jack panel which includes a pair of frame members each having a portion to which are connected

a plurality of jack springs separated by insulating blocks and each being spaced from that same portion of the other frame member by a spacing block disposed between said portions to prevent relative movement thereof and which is offset to enable adjacent jacks to be interlocked with each other.

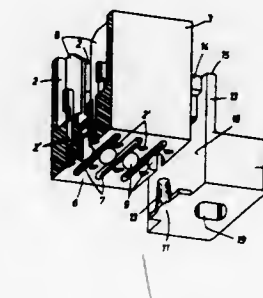
3,822,416

**ELECTRICAL CONNECTOR**  
Herbert Haag, Grosseppach, and Erich Kreutter, Winterbach, both of Germany, assignors to IIT Industries, Inc., New York, N.Y.  
Filed July 27, 1973, Ser. No. 383,091  
Claims priority, application Germany, Aug. 4, 1972, 7228972

Int. Cl. H01r 13/20

U.S. Cl. 339-65

10 Claims



An electrical connector in which mounting blocks are fixed to the end faces of an insulating connector strip having contact cavities therein. A plurality of receptacles are formed in the bottom of the strip. Each mounting block has an upstanding stud which extends into the receptacle closest to the corresponding end face of the strip. Extensions formed on the mounting blocks engage in the contact cavities closest to the end faces of the strip whereby the studs and extensions on the blocks interlock the blocks to the ends of the strip. The strip is originally cut to a desired length and thereafter the mounting blocks are attached thereto.

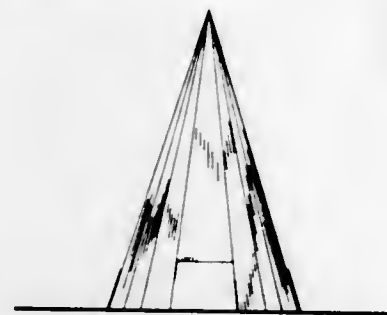


# DESIGNS

JULY 2, 1974

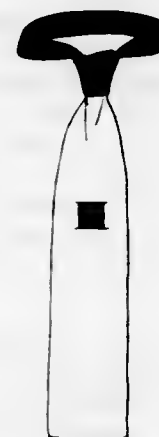
**231,957**  
**WITCH'S HAT**  
Nicholas Veltri, 1183 Elmwood Ave.,  
Buffalo, N.Y. 14222  
Filed Feb. 12, 1973, Ser. No. 331,889  
Term of patent 14 years  
Int. Cl. D2-03

U.S. Cl. D2-257



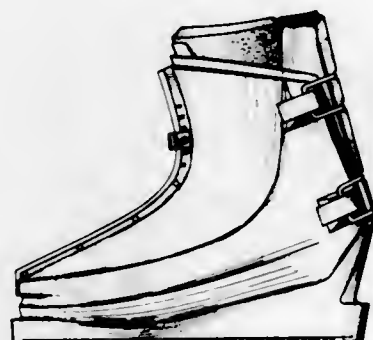
**231,959**  
**NECKTIE**  
Harshad Himantlal Shah, 3237 W. 29th St.,  
Indianapolis, Ind. 46222  
Filed Mar. 8, 1972, Ser. No. 233,001  
Term of patent 14 years  
Int. Cl. D2-05

U.S. Cl. D2-343



**231,958**  
**SKI BOOT**  
Alden B. Hanson and Chris A. Hanson, Boulder, Colo.,  
assignors to Hanson Industries, Inc., Boulder, Colo.  
Filed Nov. 29, 1972, Ser. No. 310,658  
Term of patent 14 years  
Int. Cl. D2-04

U.S. Cl. D2-276



**231,960**  
**TUBE SPOOL**  
Emerson R. Nangle, Windham, Conn., assignor to The  
American Thread Company, Stamford, Conn.  
Filed Nov. 30, 1971, Ser. No. 203,507  
Term of patent 14 years  
Int. Cl. D5-99

U.S. Cl. D3-19 A



JULY 2, 1974

U. S. PATENT OFFICE

149

**231,961**  
**STOOL**  
Caine Turner and Connie Marie Turner, both of 1926 W.  
66th St., Los Angeles, Calif. 90047  
Filed May 7, 1973, Ser. No. 357,548  
Term of patent 3 1/2 years  
Int. Cl. D6-01

U.S. Cl. D6-34



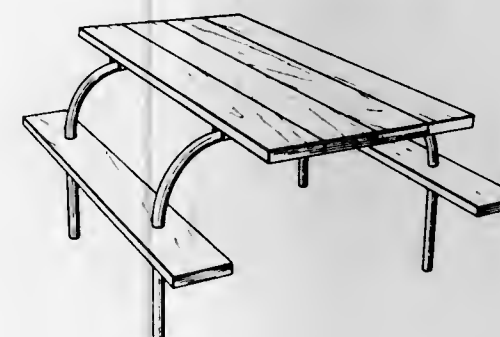
**231,962**  
**STOOL**  
Caine Turner and Connie Marie Turner, both of 1926 W.  
66th St., Los Angeles, Calif. 90047  
Filed May 7, 1973, Ser. No. 357,549  
Term of patent 3 1/2 years  
Int. Cl. D6-01

U.S. Cl. D6-34



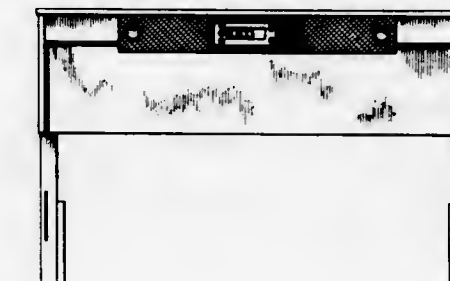
**231,963**  
**PICNIC TABLE**  
Bruce Palmer May, P.O. Box 57, Kingston Road,  
Belleville, Ontario, Canada  
Filed Sept. 25, 1972, Ser. No. 291,722  
Term of patent 14 years  
Int. Cl. D6-03

U.S. Cl. D6-45



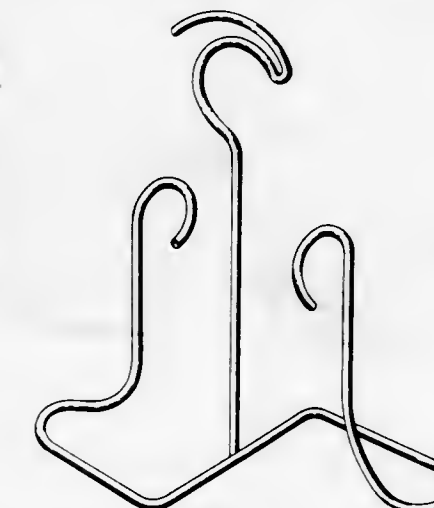
**231,964**  
**HEADBOARD**  
John J. McLaughlin, 2700 Abasco Blvd.,  
Atlantic City, N.J. 08401  
Filed Feb. 16, 1973, Ser. No. 333,179  
Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-79



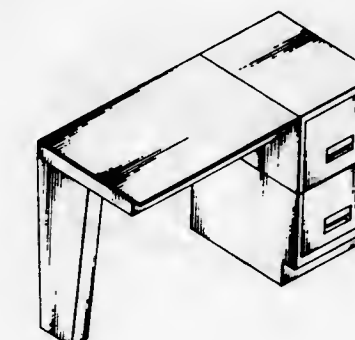
**231,965**  
**SHOE HANGER**  
Ted Gustafson, 61 Samjevangen,  
162 24 Vallingby, Sweden  
Filed Feb. 21, 1973, Ser. No. 334,312  
Claims priority, application Sweden Aug. 21, 1972  
Term of patent 7 years  
Int. Cl. D6-08

U.S. Cl. D6-116



**231,966**  
**DESK**  
Thomas C. Landau, West Los Angeles, Calif., assignor  
to Litton Systems, Inc., Beverly Hills, Calif.  
Filed Dec. 2, 1971, Ser. No. 204,400  
Term of patent 14 years  
Int. Cl. D6-04

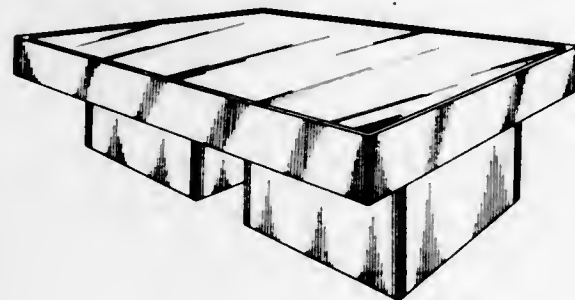
U.S. Cl. D6-162





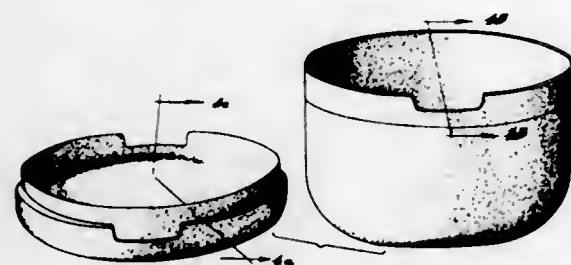
**231,967**  
**ILLUMINABLE COCKTAIL TABLE**  
 William Orval Webb, 3113 E. 8th St.,  
 Joplin, Mo. 64801  
 Filed July 24, 1972, Ser. No. 274,281  
 Term of patent 7 years  
 Int. Cl. D6—03

U.S. Cl. D6—177



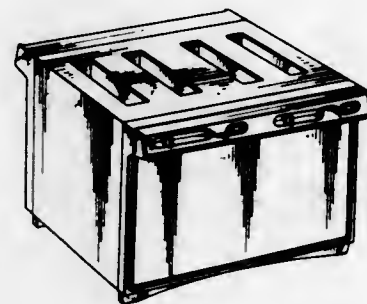
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**COVERED SALAD BOWL**  
 Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB  
 Gustavsbergs Fabrik, Gustavsberg, Sweden  
 Filed Dec. 27, 1971, Ser. No. 212,873  
 Claims priority, application Sweden June 28, 1971  
 Term of patent 14 years  
 Int. Cl. D7—01

U.S. Cl. D7—17



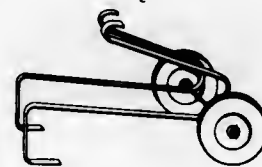
**231,969**  
**TOASTER**  
 Masatoshi Naito, Ikeda, Fujio Sawamura, Toyonaka,  
 Kunio Funatsu, Osaka, and Noriharu Furuyabu, Ashiya,  
 Japan, assignors to Matsushita Electric Industrial Co.,  
 Ltd., Osaka, Japan  
 Filed May 22, 1972, Ser. No. 255,951  
 Claims priority, application Japan Nov. 26, 1971  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D7—93



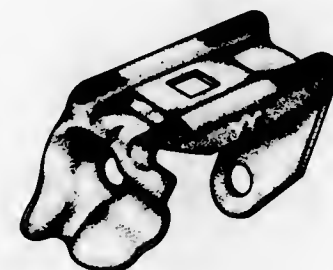
**231,970**  
**VACUUM CLEANER CART**  
 Joe F. Handley, P.O. Box 924, Odessa, Tex. 79760  
 Filed Mar. 5, 1973, Ser. No. 338,125  
 Term of patent 14 years  
 Int. Cl. D6—99

U.S. Cl. D7—170



**231,971**  
**KICKSTAND MOUNTING BRACKET**  
 Robert F. Humlong, Maysville, Ky., assignor to Wald  
 Manufacturing Company, Incorporated, Maysville, Ky.  
 Filed Jan. 30, 1973, Ser. No. 327,882  
 Term of patent 14 years  
 Int. Cl. D8—08

U.S. Cl. D8—233



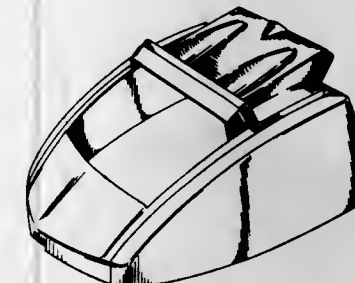
**231,972**  
**COMBINED JAR AND CLOSURE**  
 Robert M. Mitchell, Norwalk, Conn., assignor to General  
 Foods Corporation, White Plains, N.Y.  
 Filed Jan. 8, 1973, Ser. No. 321,884  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—164



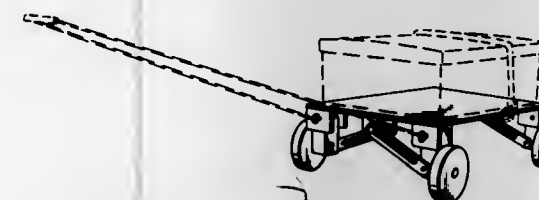
**231,973**  
**SNOWMOBILE HOOD**  
 Ronald Ponech, Valcourt, Quebec, Canada, assignor to  
 Bombardier Limited, Valcourt, Quebec, Canada  
 Filed Oct. 24, 1972, Ser. No. 299,650  
 Term of patent 14 years  
 Int. Cl. D12—14

U.S. Cl. D12—7



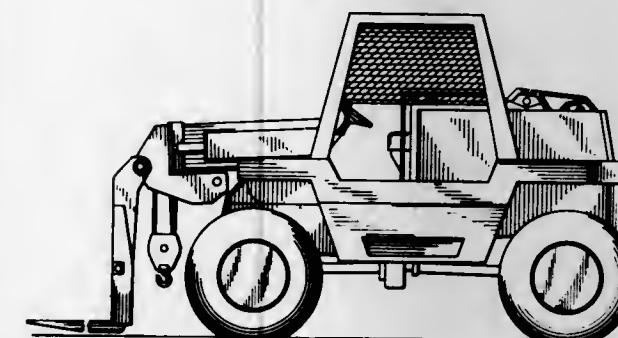
**231,974**  
**CART FOR TRANSPORTING CONTAINERS  
 OR THE LIKE**  
 Samuel Minchen, P.O. Box 932, Angleton, Tex. 77515  
 Filed Dec. 22, 1972, Ser. No. 317,629  
 Term of patent 14 years  
 Int. Cl. D12—02

U.S. Cl. D12—31



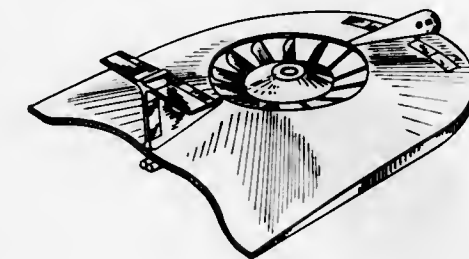
**231,975**  
**MATERIAL HANDLING VEHICLE**  
 Salvatore F. Aiello, Racine, and Eugene Olson, Wausau,  
 Wis., assignors to Load Corporation, Wausau, Wis.  
 Filed Oct. 30, 1972, Ser. No. 362,138  
 Term of patent 14 years  
 Int. Cl. D12—05

U.S. Cl. D12—57



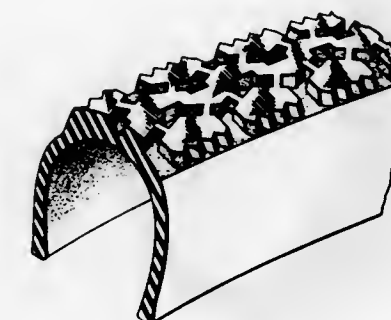
**231,976**  
**AIRCRAFT**  
 Dorant Torelli, 28 Park Place, Branford, Conn. 06405  
 Filed Jan. 23, 1973, Ser. No. 326,092  
 Term of patent 14 years  
 Int. Cl. D12—07

U.S. Cl. D12—73



**231,977**  
**TIRE FOR A VEHICLE WHEEL**  
 David Michael Lamb, Sutton, England, assignor to  
 Dunlop Limited, London, England  
 Filed Aug. 21, 1972, Ser. No. 282,299  
 Claims priority, application Great Britain Sept. 4, 1972  
 Term of patent 14 years  
 Int. Cl. D12—15

U.S. Cl. D12—136

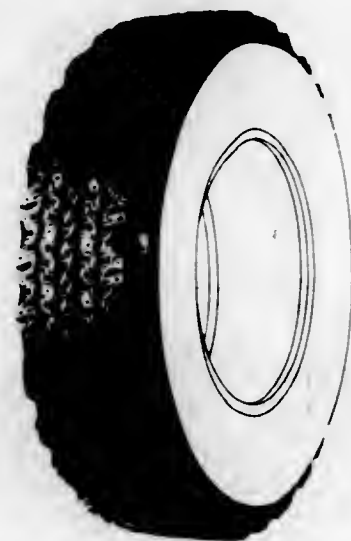




**231,978**  
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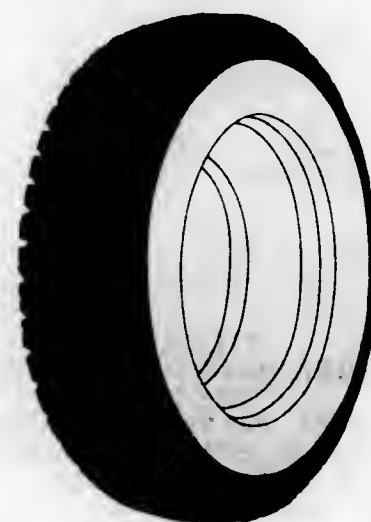
Patrick S. Neale, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed Feb. 12, 1973, Ser. No. 331,919  
Term of patent 14 years  
Int. Cl. D12—15

U.S. Cl. D12—141

**231,980**  
**TIRE**

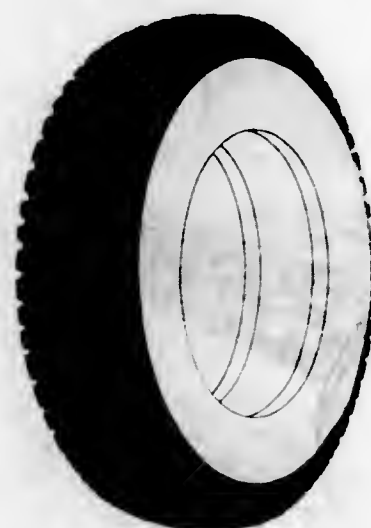
James A. Stevens, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed Feb. 3, 1972, Ser. No. 223,414  
Term of patent 14 years  
Int. Cl. D12—15

U.S. Cl. D12—146

**231,979**  
**TIRE**

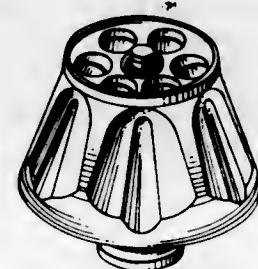
James A. Stevens, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed Mar. 14, 1973, Ser. No. 341,207  
Term of patent 14 years  
Int. Cl. D12—15

U.S. Cl. D12—142

**231,981**  
**CENTRIFUGE ROTOR**

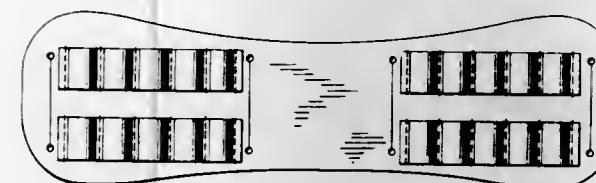
W. Charles Paulsen, 28 Juniper Road, Newtown, Conn. 06470  
Filed July 19, 1973, Ser. No. 380,697  
Term of patent 14 years  
Int. Cl. D24—02, 99

U.S. Cl. D16—2 C

**231,982**  
**CARTRIDGE HOLDER**

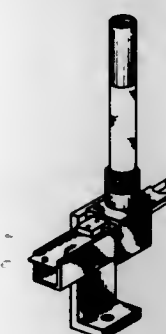
Robert N. Farquharson, Bradford, Pa., assignor to W. R. Case & Sons Cutlery Co., Bradford, Pa.  
Filed Oct. 16, 1972, Ser. No. 300,115  
Term of patent 14 years  
Int. Cl. D22—05

U.S. Cl. D22—14

**231,983**  
**FEEDER FOR A BULLET LOADING MACHINE**

Erwin S. Rodger, 58 Davis St., Locust Valley, N.Y. 11560  
Filed Aug. 6, 1973, Ser. No. 386,214  
Term of patent 14 years  
Int. Cl. D15—99; D22—31

U.S. Cl. D22—99

**231,984**  
**COMBINED OBSERVATION PLATFORM AND STORAGE TANK**

Ernest W. Boodt, Indianapolis, Ind., assignor to Universal Tank & Iron Works, Inc., Indianapolis, Ind.  
Filed Nov. 24, 1972, Ser. No. 309,052  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—2

**231,985**  
**TOILET BOWL CLEANER DISPENSER**

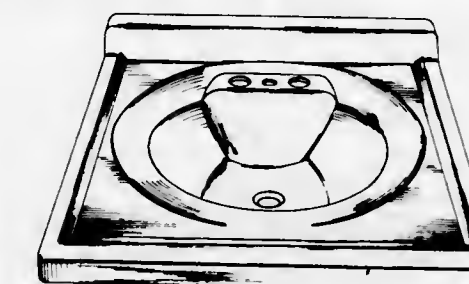
C. Richard Paulsen, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio  
Filed Feb. 5, 1973, Ser. No. 329,464  
Term of patent 14 years  
Int. Cl. D23—99

U.S. Cl. D23—3

**231,986**  
**LAVATORY**

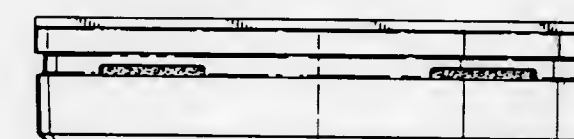
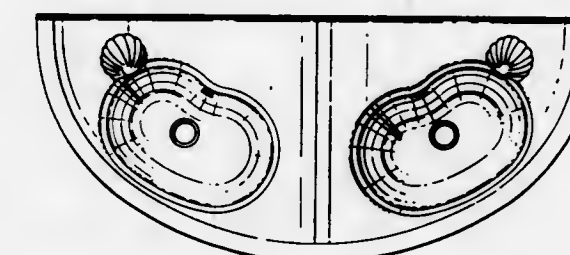
William H. Koop, Franklin Lakes, N.J., assignor to Glamour Pools by Aztec, Wyckoff, N.J.  
Filed Sept. 17, 1973, Ser. No. 397,875  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—58

**231,987**  
**BASIN**

Horst Godfrey Bonsack, Flat 17, 51 South St., London W. 1, England  
Filed June 18, 1973, Ser. No. 370,729  
Claims priority, application Great Britain Feb. 7, 1973  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—62

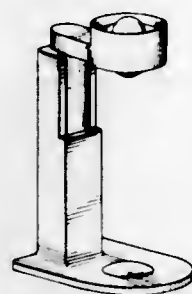




**231,988**  
**BATTERY TESTER**

William G. Skutch, Jr., 3724 Sulphur Spring Road,  
Toledo, Ohio 43606  
Filed Oct. 2, 1972, Ser. No. 294,004  
Term of patent 14 years  
Int. Cl. D10-05

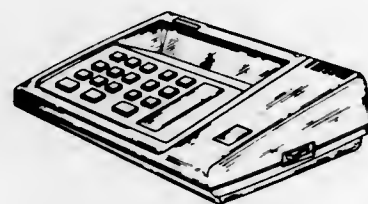
U.S. Cl. D26-1 Q



**231,989**

**ELECTRONIC CALCULATING MACHINE**  
Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki  
Kaisha, Osaka, Japan  
Filed Sept. 21, 1972, Ser. No. 291,082  
Claims priority, application Japan Apr. 29, 1972  
Term of patent 14 years  
Int. Cl. D14-02

U.S. Cl. D26-5 C



**231,990**

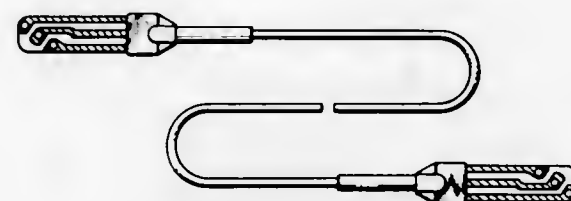
**BATTERY CASE**  
Curtis M. Peasley, 25 Boulder Drive,  
Burlington, Mass. 01803  
Filed Dec. 17, 1971, Ser. No. 209,503  
Term of patent 14 years  
Int. Cl. D13-02

U.S. Cl. D26-6



**231,991**  
**HEARING AID ELECTRICAL CONNECTORS**  
Mas Harada, Minneapolis, Minn., assignor to Seeburg  
Corporation of Delaware, Chicago, Ill.  
Filed Mar. 15, 1972, Ser. No. 235,111  
Term of patent 14 years  
Int. Cl. D24-99

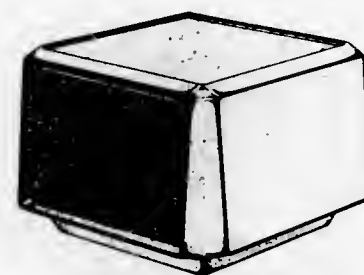
U.S. Cl. D26-14 J



**231,992**

**SPEAKER HOUSING**  
Kumi Yanagisawa and Masaharu Katayama, Saigiyon,  
Japan, assignors to Matsushita Electric Industrial Co.,  
Ltd., Kadoma, Japan  
Filed Apr. 6, 1972, Ser. No. 241,884  
Term of patent 14 years  
Int. Cl. D14-01

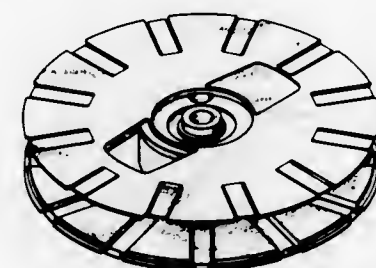
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**231,993**

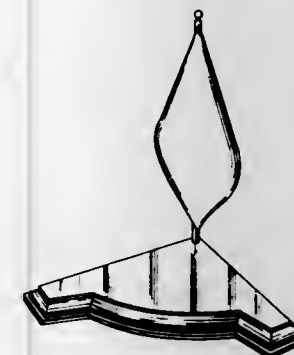
**VIDEO TAPE RECORDER REEL**  
Hiroo Hosono and Juichi Fukushima, Osaka, and Yoshiji  
Kon'i, Nara, Japan, assignors to Matsushita Electric  
Industrial Co., Ltd., Osaka, Japan  
Filed Nov. 14, 1972, Ser. No. 306,482  
Term of patent 14 years  
Int. Cl. D14-01

U.S. Cl. D26-14 B



**231,994**  
**MEMORIAL DISPLAY STAND**  
Ernest M. Demsey, Sr., 82 Centre St.,  
Danvers, Mass. 01923  
Filed Dec. 23, 1971, Ser. No. 211,822  
Term of patent 7 years  
Int. Cl. D11-05

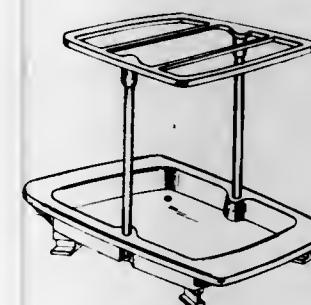
U.S. Cl. D29-17 A



**231,995**

**COMBINATION SANDBOX AND POOL**  
Walter Mitchko, 337 Elwood Road,  
East Northport, N.Y. 11731  
Filed Aug. 9, 1972, Ser. No. 279,186  
Term of patent 14 years  
Int. Cl. D21-01

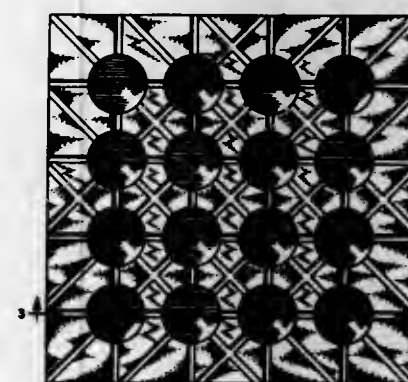
U.S. Cl. D34-5 F



**231,996**

**GAME BOARD**  
Gary B. Smart, 3500 Carter Road,  
Portsmouth, Va. 23703  
Filed Apr. 12, 1973, Ser. No. 350,333  
Term of patent 14 years  
Int. Cl. D21-01

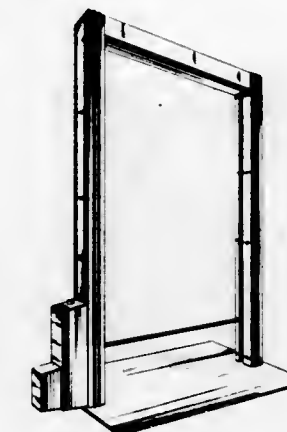
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**231,997**  
**EXERCISER**

William J. White, Santa Monica, Calif., assignor to  
Astrobar, Inc.  
Filed June 11, 1973, Ser. No. 368,503  
Term of patent 7 years  
Int. Cl. D21-02

U.S. Cl. D34-5 K



**231,998**  
**BANK**

Alex H. Holt, Huntsville, Tex., assignor of a fractional  
part interest to Charles L. Brown, Huntsville, Tex.  
Filed Jan. 26, 1973, Ser. No. 327,072  
Term of patent 14 years  
Int. Cl. D21-01

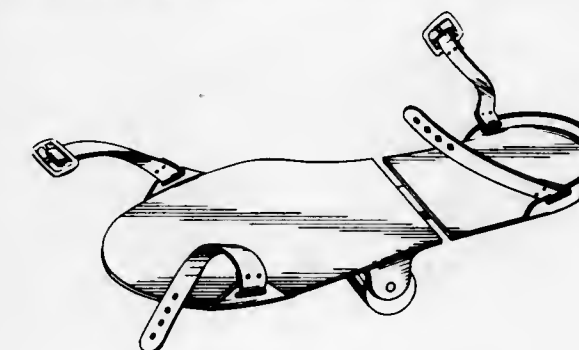
U.S. Cl. D34-11 R



**231,999**

**ROLLER SKATE**  
Woodrow T. Engman, 13210 N. 26th Place,  
Phoenix, Ariz. 85032  
Filed Feb. 26, 1973, Ser. No. 335,691  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-14 C

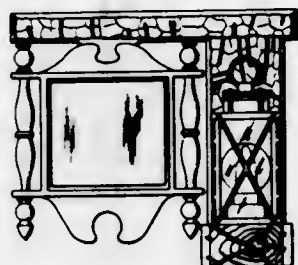




**232,000**  
**GUIDE LIGHT**

Lawrence P. Mellyn, Gloucester, R.I., assignor to  
General Electric Company  
Filed June 23, 1972, Ser. No. 265,815  
Term of patent 14 years  
Int. Cl. D26—05

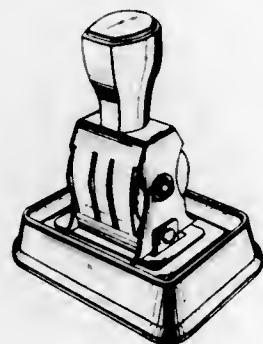
U.S. Cl. D48—20 E



**232,001**  
**COMBINED DATING STAMP AND  
STAND THEREFOR**

Takaji Funahashi, 1, 2-chome, Kitatake-machi,  
Nishi-ku, Nagoya, Japan  
Filed June 21, 1972, Ser. No. 264,998  
Term of patent 14 years  
Int. Cl. D19—02

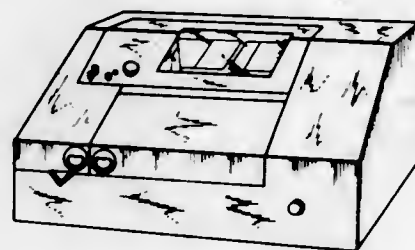
U.S. Cl. D64—10



**232,002**  
**CABINET FOR A TELEPRINTER OR THE LIKE**

Bernadt Ebbe Frick, 9 Herrgardsvagen,  
135 00 Tyreso, Sweden  
Filed Apr. 24, 1972, Ser. No. 247,236  
Claims priority, application Sweden Oct. 22, 1971  
Term of patent 14 years  
Int. Cl. D18—99

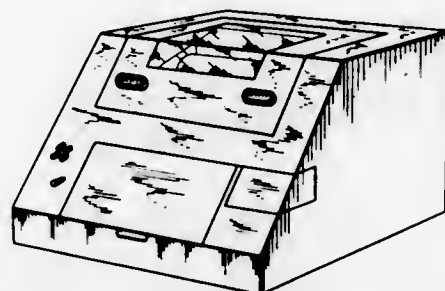
U.S. Cl. D64—11 R



**232,003**  
**CABINET FOR A TELEPRINTER OR THE LIKE**

Bernadt Ebbe Frick, 9 Herrgardsvagen,  
135 00 Tyreso, Sweden  
Filed Apr. 24, 1972, Ser. No. 247,237  
Claims priority, application Sweden Nov. 24, 1971  
Term of patent 14 years  
Int. Cl. D18—99

U.S. Cl. D64—11 R



**232,004**  
**ACETABULAR CUP**

U.S. Cl. D83—1 E

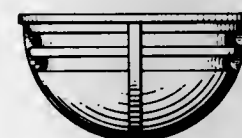
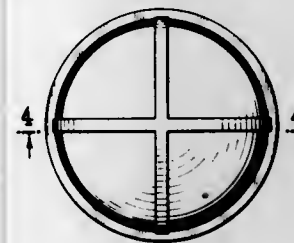
Harlan C. Amstutz, 433 Burlingame Ave.,  
Los Angeles, Calif. 90049  
Filed June 7, 1973, Ser. No. 368,415  
Term of patent 14 years  
Int. Cl. D24—99



**232,005**  
**ACETABULAR CUP**

Gene M. Farling, Warsaw, Ind., assignor to Zimmer,  
U.S.A., Inc., Warsaw, Ind.  
Filed June 7, 1973, Ser. No. 368,416  
Term of patent 14 years  
Int. Cl. D24—99

U.S. Cl. D83—1 E



**232,006**  
**WALL MOUNTABLE COMB HOLDER**

Leon J. Anders, 333 Graham Road,  
Cuyahoga Falls, Ohio 44223  
Filed Nov. 17, 1972, Ser. No. 307,587  
Term of patent 14 years  
Int. Cl. D6—04

U.S. Cl. D86—10 A





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 2D DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abbott Laboratories: See—  
Fager, Earl Elmer; and Wideburg, Norman Earl, 3,822,188.
- Abe, Jinnoike: See—  
Higashi, Teizo; Abe, Jinnoike; Take, Teruo; Watanabe, Susumu; and Otani, Masaru, 3,822,348.
- Abe, Toshiro; and Kakite, Keizi, to Matsushita Electric Works, Ltd.  
Photosensitive solid oscillator. 3,822,409, Cl. 331-66.000.
- Abex Corporation: See—  
Kouns, Herbert H., 3,821,922.
- ACF Industries, Incorporated: See—  
Barb, Gayle E., 3,821,968.
- Adams, James S.: See—  
Burst, Francis J.; Tekulve, Daniel R.; and Adams, James S., 3,821,821.
- Addressograph-Multigraph Corporation: See—  
Westdale, Virgil W., 3,822,139.
- Adler, Franklin P., to Pullman Transport Leasing Company. Hatch cover. 3,821,935, Cl. 105-377.000.
- Aerojet-General Corporation: See—  
Lawrence, Ralph W.; and Secchi, Albert J., 3,822,154.
- Affa, Stephen N., to General Connectors Corporation. Quick disconnect cap for conduits. 3,821,970, Cl. 138-89.000.
- A.G. fur Industrielle Elektronik AGIE: See—  
Ullmann, Werner; Lammler, Victor; Mattei, Silvano; Sieg, Arno; Marti, Peter; and Rezzonico, Giuseppe, 3,822,374.
- Agency of Industrial Science & Technology: See—  
Mita, Akio; and Ishida, Toshio, 3,822,180.
- Aghnides, Elie P. Vehicle with composite wheel. 3,821,995, Cl. 180-6.200.
- Agran, Jack: See—  
Tavares, Robert F.; Agran, Jack; and Easter, William M., 3,822,290.  
Tavares, Robert F.; Agran, Jack; Easter, William M.; and Blau, Leslie, 3,822,291.
- Air Products and Chemicals Inc.: See—  
Petrella, Robert G.; and Langsam, Michael, 3,822,228.
- Airborne Manufacturing Company: See—  
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Piola, Aelo. Apparatus for providing resistant hollow cylindrical body members. 3,822,167, Cl. 156-443.000.

Plasser, Franz; and Theurer, Josef. Mobile track survey apparatus. 3,821,853, Cl. 33-144.000.

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Roy, Roger E. Demolition apparatus. 3,822,042, Cl. 241-235.000.

Rudder, Charles L.; Leader, John C.; Owsley, David P.; and Dalton, William A. J., to McDonnell Douglas Corporation. Multiplexed sensor means measuring depolarized radiation. 3,822,098, Cl. 356-209.000.

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Sakagami, Teodor Alexandrovich; Orro, Pavel Ivanovich; Iskra, Boris Alexandrovich; Matveev, Vladimir Sergeevich; Varenik, Boris Iovich; and Kirilenko, Anatoly Ivanovich; deceased (by Kirilenko, Nilla Sergeevna; administratrix). Work rolls drive in a coil-rolling tube mill. 3,821,889, Cl. 72-249.000.

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527.7	3,821,843	118	3,821,893	38.8	CLASS 82	38.8	3,822,138	98	3,822,158	28R	3,822,187	61.11R	3,822,376	
568	3,821,844	170A	3,821,894	43	CLASS 83	43	3,821,936	178	3,822,159	51	3,822,188	88	3,822,377	
593	3,821,845	190H	3,821,895	218R	CLASS 84	218R	3,821,937	212	3,822,160	1R	3,822,005	151.34	3,822,378	
596	3,821,846	194E	3,821,896	17.5	CLASS 85	17.5	3,822,139	245	3,822,161	31AC	3,822,006	176	3,822,379	
624	3,821,847	215	3,821,897	46CG	CLASS 86	46CG	3,822,140	279	3,822,162	35	3,822,007	181	3,822,380	
630C	3,821,848	251	3,821,898	54	CLASS 87	54	3,822,142	351	3,822,163	40	3,822,008	197	3,822,381	
2	3,821,849	260	3,821,899	62.2	CLASS 88	62.2	3,822,143	358	3,822,164	152	3,822,009	75	3,822,039	
4A	3,821,850	122H	3,822,144	122H	CLASS 89	122H	3,822,144	415	3,822,165	204	3,822,011	86	3,822,040	
50	3,821,851	139.5A	3,822,145	218	CLASS 90	218	3,822,147	426	3,822,166	11D	3,822,368	112	3,822,041	
22	3,821,852	213	3,822,146	45	CLASS 91	45	3,822,171	443	3,822,167	61.08	3,822,369	235	3,822,042	
144	3,821,853	218	3,822,147	62	CLASS 92	62	3,822,172	545	3,822,169	81.9M	3,822,370	55	3,822,043	
169B	3,821,854	7	3,821,938	82	CLASS 93	82	3,822,173	12	3,822,170	157	3,822,372	79	3,822,044	
174L	3,821,855	44	3,821,939	93	CLASS 94	44	3,821,939	29	3,822,171	160	3,822,371	83	3,822,045	
178E	3,821,856	159	3,821,940	170	CLASS 95	159	3,821,940	45	3,822,172	15	3,822,190	107.4	3,822,046	
8	3,821,857	65WA	3,821,941	5	CLASS 96	65WA	3,821,941	62	3,822,173	241	3,822,191	77D	3,822,047	
2.5AN	3,821,858	90.38	3,821,942	17	CLASS 97	90.38	3,821,942	82	3,822,174	39	3,822,193	104R	3,822,048	
67	3,821,859	97B	3,821,943	36	CLASS 98	97B	3,821,943	93	3,822,175	49	3,822,192	203	3,822,049	
129A	3,821,860	179BG	3,821,944	162	CLASS 99	179BG	3,821,944	207	3,822,182	55R	3,822,194	223	3,822,050	
42.25	3,821,862	9	3,821,945	215	CLASS 100	9	3,821,945	215	3,822,183	64R	3,822,195	333	3,822,051	
65	3,821,861	24R	3,821,946	154	CLASS 101	24R	3,821,946	154	3,821,978	159.16	3,822,196	209	3,822,381	
51	3,822,119	1B	3,821,947	252	CLASS 102	1B	3,821,947	252	3,821,979	195M	3,822,198	305	3,822,382	
48.5	3,821,863	2.06A	3,821,948	401	CLASS 103	2.06A	3,821,948	401	3,821,980	298	3,822,199	308	3,822,383	
58	3,821,864	2.08	3,821,950	10	CLASS 104	2.08	3,821,950	10	3,821,981	299	3,822,197	551	3,822,384	
		2.1B	3,821,949	66	CLASS 105	2.1B	3,821,949	66	3,821,982	151	3,822,012	10	3,822,052	
		66	3,821,951	70	CLASS 106	66	3,821,951	70	3,821,983	223	3,822,013	2	3,822,053	
		70	3,821,952	159	CLASS 107	70	3,821,952	159	3,821,984					
		71	3,821,953	85	CLASS 108	71	3,821,953	85	3,821,985					
		149	3,821,954	293	CLASS 109	149	3,821,954	293	3,821,985					
		272	3,821,955		CLASS 110	272	3,821,955							
		343	3,821,956		CLASS 111	343	3,821,956							



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42.1	3,822,208	209R	3,822,249	413	3,822,300	7	81	3,822,395
47	3,822,209		3,822,250	446	3,822,302	47	134	3,822,396
62.64	3,822,210	239HM	3,822,251	448.8R	3,822,303		230	3,822,397
132	3,822,211	239A	3,822,252	464	3,822,304	CLASS 277		CLASS 402
136	3,822,212	239.55D	3,822,253	465D	3,822,305	96	28RS	3,822,398
162	3,822,213	239.55R	3,822,254	465.4	3,822,306	181	103P	3,822,399
301.3R	3,822,214	240A	3,822,255	479C	3,822,307	208	103R	3,822,400
301.4H	3,822,215		3,822,301	497A	3,822,308		132	3,822,401
313S	3,822,216	243C	3,822,256	515A	3,822,310	8	169	3,822,402
359E	3,822,217	243R	3,822,257		3,822,311	11.35N		CLASS 415
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431L	3,822,219	244R	3,822,259	561R	3,822,313	36B	38B	CLASS 416
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			3,822,264	610	3,822,317	367	42	3,822,105
	CLASS 256		3,822,265	613R	3,822,319			CLASS 423
22	3,822,053	267	3,822,266	614R	3,822,320	CLASS 293		224
		268BC	3,822,267	635H	3,822,321	1	99	263
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	3,822,055	287R	3,822,270	654R	3,822,324	CLASS 297		574
25	3,822,056	290R	3,822,271	861	3,822,325	140	94.5	3,822,342
191	3,822,057	293.85	3,822,272	920	3,822,326	CLASS 298		CLASS 424
		294.8R	3,822,273	928	3,822,327	95A	22	3,822,343
2.5AC	3,822,223	294.9	3,822,274	950	3,822,328	98R	44	3,822,344
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17.5	3,822,225		3,822,277			127	70	3,822,346
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29.6H	3,822,228	296D	3,822,279	CLASS 264		CLASS 339	118	3,822,350
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30.4N	3,822,231	307B	3,822,281	51	3,822,331	65	195	3,822,352
31.2MR	3,822,232	309.5	3,822,282	97	Re.28,063	174	222	3,822,353
45.75K	3,822,233	310R	3,822,283	104	3,822,332	CLASS 350	225	3,822,354
45.75R	3,822,234	315	3,822,284	194	3,822,333	3.5	243	3,822,355
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75R	3,822,239	332.1	3,822,286	CLASS 266		253	303	3,822,359
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87.3	Re.28,065		3,822,293	CLASS 272		CLASS 355		CLASS 426
89.1	3,822,243		3,822,294	83R	3,822,061	3R	491	3,822,361
93.5A	3,822,244	346.2R	3,822,295	CLASS 273		27		CLASS 431
112B	3,822,245	348R	3,822,296	96D	3,822,062	CLASS 356	93	3,822,109
152	3,822,246	397.4	3,822,298	105R	3,822,063	39	174	3,822,110
157	3,822,247	397.45	3,822,297					

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	273	231,958		177	231,967	73	231,976		2	231,984	G	231,992	D48—	20	232,000
	343	231,959	D 7—	17	231,968	136	231,977		3	231,985	J	231,991	D64—	10	232,001
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	45	231,963	D 9—	164	231,972	2C	231,981		5C	231,989	K	231,997			232,005
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4 : 3,821,818	9 : 3,821,826	3,822,158	3,822,022	3,822,027	3,822,091
6 : 3,821,820	3,821,851	3,822,163	3,822,031	3,822,094	3,822,093
3,821,829	3,821,891	3,822,164	3,822,032	3,822,141	3,822,125
3,821,832	3,821,959	3,822,178	3,822,049	3,822,145	3,822,129
3,821,875	3,821,974	3,822,181	3,822,081	3,822,152	3,822,131
3,821,881	3,822,025	3,822,188	3,822,086	3,822,153	3,822,132
3,821,885	3,822,105	3,822,216	3,822,095	3,822,155	3,822,134
3,821,899	3,822,182	3,822,249	3,822,203	3,822,177	3,822,161
3,821,904	3,822,218	3,822,284	3,822,292	3,822,183	3,822,169
3,821,912	3,822,368	3,822,367	3,822,293	3,822,215	3,822,196
3,821,915	3,822,370	3,822,398	3,822,294	3,822,238	3,822,243
3,821,916	3,822,379	3,822,411	3,822,376	3,822,245	3,822,248
3,821,921	3,822,386	3,822,421	3,822,397	3,822,252	3,822,255
3,821,922	3,822,391	3,822,440	3,822,401	3,822,254	3,822,256
3,821,926	Re.28,060	3,821,860	3,822,408	3,822,258	3,822,260
3,821,927	Re.28,065	3,822,413	3,822,413	3,822,265	3,822,270
3,821,967	3,822,145	3,821,910	Re.28,058	3,822,274	3,822,317
3,821,970	3,822,194	3,821,914	Re.28,059	3,822,286	3,822,327
3,821,973	3,822,202	3,821,935	3,821,872	3,822,290	3,822,355
3,821,982	3,822,214	3,821,952	3,821,953	3,822,291	3,822,389
3,821,999	3,822,253	3,821,958	3,821,969	3,822,296	3,822,392
3,822,038	3,822,115	3,822,006	3,822,003	3,822,310	3,822,393
3,822,042	3,822,116	3,822,035	3,822,019	3,822,318	3,822,406
3,822,047	3,822,150	3,822,040	3,822,077	3,822,338	37 : 3,821,858
3,822,055	3,822,403	3,822,147	3,822,165	3,822,345	3,821,905
3,822,058	3,822,179	3,822,028	3,822,209	3,822,371	3,822,219
3,822,072	3,821,936	3,822,211	3,822,229	3,822,377	3,822,264
3,822,082	3,821,828	3,821,925	3,822,230	3,822,412	3,822,334
3,822,088	3,821,831	3,821,940	3,822,237	3,821,849	
3,822,090	3,821,843	3,821,949	3,822,303	3,821,839	36 : 3,821,839
3,822,102	3,821,873	3,821,846	3,822,320	3,821,854	39 : Re.28,063
3,822,154	3,821,886	3,821,938	3,822,326	3,821,855	3,821,819
3,822,185	3,821,887	3,821,961	3,822,342	3,821,853	3,821,841
3,822,204	3,821,896	3,821,976	3,822,349	3,821,867	3,821,850
3,822,217	3,821,902	3,822,023	3,821,947	3,821,867	3,821,864
3,822,251	3,821,909	3,822,029	3,822,092	3,821,954	3,821,874
3,822,261	3,821,913	3,822,084	3,822,142	3,821,957	3,821,890
3,822,271	3,821,919	3,822,085	3,822,199	3,821,975	3,821,911
3,822,272	3,821,924	3,821,984	3,822,415	3,821,980	3,821,930
3,822,282	3,821,941	3,822,063	3,822,063	3,821,987	3,821,964
3,822,287	3,821,945	3,821,861	3,821,825	3,821,995	3,821,966
3,822,319	3,821,963	3,822,004	3,821,866	3,821,996	3,822,036
3,822,362	3,822,004	3,822,008	3,822,010	3,821,998	3,822,048
3,822,366	3,822,012	3,822,062	3,822,018	3,822,009	3,822,050
3,822,369	3,822,052	3,822,201	3,821,865	3,822,018	3,822,056
3,822,373	3,822,054	3,822,220	3,821,971	3,822,020	3,822,075
3,822,380	3,822,066	3,822,097	3,822,097	3,822,024	3,822,114
3,822,410	3,822,098	3,821,859	3,821,856	3,822,069	3,822,119
3,821,830	3,822,100	3,821,939	3,821,937	3,822,070	3,822,128
3,821,834	3,822,146	3,821,986	3,822,007	3,822,079	3,822,139
				3,822,083	3,822,143



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3,822,234	3,821,948	3,822,192	3,821,946	3,822,026	3,821,879
3,822,290	3,821,950	3,822,195	3,822,034	3,822,037	3,821,900
3,822,402	3,821,955	3,822,223	3,822,157	3,822,067	3,822,015
3,822,407	3,821,993	3,822,228	3,822,159	3,822,110	3,822,388
40 : 3,821,983	3,822,001	3,822,233	3,822,246	3,822,170	3,821,876
3,821,985	3,822,021	3,822,302	3,822,353	3,822,212	3,821,908
3,822,193	3,822,053	3,822,340	Re. 28,061	3,822,336	3,821,956
3,822,313	3,822,104	3,822,351	3,821,838	3,822,341	3,821,978
41 : Re. 28,057	3,822,108	3,822,357	3,821,877	3,822,372	3,821,997
3,821,817	3,822,109	3,822,363	3,821,901	3,821,824	3,822,030
3,821,862	3,822,137	3,822,383	3,821,962	3,821,929	3,822,073
3,822,099	3,822,151	44 : 3,821,897	3,821,965	3,822,043	3,822,162
42 : 3,821,822	3,822,156	45 : 3,821,991	3,821,968	3,822,045	3,822,166
3,821,848	3,822,160	3,822,225	3,821,988	3,822,057	3,822,168
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## DESIGN PATENTS

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6 : 231,961	231,972	21 : 231,971	34 : 231,986	231,980	48 : 231,970
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## PATENT OFFICE NOTICES

### Trial Voluntary Protest Program

After reviewing the comments received as a result of the Notice of Proposed Rule Making entitled, "Protests to the Grant of a Patent," dated May 15, 1973, published at 911 O.G. 760, the Patent Office has decided to institute a Trial Voluntary Protest Program limited to 2,000 applications.

The underlying purpose of protest proceedings is to assist the Patent Office by bringing the best prior art and information relevant to the patentability of a patent application to the examiner's attention. Occasionally patents are held invalid by the courts because of prior art or other information which was not available or known to the examiner. Protest proceedings are intended to elicit from the public such prior art or other information not cited by the examiner which bears upon the question of patentability.

Several benefits are expected to accrue from protest proceedings. First, patents would have a more meaningful presumption of validity because of appropriate consideration by the examiner of additional evidence submitted by the public. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Patent Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. Further, the protest proceedings may be helpful in minimizing the more expensive conventional procedure of litigating the question of validity at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent protest proceedings and the strengthening of the patent system for its intended purposes.

Since legislation is pending in Congress which would make opposition or protest proceedings mandatory in all allowed applications, it appears appropriate and desirable to gain some experience at this time with a Trial Voluntary Protest Program. The Patent Office would welcome any comments, from those who elect to participate in the program, relative to their experience concerning the effectiveness, costs, etc.

Since the trial program is voluntary and limited to a selected number of applications, no rule changes are contemplated or considered necessary at this time.

### APPLICATIONS INVOLVED

The 2,000 applications involved in the Trial Voluntary Protest Program will include 135 applications allowed in each of the 14 examining groups excluding Group 220, and 110 applications allowed in Group 220, after July 1, 1974. No other applications will be made part of the trial program. The applications in the trial will be limited to the 1970 filing date series and will exclude all reissue, plant, and design applications. Also, applications which have been involved in proceedings before the Board of Appeals, the Board of Patent Interferences, or the courts will be excluded from the trial program.

### WAIVER OF CONFIDENTIALITY

A form letter will be sent to the applicant of each of the 2,000 applications involved in the trial. The letter will indicate that the application is one of the selected applications and will afford to applicant the opportunity to participate in the program by filing a voluntary waiver of confidentiality thereby making his application available for protest.

### RESPONSE TO REQUEST FOR WAIVER OF CONFIDENTIALITY

The applicant will have two months after the mailing of the form letter concerning waiver of confidentiality to either (1) file the waiver of his right to keep the application confidential, signed by the applicant, assignee of record, or attorney or agent of record, or (2) indicate that he does not desire to participate in the trial program. A response from the applicant to the form letter will be requested. Such response is considered desirable to allow prompt processing of all 2,000 applications selected for the Trial Voluntary Protest Program. No extension of the two month period will be granted.

If the applicant declines to participate in the program, his application will be forwarded to the Patent Issue Division for

mailing of the Notice of Allowance. In these situations no record of the correspondence will be made in the application file. Also, the Patent Office will not keep any records concerning the identity of the particular applications where the opportunity to participate in the program was declined.

If a proper waiver of the right to confidentiality is submitted within two months of the date of the form letter regarding voluntary waiver, the application will be placed in the Trial Voluntary Protest Program.

Following an affirmative response a notice, identifying the application will be published in the OFFICIAL GAZETTE similar to that used for patents. The notice will include necessary identifying information, including the examining group to which the application is assigned, an illustrative figure, a representative claim or claims, and a listing of references cited by the Patent Office.

On the date the notice is published in the OFFICIAL GAZETTE, the application file will also be made available for public inspection for the duration of the protest period in the examining group and the application will be available in printed form similar to a patent. The printed application will include all the figures and the specification, including claims. All printed applications will be classified and placed in the Patent Office search files. Copies of the printed applications will be available to the public at the prices set by statute for patent copies.

### PERIOD FOR FILING PROTEST

Protesters will have a period of three months running from date of publication of the notice in the OFFICIAL GAZETTE in which to file their protest in the Patent Office. Each protest must be filed in duplicate, and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the grounds are based on prior art, the protest should include a copy of the prior art together with an explanation of the relevance of such prior art to the allowed claims. In addition or alternatively, the protester will have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which may affect the patentability of the claimed invention. In cases where prima facie evidence is presented as to prior public use or sale of the invention, the public use proceedings set forth in Rule 292 will be used to provide the protester presenting such evidence with an opportunity to be heard. No extension of the three month period will be granted.

### PROTESTER INVOLVEMENT

A protester may elect to either (1) have his identity kept secret and have no further participation in the proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application.

In both instances the protester must initially identify himself and give his address; however, if he elects to forego future involvement, he may identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be destroyed upon completion of prosecution when the application is forwarded to either Patent Issue Division or the abandoned files.

### CONSIDERATION OF PROTEST

The published allowed application files will be retained during the protest period in the examining groups. The examining groups will receive all protests filed, acknowledge receipt thereof, and make them of record in the application files. At the end of the period for filing protests, three months after publication in the OFFICIAL GAZETTE, those applications in which no protests have been filed will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance, while those applications in which protests have been filed will be referred to the group director for decision as to whether prosecution should be reopened.

If the group director decides that the evidence submitted does not constitute a prima facie showing of non-patentability of any allowed claim, the application will be forwarded to the Patent Issue Division for mailing of the Notice of Allow-

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ance. The protesters who elected to participate in subsequent prosecution will be notified that the prosecution has not been reopened, and the applicant will be sent the duplicate copy of all protests. The group director's decision will be final and not subject to petition by any protester.

If the group director decides that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim believed unpatentable. The duplicate copy of all protests will be mailed to the applicant with the Office action. Protesters who elected to participate in later prosecution and submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters who elected to participate in later prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

### RESPONSE TO SUBSEQUENT OFFICE ACTIONS BY THE APPLICANT

As a result of re-examination of the application, the applicant will be permitted to respond, such as by presenting amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters, who submitted evidence on which a rejection in the Office action is based and who elected to participate in later prosecution, to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response, including appeal brief, filed. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

### COMMENT ON APPLICANT'S RESPONSE BY THE PROTESTER

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

### CONCLUSION OF PROSECUTION

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

C. MARSHALL DANN,  
Commissioner of Patents.

May 7, 1974.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,697,908, F. F. Offner, SYSTEM FOR ACCELERATING ENGINES TO SELECTED SPEEDS AND MAINTAINING THE SPEED SELECTED; Re. 24,809, same, ELECTRONIC ENGINE SPEED CONTROL SYSTEM, filed Oct. 1, 1971, Ct. of Claims (District of Columbia), Doc. 174-64, Technical Development Corporation and Franklin P. Offner v. The United States. Defendant held fully licensed under Claims 3, 4, and 5 of Re. 24,809 and defendant held fully licensed under Claims 11 and 35 of 2,697,908. Case remanded to trial commissioner for further appropriate proceedings, June 20, 1973.

2,777,926, M. E. Bourns, VARIABLE RESISTOR, filed Oct. 11, 1973, Ct. of Claims (District of Columbia), Doc. 383-73, Bourns, Inc. and Marlan E. Bourns v. The United States.

3,367,126, J. D. Howell, FLOATING AGITATOR; 3,381,302, Reimus and Saporito, FREEZE CONCENTRATION OF COFFEE EXTRACT; 3,404,007, J. G. Muller, FREEZE DRIED COFFEE PROCESS AND PRODUCT; 3,449,129, Reimus and

Saporito, CONCENTRATION PROCESS; 3,474,723, same, BEVERAGE APPARATUS; 3,495,522, J. G. Muller, same; 3,531,295, N. Ganiaris, FREEZE CONCENTRATION OF COFFEE EXTRACT; 3,620,034, same, MULTI-STAGE FREEZE CONCENTRATION OF COFFEE; 3,632,353, Reimus and Saporito, REMOVAL OF TARS AND WAXES IN FREEZE CONCENTRATION OF COFFEE; 3,636,722, N. Ganiaris, CONCENTRATION OF COFFEE, filed Apr. 13, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16467, Struthers Patent Corporation v. The Coca-Cola Company. Case dismissed by stipulation pursuant to Rule 41(a)(1)(ii), FRCP, Oct. 10, 1973.

3,381,302. (See 3,367,126.)

3,404,007. (See 3,367,126.)

3,449,129. (See 3,367,126.)

3,474,723. (See 3,367,126.)

3,636,611, I. W. Rosenbaum, APPARATUS FOR SPLICING WIRES, filed June 20, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73-C-896, General Staple Co., Inc. v. Amtronics, Inc.

3,648,310, F. W. Butler, BOAT STRUCTURE, filed Oct. 8, 1973, D.C.S.C. (Columbia), Doc. 73-1267, Frank W. Butler v. Jack A. Helms.

3,650,816, Rudy and Rapisarda, METHOD OF APPLYING ADJUSTMENTS TO CLOTH, filed Oct. 12, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2632, A. E. Staley Mfg. Co. v. Lever Brothers Co.

3,712,772, K. Neudecker, MOTION PICTURE PROJECTOR WITH CARRIAGE FOR SETS OF FILM-CONTAINING CASSETTES, filed Oct. 19, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2693, Hunkar Laboratories, Inc. v. Bekum-Maschinenfabriken GmbH.

3,715,895, E. J. Devlin, DRINKING CUP FOR FREEZING A BEVERAGE TO A SLUSH-LIKE CONDITION, filed Feb. 20, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c442, Glacier Ware, Inc. v. Goldblatt Brothers, Inc.

3,716,871, A. G. Borse, DISPOSABLE URINAL, filed July 9, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1763, Borse Plastic Products Corporation v. Premium Plastics, Inc.

3,722,399, J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, filed July 6, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1753, Scovill Manufacturing Company v. Reliable Manufacturing Company.

3,727,536, R. D. Bunker, EXPOSED PRINTING PLATE WASHER, filed Aug. 1, 1973, D.C., C.D. Utah (Salt Lake City), Doc. NC-38-73, Aero-Tech Manufacturing, Inc. v. Dynaflex Corporation and Richard D. Bunker.

3,731,649, Anderson and Castro, RIBBON-INKING MACHINE; 3,733,211, same, filed July 3, 1973, D.C. Pa. (Philadelphia), Doc. C.A. 73-1509, Westates Space-Era Products, Inc. and Wespac/Atlantic v. Edward Seymour, doing business as Eastern Ribbons and William E. Seymour, doing business as Bonner Products and W. Bonner.

3,733,211. (See 3,731,649.)

3,765,015, R. H. Gruner, SWITCH MONITORING CIRCUITRY, filed Oct. 23, 1973, D.C. Del. (Wilmington), Doc. 4749, Data General Corporation v. Digital Computer Controls, Inc.

Re. 24,809. (See 2,697,908.)

3,091,434, D. S. Monitor, FAIRED CABLE DRIVE SYSTEM; 3,340,720, G. N. Chartier, AUTOMOBILE REPAIR TOOL; 3,611,575, same, AUTO FRAME ALIGNMENT APPARATUS; 3,635,434, same, WHEEL SUPPORT, filed Aug. 14, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1892-MML, Guy-Chart Tools Ltd. v. American Best Tool Corp. and William T. Martin. Judgment in favor of plaintiff permanently enjoining defendants from infringing plaintiff's patents, plaintiff waives without prejudice its claims for accounting of damages. Defendant's counterclaim dismissed with prejudice entered Feb. 20, 1974.

3,131,583, R. W. Wilson, APPARATUS FOR BULK CURING TOBACCO; 3,244,445, same, APPARATUS FOR SUPPLYING TOBACCO LEAVES IN BULK FORM FOR CURING, filed Feb. 25, 1974, D.C., M.D. Fla. (Jacksonville), Doc. 74-124-C-J-R, Powell Manufacturing Company, Inc. v. Suwannee Valley Gas, Inc.



3,134,718, A. Noble, PREGNA-1,4-DIENES AND COMPOSITIONS CONTAINING SAME, filed Mar. 23, 1973, D.C.N.J. (Newark), Doc. 404-73-C, Schering Corporation v. Premo Pharmaceutical Laboratories, Incorporated. Judgment in favor of plaintiff; permanent injunction, Feb. 20, 1974.

3,145,291, H. B. Brainerd, IDENTIFICATION SYSTEM, filed Feb. 14, 1974, Court of Appeals, First Circuit, Mass. (Boston), Doc. 74-1059, Sylvania Electric Products, Inc. v. Henry B. Brainerd.

3,244,445. (See 3,134,583.)

3,274,906, Worson and Dill, JOINT INSTALLATION APPARATUS, filed Feb. 7, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74-334-R, Edoco Technical Products, Inc. v. Griffith Co.

3,340,720. (See 3,091,434.)

3,370,890, M. E. Morgan, PNEUMATIC CONVEYORS FOR DRY PORTLAND CEMENT; 3,602,552, same, DRY FLOW PUMPS; Reg. No. 858,891 (DRI-FLO), Mason Edward Morgan; Reg. No. 866,987 (TKE), Tau Kappa Epsilon Fraternity, filed Jan. 18, 1974, D.C. Colo. (Denver), Doc. 74-62, Mason Edward Morgan v. International Industries, Inc. et al.

3,439,461, Chandler, Heuser, Juba, BURIAL VAULTS; 3,787,545, same, filed Feb. 11, 1974, D.C., N.D. Ind. (Hammond), Doc. H-74-43, Wilbert, Inc. and Calumet Wilbert Vault Corp. v. Gary Vault Company.

3,547,108, S. V. Selfert, COMBINATION DEFIBRILLATOR AND HEARTBEAT MONITORING SYSTEM, filed Jan. 24, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c213, Physio-Control Corporation v. Travenol Laboratories, Inc.

3,553,737, J. Bauman, METHOD OF APPLYING HAIR, filed Feb. 11, 1974, D.C., E.D. Calif. (Los Angeles), Doc. 74-359-F, Plus Hair Centers International Inc. v. Dura-Hair International Inc.

3,563,365, H. T. Loberg, ACCUMULATING CONVEYOR, filed June 22, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1626, Henry Thomas Loberg v. Rheem Manufacturing Company. Order motion by stipulation for dismissal of this action under Rule 41(a) of FRCP, granted Nov. 21, 1973.

3,602,552. (See 3,370,890.)

3,611,575. (See 3,091,434.)

3,613,612, C. T. Kennedy, HIGH STRENGTH TUFTED PILE FABRIC, filed July 28, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16931, Thiokol Chemical Corporation v. E. T. Barwick Industries and Amoco Fabrics Company. Order, action dismissed with prejudice; patent is invalid and unenforceable, entered Jan. 17, 1974.

3,635,434. (See 3,091,434.)

3,705,963, King and Steln, MATRIX SWITCH WITH SLIDE TYPE ACTUATOR AND CONDUCTIVE SPRING COMMON TO GROUND CONTACT AND MOVABLE CONTACT, filed Feb. 11, 1974, D.C. Md. (Baltimore), Doc. K-74-153, William L. King v. Quadatron, Inc. et al.

3,710,099, T. H. Chapman, OPTICAL UNIT FOR USE IN A LIGHT-SENSITIVE SORTING MACHINE, filed June 22, 1973, D.C., E.D. Mich. (Detroit), Doc. 40323, Gunson's Sortex Limited v. Mandrel Industries, Inc. and Wickes Corporation.

3,750,882, G. W. Hays, AUTOMATIC GRADER, filed Feb. 22, 1974, D.C., E.D. Va. (Richmond), Doc. 74-0090-R, AMF Incorporated v. Universal Leaf Tobacco Co. et al.

3,787,545. (See 3,439,461.)

Reg. No. 858,891. (See 3,370,890.)

Reg. No. 866,987. (See 3,370,890.)

# Certificates of Correction for the Week of July 9, 1974

D. 227,704	3,763,470	3,784,060	3,792,006
D. 230,092	3,763,926	3,784,159	3,792,068
D. 230,934	3,763,983	3,784,297	3,792,073
Re. 27,747	3,764,054	3,784,334	3,792,306
3,523,750	3,764,313	3,784,359	3,792,318
3,609,107	3,764,494	3,784,885	3,792,977
3,628,781	3,764,546	3,784,896	3,792,999
3,629,379	3,764,565	3,784,981	3,793,041
3,637,710	3,764,571	3,785,298	3,793,086
3,664,843	3,764,831	3,785,312	3,793,159
3,664,848	3,765,084	3,785,320	3,793,282
3,666,789	3,765,784	3,785,439	3,793,394
3,668,222	3,766,242	3,785,511	3,793,446
3,668,716	3,766,375	3,785,574	3,793,452
3,670,388	3,767,016	3,785,921	3,793,554
3,671,744	3,767,409	3,786,046	3,793,757
3,680,345	3,767,669	3,786,137	3,793,864
3,682,381	3,768,497	3,786,226	3,793,897
3,691,830	3,768,636	3,786,239	3,794,087
3,692,964	3,768,846	3,786,270	3,794,146
3,693,491	3,768,887	3,786,439	3,794,167
3,701,940	3,769,640	3,786,638	3,794,363
3,706,074	3,770,297	3,786,690	3,794,369
3,708,049	3,770,708	3,786,755	3,794,377
3,708,641	3,771,288	3,786,962	3,794,687
3,711,385	3,771,329	3,787,035	3,794,750
3,711,475	3,771,422	3,787,110	3,794,751
3,714,133	3,771,768	3,787,117	3,794,990
3,715,188	3,772,005	3,787,351	3,795,107
3,715,330	3,772,035	3,787,365	3,795,181
3,717,636	3,772,138	3,787,447	3,795,278
3,718,608	3,772,183	3,787,605	3,795,403
3,722,651	3,772,207	3,787,649	3,795,457
3,723,423	3,772,336	3,787,839	3,795,468
3,725,388	3,772,877	3,787,874	3,795,517
3,728,352	3,772,884	3,788,118	3,795,600
3,729,521	3,773,503	3,788,343	3,795,736
3,730,356	3,773,877	3,788,373	3,795,800
3,732,201	3,774,029	3,788,386	3,795,868
3,733,524	3,775,702	3,788,463	3,796,149
3,734,901	3,776,267	3,788,498	3,796,239
3,734,973	3,777,067	3,788,729	3,796,241
3,735,085	3,777,375	3,788,785	3,796,621
3,737,045	3,778,119	3,788,796	3,796,638
3,739,033	3,778,344	3,788,854	3,796,659
3,739,822	3,778,463	3,788,863	3,796,894
3,740,761	3,779,044	3,788,865	3,797,148
3,742,621	3,779,383	3,789,091	3,797,219
3,742,786	3,779,524	3,789,092	3,797,293
3,743,868	3,779,601	3,789,142	3,797,319
3,745,413	3,779,930	3,789,232	3,797,456
3,747,304	3,780,117	3,789,574	3,797,529
3,748,343	3,780,275	3,789,630	3,797,744
3,748,510	3,780,569	3,789,725	3,797,764
3,749,097	3,780,587	3,789,767	3,797,936
3,754,594	3,780,737	3,789,838	3,797,963
3,754,673	3,781,205	3,789,881	3,798,031
3,754,714	3,781,266	3,789,952	3,798,091
3,754,909	3,781,459	3,790,494	3,798,101
3,755,246	3,781,764	3,790,684	3,798,279
3,757,485	3,781,782	3,790,691	3,798,320
3,757,839	3,781,806	3,790,693	3,798,517
3,757,866	3,781,888	3,790,823	3,798,085
3,758,591	3,781,935	3,790,869	3,799,140
3,758,596	3,781,941	3,790,873	3,799,858
3,759,081	3,781,972	3,790,954	3,800,337
3,759,537	3,782,473	3,791,021	3,800,492
3,761,065	3,782,496	3,791,246	3,800,571
3,761,255	3,783,127	3,791,342	3,800,598
3,761,263	3,783,162	3,791,517	3,801,027
3,761,304	3,783,179	3,791,602	3,801,691
3,761,435	3,783,185	3,791,670	3,802,401
3,761,606	3,783,353	3,791,889	3,803,527
3,762,008	3,783,604	3,791,910	3,804,714
3,762,476	3,783,741	3,791,921	3,805,096

## Disclaimer and Dedication

3,796,627.—Alfred Marzocchi, Cumberland, R.I. RESORCINOL-ALDEHYDE RESIN AND ELASTOMER-GLASS FIBER STRUCTURES AND METHOD FOR PREPARA-

TION. Patent dated Mar. 12, 1974. Disclaimer and dedication filed July 18, 1973, by the assignee, Owens-Corning Fiberglas Corporation.

Hereby disclaims and dedicates to the Public the portion of the term of the patent subsequent to Nov. 18, 1986.

## National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

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DOUGLAS J. CAMPION,  
Patent Program Coordinator,  
National Technical Information Service.

### U.S. ATOMIC ENERGY COMMISSION Assistant General Counsel for Patents, Washington, D.C. 20545

Patent application 414,029. Removal of Heavy Metal Contaminants From Fluid Streams. Filed Nov. 8, 1973. PC \$4/MF \$1.45.

Patent application 436,401. Apparatus and Method for Large Tunnel Excavation in Hard Rock. Filed Jan. 25, 1974. PC \$4/MF \$1.45.

Patent application 436,402. Apparatus and Method for Large Tunnel Excavation in Soft and Incompetent Rock or Ground. Filed Jan. 25, 1974. PC \$4/MF \$1.45.

Patent 3,762,133. Process for the Separation of Components From Gas Mixtures. Filed Oct. 15, 1971. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,762,486. Big Hole Drilling Bit. Filed Mar. 6, 1972. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,762,992. Laser-Driven Fusion Reactor. Filed Mar. 1, 1972. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,764,660. Chemical Processing in Geothermal Nuclear Chimney. Filed May 17, 1971. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,766,082. Sintering of Compacts of UN (U, Pu), N, and PuN. Filed Apr. 20, 1971. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,767,525. Irradiation Subassembly. Filed Oct. 6, 1972. Patented Oct. 23, 1973. Not available NTIS.

Patent 3,767,930. Radiolabeled Heat Source. Filed June 21, 1972. Patented Oct. 23, 1973. Not available NTIS.

Patent 3,769,911. Contact Fuse. Filed Dec. 14, 1971. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,772,004. Uranium, Niobium and Carbon Alloy. Filed Aug. 11, 1972. Patented Nov. 13, 1973. Not available NTIS.

Patent 3,414,570. Na, Na, Na-Tripicrylamine. Filed June 8, 1966. Patented Dec. 3, 1968. Not available NTIS.

### DEPARTMENT OF THE AIR FORCE AF/JACP, Washington, D.C. 20314

Patent application 289,692. Liquid Cooler Mirror Structure. Filed Sept. 5, 1972. PC \$4/MF \$1.45.

Patent application 314,638. Surface Wave Delay Line With Quarter-Wave Taps. Filed Dec. 13, 1972. PC \$4/MF \$1.45.

Patent application 323,152. An Associative Storage Apparatus for Comparing Between Specified Limits. Filed Jan. 12, 1973. PC \$4/MF \$1.45.

Patent application 343,061. Method and Means for Equalizing the Response of Signal Channels in a Multiple Channel Infrared System. Filed Mar. 20, 1973. PC \$4/MF \$1.45.

Patent application 349,515. Signal Analyzing Apparatus for Time Sequential Signals. Filed Apr. 9, 1973. PC \$4.50/MF \$1.45.

Patent application 349,900. Solid Fuel Burner for Ramjet Engine. Filed Apr. 9, 1973. PC \$4/MF \$1.45.

Patent application 354,261. Combustion Device. Filed Apr. 25, 1973. PC \$4/MF \$1.45.

Patent application 354,263. Technique and Apparatus for Stabilizing the Frequency of a Gas Laser. Filed Apr. 25, 1973. PC \$4/MF \$1.45.



Patent application 356,269. Doppler Data Processor With Digital Computing Pulse Rate Filter. Filed May 1, 1973. PC \$4.25/MF \$1.45.

Patent application 357,037. Photocathode. Filed May 3, 1973. PC \$4.50/MF \$1.45.

Patent application 357,039. Embedded Porous Element Rocket Motor. Filed May 3, 1973. PC \$4/MF \$1.45.

Patent application 366,887. Process for Preparing Mullite Powder and Fabrication of Structural Bodies Therefrom. Filed June 4, 1973. PC \$4/MF \$1.45.

Patent application 369,654. Method of Manufacturing a Multi-Layered Strip Transmission Line Printed Circuit Board Integrated Package. Filed June 13, 1973. PC \$4/MF \$1.45.

Patent application 369,655. Integral Precombustor/Ramburner Assembly. Filed June 13, 1973. PC \$4/MF \$1.45.

Patent application 380,420. A Spiral Antenna Stripline Termination. Filed July 18, 1973. PC \$4/MF \$1.45.

Patent application 380,520. Lock and Release Mechanism for Propellant Actuated Escape System. Filed July 18, 1973. PC \$4/MF \$1.45.

Patent application 384,531. Multiport Multimode Slot Antenna. Filed Aug. 1, 1973. PC \$4/MF \$1.45.

Patent application 392,383. Support for Flexible Control Device. Filed Aug. 28, 1973. PC \$4/MF \$1.45.

Patent application 392,387. Single Phase Sintering Aid for Stabilized Zirconia. Filed Aug. 28, 1973. PC \$4/MF \$1.45.

## U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,  
Federal Building, General Services Division,  
Agricultural Research Service,  
Hyattsville, Md. 20782

Patent application 290,933. Process for Acylating Functional Groups Bearing Active Hydrogen With Isopropenyl Esters of Long-Chain Fatty Acids. Filed Sept. 21, 1972. PC \$4/MF \$1.45.

Patent 3,732,872. Apparatus for the Uniform Addition of Soluble Materials to Cigarettes. Filed Aug. 31, 1971. Patented May 15, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
Assistant General Counsel for Patent Matters, NASA—  
Code GP-2, Washington, D.C. 20546

Patent application 394,149. Servo-Controlled Intravital Microscope System. Filed Sept. 4, 1973. PC \$4.50/MF \$1.45.

Patent application 412,080. Laser System With an Antiresonant Optical Ring. Filed Nov. 2, 1973. PC \$4.35/MF \$1.45.

Patent application 438,147. Two Stage Light Gas Plasma Projectile Accelerator. Filed Jan. 29, 1974. PC \$4/MF \$1.45.

Patent application 446,561. Recording Apparatus. Filed Feb. 27, 1974. PC \$4/MF \$1.45.

Patent application 446,567. Method of Forming a Wick for a Heat Pipe. Filed Feb. 27, 1974. PC \$4/MF \$1.45.

Patent application 446,569. Self-Regulating Proportionally Controlled Heating Apparatus and Technique. Filed Feb. 27, 1974. PC \$4/MF \$1.45.

Patent application 450,500. Analysis of Volatile Organic Compounds. Filed Mar. 12, 1974. PC \$5.25/MF \$1.45.

Patent application 450,503. Symmetrical Odd-Modulus Frequency Divider. Filed Mar. 12, 1974. PC \$4/MF \$1.45.

Patent application 452,767. Shoulder Harness and Lap Belt Restraint System. Filed Mar. 19, 1974. PC \$4/MF \$1.45.

Patent Application 452,768. Visual Examination Apparatus. Filed Mar. 19, 1974. PC \$4.25/MF \$1.45.

Patent application 452,769. Thermoelectric Power System. Filed Mar. 19, 1974. PC \$4/MF \$1.45.

Patent application 452,770. A Doped Josephson Tunneling Junction for Use in a Sensitive IR Detector. Filed Mar. 19, 1974. PC \$4.50/MF \$1.45.

Patent application 453,232. A Space Vehicle. Filed Mar. 21, 1974. PC \$4/MF \$1.45.

Patent 3,795,134. Anti-Buckling Fatigue Test Assembly. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,796,592. Method and Apparatus for Stable Silicon Dioxide Layers on Silicon Grown in Silicon Nitride Ambient. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,799,793. Formation of Star Tracking Reticles. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,074. Apparatus for Scanning the Surface of a Cylindrical Body. Patented Mar. 26, 1974. Not available NTIS.

[F.R. Doc. 74-14046; Filed 6-18-74; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION  
Assistant General Counsel for Patents,  
Washington, D.C. 20545

Patent application 350,860. Automated Sample-Reagent Loader. Filed Apr. 13, 1973. PC \$4/MF \$1.45.

Patent application 357,758. Diagnoses of Disease States by Fluorescent Measurements Utilizing Scanning Laser Beams. Filed May 7, 1973. PC \$4/MF \$1.45.

Patent application 363,221. Pulsed Multiline CO<sub>2</sub> Laser Oscillator Apparatus and Method. Filed May 23, 1973. PC \$4/MF \$1.45.

Patent application 364,397. Telecommunication Using Moon Beams. Filed May 29, 1973. PC \$4/MF \$1.45.

Patent application 367,657. Method of Diagnosing a Disease Utilizing Enzyme-Labeled Anti-Bodies. Filed June 6, 1973. PC \$4/MF \$1.45.

Patent Application 367,680. Low Density Syntactic Foams. Filed June 6, 1973. PC \$4/MF \$1.45.

Patent Application 367,683. Doppler-Shift Velocity Measurement System Using a Two-Frequency Laser. Filed June 6, 1973. PC \$4/MF \$1.45.

Patent 3,764,466. Production of Plasmas by Long-Wavelength Lasers. Filed Apr. 1, 1971. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,467. Fast Breeder Reactor Protection System. Filed Dec. 22, 1971. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,552. Method for Storing Radioactive Combustible Waste. Filed June 14, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,553. Removal of Radiolabeled From Waste Solutions. Filed Aug. 18, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,766,526. Multi-Microprogrammed Input-Output Processor. Filed Oct. 10, 1972. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,767,929. Method and Means for Measuring the Anisotropy of a Plasma in a Magnetic Field. Filed June 15, 1972. Patented Oct. 23, 1973. Not available NTIS.

## DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent application 404,060. Quick Release Open Link. Filed Nov. 5, 1973. PC \$4.50/MF \$1.45.

Patent application 404,063. Sliding Segment Roller. Filed Oct. 5, 1973. PC \$4/MF \$1.45.

Patent application 404,091. The Chemical Protection of Asbestos. Filed Oct. 5, 1973. PC \$4/MF \$1.45.

Patent application 405,620. Apparatus for Laser Frequency Selection. Filed Oct. 11, 1973. PC \$4/MF \$1.45.

Patent application 405,722. Gauge Installation Tool. Filed Oct. 11, 1973. PC \$4/MF \$1.45.

Patent application 407,357. Base Two Exponential Counter. Filed Oct. 17, 1973. PC \$4/MF \$1.45.

Patent application 407,379. Ceramic Ductile Metal Composites. Filed Oct. 17, 1973. PC \$4/MF \$1.45.

## U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,  
Federal Building, General Services Division,  
Agricultural Research Service,  
Hyattsville, Md. 20782

Patent application 176,620. Improved, Easily Folding Strip Chart Records. Filed Aug. 20, 1973. PC \$4/MF \$1.45.

Patent application 278,661. Process for Reducing the Hygroscopicity of Dehydrated Fruits. Filed Aug. 7, 1972. PC \$4/MF \$1.45.

Patent application 288,839. Stable Acidified Concentrated Milk Products and Methods of Preparation. Filed Sept. 13, 1972. PC \$4/MF \$1.45.

Patent application 323,194. Process for the Preparation of Beta Keto Aldehydes. Filed Jan. 12, 1973. PC \$4/MF \$1.45.

Patent application 335,859. Preparation of Enol Esters. Feb. 26, 1973. PC \$4/MF \$1.45.

Patent application 337,789. Physiochemically Designed Fat Compositions From Tallow and Process for Making. Filed Mar. 5, 1973. PC \$4/MF \$1.45.

Patent application 343,328. Method and Compounds for Disrupting Normal Insect Maturation. Filed Mar. 21, 1973. PC \$4/MF \$1.45.

Patent application 348,554. 2-Hydroperoxycarboxylic Acids and Their Preparation. Filed Apr. 6, 1973. PC \$4/MF \$1.45.

Patent application 360,279. Methods of Increasing the Attraction of the Gypsy Moth, *Porthetria dispar* L. Filed May 16, 1973. PC \$4/MF \$1.45.

Patent application 365,898. A Method of Inhibiting the Formation of Nitrosamines in Cured Meat Products. Filed June 1, 1973. PC \$4/MF \$1.45.

Patent application 370,094. Doctoring Apparatus. Filed June 14, 1973. PC \$4/MF \$1.45.

Patent 3,692,532. Milk-Fruit Juice Beverage and Process for Preparing Same. Filed Oct. 20, 1970. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,716,592. Process for the Preparation of Alkyl, Perfluoroalkyl and Aryl Iodides. Filed Nov. 12, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,748,149. Continuous Production of Cheese Curd. Filed Feb. 14, 1972. Patented July 24, 1973. Not available NTIS.

Patent 3,749,669. Lubricants for Hides and Leather. Filed June 21, 1971. Patented July 31, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
Assistant General Counsel for Patent Matters, NASA—  
Code GP-2, Washington, D.C. 20546

Patent 3,763,708. Cryogenic Gyroscope Housing. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,788,163. Manual Actuator. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,789,654. Method for Determining Thermo-Physical Properties of Specimens. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,790,037. Metering Gun for Dispensing Precisely Measured Charges of Fluid. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,790,347. Apparatus for Remote Handling of Materials. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,790,650. Method for Compression Molding of Thermosetting Plastics Utilizing a Temperature Gradient Across the Plastic To Cure the Article. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,795,448. Doppler Shift System. Patented Mar. 5, 1974. Not available NTIS.

[F.R. 74-14047; Filed 6-18-74; 8:45 am]



## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 22, 1974

### PATENT EXAMINING GROUPS

Actual  
Filing Date  
of Oldest  
New Case  
Awaiting  
Action

#### CHEMICAL EXAMINING GROUPS

- GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... 7-2-73  
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.
- GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... 6-11-73  
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.
- HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... 11-15-73  
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.
- COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director..... 8-23-73  
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.
- SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. 5-21-73  
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

#### ELECTRICAL EXAMINING GROUPS

- INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... 11-14-73  
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.
- SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... 1-22-73  
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.
- INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... 11-1-73  
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.
- RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director..... 2-23-73  
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.
- ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... 12-10-73  
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.
- DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... 1-15-73  
Industrial Arts; Household, Personal and Fine Arts.

#### MECHANICAL EXAMINING GROUPS

- HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director..... 1-2-74  
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.
- MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... 10-16-73  
Manufacturing Processes; Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.
- AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director..... 11-2-73  
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.
- HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... 9-10-73  
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear- ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.
- GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... 8-28-73  
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.

**Expiration of patents:** The patents within the range of numbers indicated below expire during July 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,797,414 to 2,801,413, inclusive  
Plant Patents..... Numbers 1,612 to 1,625, inclusive

## REISSUES

JULY 9, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

### 28,066 SINGLE-STATION MULTIPURPOSE BODY- EXERCISING MACHINE

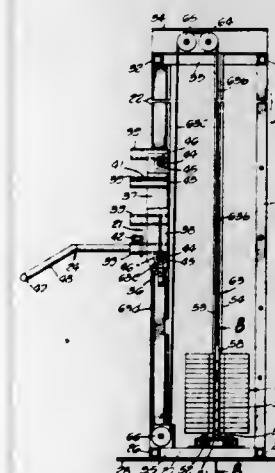
Walter Marcyan, 3055 Hollywell Place,  
Glendale, Calif. 91206

Original No. 3,635,472, dated Jan. 18, 1972, Ser. No. 817,729, Apr. 21, 1969. Application for reissue Feb. 1, 1973, Ser. No. 328,789

Int. Cl. A63b 21/00

U.S. Cl. 272—81

8 Claims



An exercising machine comprising an upright supporting structure, vertical tracks associated with the upright supporting structure, a carriage which slides vertically upwardly and downwardly on the vertical tracks, a lifting arm rigidly but removably connected to the carriage at any selected one of a plurality of vertically spaced connection points, and adjustable resistance means associated with the carriage to bias the carriage and lifting arm in a vertically downward direction, downward movement of the carriage being limited by stop elements.

### 28,067 COLLAPSIBLE ROD

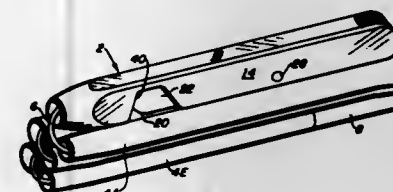
Joseph Hyman, Newton Center, Mass., assignor to  
Hycor, Inc., Woburn, Mass.

Original No. 3,669,133, dated June 13, 1972, Ser. No. 44,239, June 8, 1971. Application for reissue Feb. 26, 1973, Ser. No. 335,717

Int. Cl. A45b 9/00

U.S. Cl. 135—15 PQ

16 Claims



A collapsible rod structure adopted to be used as a cane, the structure comprises a plurality of tubular sections tethered together by a cord and separable to form a compact bundle.

### 28,068 ARTICLE DECORATION APPARATUS AND METHOD

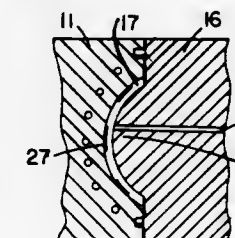
Jerome H. Lemelson, 85 Rector St.,  
Metuchen, N.J. 08840

Original No. 3,504,063, dated Mar. 31, 1970, Ser. No. 421,897, Dec. 29, 1964, which is a continuation-in-part of application Ser. No. 734,340, May 9, 1958, now Patent No. 3,173,175. Application for reissue Feb. 3, 1972, Ser. No. 223,287

Int. Cl. B29c 9/00; B29f 5/00

U.S. Cl. 264—24

20 Claims



The provision of an apparatus and method for selectively depositing a particulate material against one or more selected areas of the surface of a mold, retaining said material against the areas on which it is deposited, and solidifying the deposited material either prior to or immediately after disposing a molding material in the mold in a manner to fuse the deposited material to the molding material so as to form a unitary and integral structure of the two.

### 28,069 INDICATOR POSTS FOR USE IN CONJUNCTION WITH VALVES

Ronald Fortune, Hamilton, Ontario, Ernest G. Mills, Kitchener, Ontario, and James Beverley Woods, Preston, Ontario, Canada, assignors to Canada Valve Limited, Kitchener, Ontario, Canada

Original No. 3,554,160, dated Jan. 12, 1971, Ser. No. 812,255, Apr. 1, 1969. Application for reissue Oct. 25, 1972, Ser. No. 300,797

Int. Cl. F16k 37/00

U.S. Cl. 116—125

11 Claims



An indicator device for a nonrising stem valve has a housing in which is mounted an elongated screw adapted



to be coupled to the valve stem. The screw is rotatable but cannot move axially. The screw is hollow and has a pair of elongated slots through which a bar extends transversely and an indicator rod, located in the hollow screw, is attached to the bar. The ends of the bar are attached to a follower threaded onto the screw. The follower nut can move axially of the screw but is restrained against rotation. The bar ends are connected to the nut in a manner to allow the bar to rotate with the screw. As the screw is turned the nut, bar and rod move axially of the screw.

28,070

**ANTISTATIC POLYMER COMPOSITIONS**

Gordon D. Bridell, Crystal Lake, Ill., and Leland E. Dannals, Waterbury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original No. 3,658,744, dated Apr. 25, 1972, Ser. No. 867,410, Oct. 17, 1969. Application for reissue Oct. 24, 1972, Ser. No. 300,045

Int. Cl. C09d 5/02; D03d 27/00, 27/12

U.S. Cl. 260—29.7 28 Claims

Polymer compositions are provided which are sufficiently electrically conductive so as to inhibit the build-up of electrostatic charges. The compositions contain an effective amount of an antistatic agent selected from the group consisting of alkali metal salts of organic acids or mixtures thereof with or without at least one polyhydric alcohol.

28,071

**PORTABLE TYPE HANDLING APPARATUS**

James E. Smart, Odessa, Tex., assignor to Automatic Pipe Racker, Incorporated, Odessa, Tex.  
Original No. 3,494,483, dated Feb. 10, 1970, Ser. No. 765,209, Oct. 4, 1968. Application for reissue Feb. 10, 1972, Ser. No. 225,343

Int. Cl. E21b 19/00

U.S. Cl. 214—1 P 13 Claims



A pipe handling apparatus for racking pipe which includes a pair of cars slidably received upon an elongated track with the cars being positioned along the track in a pipe receiving relationship with respect to a pipe delivery chute. The cars include a latch means which enables movement of one of the cars to impart movement to the remaining car. The first car is positioned adjacent the chute to receive one end of a pipe, whereupon the pipe is transported by the car longitudinally along the track until the remaining marginal end portion of the pipe is received by the second car. A laterally arranged conveyor means transports the pipe away from the track and onto a pipe rack, whereupon the cars are again positioned in pipe receiving relationship with respect to the track and the chute in order to receive the next joint of pipe.

28,072

**MIXING APPARATUS**

Robert Sluijters, Arnhem, Netherlands, by Akzona Incorporated, Asheville, N.C., assignee  
Original No. 3,051,453, dated Aug. 28, 1962, Ser. No. 821,917, June 22, 1959. Application for reissue June 11, 1973, Ser. No. 368,911

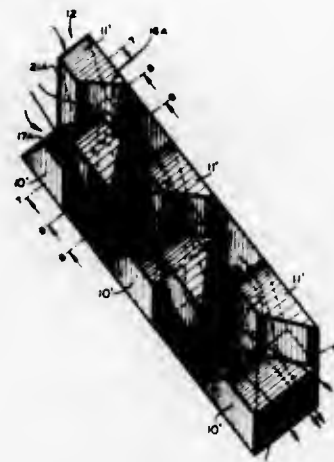
Claims priority, application Netherlands, July 8, 1958, 229,424

Int. Cl. B01f 5/06

U.S. Cl. 259—4 3 Claims

A fluid mixer having no moving parts is disclosed in which a main stream of materials in a uniform cross-

sectional conduit is divided into a number of substreams. The substreams are directly recombined in a manner that causes a direct and positive mixing of elements of the



main stream. The positive mixing action allows precise control of the mixing action to the point of infinity, but may be concluded at any interim point.

28,073

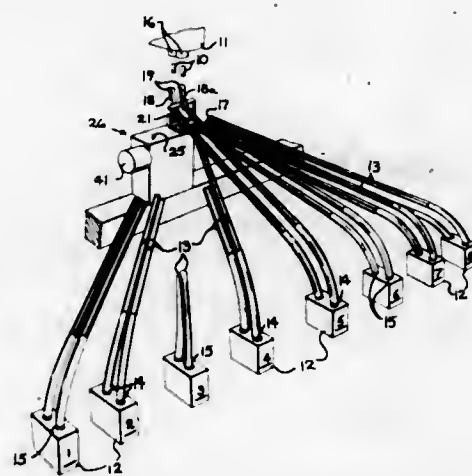
**APPARATUS FOR HANDLING MOLD CHARGES OF MOLTEN GLASS**

Urban P. Trudeau, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original No. 3,597,187, dated Aug. 3, 1971, Ser. No. 681,651, Nov. 9, 1967. Application for reissue Aug. 1, 1973, Ser. No. 384,564

Int. Cl. C03b 5/32

U.S. Cl. 65—304 10 Claims



The sequential delivery of plural mold charges or gobs to a plurality of glass forming machines positioned beneath a flow feeder. A single pair of scoops, having their upper, gob-receiving ends in vertical alignment with the double orifices of the flow feeder, are pivoted horizontally under the mechanical control of a cam operated drive mechanism so as to provide a predetermined, timed sequence of delivery of gobs falling from the orifices to the gob guides and deflectors of a plurality of forming machines.

**PATENTS**

GRANTED JULY 9, 1974

**GENERAL AND MECHANICAL**

3,822,417

**GLOVE AND METHOD OF MAKING**

Pehr Lars-Jos, N. Moen, S-782 Malung, Sweden

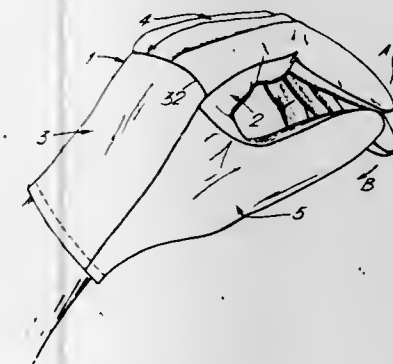
Filed Nov. 8, 1972, Ser. No. 304,826

Claims priority, application Sweden, Nov. 9, 1971, 14266/71

Int. Cl. A41d 19/02

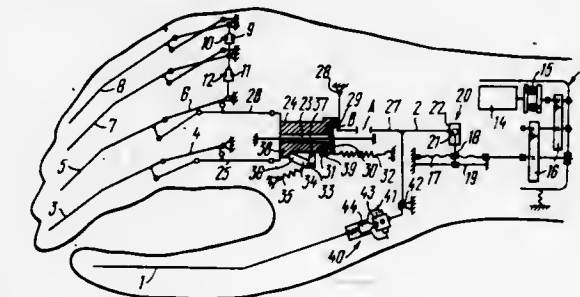
U.S. Cl. 2—169

10 Claims



A glove constructed of trunks including a palm portion and a rear portion, and with the glove being closely adapted to the anatomy and natural motion of the hand. The palm portions of the finger compartments or stalls adapted to respectively receive the fore finger, middle finger, and little finger of the hand are obliquely inclined relative to an imaginary center line drawn through or along an edge of the trunk for the glove portion encompassing the metacarpus of the hand, which edge of the trunk which is coextensive with the outer edge of the trunk portion for the little finger compartment being directed away from the thumb-forming portion of the glove.

bioelectric potentials produced by muscles, and kinematically associated with an actuating lever of the thumb and with at least one for the thumb-opposing fingers. The mechanical linkage interconnecting the electric drive with said thumb-opposing finger is essentially a disengageable unidirectional link-



age capable of ensuring that the positive effect of the electric drive upon said finger occurs solely in the direction of extension thereof. The thumb-opposing finger is coupled to a spring actuating it in the direction of flexion thereof, and is provided with a lock to prevent it from being extended under any external force.

3,822,419

**URINE CONVEYER**

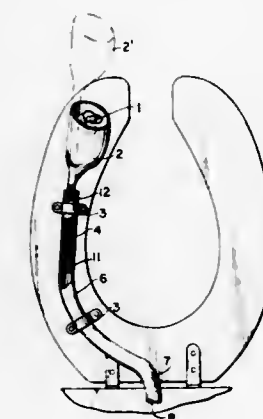
Charles Kenneth Wilson, Sr., 1908 Ruffs Mill Rd., Bel Air, Md. 21014

Filed Oct. 16, 1972, Ser. No. 297,902

Int. Cl. A47k 17/00, 11/00; E03d 13/00

U.S. Cl. 4—1

6 Claims



This invention pertains to a device, attachable to the underside of a toilet seat, adapted to receive urine from a standing person and convey it into the toilet bowl near the water level in a manner to avoid unsanitary splashing. A self rinsing feature as well as an extendible inlet end may be incorporated in the structure.

3,822,418

**ELECTRICALLY DRIVEN ARTIFICIAL HAND FOR UPPER EXTREMITY PROSTHESIS**

Yakov Savelfevich Yakobson, Leningradskoe shosse, 112/1, korpus 3, kv. 613; Alexandr Yakovievich Sysin, Kotelnicheskaya naberezhnaya, 25/8, kv. 25; Vyacheslav Stepanovich Leonov, ulitsa Kedrova, 16, korpus 1, kv. 36; Vladimir Alexeevich Ignatovich, Angarakaya ulitsa, 53, korpus 3, 72; Boris Petrovich Popov-Ilin, Orshanskaya ulitsa, 1, kv. 6; Alexandr Nikolaevich Skachkov, Leninsky prospekt, 39, kv. 292; Natalia Alexandrovna Skudina, Konkovo-Derevlevo, 1 mikroraiion, korpus 10B, kv. 6; Sergei Gavrilovich Forichev, Ussuriskaya ulitsa, 5, kv. 342; Gavril Artemovich Degtyarev, ulitsa Garibaldi, 12, kv. 99; Mirev Leizerovich Bir, ulitsa Nametkina, 15, korpus 2, kv. 48; Nikolai Ivanovich Kovanov, Proletarsky prospekt, 45, korpus 1, kv. 56; Jury Sergeevich Melnikov, ulitsa Krasikova, 11, kv. 75, and Lidia Mikhailovna Voskoboinikova, Novolesnaya ulitsa, 18, korpus 1, kv. 45, all of Moscow, U.S.S.R.

Filed Aug. 31, 1971, Ser. No. 176,530

Claims priority, application U.S.S.R., Sept. 4, 1970, 1465355

Int. Cl. A61f 1/00, 1/06

U.S. Cl. 3—1.1

12 Claims

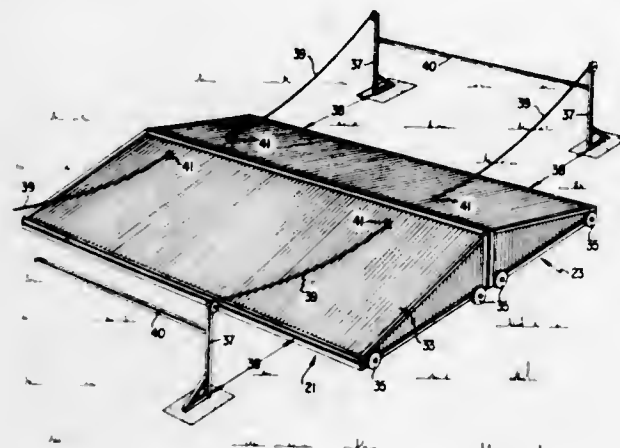
An artificial hand for upper extremity prosthesis, comprising a reversible electric drive controlled by, for example,



3,822,420

**COVER FOR SWIMMING POOLS AND THE LIKE**  
 Stanley A. Kindness, 1327 Michigan St., Oshkosh, Wis. 54901  
 Filed May 10, 1973, Ser. No. 359,076  
 Int. Cl. E04h 3/16, 3/18  
 U.S. Cl. 4—172.14

23 Claims

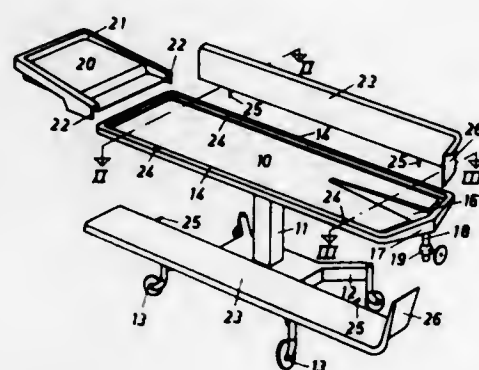


A cover for swimming pools and the like comprising two pitched sections mounted on wheels is disclosed. The pitched sections are formed of lightweight structural components covered with lightweight sheet material. Manual or power driven means are provided for rolling the sections back from the pool so as to entirely expose the surface of the liquid in the pool. In addition, manual or power driven means may be provided for moving the sections to a position where they cover the entire surface of the pool. In one alternate embodiment the sections are raised through an angle of approximately 90° after being fully or partially rolled back from their pool covering positions. In another alternate embodiment, the cover sections are formed in a telescoping manner so that they can be collapsed in size prior to being rolled back from their positions over the pool.

3,822,421

**LITTER FOR TENDING BED-RIDDEN PATIENTS**  
 Jan Loren, Vastra Frolunda, Sweden, assignor to Soderberg Tollman AB, Vastra Frolunda, Sweden  
 Filed Dec. 1, 1971, Ser. No. 203,662  
 Int. Cl. A47k 3/00  
 U.S. Cl. 4—173

2 Claims

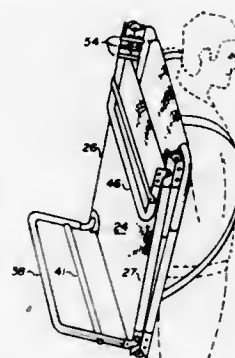


A litter on which bedridden patients may be washed in which a patient supporting surface of rectangular shape and being made of a liquid impermeable material is provided with a low upstanding peripheral rim and a wedge-shaped recess extends axially from one short end of the surface approximately one-half the length of the supporting surface and serves as a drain for the washing liquid.

3,822,422

**COMBINATION MULTIPLE PURPOSE CAMPERS FOLDING COT AND PORTABLE PACK FRAME**  
 Tom C. Buntyn, 6704 Langston, Austin, Tex.  
 Filed July 26, 1973, Ser. No. 383,296  
 Int. Cl. A45f 1/00, 3/00  
 U.S. Cl. 5—114

1 Claim

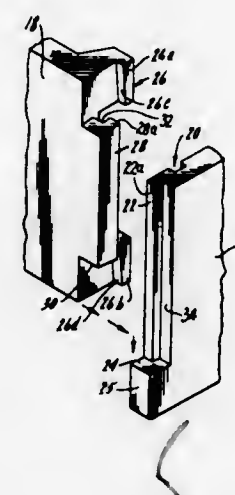


Portable multiple purpose camping apparatus adapted to serve as a pack frame that can be carried on the back of the camper when folded up and which can be unfolded on the camp site to form a camp chair, a chaise lounge or can be completely unfolded to form a cot for sleeping.

3,822,423

**JOINT FOR ATTACHING MEMBERS AND BED FRAME**  
 Edwin B. Watts, Lombard, Ill., assignor to Sealy, Inc., Chicago, Ill.  
 Continuation-in-part of Ser. No. 281,108, Aug. 16, 1972, abandoned. This application May 16, 1973, Ser. No. 360,957  
 Int. Cl. A47c 19/00, 4/02  
 U.S. Cl. 5—201

7 Claims

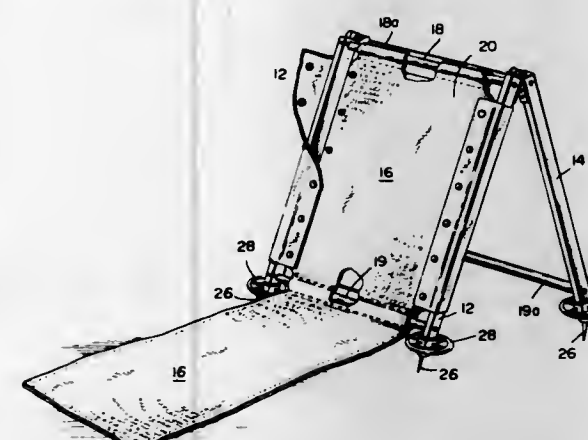


A joint for attaching members which is easily manufactured, has few parts and is readily connected and disconnected and a bed frame utilizing said joint. The bed frame comprises two pairs of first and second members which are attached to one another by said joint. Each of the first members have on each end a first groove and a first tongue. Each of the second members have on the end thereof a second groove and a second tongue. The second tongue of the end member cooperates with the first groove of the first member to prevent movement of the second member along the longitudinal axis of the first member. The first tongue of the first member cooperates with the second groove of the second member to prevent the second member from moving transversely with respect to the first member. Each of the first and second members are attached in the same manner and may therefore be easily assembled and disassembled.

3,822,424

**BACK REST**  
 Thomas V. Messer, 747 Olympic Ave., Edmonds, Wash. 98020  
 Filed Feb. 2, 1973, Ser. No. 329,102  
 Int. Cl. A47c 21/00; A47g 9/00  
 U.S. Cl. 5—344

2 Claims

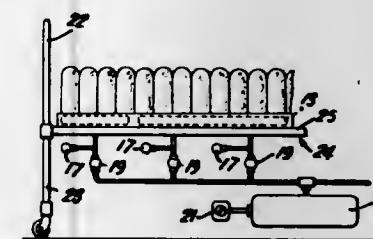


A back rest suitable for use by one or more persons which is designed for easy assembly and portage. A material such as canvas is releasably secured to a pair of frames which are hingedly connected together enabling two persons to use the same rest in back-to-back position. The supporting material is removable from the frames whereby the components may be rolled into a compact package for storage purposes.

3,822,425

**INFLATABLE SUPPORT APPLIANCE**  
 John Tracey Scales, 17 Brockley Ave., Stanmore, England  
 Filed July 7, 1972, Ser. No. 269,864  
 Claims priority, application Great Britain, July 9, 1971, 32461/71  
 Int. Cl. A47c 27/08, 29/00  
 U.S. Cl. 5—348 R

18 Claims



The specification discloses an air mattress consisting of a number of cells each having a surface which supports a user formed from a material which is gas permeable but is non-permeable to liquids and solids. An air supply is provided for inflating the cells to the required pressure.

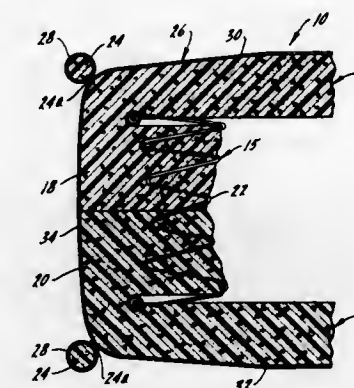
3,822,426

**MATTRESS TOPPER PAD AND BORDER STABILIZER**  
 Richard Mistarz, Chicago, Ill., assignor to Sealy, Incorporated, Chicago, Ill.  
 Filed Nov. 3, 1972, Ser. No. 303,318  
 Int. Cl. A47c 23/04, 25/00  
 U.S. Cl. 5—354

5 Claims

A combined topper pad-border stabilizer means for mattress inner spring units which comprise a single unitary member of resilient material having a mattress topper pad portion, and a border stabilizer portion. The topper pad portion overlies the top or bottom of the coil spring unit. The border stabilizer portion is inserted between at least one convolution

of each coil on the outside row of the coil spring unit to stiffen the spring action of the coils. In one embodiment the border stabilizer portion is preformed in the position it will assume in

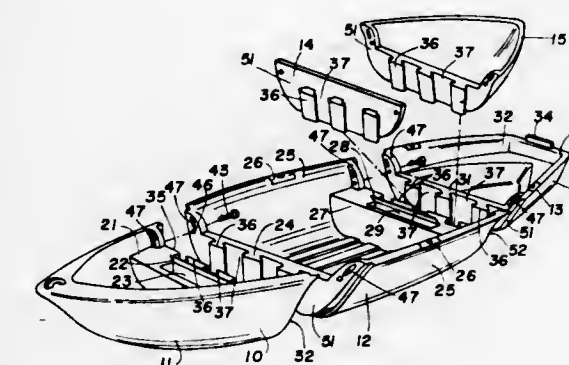


the mattress. In the second embodiment, the border stabilizer portion is formed in such a way that it must be bent 90° to be in the position it will assume in the mattress.

3,822,427

**TELESCOPING RIGID BOAT**  
 John L. Ewart, Jr., Prescott, Ariz., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest  
 Filed Feb. 21, 1973, Ser. No. 334,351  
 Int. Cl. B63b 7/04  
 U.S. Cl. 9—2 S

4 Claims



A boat, made of several independent sections designed to be stacked one inside the other each of which sections join together by means of tongue and groove joints to form the assembled boat. Each independent section of the boat is formed as a watertight shell of molded fiberglass plastic material, with the joint between adjacent assembled sections made along vertical adjoining walls of each section, and with each such wall enclosing the section to a level above the normal water-line.

The tongue and groove joints fastening adjacent boat sections absorb all longitudinal and lateral forces between the joined sections, with shear bolts, joining the adjacent sections, absorbing the vertical forces between the joined sections.

The minimum size boat is formed of a prow section, a mid-section and a stern board, the stern board being attachable to the rear grooves of the mid-section. The unit may be expanded into a boat of longer length by the addition of one or more mid-sections and by the addition of a stern section.



3,822,428

**JOINT INSERTS FOR BRIDGING EXPANSION JOINTS**  
 Wilhelm Stog, and Reinhard Springer, both of Waltrop, Germany, assignors to W. Stog KG, Industrie- und Rohrleitungsbau, Waltrop, Germany

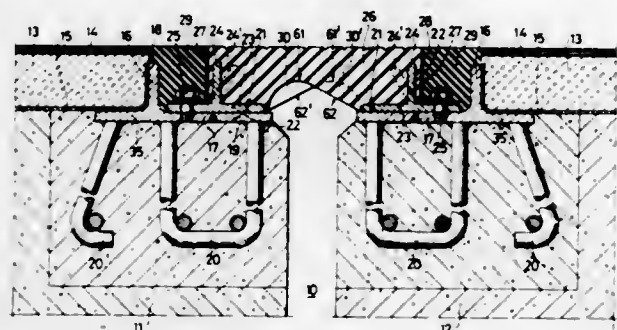
Filed Feb. 21, 1973, Ser. No. 334,297

Claims priority, application Germany, July 19, 1971, 2235413

Int. Cl. E01c 11/10

U.S. Cl. 14-16

12 Claims



A joint or gap insert for bridging expansion gaps in structures, especially bridges, which includes strip means of elastic material having recess means with an arcuate cross section arranged within that region of the strip means which in installed position of said insert will be located within the region of the expansion gap to be bridged while reinforcing means extend into the strip means and are adapted to be firmly connected to the structure, the expansion gap of which is to be bridged.

3,822,429

**VEHICLE WASHING APPARATUS**

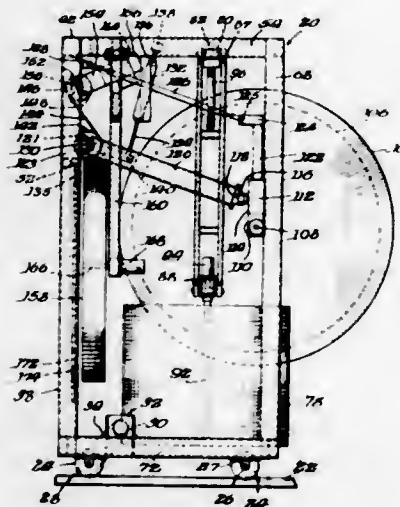
William H. Thompson, Mentor, Ohio, assignor to Trans-Clean, Inc., Glenview, Ill.

Filed Oct. 15, 1971, Ser. No. 189,682

Int. Cl. B60s 3/06

U.S. Cl. 15-21 E

5 Claims



An apparatus for washing a stationary vehicle. A mobile carriage travels along a longitudinal path over the vehicle. The carriage supports opposing vehicle washing brushes rotatable about laterally movable vertical axes to wash the vertical surfaces of the vehicle, an overhead brush rotatable about a horizontal axis and movable in a vertical direction to wash the upper surfaces of the vehicle, and horizontally mounted opposed rotatable brushes for washing the windows and upper vertical surfaces of the vehicle. The vertically mounted brushes are suspended from the carriage by a linkage which has a natural pendular position urging the brushes into scrubbing contact with the vehicle. The overhead brush linkage includes a novel structure wherein counterbalancing weights are located wholly within the lateral limits of the car-

riage, and wherein the motor driving the overhead brush is mounted so as to eliminate the motor torque reaction when the direction of brush rotation is reversed. A control system comprising sensing elements responsive to the physical dimensions of the vehicle automatically programs the functions of the washing apparatus. A unique feature of the control system provides for stopping rearward movement of the carriage when the rear of the vehicle has been reached by the brushes, regardless of the length of the vehicle. A second unique feature of the control system prevents the carriage from stopping as it reaches the rear of the vehicle until the overhead brush cleans the rear window or upper rear vertical surface of station wagons or vans.

3,822,430

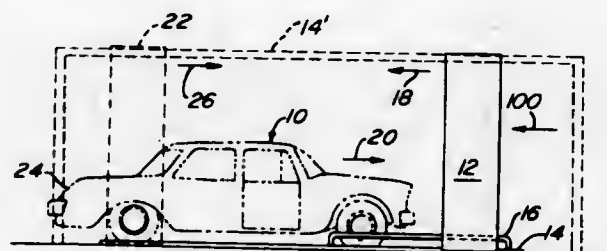
**VEHICLE CONVEYING MEANS FOR VEHICLE WASHER**  
 Sherman L. Larson, Cinnaminson, N.J., assignor to Sherman Car Wash Equipment Co., Palmyra, N.J.

Filed Dec. 17, 1971, Ser. No. 209,134

Int. Cl. B60s 3/04

U.S. Cl. 15-21 R

13 Claims



A vehicle washer utilizing a shortened track for the frame carrying the washing elements such as nozzles and/or brushes. The vehicle is moved in a direction opposite to the direction of movement of the frame as the frame traverses the length of the vehicle. As the frame moves backward along the length of the car, the car is moved forward by a vehicle moving or carrier means. As the frame moves forward along the length of the vehicle, the vehicle is moved backwards by the vehicle moving or carrier means.

3,822,431

**HUBCAP AND LOWER DETAIL WASHER FOR AUTOMOBILES**

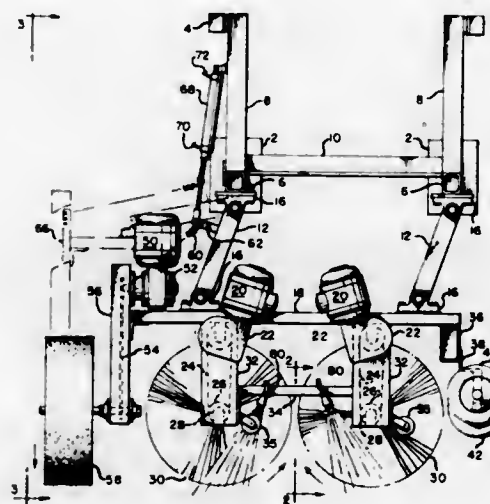
Russel A. Van Brakel, Harshaw, Wis., assignor to Haverberg Auto Laundry Equipment Co. Inc., Chicago, Ill.

Filed Nov. 22, 1972, Ser. No. 308,671

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

5 Claims



A mechanism for washing the hubcaps and lower detail of an automobile including a horizontally disposed, pivotally

mounted framework biased toward the path of an automobile passing through an automatic automobile washing apparatus. The framework supports a pair of horizontally disposed, driven brushes which are adapted to contact and wash the lower detail of the automobile as well as the hubcaps. Similarly mounted upon the framework is a vertically disposed, driven brush which is included to assure that the hubcap is completely cleaned.

3,822,432

**DENTAL HYGIENE APPLIANCE**

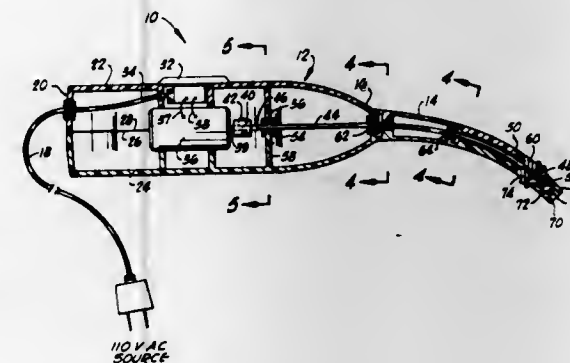
James A. Skinner, 730 Asp, Norman, Okla. 73069

Filed July 7, 1971, Ser. No. 160,427

Int. Cl. A46b 13/02

U.S. Cl. 15-23

10 Claims



A dental hygiene appliance having a housing with a curved tubular extension formed on one end thereof. An electric motor is carried within the housing and is drivably connected to one end of a flexible shaft disposed within the tubular extension. The opposite end of the flexible shaft extends beyond the end of the tubular extension and is removably drivably secured to a rotary tooth cleaning tool. In one form of the invention, the rotary tooth cleaning tool comprises a tooth polishing cup formed of elastomeric material. In another form of the invention the rotary tooth cleaning tool comprises a brush. One or more flexible shaft bearings are disposed within the tubular extension intermediate the electric motor and the rotary tooth cleaning tool.

3,822,433

**ELECTRIC MOP**

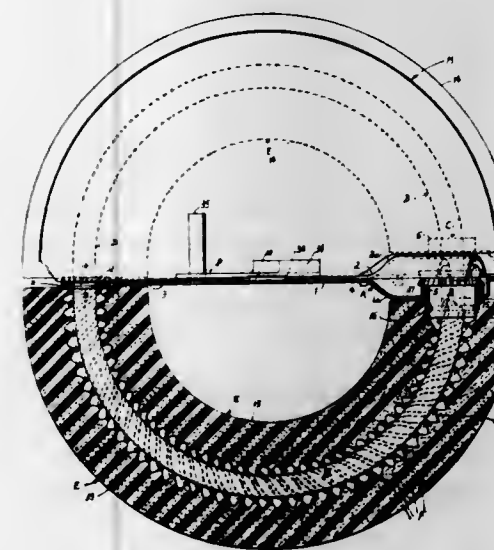
Marion Krekler, 2422 N. French St., Santa Ana, Calif. 92706

Filed Mar. 12, 1973, Ser. No. 340,228

Int. Cl. A47i 11/282

U.S. Cl. 15-98

12 Claims



An electric mop that makes use of a toroidal cleaning element that is rotatably mounted on a ring-shaped axle with the

electric motor rotating the toroidal cleaning element or mop on this circular axle. A novel mop wringing plate rests lightly on the top of the toroidal mop when the plate is in normal position and acts as a shield to protect the operator from any flying liquid that might accidentally be thrown off by the toroidal cleaning element as it is rotated about the ring-shaped axle. In addition, novel means is provided for forcing the plate down upon the toroidal cleaning element while it is rotating for wringing the cleaning element or mop of its dirty water.

3,822,434

**SHAVING BRUSH HAVING HEATING MEANS FOR LATHER**

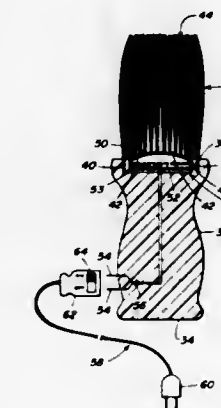
Edwin L. Mahoney, 2843 W. Brooklyn, Dallas, Tex. 75211

Filed Apr. 3, 1972, Ser. No. 240,421

Int. Cl. A46b 11/08

U.S. Cl. 15-160

6 Claims



A shaving brush comprises a handle and bristles extending from the handle in an annular array to provide a cylindrical barrel for receiving shaving lather directly from an aerosol container. The shaving lather receiving barrel extends full depth and is therefore adapted to receive a relatively large quantity of lather, and the bristles are arranged in tufts to provide apertures at the lower end of the barrel adjacent the handle which permit thorough rinsing of the brush following each use. In one embodiment of the invention an electric heating apparatus is mounted in the handle and extends into the shaving lather receiving barrel for actuation to heat shaving lather deposited therein.

3,822,435

**DISPOSABLE DUST MOP AND METHOD OF MAKING SAME**

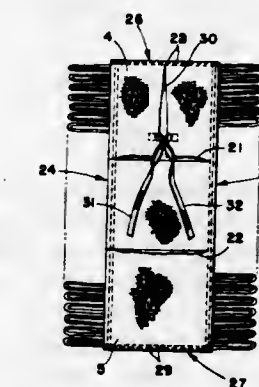
Theron V. Moss, P.O. Box 234, Cleveland, Tenn. 37311

Filed Dec. 22, 1972, Ser. No. 317,538

Int. Cl. A47i 13/253

U.S. Cl. 15-229 BP

13 Claims



A disposable dust mop and method of making same comprising the steps of stitching one or more intermediate rows of



yarn to one side of a piece of fabric intermediate one side edge of the fabric and the longitudinal middle thereof, folding the fabric at the middle back against itself along the entire length thereof to provide a fabric support member two layers thick, then stitching an outer row of yarn adjacent the fold with the stitching extending through both layers of fabric, and then stitching another outer row of yarn to the fabric adjacent the two side edges with the stitching also extending through both layers of fabric. Either prior to or during the stitching of the outer row of yarn adjacent the side edges of the fabric, the fabric is desirably slit along the side edge of the fabric which comprises the back layer of the support member at longitudinally spaced apart points, after which the outer row of yarn adjacent the side edges is stitched to the fabric over the slits. The slits extend sufficiently inwardly beyond the stitching for the adjacent outer row of yarn to permit a scissors to be inserted into the slits for cutting the slits all the way across the back layer of fabric to the outer row of stitching adjacent the fold thus providing end pockets between the two layers of fabric for attachment to a mop holder. Finally, the ends of the fabric are stitched together with one or more rows of stitching extending through both layers of fabric and also through the ends of the rows of yarn to prevent unraveling.

3,822,436

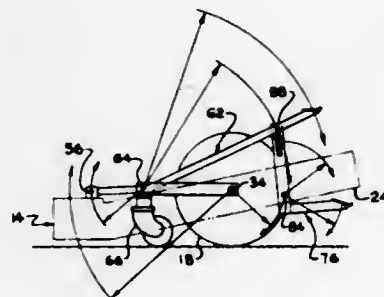
**VACUUM CLEANER WITH HEIGHT ADJUSTMENT**  
Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Nov. 16, 1972, Ser. No. 307,001

Int. Cl. A47I 5/34

U.S. Cl. 15—354

9 Claims



A large vacuum cleaner with height adjustment mechanism for the vacuum nozzle is provided. The adjustment mechanism includes two foot-operated levers, one effective to change the height of the nozzle in a direction away from the surface to be cleaned, and one to change the height of the nozzle in a direction toward the surface by releasing the first lever from a predetermined position. The mechanism is easily operated from the rear by an operator manipulating the vacuum cleaner by its handle. The mechanism is also simple, maintenance free, reliable, and inexpensive.

3,822,437

CASTORS

Stafford Thomas Screen, Stourbridge, England, assignor to British Castors Limited, Tipton, Stafford, England

Filed Nov. 24, 1972, Ser. No. 308,937

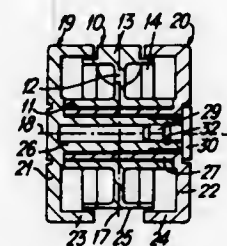
Int. Cl. B60b 33/00

U.S. Cl. 16—45

11 Claims

In a castor having a body adapted to be mounted on an article of furniture and roller means mounted on the body for rotation relative thereto about a rolling axis, the roller means has mutually opposed disc portions which extend transversely of the rolling axis and a peripheral wall portion which is supported by the disc portions for engagement with a floor sur-

face. The roller means comprises two wheel components which are connected together and each of which includes one



of said disc portions. The wheel components include respective interfitting integral formations which locate one wheel component relative to the other.

3,822,438

**DOOR CLOSER MECHANISM**

Yukimasa Takenaka, Hiroshima-ken, Japan, assignor to Ryobi Co., Ltd., Fuchu-shi, Hiroshima-ken, Japan

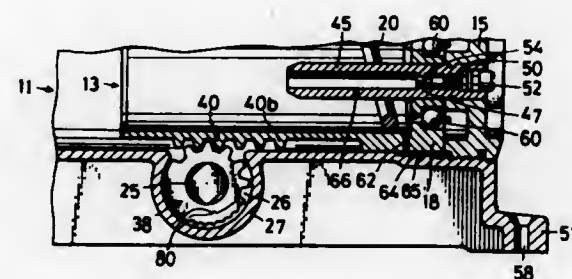
Filed Jan. 8, 1973, Ser. No. 321,702

Claims priority, application Japan, Feb. 2, 1972, 47-13891

Int. Cl. E05F 3/12, 3/22

U.S. Cl. 16—62

8 Claims



In the present door checking mechanism, a piston reciprocates within a cylinder. A pinion shaft carries a pinion which is normally held in meshing engagement with a rack axially formed on the outer surface of the piston. The pinion is partly toothed so that further rotation of the pinion shaft after the pinion has been disengaged from the rack results in a frictional engagement between the end tooth of the rack and the toothless portion of the pinion. In this condition, the door is firmly held until an external force is applied thereto. Another embodiment includes a pinion having a cut-away portion which, in the door fully open position, is held in surface contact with a corresponding portion of the rack to thereby prevent the door from being violently hit against the wall behind, for example, due to a large wind pressure.

3,822,439

**ROLLER NUT-TYPE CONTROL ROD DRIVE**

Robert A. Wallin, Lynchburg, Va.; John R. Null, Canal Winchester, and Don W. Smith, Lancaster, both of Ohio, assignors to Diamond Power Specialty Corporation, Lancaster, Ohio

Filed Feb. 22, 1973, Ser. No. 334,851

Int. Cl. F16h 1/18; G21c 7/08

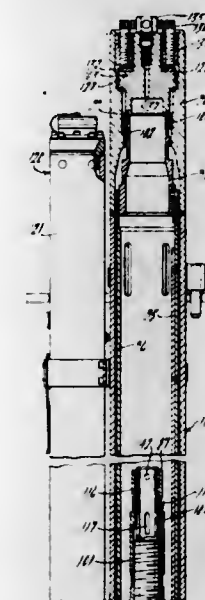
U.S. Cl. 74—424.8 R

16 Claims

A control rod drive of the type wherein the load is actuated by a non-rotatable screwshaft driven axially within a sealed tubular enclosure includes a spinning nut assembly consisting of roller nuts mounted on pivoted segment arms and movable into and out of mesh with the screwshaft by energization and deenergization of an induction-type motor. The segment arms form a portion of the rotor so that when the field of stator rotates the roller nuts planetate to drive the shaft. A combined support and convection-controlling housing structure for the

mechanism is adapted to be attached to the cover of a reactor vessel and includes an upwardly extending torque-taking piston-carrying section connected to the screwshaft and a

opening in an edge of the clip dividing the clip on opposite sides of said opening into a pair of flexible jaws. The opening edges flare outwardly to guide the bunched bag neck into the inner narrow part of the opening. A pointed tongue formed integral with the clip extends into said aperture to engage the



snubbing cylinder for controlling the rate of descent and absorbing shock in event of scan, and means for parking the screwshaft in a raised position.

3,822,440

**SPRINGLESS SELF-LATCHING HINGE**

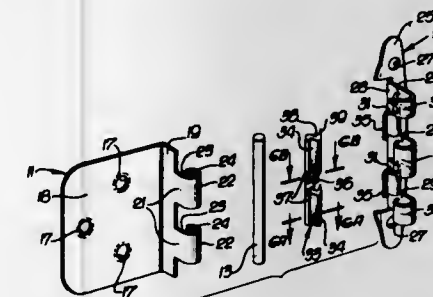
Benjamin H. Stansbury, Jr., Beverly Hills, and Frank A. Holmes, Buena Park, both of Calif., assignors to Jaybee Manufacturing Corporation, Los Angeles, Calif.

Filed Apr. 12, 1972, Ser. No. 243,191

Int. Cl. E05d 11/08

U.S. Cl. 16—142

10 Claims



A springless self-latching hinge includes a pair of hinge leaves pivotally connected by a hinge pin. One leaf has a hinge knuckle the end of which incompletely encircles the pin to form a recessed bearing sleeve having a cam engaging edge. The other member has at least one hinge knuckle terminating at a hinge pin encircling bearing sleeve and at least one laterally extending, resilient spring leaf cooperating with a cam block disposed between the leaf and the recessed bearing sleeve to exert a force on the cam engaging edge for releasably maintaining said hinge closed.

3,822,441

**PLASTIC CLIP FOR CLOSING FLEXIBLE PLASTIC BAG**  
Floyd G. Paxton, P.O. Box 2098, Yakima, Wash. 98902

Continuation of Ser. No. 131,226, April 5, 1971, abandoned.

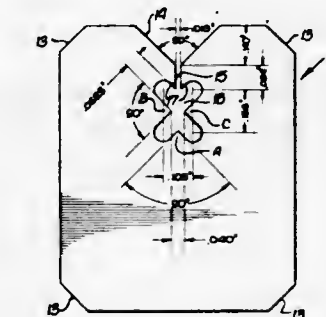
This application Nov. 30, 1972, Ser. No. 310,705

Int. Cl. B65d 77/10

U.S. Cl. 24—30.5 S

4 Claims

A clip about 1 inch square of flat springy plastic, such as 0.032 inch gauge polystyrene, having an internal bag neck confining aperture, access to which is provided by a narrow



bag neck and resist slippage of said bag neck through said aperture. A multiple of said tongues may be provided, in which case a pair of tongues may extend into said aperture into a juxtaposed relationship on a transverse axis. A third tongue may be provided pointed toward and co-axially aligned with said narrow opening.

3,822,442

**METHOD OF ANCHORING A BUNDLE OF REINFORCING WIRES OR STRANDS FOR PRE-STRESSED CONCRETE, AND ANCHORING CONSTRUCTION**

Jan Frederik Herbschleb, Leidschendam; Albert Komijn, Rijswijk Z.-H., and Hans Egbert Westenberg, The Hague, all of Netherlands, assignors to I.B.I.S. Nederland N.V., Rijswijk, Netherlands

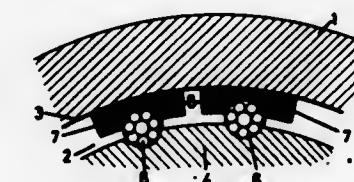
Filed Dec. 21, 1971, Ser. No. 210,329

Claims priority, application Netherlands, Dec. 24, 1970, 7018796

Int. Cl. F16g 11/00

U.S. Cl. 24—122.6

6 Claims



Anchorage of a bundle of reinforcing wires or strands for pre-stressed concrete in a tapered throughbore of an anchoring block, in which said wires or strands are clamped relatively to the wall of the throughbore by driving a wedge into said bore, whereafter as the bundle is subsequently caused to assume its final pre-stressed condition, the bundle pulls itself with the wedge into a more tightly wedged position in the bore, and wherein, before the wedge is driven in sliding pieces are interposed between the wires or strands and the wall of the throughbore, said sliding pieces being formed so that as the bundle pulls itself tightly into the bore, said sliding pieces ex-



clusively move relatively to said wall, without moving relatively to the wires or strands. The sliding pieces preferably have a prismatic shape.

3,822,443

## SLIDER FOR SLIDE FASTENERS

Hiroshi Yoshida, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

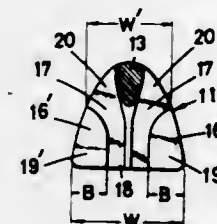
Filed Sept. 18, 1973, Ser. No. 398,392

Claims priority, application Japan, Sept. 19, 1972, 47-109126[U]

Int. Cl. A44b 19/26

U.S. Cl. 24-205.15 R

1 Claim



A slider provided with greater flange surfaces towards its exit end for guiding and holding the fastener stringers stably thereon during the assembling of the fastener chain through the slider, so as to prevent the fastener elements from becoming displaced at the exit end and caught in the guide channel of the slider.

3,822,444

## CLOSURE ARRANGEMENT FOR COIL FILAMENT ZIPPERS

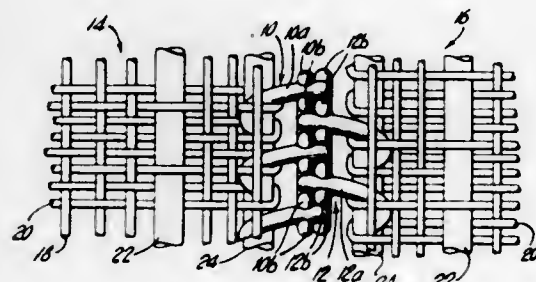
Max F. Johns, Scotch Plains, N.J., assignor to General Zipper Corporation, Long Island City, N.Y.

Filed Jan. 3, 1973, Ser. No. 320,779

Int. Cl. A44b 19/12

U.S. Cl. 24-205.13 C

3 Claims



Slide fastener filaments in the form of helical coils are provided with projecting portions on each convolution. The projecting portions on one filament interlock with the projecting portions of a cooperating filament. A plurality of projecting portions are provided on each coil, so that the coils are prevented from becoming separated when twisting forces or a side load is applied to the filaments.

3,822,445

## DRAWSTRING WITH CLIPS

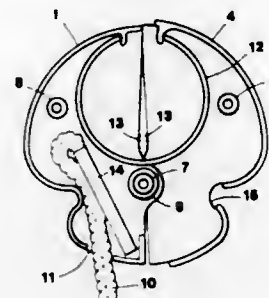
Chung Liao Feng, 16 Seven Springs Rd., Radnor, Pa. 19087

Filed Mar. 26, 1973, Ser. No. 345,087

Int. Cl. A41f 1/00; A44b 21/00

U.S. Cl. 24-266

2 Claims



The invention relates to drawstrings equipped with spring clips. The function of the clips is to eliminate the need of tying knots by clamping the drawstring at the right length.

3,822,446

## LOSS-PREVENTION WALLET CLAMP AND CHAIN DEVICE

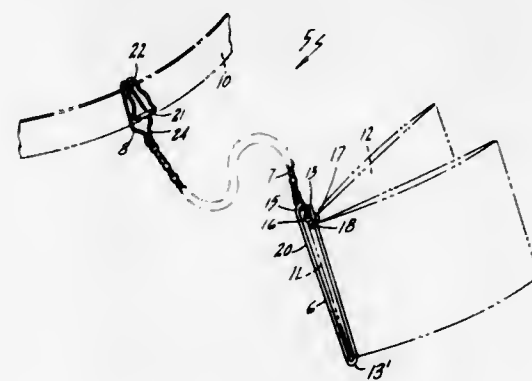
Bernard Silverstein, 9-34 130th St., College Point, N.Y. 11356

Filed Nov. 16, 1973, Ser. No. 416,414

Int. Cl. A45f 5/02; A45c 13/20

U.S. Cl. 24-3 H

8 Claims



In a preferred embodiment, a wallet safety clamp and chain and belt latch on the end of the chain for slidably clamping over the belt edge of a man, the chain being of a link-type which does not therefore knot during use to thereby weaken the chain, and the chain being linked to a circular end of the head of the clamp in which the head is a bent rigid but resilient steel wire, with one end of the head-forming wire extending laterally a very minor distance and looping back in a reverse direction to form a semicircular hook-portion as the head catch, and the other portion of wire extending from the head extending linearly slightly greater in length than a typical wallet's width and then bending sharply in a rounded bend to form a reverse-direction leg which is latchable into the semicircular hook-portion which extends transversely to the direction of the linearly extending reverse-direction leg, such that there is formed a head extending in a space-saving and non-protruding direction the same as the plane in which the semicircular hook-portion extends, and with the hook-portion being formed in close relationship to the back-body leg so as to not be uncomfortably wide and bulky in latch nature when the clamp is buckled around a wallet, and with the back-body leg continuing directly without curves into the head portion thereby avoiding unnecessary protrusions of tumor portions which might catch on a pocket or which might in time wear-away a pocket undesirably in the placing of the wallet into a

pocket and removing the same therefrom, whereby a functional wallet clamp is provided obtaining both security against loss of the wallet accidentally such as when sitting in an easy-chair or automobile seat or the like, while being attractive in appearance and easily latchable on and removable from a wallet as desired by virtue of the above structural relationships.

3,822,447

## METHOD AND APPARATUS FOR ELECTRIFYING PILE FABRICS

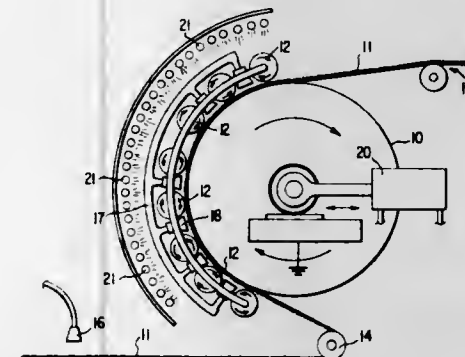
Daniel Frishman, 14 Castle Heights Rd., Andover, Mass. 01810

Filed July 24, 1972, Ser. No. 274,636

Int. Cl. D06c 29/00

U.S. Cl. 26-2 E

7 Claims



The present disclosure is directed to a machine and method in which a pile fabric carried on the surface of a large rotating drum is submitted to the electrifying action of several rotating cylinders placed in a planetary arrangement around the large cloth-carrying cylinder. The rotation of the planetary cylinders is varied (some clockwise, others counter-clockwise) so that in one pass of the fabric through the electrifying machine some of the electrifying cylinders throw the pile fibers forward (in the direction of movement of the fabric) while other electrifying cylinders throw the pile fibers in the opposite direction. In order to provide lateral oscillatory motion to the fibers, each planetary cylinder has a spiral groove on its surface and the direction of this spiral alternates for successive planetary cylinders. Preferably, each planetary cylinder has, on its surface, two (or more) spiral grooves and the two grooves are "wound" in opposite directions. When the pitch of each (oppositely wound) spiral on a cylinder is great enough, the spirals will cross each other at one or more points. (Cross-over points can cause streaks on the surface of the pile fabric.) In this invention the spirals are arranged so that the cross-over points occur at different positions along the length of each planetary cylinder on the electrifying machine and the last one to three cylinders are designed to have no cross-over points.

3,822,448

## APPARATUS FOR SPREADING AND GUIDING FABRIC WIDTHWISE

Hideyuki Cho, No. 30, 6-chome, Zuiko-dori, Higashiyodogawa-ku, Japan

Filed Jan. 12, 1972, Ser. No. 217,337

Claims priority, application Japan, Nov. 16, 1971, 46/107219

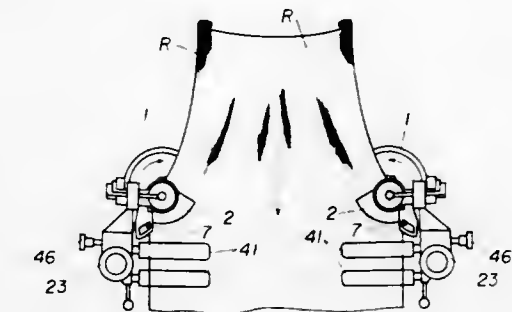
Int. Cl. D06c 3/06

U.S. Cl. 26-67

3 Claims

An apparatus includes a pair of rotary discs to be disposed at the opposite side edges of a travelling fabric and a pair of push plates adapted to be moved toward or away from the rotary discs in opposing relation thereto for spreading the

travelling fabric widthwise at its opposite selvages. At least two parallel guide rollers are positioned ahead of each of the



spreading units with respect to the direction of travel of the fabric at a variable angle with respect to the fabric so as to guide the travelling fabric at each selvage.

3,822,449

## HINGED CAP JET

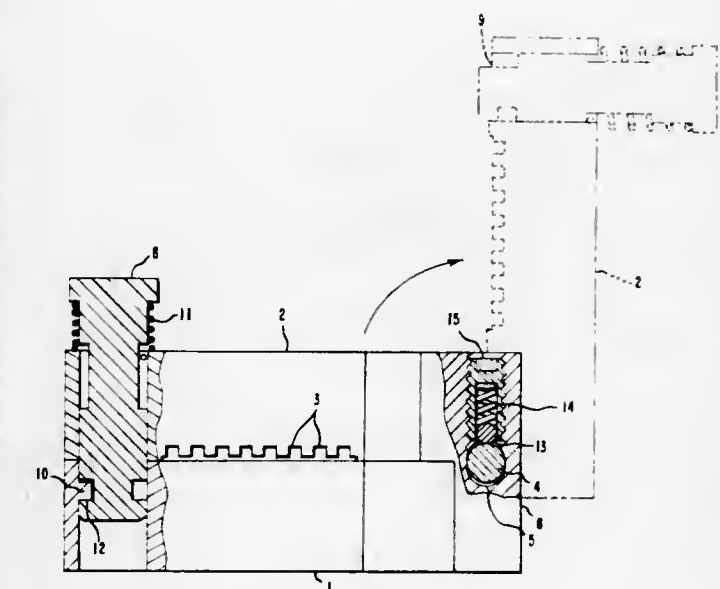
Burness Carl Dick, Nashville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1972, Ser. No. 307,006

Int. Cl. D02g 1/16

U.S. Cl. 28-1.4

2 Claims



A hinge connecting a cap to a body member of a yarn treating jet is modified with a biasing means for exerting a force against the hinge pin normal to the mating surfaces of the cap and body member of the jet.

3,822,450

## APPARATUS FOR PRODUCING CRIMPED FILAMENTS FROM SYNTHETIC POLYMERS

Konrad Ellegast, Leichlingen; Robert Schnegg, Dormagen; Karl August Essig, Marl, and Horst Wieden, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 29,045, April 6, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,565 Claims priority, application Germany, Apr. 24, 1969, 1920760

Int. Cl. D02q 1/20, 1/10, 1/12

U.S. Cl. 28-1.3

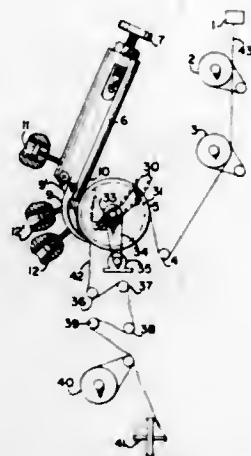
3 Claims

Apparatus is disclosed for stretching and crimping filaments



or yarns from synthetic polymers. The crimping device includes a heated, driven roller with a pressure plate and stow-

yarn passing through the cylindrical wall portion. Suction means is provided for drawing off the products of combustion



ing or packing flaps mounted about the circumference of the roller to stuffer crimp the filaments or yarns.

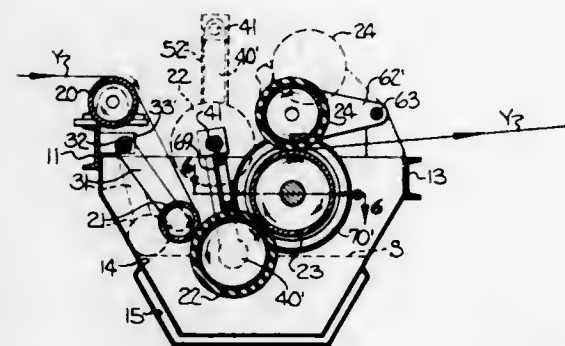
### 3,822,451 SIZE BOX

Ira L. Griffin, Jr., Charlotte, N.C., assignor to Ira L. Griffin & Sons, Inc., Charlotte, N.C.

Filed Dec. 14, 1972, Ser. No. 314,990

Int. Cl. D06c 29/00

U.S. Cl. 28—28



The present size box is particularly adapted for applying size to textile strands or yarns at extremely high speeds. The rolls are arranged in the size box in such a manner that slinging of size from the rolls is reduced. To this end, only the immersion roll is positioned so that it runs in the size solution and the remaining rolls are positioned above the level of the size. Suitable guards are provided to restrict the amount of slinging of size from the rolls during high speed operation. The immersion roll is supported for vertical movement between a lowered operative position in the size solution and a raised in-operative position above the upper level of the size tank.

### 3,822,452

#### GAS SINGEING APPARATUS FOR TEXTILE YARN PROCESSING MACHINE

Klaus Nitz, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

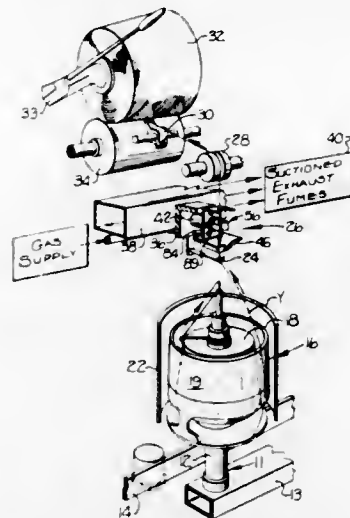
Filed Nov. 17, 1972, Ser. No. 307,627

Int. Cl. D02j 3/16

U.S. Cl. 28—63

6 Claims

A gas singeing apparatus for use with textile yarn processing machines such as a twister, spinning frame or the like, and which includes a singeing plate forming the front wall of a combustion chamber and having a cylindrical wall portion for receiving a running yarn end therethrough. A gas burner nozzle is positioned within the combustion chamber to heat the singeing plate to thereby singe off any protruding fibers on the



within the combustion chamber as well as the residue of the singeing operation from both the entry end and discharge end of the cylindrical wall portion of the singeing plate.

### 3,822,453

#### METHOD OF MAKING CATHODE RAY TUBE INTERNAL SHIELDS

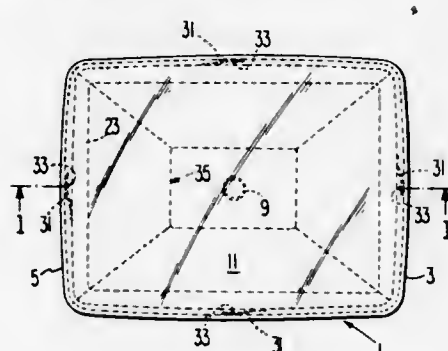
Terry M. Shrader, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 95,779, Dec. 7, 1970, abandoned. This application Nov. 7, 1972, Ser. No. 304,587

Int. Cl. H01j 9/00

U.S. Cl. 29—25.14

2 Claims



An internal magnetic shield of generally truncated pyramidal shape conforming generally to the inner wall of the funnel of a rectangular shadow mask type color picture tube is made up of four pre-annealed trapezoidal pieces of magnetic sheet metal assembled and attached together by overlapping flanges integral with the non-parallel sides of the pieces. The larger end of the shield is attached to the shadow mask frame by integral flanges on the long sides of the trapezoidal pieces. The sheet metal of the shield is annealed either before or after being formed into the trapezoidal pieces, but before assembly and attachment of the pieces together.

### 3,822,454

#### METHOD OF FABRICATING A COLOR CATHODE RAY TUBE

Kenneth Spiegel, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,707

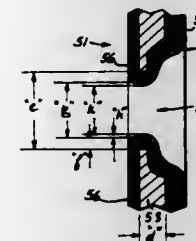
Int. Cl. H01j 9/18

U.S. Cl. 29—25.13

8 Claims

A method for making a color cathode ray tube utilizing a screen-related apertured mask member wherein the apertures

are temporarily reduced in size by an applied coating that is absorbent of actinic radiant energy. The coated mask is used to photo expose a windowed-web, defined by opaque interstices, on the viewing panel of the tube; whereupon, the coated mask is again employed to photo expose a superimposed array of phosphor dots to fully cover each of the window areas. After formation of the screen structure the tempo-



rary coating is removed from the mask by treating with a dissolving solution which completely de-coats the mask thereby restoring the apertures to their initial dimensioning without harming the underlying mask material per se. In the mask-screen assembly thus fabricated, the mask apertures in the completed tube are of a size larger than the associated phosphor-filled window areas of the screen.

### 3,822,455

#### METHOD OF MANUFACTURING BEADED FILAMENT COILS FOR ELECTRIC LAMPS AND SIMILAR DEVICES

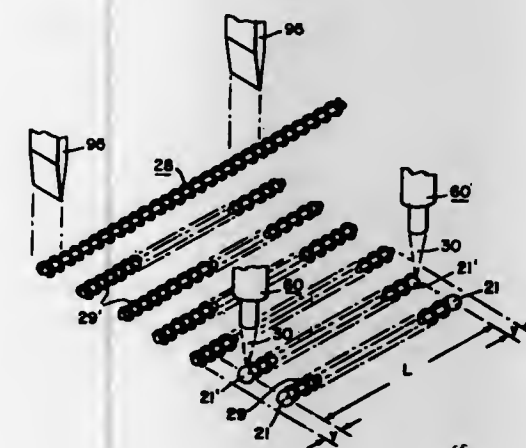
James Petro, Little Falls, and Clair M. Rively, Old Bridge, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 163,651, July 19, 1971, which is a division of Ser. No. 792,988, Jan. 22, 1969, abandoned, Continuation of Ser. No. 317,880, Dec. 22, 1972, Pat. No. 3,778,664. This application May 30, 1973, Ser. No. 365,369

Int. Cl. H01j 9/00

U.S. Cl. 29—25.18

10 Claims



The tangling of helically-coiled wire articles during bulk handling and shipment is prevented by providing integral modules or beads of fused metal at each end of the articles which enclose the severed ends of the wire. In the case of tungsten wire coils that are designed for use in electric lamps and similar devices and are wound on iron mandrels, the fused beads are composed of tungsten-iron alloy and formed in situ during coil manufacture by melting the ends of the mandrel with a concentrated heat source such as a focused laser beam. The tungsten-iron alloy beads remain on the end turns of the coil during the subsequent mandrel-dissolving operation, are ductile and are formed without embrittling the tungsten wire. Various methods for manufacturing such beaded-end coils on a mass production basis using a laser are disclosed.

### 3,822,456

#### STRAND CONNECTING METHOD

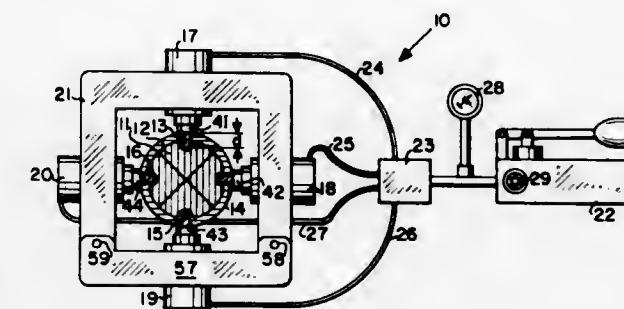
Rudolph E. Petrucci, Bronxville, N.Y., assignor to The Anaconda Company, New York, N.Y.

Division of Ser. No. 23,611, March 30, 1970, abandoned. This application June 7, 1972, Ser. No. 260,699

Int. Cl. H05k 43/00

U.S. Cl. 29—628

2 Claims



In a hydraulic press for connecting cable strands the penetration of the rams is positively determined and equalized by spacers that attach to the ram guides and limit the hydraulic piston stroke. In this method of using a ram press sufficient pressure is always applied to rams to obtain preselected equal depth of penetration.

### 3,822,457

#### METHOD OF MAKING ROTATABLE MEMBER ASSEMBLY

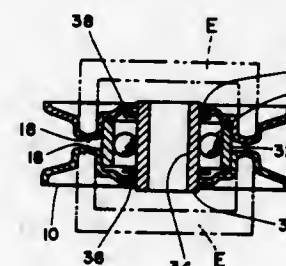
Charles C. Frost, Kentwood, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to C. L. Frost & Sons, Inc., Grand Rapids, Mich.

Division of Ser. No. 199,983, Nov. 18, 1971, Pat. No. 3,789,683. This application July 9, 1973, Ser. No. 377,443

Int. Cl. B21k 1/42

U.S. Cl. 29—159 R

3 Claims



The present disclosure relates to a rotatable member assembly such as a pulley wheel, a sheave or drive pulley or the like fabricated from a pair of metal disks stamped from sheet metal stock and welded together in a novel manner. The disk members are each provided with an outer peripheral rim, a web portion having an annular laterally extending weld projection formed thereon, and a central hub-engaging section. To assemble the member, a bearing, bushing, or hub is positioned in the central hub-engaging section and the disks are placed together and subjected to heat and pressure at the web portion so that the weld projection of one of the disks fuses with the weld projection of the other disk to form an integral assembly.



3,822,458

## METHOD OF MAKING WHEELS

Friedrich Wilhelm Schulte; Manfred Diels, both of Meinerzhagen, Germany, and Wilhelm Rosenkranz, deceased, late of Meinerzhagen, Germany (by Barbara Rosenkranz, heir), assignors to Otto Fuchs, Meinerzhagen, Germany

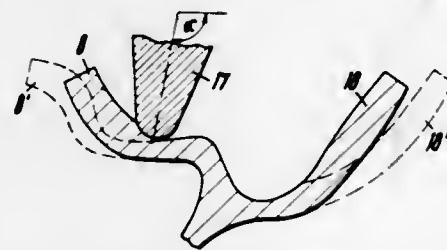
Division of Ser. No. 11,233, Feb. 13, 1970, Pat. No. 3,672,021. This application June 7, 1972, Ser. No. 260,388

Claims priority, application Germany, Feb. 20, 1969, 1908465 The portion of the term of this patent subsequent to June 27, 1989, has been disclaimed.

Int. Cl. B21b 1/02; B21k 1/32

U.S. Cl. 29—159.01

5 Claims



Wheels, particularly for automotive vehicles, are made by first forming a disk-shaped blank, forging the same into a semi-finished wheel having a hub and a wheel disk surrounding the hub and having a peripheral rim provided with a cylindrical circumferential edge face, and then mounting the semi-finished wheel in a machine. The edge face is thereupon engaged with one roller and split under application of pressure in direction inwardly of the edge face and towards the hub to obtain two unfinished flanges. The unfinished flanges are rollingly deformed with two rollers in opposite directions axially of the hub and to the desired configuration to thereby obtain two finished wheel flanges.

3,822,459

## MACHINE FOR PRODUCING A PLASTIC-COVERED GLASS CONTAINER

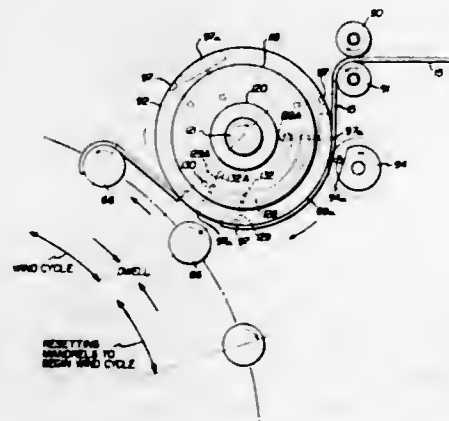
Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket, both of N.Y., and Clarence A. Heyne, Sun City, Ariz., assignors to Owens-Illinois Inc., Toledo, Ohio

Division of Ser. No. 209,751, Dec. 20, 1971. This application July 10, 1973, Ser. No. 378,002

Int. Cl. B23p 19/04

U.S. Cl. 29—208 B

12 Claims



The disclosure relates to a machine for making a plastic covering on a rigid base article which in the illustrated form comprises a glass bottle and a conforming shrunken plastic covering thereon. The plastic is fed in oriented sheet form to the turret apparatus, cut into lengths and wrapped and seamed on successive mandrels as sleeves. Bottles are simultaneously processed to preheat condition and indexed over the sleeves,

the latter telescopically assembled on the rigid base article, i.e., the bottle, and the combination carried to a heat tunnel. The plastic sleeve shrinks into snug surface fit on the adjacent surface portion of the rigid base article.

The bottle is preheated in one of two embodiments by: (1) a preheat tunnel on the machine which raises the bottles from room temperature to about 220° F., or (2) the preheat is carried over as latent heat in the glass bottle from the annealing lehr, a part of the bottle manufacturing process.

The machine includes novel subassemblies comprised of (1) a bottle chuck and loading station for assuring proper loading of the bottles on the machine, (2) bottle handling, (3) plastic strip handling and feed mechanism for placing oriented cut lengths onto mandrels of the turret, (4) the turret for making seamed sleeves in succession and feeding them onto registered bottles carried by the bottle handling apparatus, and (5) unloading device for transfer of the covered bottles to a conveyor and with said transfer smoothening the bottom surface of the covering on the bottle.

3,822,460

## APPARATUS FOR AUTOMATICALLY MOUNTING TRANSPARENCIES IN SLIDEMOUNTS

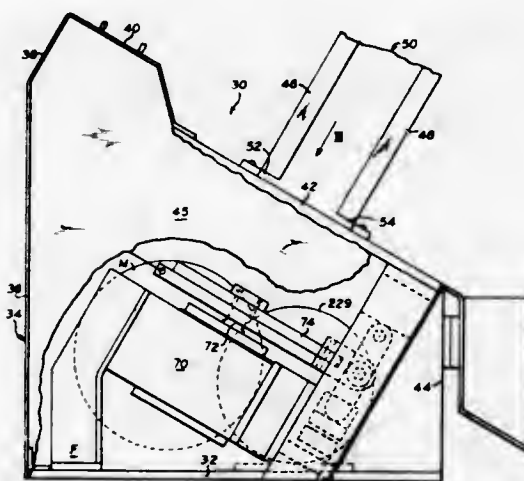
Richard A. Rinehuls, Port Crane, N.Y., assignor to Seary Manufacturing Co., Endicott, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,030

Int. Cl. B23q 7/10

U.S. Cl. 29—211 D

17 Claims



Apparatus for automatically mounting transparencies in slidemounts in which the slidemounts and transparencies are simultaneously fed in opposite directions along the same axis to a loading station where they are superimposed, and under which a carriage reciprocates for actuating a cutter, for elevating pusher dogs to engage and push the superimposed transparency and mount to a press, and for subsequently dropping the pusher dogs so that the carriage can move back under the loading station without interference with the newly disposed slidemount and transparency.

3,822,461

## DISPOSABLE LANCET

Sven-Erik Malmstrom, Reftele, Sweden, assignor to Swedish Hospital Supply SHSAB, Malondal, Sweden

Division of Ser. No. 182,862, Sept. 22, 1971. This application June 22, 1973, Ser. No. 372,487

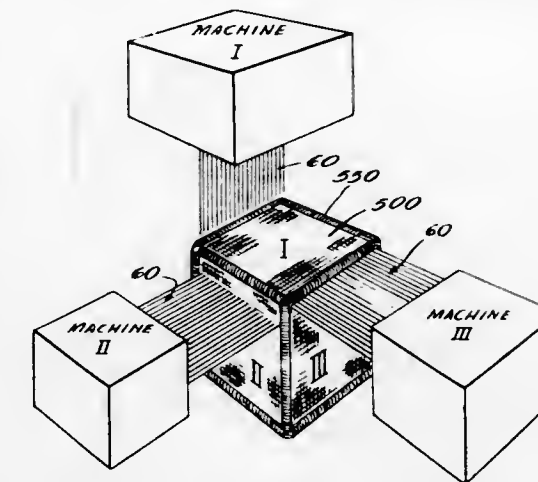
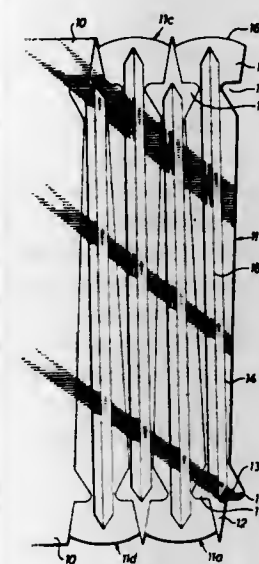
Int. Cl. B21d 28/06

U.S. Cl. 29—415

4 Claims

A disposable lancet used for piercing the tissue of a finger to obtain blood specimens. The lancet is designed to contain

minimum material to achieve low material costs which still have the strength and rigidity to be completely functional. The strands within a grid framework. The strand lattice can be utilized as a reinforcement for other materials. The method of



making the three dimensional lattice involves sewing strands in three directions within a grid framework.

3,822,464

## METHOD OF JOINING A TUBE TO A ROLL FORGED SHEET

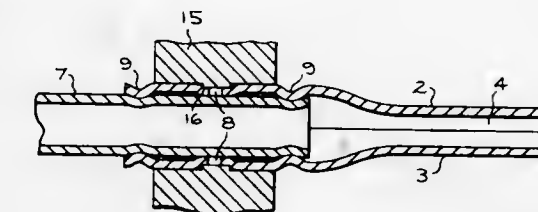
William F. Hester, and Frank A. Schumacher, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 26, 1973, Ser. No. 345,003

Int. Cl. B23p 3/00, 19/04

U.S. Cl. 29—460

4 Claims



lancet design permits multiple lancets to be punched from a strip of sheet steel to obtain economy in the manufacturing operation.

3,822,462

## METHOD OF CONSTRUCTING DOOR AND WINDOW STRUCTURES

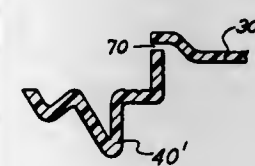
Wingfield L. Chubb, Faircroft Engineering, Inc., Beverly Shores, Ind. 46304

Filed Nov. 8, 1972, Ser. No. 304,721

Int. Cl. B23p 17/00

U.S. Cl. 29—416

4 Claims



A door and window structure in which a plastic frame is adapted to be secured to the opening structure of a recreational vehicle, mobile home or the like, and a panel of plastic material, severed from the frame, forms the door or window. The method includes forming, from a single sheet or panel, an integral frame and door or window and severing the door or window pane from the frame, the cut preferably being made in the edgewise direction from a joint between the frame and panel so that the panel overlaps the frame when the panel and frame are assembled in place.

A method of joining a metal tube to a member comprising roll forged sheets formed to provide a tubular passageway which comprises punching a hole in at least one of the sheets in communication with the passage, inserting a tubular member into the passageway sized to provide a radial clearance therebetween, crimping the sheets into engagement with the tube on opposite sides of the hole and circumferentially of the tube, introducing a heat-curable resin adhesive through the hole to substantially fill the space between the crimped areas, reducing the area of the sheet including the hole into hole-sealing engagement with the tube and thereafter curing the adhesive.

3,822,465

## METHOD FOR THE ULTRASONIC WELDING OF WIRES ON THE METAL SURFACE OF A SUPPORT

Martinus Petrus Carolus Gerardus Maria Frankort; Nico Arie De Gier; Aloysius Petrus Albertus Johannes Hulst, and Martijn De Jong, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,715

Claims priority, application Netherlands, Dec. 17, 1970, 7018377

Int. Cl. B23k 21/00

U.S. Cl. 29—470.1

8 Claims

A method of and a device for the ultrasonic welding of wires comprising a non-metal insulating layer on the metal surface

3,822,463

## METHOD FOR PRODUCING A THREE DIMENSIONAL LATTICE

Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.

Filed July 18, 1972, Ser. No. 272,736

Int. Cl. B23p 19/04

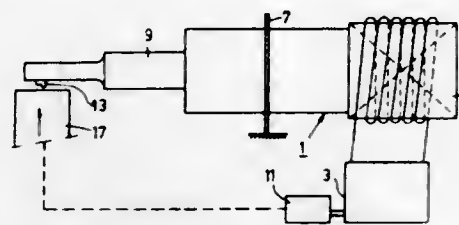
U.S. Cl. 29—433

1 Claim

A machine for making a three dimensional lattice array of



of a support by means of a welding tip which is made to vibrate in a direction parallel to the longitudinal direction of a wire to be welded; according to a previously programmed welding cycle, the insulating layer is first removed locally and the wire is



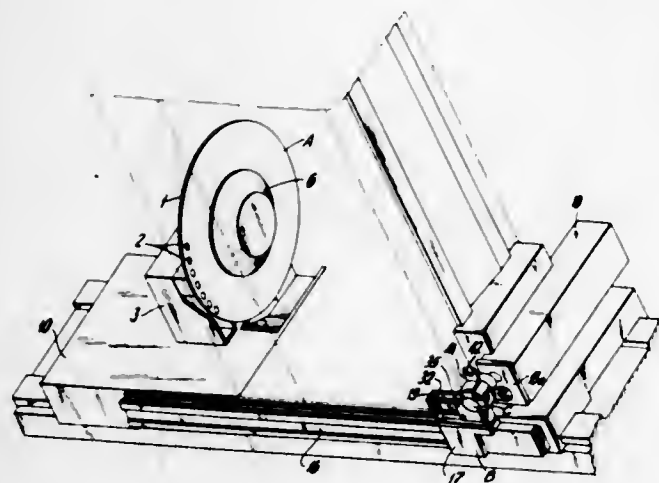
then welded; a preceding mechanical or chemical cleaning of the wires is not necessary. The method according to the disclosure provides a welded joint which has compact dimensions and a high mechanical strength.

**3,822,466**  
**AUTOMATIC TOOL EXCHANGER FOR LARGE-SCALED FLOOR-TYPE HORIZONTAL BORING MACHINES**  
Akio Noguchi, and Shinsuke Tsuda, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1972, Ser. No. 234,545  
Int. Cl. B23q 3/157

U.S. Cl. 29—568

7 Claims



A floor-mounted horizontal boring machine includes an elongated horizontal base, a slide mounted on the base for reciprocation longitudinally thereof, an upright column fixedly mounted on the slide adjacent one end thereof, and a main spindle head mounted on a front end wall of the column for vertical and lateral adjustment relative thereto. An automatic tool exchanging apparatus includes a tool magazine fixedly mounted on the slide adjacent a rear end wall of the column so that the column is interposed horizontally between the main spindle head and the magazine. A carriage is mounted on rails on a horizontally extending vertical front surface of the slide for horizontal reciprocation past a sidewall of the column between the main spindle head and the tool magazine, and an automatic tool exchanger is mounted on the carriage for tool exchange in cooperation with the main spindle head, in one limit position of the carriage, and with the tool magazine, in the other limit position of the carriage. The carriage is normally retracted to a position adjacent the

magazine where the tool exchanger positions a used tool in the magazine and extracts a new tool from the magazine. When a tape control or the like calls for a tool exchange, the carriage is moved to an extended position adjacent the main spindle and the automatic tool exchanger extracts a tool from the main spindle and mounts a new tool in the main spindle, after which the carriage is retracted to a position adjacent the tool magazine.

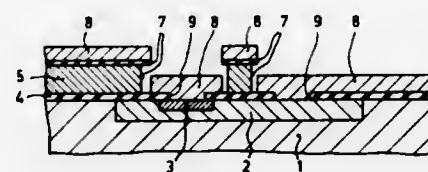
**3,822,467**  
**METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A PATTERN OF CONDUCTORS AND DEVICE MANUFACTURED BY USING SAID METHOD**  
Bohuslav Symersky, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,504  
Claims priority, application Netherlands, Apr. 28, 1972, 7205767

Int. Cl. B01j 17/00

U.S. Cl. 29—579

13 Claims



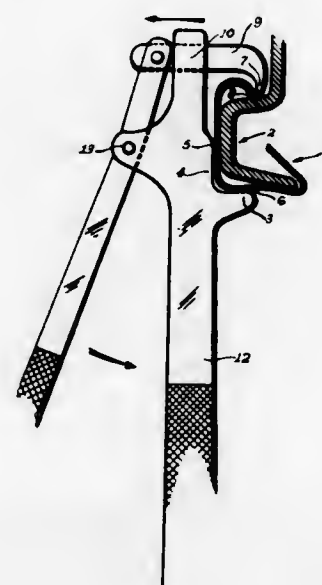
A method of providing patterns of conductors on semiconductor device, in particular patterns which consist of layers of different materials. A metal auxiliary layer is used in which a negative reproduction of the desired pattern of conductors is provided. After providing the conductive layers necessary for the pattern, the excessive parts thereof are removed by the selective dissolution of the metal auxiliary layer. The method is of particular importance which patterns of conductors are used having one or more materials which cannot be etched or can be etched with difficulty only.

**3,822,468**  
**TOOL FOR REMOVAL OF DETERRENT SPRING CLIP**  
Hellmuth F. A. Mueller, Warrington, Pa., assignor to Merit Metal Products Corp., Warrington, Pa.

Filed Mar. 22, 1972, Ser. No. 236,804  
Int. Cl. B25b 7/00, 27/14

U.S. Cl. 29—268

5 Claims



Since current trends in crime against property have made additional and improved means necessary for reinforcing security of boxcar doors to prevent theft and pilferage, a

deterrent spring clip attached to the door prevents door from being opened surreptitiously or forcibly, except by the use of a special tool available only to authorized personnel.

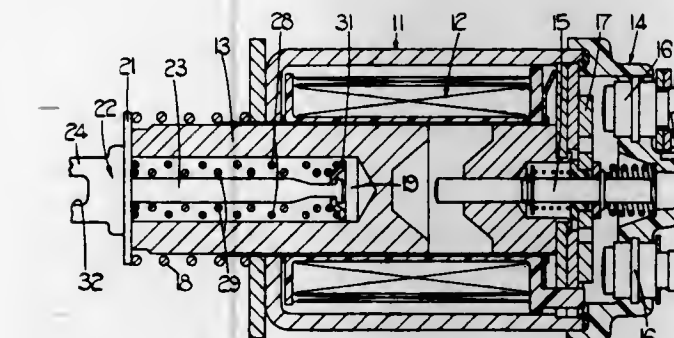
A tool for the removal of the deterrent spring clip is disclosed which will readily fit around engaged clip and which can be manipulated manually to distort clip and remove it so that door will be free to be opened.

**3,822,469**  
**METHOD OF MAKING A SOLENOID FOR USE IN AN ENGINE STARTING MECHANISM**  
Alan William Lazenby, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Division of Ser. No. 204,606, Dec. 3, 1971, Pat. No. 3,750,066.  
This application Mar. 22, 1973, Ser. No. 344,026

Int. Cl. H02k 15/00

U.S. Cl. 29—596

4 Claims



A method of manufacturing an armature assembly for a solenoid includes slidably engaging a first abutment member with a first part of a link member. The link member is provided with an abutment intermediate its ends which limits relative sliding movement between the link member and the first abutment member in one direction. A compression spring is then engaged with the first part of the link member so that the spring encircles the first part of the link member. The spring is compressed in a longitudinal direction so that one end of the spring engages the first abutment member and the first abutment member engages the abutment while the free end of the first part of the link member protrudes from the other end of the spring. A second abutment member is then engaged with the portion of the first part of the link member which protrudes from the spring the second abutment member engaging a stop member at the free end of the first part of the link member. The spring is then released so that the second abutment member is urged into engagement with the stop member, and the first part of the link member is then inserted into the hollow armature of the solenoid and the first abutment member is secured to the armature.

**3,822,470**  
**TRIMMING TOOL FOR COAXIAL CABLES**  
Donald A. Hildebrand, 7 Sunset Dr., Mtd. Rt. No. 2, Rome, N.Y. 13440

Filed Nov. 22, 1972, Ser. No. 308,887

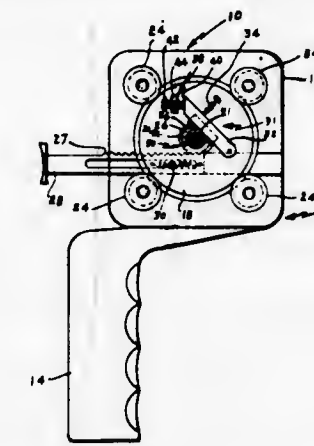
Int. Cl. B26b 27/00

U.S. Cl. 30—90.1

5 Claims

A trimming tool for coaxial cables having a hand held supporting structure on which is rotatably mounted a circular

member. Both the supporting structure and circular member have aligned apertures therein through which a cable to be

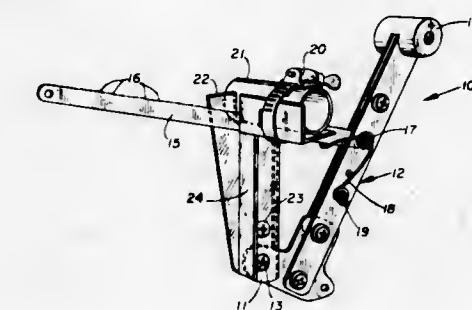


trimmed is inserted. A cutter mechanism is fixedly mounted on the circular member for rotation therewith. Upon rotation of the circular member trimming of the cable takes place.

**3,822,471**  
**PORTABLE SAWING DEVICE**  
Jimmie Ray Crowl, 9011 E. 29 Pl., Tulsa, Okla. 74129  
Filed Oct. 2, 1972, Ser. No. 294,320  
Int. Cl. B23d 21/06

U.S. Cl. 30—92

4 Claims

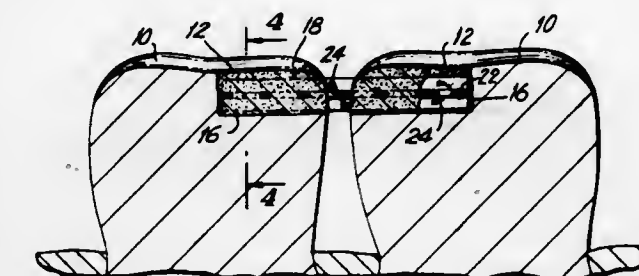


A portable sawing device including a frame integral with a handle, the said frame having saw guiding means and means suitable for mounting objects to be cut, the said handle being pivotally connected to one end of the said frame; a removable saw blade being mounted on the said handle, a spring mounted on the said handle for holding the said saw blade against the object to be cut.

**3,822,472**  
**TOOTH RIGIDITY IMPARTING DEVICE AND METHOD OF IMPLANTATION THEREOF**  
Leonard Garfinkel, 11 Buffalo Ave., Islip, N.Y. 11751  
Filed Jan. 31, 1973, Ser. No. 328,354  
Int. Cl. A61c 13/00

U.S. Cl. 32—2

4 Claims



A tooth rigidity imparting device and method of implanting into a pair of adjacent teeth of which at least one tooth has lost



its resistance to mobility in the jaw, including contiguous cavities being drilled in each of the teeth, the device being a rigid elongate beam member having the ends thereof located in the cavities and extending between the teeth, and with the ends encompassed by a self-hardening dental filling material in the cavities so as to form a rigidly interconnected tooth structure.

3,822,473

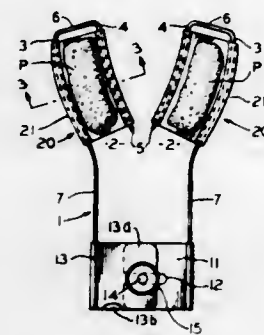
**BIB AND COMBINATION THEREOF WITH BITE TRAY**  
Russell J. Jones, 13804 Lake Shore Dr., Bratenahl, Ohio 44110

Filed June 12, 1973, Ser. No. 369,271

Int. Cl. A61c 9/00

U.S. Cl. 32-17

4 Claims



A bib for a bite registration tray has a paste supporting strip of soft, flexible, open mesh material, its lateral margins embedded in resilient snap fastening channels of set plastic material. Embedding of the margins is effected during molding of the channels. The channels are coextensive in length with the strip and each has a restricted entry passage with guide walls flaring outwardly from the passage, so that the channels can be snapped easily onto laterally spaced wire frame members, respectively, of a bite registration tray in a direction radially of the frame members for holding the strip in bridging relation to the space between the wire frame members. The channels are of such resiliency and the strip is so connected thereto that the strip can be adjusted for slack or tensioned condition by rotating one or both of the channels about the axes of the frame members, respectively. The gripping power of the channels is such that, coupled with the lengthwise curvature of the frame members and resilient warpage of the channels, the channels remain in the adjusted position to which they have been rotated, and thus retain the strip with the selected degree of slackness or tension. The bibs are produced in multiple by a new method.

3,822,474

**DRAWING INSTRUMENT**

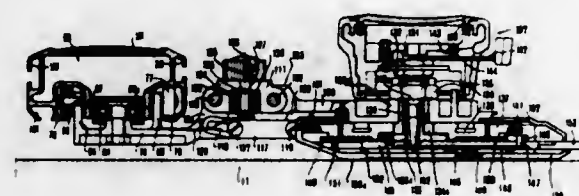
Tatsuo Yada; Yoshitomi Komabayashi, and Yoshinori Watanabe, all of Tokyo, Japan, assignors to Muto Industrial Company Ltd., Tokyo, Japan

Filed July 21, 1971, Ser. No. 164,766

Int. Cl. B43I 13/02

U.S. Cl. 33-76 R

3 Claims



A drawing instrument in which a Y-rail is connected at right angles to an X-rail firmly secured to a drawing board along an X-coordinate axis and permitted to move in sliding motion relative to the X-rail, and in which ruler means with graduated scales is connected to a head mounted on a Y-carrol slidably

mounted on the Y-rail. The head is provided with resilient means for urging the ruler means connected to the head to move upwardly away from the surface of the drawing board for facilitating operation of the ruler means.

3,822,475

**MEASURING AND MARKING APPARATUS FOR WOODEN STRUCTURAL ELEMENTS**

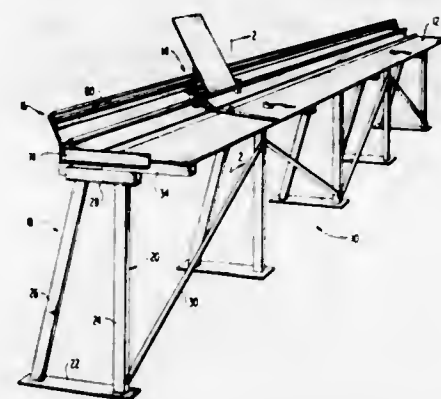
John Calvin Jurett, Coral Gables, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed Aug. 14, 1972, Ser. No. 280,257

Int. Cl. B43I 13/04

U.S. Cl. 33-76 R

3 Claims



The apparatus includes a table and a fence along one side of the table against which a wooden frame plate is butted. Coextensively with the table there is carried an elongated support and guide rod on which is mounted a slide carriage. Fixed and slideable rules are mounted on one side of the table. The carriage includes a pointer which registers along the various indicia on the rules. A blade is hingedly carried by the carriage and is lowered on top of the plate on the table whereby the plate is marked when the pointer is aligned with selected indicia on one of the rules. The carriage also mount a stand for holding instruction sheets whereby a workman can move the carriage along the slide rod in accordance with information contained on the instruction sheet to locate the blade at selected positions along the plate.

3,822,476

**FINGER AND RING MEASURING GAUGE**

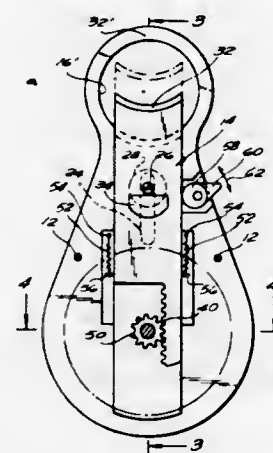
Athos D. Leveridge, Pompton Plains, N.J., assignor to Athos D. Leveridge and Therese Leveridge d/b/a A. D. Leveridge, Pompton Plains, N.J.

Filed Oct. 24, 1972, Ser. No. 299,896

Int. Cl. G01b 5/08, 3/34

U.S. Cl. 33-143 C

3 Claims



A finger and finger ring measuring gauge comprising a casing containing the operating members for measuring and in-

dicating the measurements of fingers and rings to be fitted thereto, characterized by combining (a) a simplicity in structure, (b) an ease of manipulation, (c) a facility in measuring and visibly indicating the finger and ring sizes measured, and (d) an attractiveness in appearance of the gauge.

3,822,477

**GOLF CLUB ANALYZER**

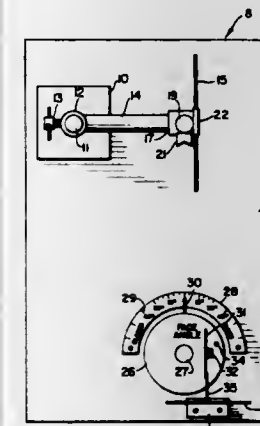
Jan S. Collins, 423 Flomond Ave., Ormond Beach, Fla. 32074

Filed July 25, 1972, Ser. No. 275,047

Int. Cl. G01b 5/24

U.S. Cl. 33-174 F

9 Claims



A device or instrument for accurately measuring the important variables of a golf club to determine if the club is suitable to the requirements of a particular player. By adjustments of various part of the instrument, the loft, lie, face angle and face height of a golf club, which has been applied to the device, can be quickly and accurately determined.

3,822,478

**WHEEL CENTERING DEVICE**

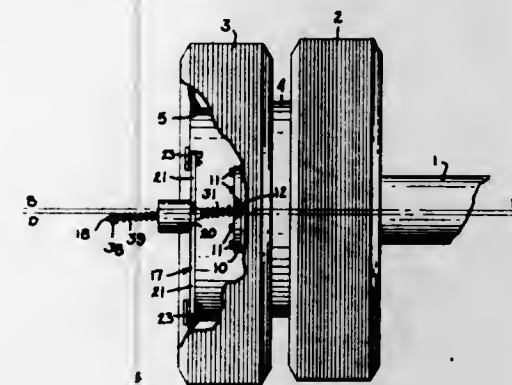
Kenneth M. Aly, 433 1st Ave., and Alton S. Kjoerli, Rt. 2, Box 110, both of Perham, Minn.

Filed Oct. 12, 1972, Ser. No. 296,836

Int. Cl. G01b 5/25, 5/255

U.S. Cl. 33-193

10 Claims



A device for centering one wheel rim with respect to another in dual wheel arrangements for automotive vehicles. A mounting structure, having means for application to a wheel rim, supports a centering rod having an inner end receivable in an axially opening central recess in a vehicle wheel construction. The centering rod is universally pivotally movable relative to the mounting structure, and has an indicator which cooperates with a portion of the mounting structure to provide a visual indication as to the state of axial alignment or misalignment of the wheel rims of the dual wheel.

3,822,479

**ARCHERY BOW SIGHT**

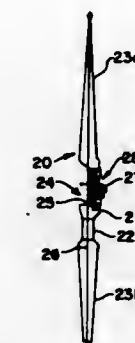
Robert J. Kowalski, 512 Berner St., Pittsburgh, Pa. 15215

Filed Sept. 12, 1972, Ser. No. 288,251

Int. Cl. F41g 1/00; F41b 5/00

U.S. Cl. 33-265

12 Claims



An archery bow sight having one or more sighting elements rotatably supported on a screw device presented by a bracket. The bow sight incorporates adjusting means by which each sighting element is moved along the screw device independently of the others; a master dial for rotating the screw device thereby to move all of the sighting elements in unison; and resilient means for releasably holding each sighting element in a sighting or out position. The adjusting means and the master dial are utilized in accurately calibrating the bow sight for master and secondary ranges. In using the bow sight for target practice, hunting or in tournaments, the master dial is utilized to position accurately a selected sighting element at one of the secondary range marks and to return the sighting element to the master range mark.

3,822,480

**POSITION LOCATING DEVICE**

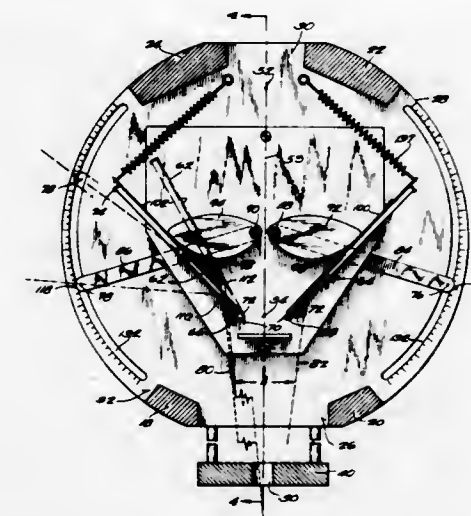
Jerome F. Rolefson, W220 N6755 Townline Rd., Sussex, Wis. 53089

Filed Nov. 10, 1972, Ser. No. 305,572

Int. Cl. G01c 1/00, 21/00

U.S. Cl. 33-280

7 Claims



A position locator or homing device for use by fishermen, divers, etc., includes a view finder for directly observing one landmark and adjustable mirrors for reflecting images of other landmarks into the view finder for simultaneous viewing of three landmarks. The position locator also includes scales for recording the angular position of the reflected landmarks to enable pre-setting the adjustable mirrors at the recorded angle so that the user can subsequently find the position of the previous fix. Hairline indicator pins mounted on swing arms and spaced from the mirrors enable accurate recording of the relative angular position of the reflected landmarks and are employed to subsequently locate the position of the fix.

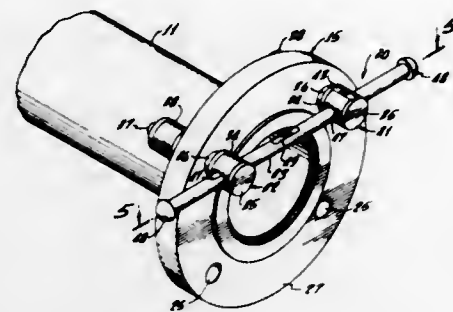


### 3,822,481 PIPE FLANGE ALIGNER

Robert L. Doan, 10362 Vic Pl., Garden Grove, Calif. 92642  
Filed June 1, 1973, Ser. No. 365,845  
Int. Cl. G01c 9/28

U.S. Cl. 33—371

3 Claims



Apparatus for vertically leveling the face and horizontally aligning the pairs of holes of a pipe flange comprising a pair of self-aligning line-up pins engagable with the respective holes of one of the pairs of holes in the pipe flange, the pins aligning themselves with the axes of the holes; an elongated bar extending perpendicularly through the line-up pins for interconnecting and maintaining the pins in parallel, spaced-apart relationship with the line-up pins being movable relative to the bar, toward and away from each other; a first bubble level mounted on one of the line-up pins for vertically leveling the face of the pipe flange; and a second bubble level mounted on the bar for horizontally leveling the holes of the one pair of holes.

### 3,822,482

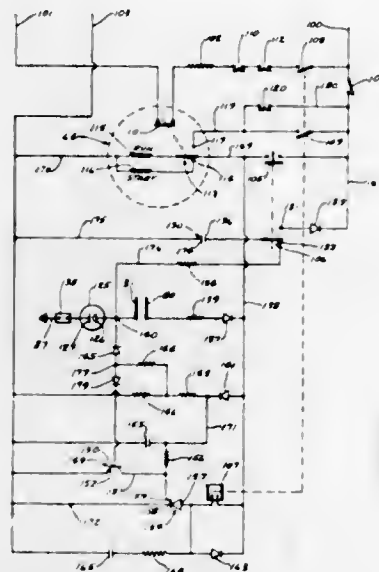
#### MOISTURE SENSING CONTROL FOR DRYER

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Nov. 2, 1973, Ser. No. 412,455  
Int. Cl. F26b 19/00

U.S. Cl. 34—45

21 Claims



In a material moisture sensing control, an integrating switch, in series circuit with a pair of moisture sensing electrodes in a fabric drying apparatus, is operable to a conductive posture for a time delay period as a function of the dryness condition of the fabrics being dried. In one embodiment an integrating switch comprises an electrolytic cell operable to the conductive posture by current flow through the wet fabrics and operable for returning to the nonconductive condition upon the fabrics achieving a predetermined dryness condition.

A transistor is operable for initiating a control function responsive to the high voltage developed across the electrolytic cell in the nonconductive condition.

### 3,822,483

#### PORTABLE HAIR DRYER FOR LONG HAIR

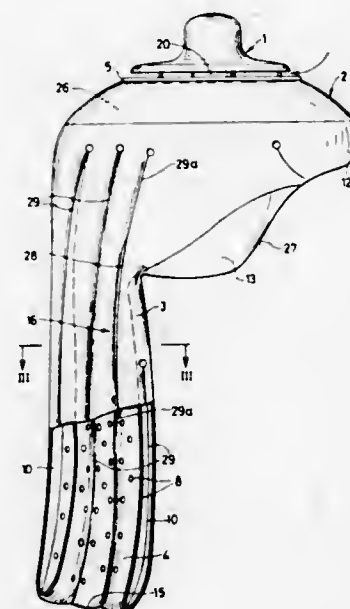
Otto Hubner, Mauerkircherstrasse 199, Munich 81, Germany  
Filed May 16, 1973, Ser. No. 360,759

Claims priority, application Germany, May 19, 1972, 2224488; Dec. 12, 1972, 2260430

Int. Cl. A45d 20/24

U.S. Cl. 34—99

11 Claims



A light weight hair dryer for use for drying long hair and having inner and outer jackets divided into longitudinal cells and provided with face engaging cushions for preventing loss of warm air while permitting the hair to freely fit within the shoulder-length hood. Flap covered slots are provided for facilitating insertion of long hair.

### 3,822,484

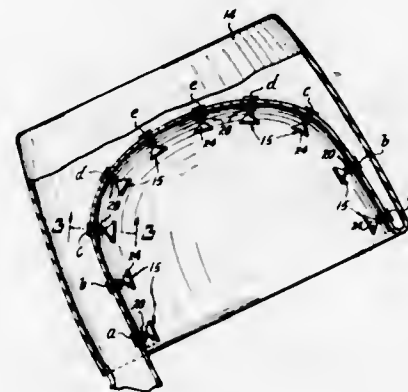
#### SIMULTANEOUS HAIR DRYING AND STYLING

Eva Reed, 4001 Clover Hill Ter., Olney, Md.  
Filed Sept. 10, 1973, Ser. No. 396,055

Int. Cl. A45d 20/24

U.S. Cl. 34—99

3 Claims



A hair dryer hood is constructed to include air directing means to cause the air used for drying hair to flow in a controlled path around the head to simultaneously dry and shape the hair and thereby produce a hair style setting which is determined by the controlled air flow pattern.

### 3,822,485

#### ROLLER MACHINE FOR PROCESSING GOODS

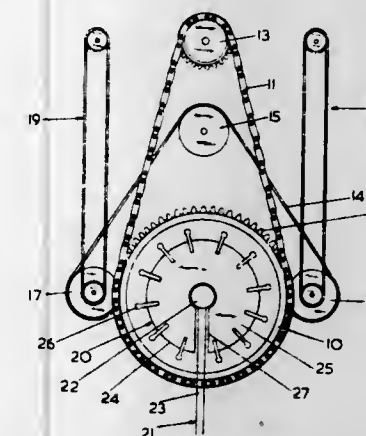
Emile Bernard Bates, 11 Barrington Rd., Stonegate, Leicestershire, England

Filed July 17, 1972, Ser. No. 272,640

Int. Cl. F26b 11/02

U.S. Cl. 34—121

10 Claims U.S. Cl. 35—35 J



A roller machine, for processing goods in web or sheet form or textile articles, of the type comprising a driven roller over the periphery which the goods travel. The roller is suspended by being slung in bights of two endless flexible elements which are spaced apart lengthwise of the roller and are themselves guided and supported to circulate in endless paths, at least one of which elements is driven and rotates the roller. This mode of mounting and driving the roller places virtually no restriction on the roller diameter and permits of there being, at least at one end of the roller, an aperture of adequate size to permit the introduction of gas or electrical heating apparatus or oil fired apparatus. It is also possible to arrange for a positive drive without any clatter.

### 3,822,486

#### DYNAMIC CHILDBIRTH SIMULATOR FOR TEACHING MATERNITY PATIENT CARE

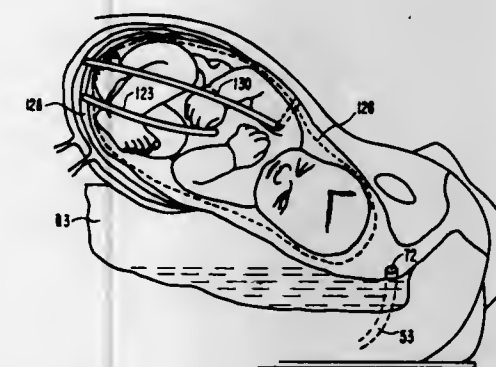
Charles F. Knapp, and George S. Eades, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Division of Ser. No. 308,542, Nov. 21, 1972. This application Nov. 5, 1973, Ser. No. 412,886

Int. Cl. G09b 23/32

U.S. Cl. 35—17

7 Claims



A programmable patient simulator for teaching maternity patient care includes a life size manikin with a pelvis, vaginal canal, uterus, placenta, umbilical cord, and a fetal doll from which heart sounds are emitted. A programmable electro-pneumatic system controls the simulated uterine contractions, position of the uterus, rupture of membranes, expulsion of fetal doll, and fetal heart rate during labor and delivery sequence. The invention described herein was made in the course of work under a grant or award from the Department of Health, Education and Welfare.

### 3,822,487

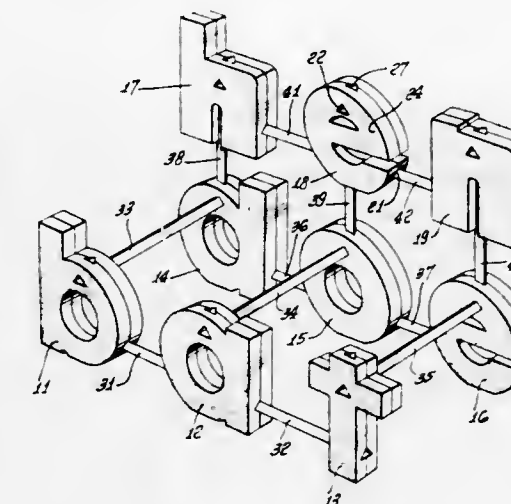
#### ALPHABET BLOCK DISPLAY AND TOY

George B. Koch, 644 Landfair, No. 105, Los Angeles, Calif. 90024

Filed Mar. 15, 1973, Ser. No. 341,460

Int. Cl. G09b 1/40

10 Claims



Alphabet letters and other symbols are constructed in relatively large three-dimensional block form. The block symbols are provided with connecting means in the form of elongated connecting rods cooperating with mated recesses or sockets formed within the letter blocks. The sockets are arranged on each of the blocks so that the symbols, such as letters of the alphabet can be arranged in vertical, horizontal and/or front to back word displays. The block letters or symbols are provided with recesses or sockets particularly arranged to receive the inter-connecting rods so that nonsensical arrangements of the blocks, such as an upside down letter, are precluded. As an educational toy, this helps the child assemble the letter blocks into a meaningful word pattern, or at least into a display in which letters of the alphabet are properly oriented.

### 3,822,488

#### ATHLETIC SHOE HAVING UPPER SECTIONS OF DIFFERENT MATERIALS AND COVER STRIP UNDER JUNCTION BETWEEN SUCH SECTIONS

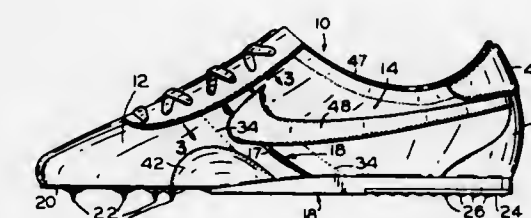
Jeffrey O. Johnson, Beaverton, Oreg., assignor to BRS, Inc., Beaverton, Oreg.

Filed Jan. 17, 1973, Ser. No. 324,529

Int. Cl. A43b 1/02

U.S. Cl. 36—2.5 AM

14 Claims



An athletic shoe, such as for track or basketball, is described having an upper formed of at least two upper sections made of different material joined together and to a sole member. Preferably the upper includes an upper section of synthetic material which does not overlap the other upper section to which it is joined, except at the junction along their joined edges. One of the upper sections is a toe section made of leather and joined to a heel upper section made of a synthetic woven fabric, such as nylon, to give the comfort and



close fit of leather, along with the strength, reduced weight and weather resistance of synthetic fabric. However, it is also possible to make the two upper sections of other materials, including vinyl. In addition, a cover strip including a layer of synthetic foam material and a backing layer of fabric, such as nylon, is provided over the inner surface of the junction formed by the overlapping edges of two upper sections where they are joined together to provide greater comfort and additional reinforcing support for the arch of the shoe.

3,822,489

## SPORT SHOE CONVERSION ATTACHMENT

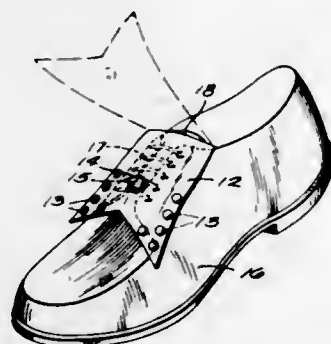
Earl S. Johnson, 828 N. Broadway, Milwaukee, Wis. 53202

Filed Mar. 19, 1973, Ser. No. 342,833

Int. Cl. A43b 00/00

U.S. Cl. 36—2.5 C

1 Claim



A flexible unitary insert for attachment releasably over the tongue of an oxford shoe and under the laces thereof with the ornamented portion thereof adapted to overlie the laces in tied position to hide the lace bows and substitute an overlying sports design to convert the oxford to a sports shoe in appearance.

3,822,490

## HOLLOW MEMBER FOR SHOES

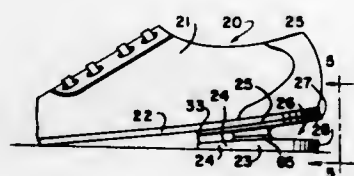
Steve A. Murawski, 13422 Ave. K, Chicago, Ill. 60633

Filed May 2, 1973, Ser. No. 356,333

Int. Cl. A43b 21/26

U.S. Cl. 36—2.5 R

4 Claims



A hollow member for a shoe which includes a recessed construction so that as the user walks a cushioned effect is provided.

3,822,491

## SKI BOOT HINGED ON SOLE

Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, N.J. 07446

Filed Nov. 15, 1973, Ser. No. 416,193

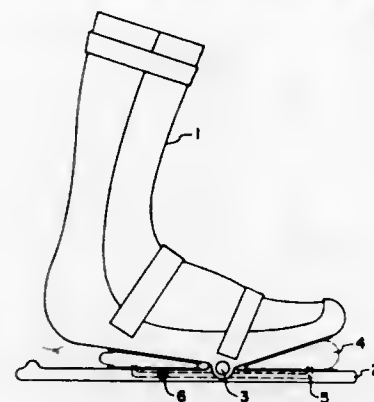
Int. Cl. A43b 00/00

U.S. Cl. 36—2.5 AL

15 Claims

A ski boot that includes an upper that supports the skiers foot, ankle, and lower leg as a relatively rigid unit, a separate

rigid sole with means for the sole to be attached to the ski, a hinge that connects the sole to the upper, and means to adjust



the effective rigidity of the total boot and to adjust the angle of forward lean by constraining motion about the hinge.

3,822,492

## REMOVABLE REUSABLE LABELS

Thomas B. Crawley, 252 Sherwood Rd., Beaconsfield, Quebec, Canada

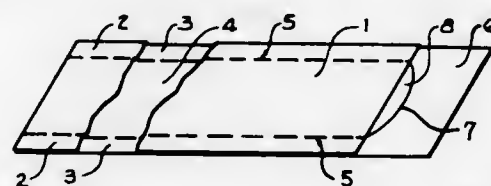
Filed May 17, 1973, Ser. No. 361,285

Claims priority, application Canada, Apr. 17, 1973, 168961

Int. Cl. A44c 3/00

U.S. Cl. 40—2

4 Claims



A reusable label comprising a sheet with pressure sensitive undercoating, said undercoating being protected with separably attached backing paper which is extended somewhat beyond one end of the label to form a tab. Perforations through both label and backing paper and a slit in the backing paper tab are furnished to provide means of conveniently detaching separable portions of backing paper and/or label, whereby the label can be initially affixed as required and a portion thereof subsequently detached for reuse.

3,822,493

## DISPLAY APPARATUS

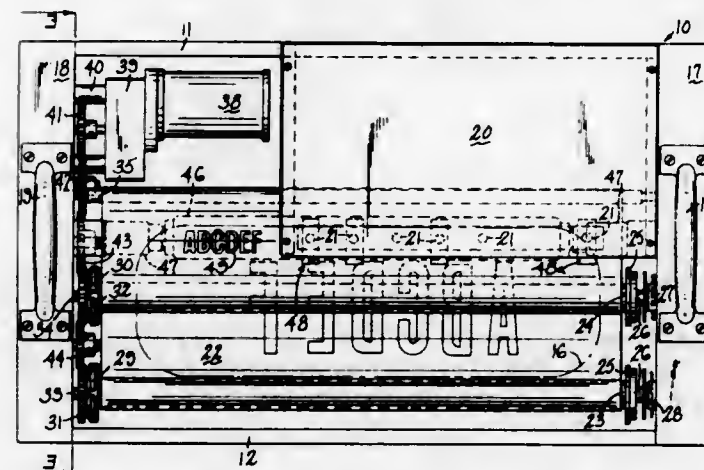
William B. Maley, Orange, Conn., assignor to Techlite, Inc., Milford, Conn.

Filed Feb. 4, 1972, Ser. No. 223,473

Int. Cl. G09f 11/28

U.S. Cl. 40—31

5 Claims



A display apparatus for displaying a plurality of items on a curtain wherein the items are back-lighted by a light source

and the curtain further contains coded position information associated with each item which is also backlighted by the same light source so that photo-sensitive devices may sense the position of the curtain.

3,822,494

## WALL PLAQUE AND METHOD OF FABRICATING SAME

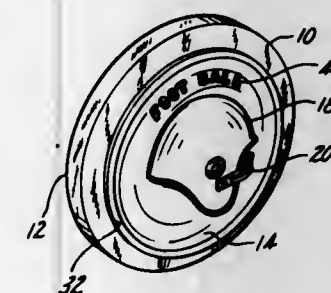
Robert F. Zivica, St. Claire Shores, Mich., assignor to Select Markets, Inc., Detroit, Mich.

Filed Oct. 20, 1972, Ser. No. 299,373

Int. Cl. G09f 1/12

U.S. Cl. 40—154

7 Claims



A wall plaque having an outer rim member fabricated from a thermoplastic polystyrene with a surface finish resembling a wood grain. The rim member is provided with a central aperture receiving a concave dish-shaped center plate on which is mounted a decorative member representative of a sport, such as football or the like. Integrally molded to the concave surface of the center plate is indicia representative of the particular sport for example, the name of a football team, or the like. The rim member and center plate are fabricated in such a manner that they are interchangeable for use with different decorative members and indicia representative of different sports such that only one set of molds is required to fabricate the rim member and center plate, which rim member and center plate are interchangeably used in the fabrication of wall plaques representative of different sports and the like. A method of fabricating the wall plaque is disclosed.

3,822,495

## IMPROVED PHOTOGRAPH MOUNT

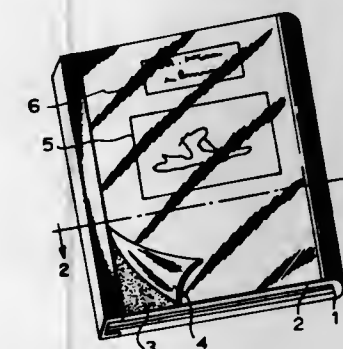
Tadao Ohfuji, Tokyo, Japan, assignor to Happy Shokai Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,080

Int. Cl. G09f 1/10

U.S. Cl. 40—158

4 Claims



An improved photograph mount comprising a substratum member, a primary transparent film having a non-drying tacky pressure-sensitive adhesive coatings on the outer face of the film and overlaying the substratum member, and a secondary transparent film covering and releasably adhering to the primary transparent film, whereby photographs can be preserved together with a sheet of paper on which any desired matters are noted down, the sheet being capable of inserting and transferring between the primary transparent film and the substratum member.

3,822,496

## DISPLAY PLATE FOR OPENERS OF PRE-SCORED CANS

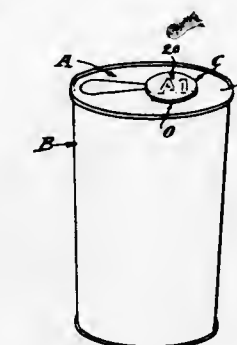
Delwin V. Minder, 2818 Colorado Blvd. No. A22, Santa Monica, Calif. 90405

Filed Aug. 23, 1973, Ser. No. 390,906

Int. Cl. G09f 3/02

U.S. Cl. 40—307

10 Claims



A plate adapted to enhance articles for sale in the presentation of advertising, and namely containers of beverages and the like that are opened with a levered opener permanently attached to a pre-scored area which is subsequently removed thereby, the plate being detachable to said opener and adapted to be suitably shaped and to carry and openingly present printed matter.

3,822,497

## TRAWL ARRANGEMENTS

Ivar Rivenaes, Krakenes, and Oddvar Johan Lid, Fyllingsdalen, both of Norway, assignors to Ivar Rivenaes A/S, Damsgardson, Norway

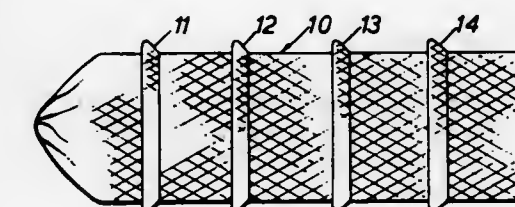
Filed Aug. 6, 1973, Ser. No. 386,123

Claims priority, application Norway, Aug. 21, 1972, 2991/72; Jan. 10, 1973, 96/73

Int. Cl. A01k 73/02

U.S. Cl. 43—9

13 Claims



Trawl arrangement having an adjustable trawl bag volume comprising a trawl bag with connecting means each connected to one or more mesh members thereof. The connecting means have a tensile strength less than the tensile strength of said mesh members and are adapted to extend axially of the trawl bag while contracting together said trawl bag in an axial direction to form one or more axially double-layered annular folds. A break-producing portion of each connecting means has said tensile strength preselected according to the object of use, each end of said portion having a fastening portion designed for reception of mesh formations arranged directly opposite each other in the trawl bag folding. The connecting means are adapted to be fastened into the trawl bag independently of each other for absorbing their respective proportion of the axially directed tensile force therethrough.

3,822,498

## AERATOR FOR A FISH LIVE WELL

Don T. Butler, 7715 E. 25 Pl., Tulsa, Okla.

Filed Mar. 2, 1973, Ser. No. 337,455

Int. Cl. A01k 97/04

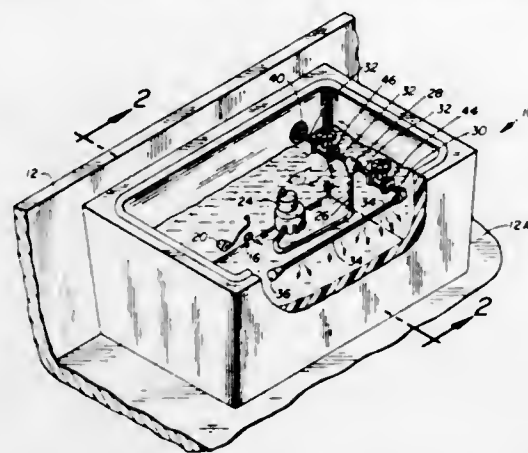
U.S. Cl. 43—57

5 Claims

An aerator for a fish live well including a vessel having open top and a first and second opening therein, the vessel being



positionable in water so at least one of the openings is below the water surface to thereby establish a water level in the vessel, a pump positioned in the vessel having an intake below the water surface, a foraminous water distributor positioned within the vessel and above the water level, a conduit connecting the pump output to a tee fitting, another conduit connecting the tee fitting to the foraminous water distributor whereby water pumped by the pump passes out through the water dis-



tributor and through the air before re-entering the water, the second conduit connected from the tee fitting to the second outlet whereby the water pumped by the pump is forced out of the vessel thereby lowering the water level and causing water to flow into the vessel through the first opening, and valve means in each of the conduits leading from the tee fitting to control the ratio of water passing through the water distributor and passing out of the vessel.

#### ERRATUM

For Class 46—24 see:  
Patent No. 3,822,569

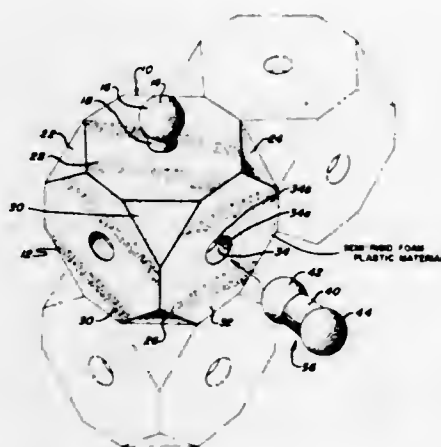
3,822,499

#### TOY BUILDING BLOCK SUITABLE FOR A PAD, RAFT OR THE LIKE

John B. De Vos, 625 Downing Rd., Libertyville, Ill. 60048  
Filed May 30, 1972, Ser. No. 258,075  
Int. Cl. A63h 33/08

U.S. Cl. 46—26

1 Claim



The present invention is a semi-rigid polymeric foam toy suitable for use as a toy building block. Its softness and larger size make it suitable for constructing wrestling mats and floatable rafts. Its lightness make lifting and throwing relatively easy for a child. The block has sockets and one integral projection for connecting to other blocks and the projection serves as a handle when the block is used as a throwing toy in various games.

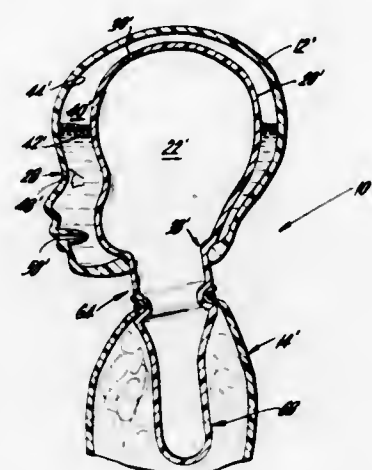
#### 3,822,500 TEARING EYE DOLL ACTUATED BY SQUEEZING THE TORSO

Robert K. Ostrander, 497 Prospect St., Maplewood, N.J. 07040

Filed Sept. 25, 1972, Ser. No. 291,768  
Int. Cl. A63h 33/24

U.S. Cl. 46—135 A

4 Claims



The essence of the invention resides in the use of an area in the interior of a doll's head which is in direct communication with measured holes in the doll's eyes and which is formed by a means of displacing a portion of the hollow interior of said doll's head. The measured holes in the doll's eyes run through from the interior of the doll head to the exterior thereof. The preferred means for forming the area is by the use of a bulbous protrusion which is part of the torso of the doll body and which extends upwardly therefrom. The bulbous protrusion is hollow so that air may be accumulated therein, may be formed other than integrally with the torso although the integral formation is preferred. The area is formed between the interior surface of the doll's head and the exterior surface of the bulbous protrusion and a flange and seat arrangement is formed at the doll's neck to prevent the leakage of fluid from the area when fluid is contained or injected therein. Fluid is urged into the area by the use of a slit formed in the back of the mouth of the doll. Water may be injected into the mouth and this water is used to force the slit open and force fluid into the area. The leakage of fluid through the measured holes in the doll's eyes may be a result of either light pressure applied to the surface of the fluid in the area or as a result of a gravity feed of fluid through the holes. The use of the gravity feed requires an aperture in the doll while the use of pressure requires a hole in the bulbous protrusion within the head of the doll.

#### 3,822,501 CAR COUPLING MEANS WITH MEANS FOR TRANSMITTING PUSH-PULL STRAINS TO THE CAR BODY

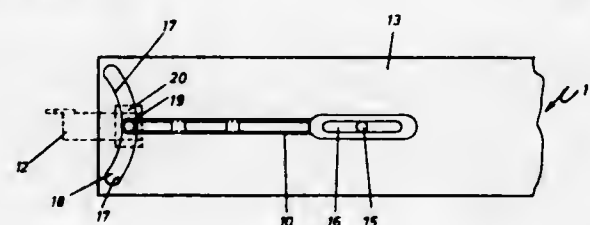
Kelterstr. 17, 7441 Unterensingen, Germany

Filed July 24, 1972, Ser. No. 274,259  
Claims priority, application Germany, Feb. 2, 1972, 2205661

Int. Cl. A63h 19/19

U.S. Cl. 46—221

18 Claims



A coupling arrangement for model train cars where the coupling bar is laterally pivotable and longitudinally adjustable.

ble either by hand within different positions of a snap connection, or automatically by a guide slot and pin which control the extension of the coupling bar from the car body as a function of its pivotal position with respect to the car body long axis. The coupling bar has bores and recesses for the accommodation of electrical conductors, and the coupling elements are arranged to also serve as electrical coupling plugs.

#### 3,822,502 TOY PARACHUTE APPARATUS

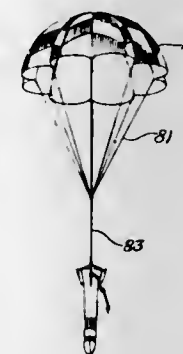
Franklin D. Belz, 2102 Ave. E., Brownwood, Tex. 76801

Filed Sept. 4, 1973, Ser. No. 393,745

Int. Cl. A63h 33/20

U.S. Cl. 46—241

6 Claims



The specification discloses a toy missile having a rear container for holding a parachute and a movable steel member which is drawn towards a forward stationary magnet when the missile reaches its maximum height to release a trigger mechanism to allow an elastic band to expel the parachute from the container through its rear opening. The elastic band is adapted to extend across the rear opening of the container and to be stretched inward by the parachute when inserted into the container such that the elastic band urges the parachute rearward. The trigger mechanism disclosed comprises a flexible cord adapted to extend across the rear opening of the container and to hold the parachute in place and in addition, includes a trigger arm attached to the cord and adapted to be restrained by a slidable member coupled to the movable member when the missile is traveling upward and to be released when the movable member and the slidable member move forward as the missile begins its descent.

#### 3,822,503 MODEL AIRPLANE TIMING MECHANISM

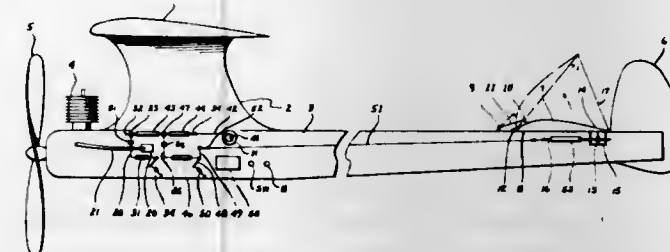
Wesley F. Morris, 7422 E. MacKinley, Scottsdale, Ariz. 85257

Filed May 25, 1972, Ser. No. 257,037

Int. Cl. A63h 27/02

U.S. Cl. 46—244 B

8 Claims



A free flight model airplane incorporating a timer for selectively energizing actuating mechanisms controlling the flight path of the airplane is disclosed. The timer includes a source for generating a train of pulses and a plurality of counters

responsive to the train of pulses. One or more gates, selectively responsive to the output signals of one or more of the counters, energizes a mechanical actuator at selected time intervals, which mechanical actuator in turn alters the flight mode of the free flight model airplane. Provisions are also available to interrupt the timed sequence on command to effect immediate alteration of the flight mode.

#### 3,822,504 AQUACULTURE STRUCTURE AND METHOD

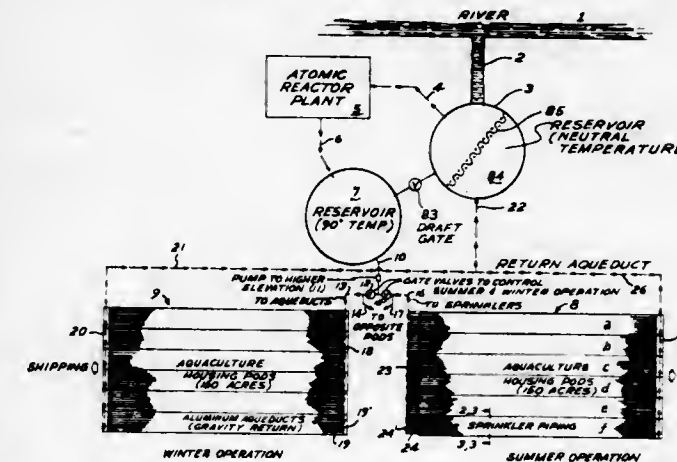
Arthur C. Kuehn, 1561 W. George Washington Blvd., Davenport, Iowa 52804, and Richard M. Kuebler, 1427 23rd St., Bettendorf, Iowa 52722

Filed Mar. 1, 1972, Ser. No. 230,578

Int. Cl. A01g 31/00

U.S. Cl. 47—1.2

10 Claims



Aquaculture housing pod and method of culture employing heated water from a power plant in which the water temperature is cooled to near ambient for safe discharge into the ambient ecology. The aquaculture housing pods are designed to cover large areas, on the order of 150 acres each, and comprise a column and cable structure supporting overhead sprinkler systems for discharge on hydroponic beds contained under the housing pod structure. A series of aqueducts and hydroponic planting beds are arranged underneath the structure. The method involves discharging hot water from a power plant into a first holding and distribution reservoir, withdrawing water from the reservoir and passing it through either or both the aqueducts and sprinkler system of the housing pods, collecting excess water from the housing pod, and returning it to a neutral temperature reservoir before either recycling the cooled water to the power plant or discharging it to the environment. The aquaculture housing pod is simple of construction and inexpensive, and the method provides for cooling the water and discharge to the environment without harming the ecology.

#### 3,822,505 METHOD AND APPARATUS FOR INDUCING MORPHOGENETIC ALTERATIONS IN PLANTS

William C. Levengood, Grass Lake, Mich., assignor to Sensors Incorporated, Ann Arbor, Mich.

Filed Mar. 27, 1972, Ser. No. 238,489

Int. Cl. A01c 1/00; A01g 7/04; H05b 9/04

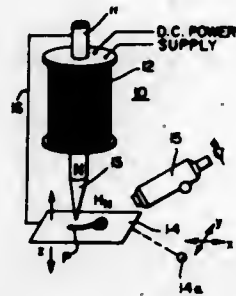
U.S. Cl. 47—1.3

15 Claims

The process of and apparatus for treating plants to provide morphogenetic alterations which are transferred to succeed-



ing generations by applying a predetermined gradient force field to a predetermined localized region on the plant wherein



mechanism attached to the window sash. The brake mechanism has a housing, which contains a spring, a brake shoe, and a brake lining. The brake lining is frictionally engaged with the slide rail strip and the brake shoe is spring loaded toward the slide rail strip so that the brake frictionally holds the window in position. An adjusting screw engages the spring by which the spring tension on the brake may be adjusted. The adjusting screw varies the frictional resistance of the window and therefore its resistance to movement can be adjusted.

the field and the region are selected in accordance with the desired morphogenetic response.

3,822,506

#### DOOR COORDINATING DEVICE

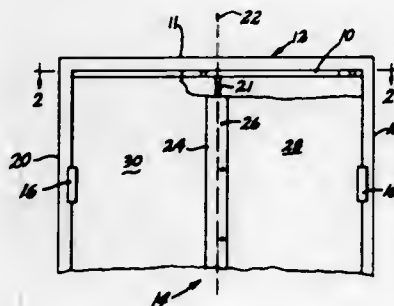
Frederick F. Fishbach, Saline, Mich., assignor to Door Controls Incorporated, Saline, Mich.

Filed May 21, 1973, Ser. No. 362,106

Int. Cl. E05c 7/05

U.S. Cl. 49—367

8 Claims



A door coordinating device for use with a pair of doors which have overlapping edges, astragals, or rabbeted faces, or for any other reason have a preferred sequence for closing. The device has a pivotally mounted door stop which engages and holds open the overlapping door which is properly closed last until the overlapped door is closed thus triggering a latch which then allows the overlapping door to close. The device also provides that the latch mechanism can be overridden when sufficient force is exerted on the overlapping door regardless of the position of the overlapped door.

3,822,507

#### WINDOW SASH HOLDER

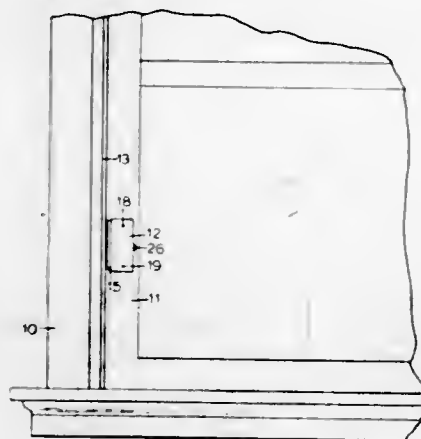
Louis A. Buczkowski, 1332 E. 7th St., Erie, Pa. 16503

Filed June 13, 1972, Ser. No. 262,307

Int. Cl. E05d 13/08

U.S. Cl. 49—417

1 Claim



A holder for a window sash made up of a slide rail strip attached to a window frame and a spring loaded brake

#### 3,822,508 DEVICE FOR CHIP REMOVING MACHINING OF TROCHOIDAL MANTLE SURFACES

Albert Bender, Nellingen, Germany, assignor to Maschinenfabrik Gehring KG, Nellingen, Germany

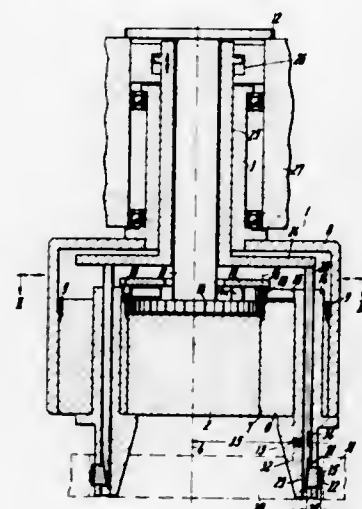
Filed May 2, 1973, Ser. No. 356,483

Claims priority, application Germany, May 5, 1972, 2221576

Int. Cl. B24b 17/02, 7/00, 9/00

U.S. Cl. 51—34 R

21 Claims



A device for machining trochoidal mantle surfaces, especially the inner epitrochoidal surface of circular piston machines, in which a tool body rotatable about its central axis and provided with bores parallel to the central axis is by means of a cycloidal transmission comprising a rolling path body and arranged in axial alignment with the central axis of the tool body operatively connected to rotatable members journaled in the bores of the tool body and in rolling engagement with the rolling path body. Each of the rotatable members has an eccentric bore therethrough through which extend tool holding elements which by a control mechanism carry out a movement around the above mentioned central axis and simultaneously a pivotal movement in the eccentric bore of the pertaining rotatable member.

3,822,509

#### LONG-ARM GRINDING MACHINE

Egon Evertz, Vorländer Strasse 23, 565 Solingen, and Rolf Seybold, Solingen, Germany, assignors to said Evertz, by said Seybold

Division of Ser. No. 160,676, July 8, 1971, abandoned. This application Mar. 27, 1973, Ser. No. 345,295

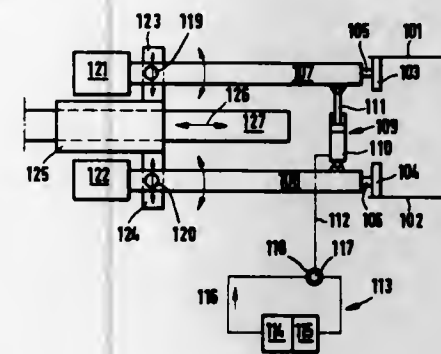
Int. Cl. B24b 5/40

U.S. Cl. 51—40

2 Claims

A grinding machine for use in the machining of elongated surfaces, the machine having rotatable grinding means com-

prising at least two grinding heads disposed respectively at one end of two long shafts and rotatable respectively in two cam follower mechanism for moving along the cam surface, structure for supporting the workpiece in fixed position rela-



bearings which are interconnected by means of a piston and cylinder unit whereby said grinding heads can be urged towards or away from each other on actuation of said unit.

3,822,510

#### AUTOMATIC GRINDING MACHINE

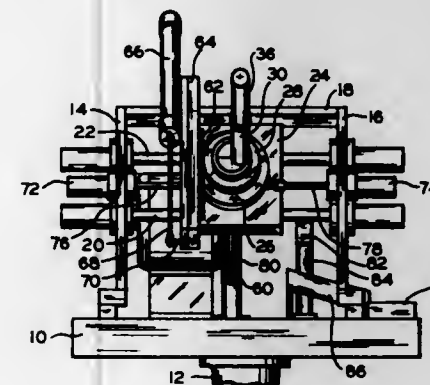
Robert D. Simonton, and Albert A. Axe, both of Fremont, Ohio, assignors to Crescent Manufacturing Company, Fremont, Ohio

Filed Feb. 27, 1973, Ser. No. 336,211

Int. Cl. B24b 9/00

U.S. Cl. 51—96

6 Claims



A machine for grinding a cutting surface on an article wherein the machine has magazine means for automatically feeding the articles to be ground to a grinding position and means for automatically ejecting the ground articles into a hopper, bin or the like.

3,822,511

#### CAM CONTROLLED GRINDING MACHINE

Nils O. Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

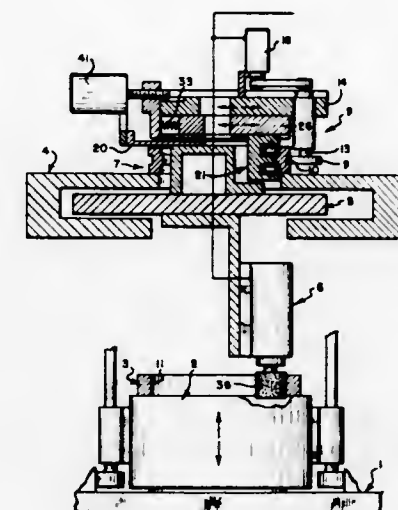
Continuation-in-part of Ser. No. 237,175, March 22, 1972, which is a division of Ser. No. 164,406, July 20, 1971, Pat. No. 3,663,188, which is a continuation-in-part of Ser. No. 147,145, May 26, 1971, abandoned. This application July 13, 1972, Ser. No. 271,571

Int. Cl. B24b 17/02, 17/08

U.S. Cl. 51—101 R

19 Claims

A grinding apparatus having a cam member with a surface corresponding to the surface of a workpiece to be ground, a



tive to the cam member, and a grinding element movable with the cam follower mechanism along the surface of the workpiece to be ground.

3,822,512

#### AUTOMATIC SURFACE GRINDER

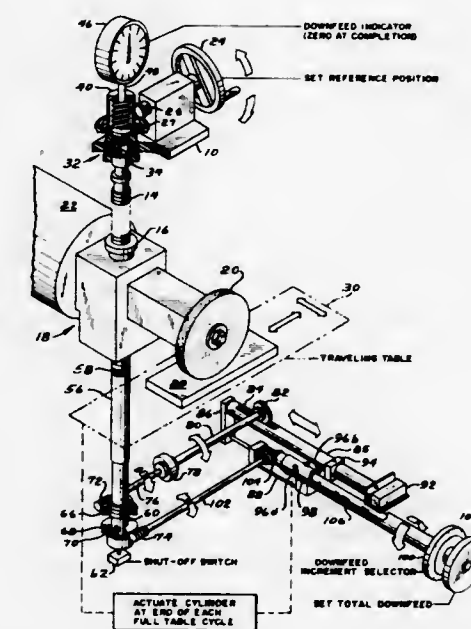
Norman Joseph Mercer, Jr., Hillside, Ill., assignor to Esterline Corporation, Broadview, Ill.

Filed June 30, 1972, Ser. No. 268,017

Int. Cl. B24b 49/00

U.S. Cl. 51—165.81

14 Claims



Automatic grinding to preset depths and spark-out finishing are provided in a surface grinder of the type having a traveling worktable and a grinding-wheel head supported by an elevating screw. The screw is slideable longitudinally in its mount, abutting against a fixed stop in its lower position. A jack is employed to raise the screw by an amount corresponding to the desired stock removal. At the conclusion of each full cycle of operation of the traveling table, the jack is automatically lowered a predetermined distance and the grinding continues with the increments of depth thus selected until the final depth is reached, whereupon the jack actuates a switch, initiating spark-out finishing.



3,822,513

**BENCH GRINDER APPARATUS**

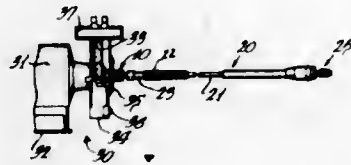
Grover P. Holther, Jr., Mount Prospect, Ill., assignor to Electro Engineering Products Co., Inc., Chicago, Ill.

Filed Apr. 25, 1973, Ser. No. 354,260

Int. Cl. B24b 41/00; B24d 17/00

U.S. Cl. 51-168

4 Claims



A tool assembly includes a bench grinder, coupler and flexible shaft power take-off apparatus. The coupler is designed to secure the flexible shaft to the bench grinder so that a condition of dynamic balance will be present during rotation thereof.

3,822,514

**APPARATUS FOR THE FINE BALANCING OF GRINDING WHEELS**

Ulrich Vetter, Stuttgart-Heumaden, Germany, assignor to Schaudt Maschinenbau, GmbH, Stuttgart, Germany

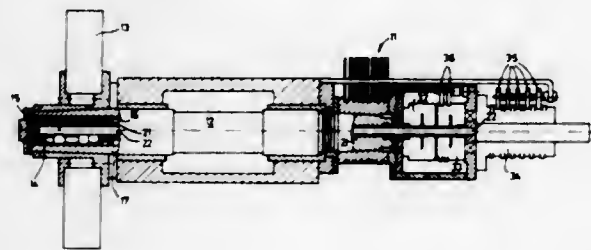
Filed July 26, 1972, Ser. No. 275,243

Claims priority, application Germany, July 29, 1971, 2137901

Int. Cl. F16f 15/00; B24b 45/00

U.S. Cl. 51-169

14 Claims



Apparatus for the fine balancing of a grinding wheel comprising two balance masses adjustable jointly in one angular direction and a third balance mass adjustable in the opposite direction all located in a housing which is adjustably rotatable relative to the wheel, the masses being arranged on a common balance shaft rotatable relative to the wheel and to the housing, the housing carrying a pinion meshing with a bevel wheel rotatable with the third mass and with a bevel wheel rotatable with one of the adjustable masses, whereby adjustment of the first two masses causes counter adjustment of the third mass. Two further balance masses may be secured in the housing, the pinion being mounted in one of these. All the masses are preferably semi-circular in cross section. The balance shaft extends through an inner hollow shaft which carries the housing and which in turn extends inside the hollow grinding wheel spindle, control means for adjusting the masses being located at one end of the balance shaft and inner hollow shaft. The control means includes sun and planet gearing interconnecting the balance shaft inner hollow shaft and spindle and adjusting rings connected through disengagable couplings with an adjusting motor. The control may be arranged for operation manually or through electrical circuits, and several forms of electrical control are described as well as electrical means for indicating the degree of imbalance and the compensation movements of the masses.

3,822,515

**HONING TOOL**

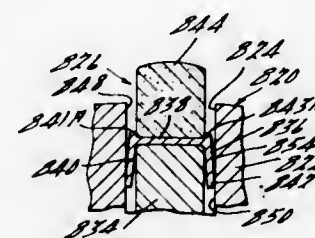
Robert H. Gillette, 205 Pendleton Ave. No. 3, Pendleton, Ind. 46064

Division of Ser. No. 291,279, Sept. 22, 1972. This application Oct. 2, 1973, Ser. No. 402,749

Int. Cl. B24d 5/00, 7/00

U.S. Cl. 51-204

8 Claims



A honing tool incorporating improved means for mounting and retaining abrasive elements in the honing tool.

3,822,516

**METHOD OF MAKING AN ENDLESS POWER TRANSMISSION BELT**

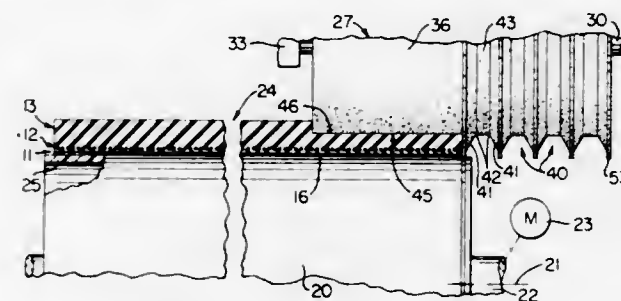
Walter E. Huber, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 28, 1972, Ser. No. 310,053

Int. Cl. B24b 1/02, 27/06

U.S. Cl. 51-326

12 Claims



A method of making an endless power transmission belt having opposed non-parallel portions is provided wherein a belt construction is built on a mandrel and ground with a contoured grinding wheel to precisely define the opposed non-parallel portions of the belt in a simultaneous manner.

3,822,517

**BUFFING OR SCRUBBING PAD WITH OUTER ABRASIVE RING**

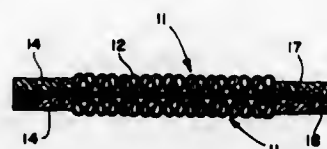
Theron V. Moss, 3175 Falmouth Rd., Shaker Heights, Ohio 44122

Filed Sept. 29, 1972, Ser. No. 293,439

Int. Cl. B24d 11/00

U.S. Cl. 51-394

11 Claims



A buffing or scrubbing pad having at least a portion of one side covered by a relatively soft buffing material and a ring of abrasive material around the outer periphery thereof. The buffing material may be yarn or similar soft material for buffing and the abrasive material may be impregnated fiber material, scrim material, or similar material having the desired abrasive properties.

3,822,518

**SANDING SHOE AND CLIP THEREFOR**

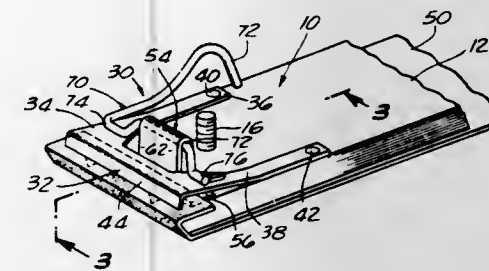
Gerald D. Sjostrand, Fresno, Calif., assignor to Rodac Pneumatic Tools, Los Angeles, Calif.

Filed Sept. 7, 1972, Ser. No. 286,937

Int. Cl. B24d 17/00

U.S. Cl. 51-386

14 Claims



A sanding shoe having an over-center type clip for clamping an abrasive sanding sheet to the end of the shoe. The shoe itself is fabricated from rubber having a metal panel or insert molded into it near the upper surface. The rubber material forms an upstanding rib at the end of the shoe with bevelled inside surfaces. The ends of the abrasive sheet come over the end ribs and it is clamped thereto by a resilient U-shaped metal clamp which is held in the clamped position by an over-center movement.

3,822,519

**BUILDING STRUCTURE**

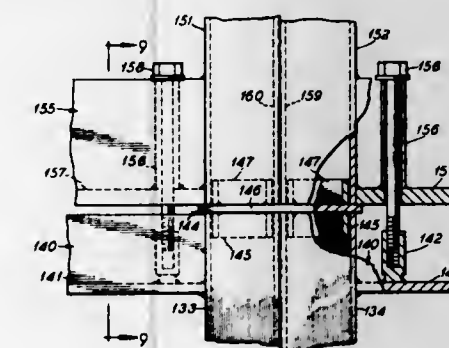
Anthony A. Antoniou, c/o Avan Industries, Inc., 1200 Roosevelt Rd., Glen Ellyn, Ill. 60137

Filed June 28, 1971, Ser. No. 157,402

Int. Cl. E04b 1/348

U.S. Cl. 52-79

7 Claims



A building system utilizing discrete prefabricated modular building units, adapted to be erected with additional units to form a complete building structure of one or more stories; each unit including a rigid metal parallelepiped framework having upright tubular column sections and selectively spaced truss sections which cooperate with connector means to positively intertie adjacent units both vertically and horizontally to provide a building structure having both column and truss support systems.

3,822,520

**PRESTRESSED TANK AND METHOD OF PRODUCING SAME**

John M. Crom, Jr., 720 Champagne Dr., Incline Village, Nev. 89450

Continuation of Ser. No. 586,277, Oct. 12, 1966, abandoned.

This application Jan. 20, 1970, Ser. No. 4,389

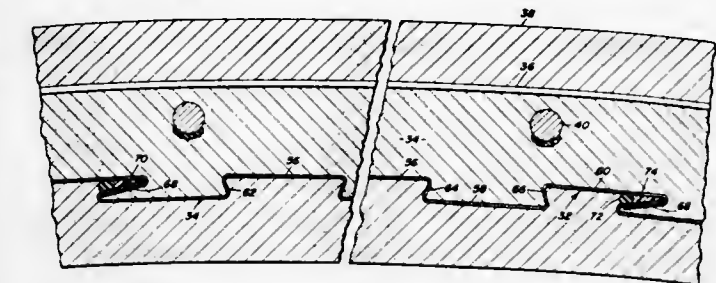
Int. Cl. E04h 12/16

U.S. Cl. 52-224

13 Claims

A prestressed tank including a substantially vertical shell with a layer of cementitious material on each side thereof. The

shell comprises a plurality of panels having edges cooperating to form joints. A sealant may be pumped into channels within the joints after application of said layers to the shell to fill



voids and veins within the layers. Sealant is also disposed adjacent to and/or around reinforcing rods and wires disposed in the cementitious material.

3,822,521

**MODULAR WALL PANEL SECTION AND BOLTED WALL CONSTRUCTION**

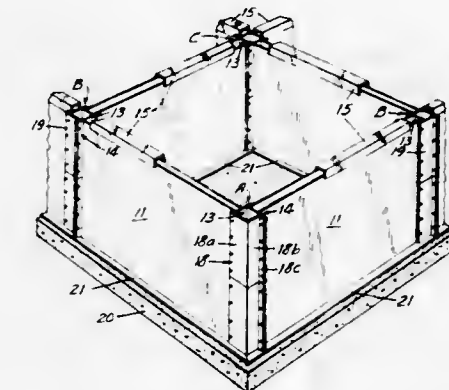
Richard V. Lucas, Rt. 2, Jordan, Minn. 55352

Filed Feb. 7, 1973, Ser. No. 330,178

Int. Cl. E04c 1/28, 2/08

U.S. Cl. 52-593

11 Claims



This is a modular hollow panel wall section and a wall constructed from a bolted together assembly thereof, each section including a pair of spaced apart smooth surfaced planar inner and outer panel sheets rigidly connected together by a supporting frame structure including reinforcing spacer members, one of which forms an interfitting member along one horizontal section edge, and a pair of vertical structural side members fixed to the respective side edges of each section with a portion thereof overlapping the marginal side edges of the inner and outer panel sheets and another portion thereof extending transversely across the space between the side edges of said panel sheets each of the side members having bolt receiving apertures therethrough with bolt anchoring means fixed to the inside enclosed overlapped side edges of each section in registration with the apertures through the overlapping portions to permit easy connection of one section with another.

3,822,522

**METHOD OF ERECTING A MULTI-LEVEL BUILDING OF CURTAIN WALL CONSTRUCTION**

David E. Termohlen, 1670 El Camino Real, Atherton, Calif. 94025, and William G. Irvine, 10560 Castine Ave., Cupertino, Calif. 95014

Division of Ser. No. 156,634, June 25, 1971, Pat. No.

3,729,878, which is a continuation-in-part of Ser. No. 876,407, Nov. 13, 1969, abandoned. This application Oct. 13, 1972, Ser.

No. 297,504

Int. Cl. E04g 21/14

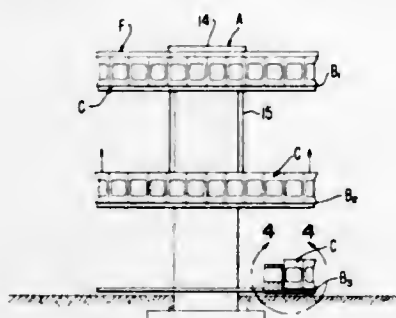
U.S. Cl. 52-745

3 Claims

A curtain wall construction and process of erecting the construction is provided for a building which has each of its floors



constructed at ground level and thereafter raised to the floors respective elevated positions. Modular curtain wall sections are fastened to frameworks attached to the floor edges when each building floor is at ground level. Thereafter, when the floor is raised to its elevated position, the top edge of the framework attached to the elevated floor keys into the bottom



edge of the overlying framework attached to the floor above for a sliding engagement and the contiguous edges of the curtain walls overlap one another to provide a continuous weather surface on the exterior of the building. Thus, each floor is completely enclosed upon being raised to its final elevational position.

3,822,523

## ENVELOPE OPENING APPARATUS AND METHOD

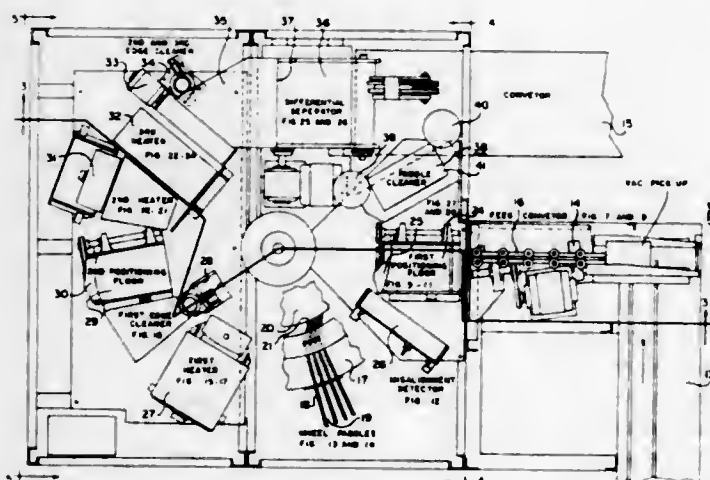
Robert J. Russell, Philadelphia, Pa.; William Young, Wenonah, and Barry D. Nuss, Woodbury, both of N.J., assignors to Kenco Corporation, Cherry Hill, N.J.

Filed Sept. 15, 1972, Ser. No. 289,314

Int. Cl. B65b 43/26

U.S. Cl. 53-3

28 Claims



Apparatus and method for opening an envelope upon three sides. The apparatus employs a circular rotating wheel which supports a plurality of complementary pairs of paddles which are designed to open at predetermined times to receive an envelope and close upon the envelope in a protective manner. The envelope is first received in the paddles with the leading edge thereof slightly exposed. As the paddles progress in their circular motion, the leading edge is engaged by means which weaken the edge. Thereafter, the paddles are opened and a conveyor below the paddles repositions the envelope between the paddles so as the trailing and bottom edges thereof are slightly exposed. As the paddles progress, the trailing and bottom edges are likewise weakened after which the envelope is discharged to an opening means.

Opening means are provided which receive the envelope and convey the envelope by means of a belt over idler pulleys which cause parallel shearing forces to the sides of the envelope by reverse flexing of the envelope to crack the weakened edges. The envelope is then passed between a belt

and a roller through which a vacuum is induced to grip the opposite panels of the envelope and exert a separating force perpendicular to the panels to complete opening of the envelope and expose the contents thereof.

3,822,524

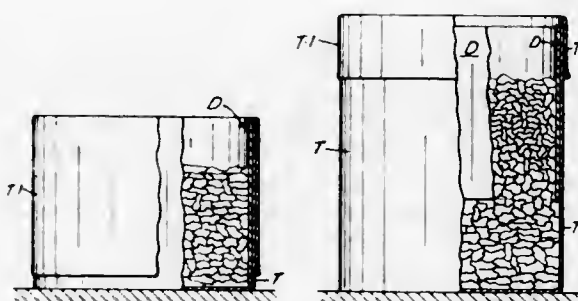
## DEVICE AND METHOD FOR FACILITATING THE FILLING OF FLEXIBLE TRASH BAGS

Selmer L. Jerpak, 6100 Abbot Ave. South, Minneapolis, Minn. 55410

Continuation-in-part of Ser. No. 223,153, Feb. 3, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,231 Int. Cl. B65b 67/04, 39/02

U.S. Cl. 53-37

2 Claims



A device for facilitating filling of elongate flexible trash bags utilizes a generally rectangular sheet of material constructed of a slippery, manually flexible composition having sufficient stiffness to retain itself in a cylindrically formed shape. The sheet is provided with a set of spaced fastener-receiving apertures adjacent one end edge thereof. A plurality of parallel sets of similarly shaped fastening apertures is provided in an intermediate portion of the sheet nearer the opposite end thereof. Quickly applicable fastener elements are provided for insertion through two selected aligned sets of said fastening apertures when the sheet is manually flexed in curvilinear manner to a helical, generally cylindrical shape. Secured by said fasteners in a desired adjusted diameter, the sheet forms a distender cylinder for use in a novel method for filling flexible trash bags. The distender cylinder in height is only a fraction of the height of the limp trash bag with which it functions in a combination relationship. The distender is first slipped to the bottommost position within the bag, thereby uniformly distending the same and thereafter trash is dumped through the open top of the bag to a level just below the upper edge of the cylindrical distender. Thereafter the distender is slid upwardly above the level of trash and the filling operation is repeated. These steps for elongate large bags are repeated until the bag is filled to the desired level, whereafter the distender is removed and the upper annular edge of the bag is twisted tightly and secured and preferably sealed.

3,822,525

## MACHINE FOR CLOSING FILLED BAGS UNDER VACUUM

Benjamin M. Anderson, deceased, late of Aurora, Ill. (by Madalyn R. Anderson, executrix), and James P. Smithers, Glen Ellyn, Ill., assignors to Armour and Company, Chicago, Ill.

Filed Oct. 6, 1972, Ser. No. 295,625

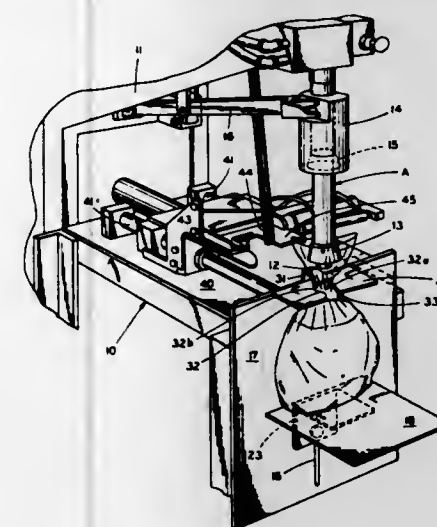
Int. Cl. B65b 31/04

U.S. Cl. 53-112 B

8 Claims

A machine which includes supporting structure for a bag of flexible film material filled with products so that the top portion of the bag above the product is received through a recess in a guideplate to thereby hold the neck of the bag in position

and prevent the film from interfering with the nozzle through which the vacuum is drawn. The supporting structure is ad-



justable to accommodate different sizes of bags and shapes of product and is tiltable to accommodate products which are slanted on their bottoms.

3,822,526

## TIRE COMPRESSING AND HANDLING APPARATUS

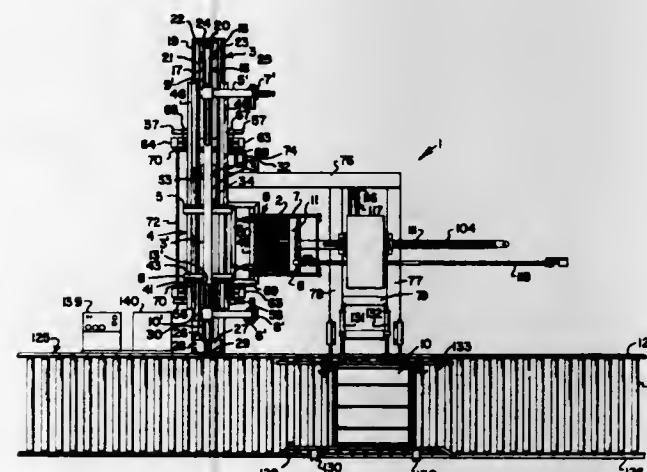
Billy B. Black, 3343 N.W. Brickyard Rd., Topeka, Kans. 66618

Filed May 14, 1973, Ser. No. 359,703

Int. Cl. B65b 63/02

U.S. Cl. 53-124 D

14 Claims



An apparatus for preparing pneumatic tires for shipping and storage including compressing and handling a plurality of tires by positioning same in a group in side-by-side relation and substantially coaxially aligned, compressing the group, moving the compressed group to a shipping structure, positioning the group in said shipping structure which handles one or more groups of compressed tires and maintains the compressed condition until selectively released. The apparatus includes a support structure having at least a pair of laterally spaced, longitudinally extending rails mounted thereon and adapted to receive and support the plurality or selected group of tires between a pair of facing jaws or platens which are movable toward each other to compress a plurality of tires therebetween. Spaced finger groups of a hand assembly engage ends of the compressed tire group and the jaws move away to spread and release the tires which are held by the finger groups. The hand is mounted for movement laterally toward and away from the path of the jaws thereby being adapted to receive and remove the compressed tires from the support structure. The hand is also mounted for movement to a position adjacent a shipping structure on pallet having tire

compression maintenance structure. The hand assembly has an ejection member therein which is movable between a retracted position within the hand assembly permitting the hand assembly to receive therein a plurality of compressed tires and an ejection position during movement of the tires out of the hand assembly and into a selected position in a pallet while in a compressed condition.

3,822,527

## CONTAINER HANDLING APPARATUS

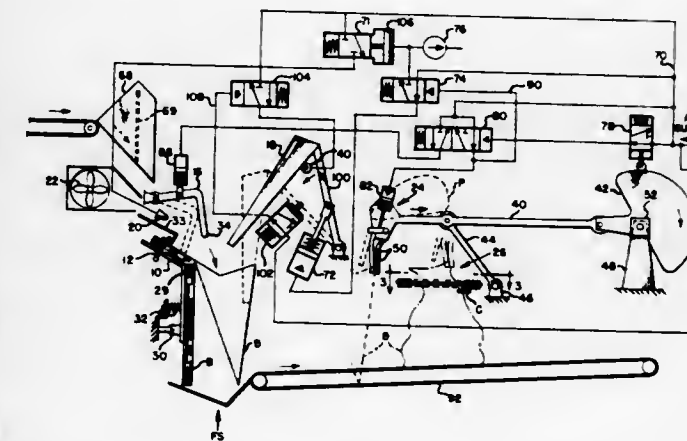
Gary G. Germunson, and Fredrick R. Schopp, both of Yakima, Wash., assignors to Yakima Wire Works, Inc., Yakima, Wash.

Filed Nov. 9, 1972, Ser. No. 304,954

Int. Cl. B65b 43/36, 51/04

U.S. Cl. 53-189

10 Claims



Flexible containers, such as polyethylene bags, are held on a standard wicket and are individually opened by a blast of air and the insertion of an expandable scoop. The bag is then filled with material and after a predetermined time a two finger gripping device engages the top edge of the filled bag and the scoop is removed. The bag is then simultaneously released and pulled from the wicket by the gripping means which further pulls the filled bag directly into a bag closing device or a pocket of a collecting conveyor.

3,822,528

## BAG PACKING APPARATUS

Stig Martin Carlsson, and Jan Erik Andreasson, both of Orebro, Sweden, assignors to Sunds Aktiebolag, Sundsvall, Sweden

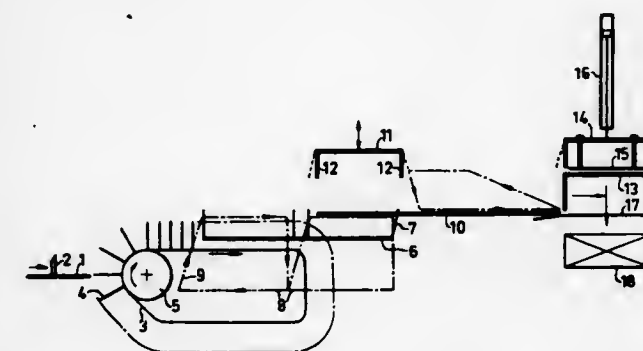
Filed Nov. 3, 1972, Ser. No. 303,361

Claims priority, application Sweden, Nov. 22, 1971, 14922/71

Int. Cl. B65b 35/30

U.S. Cl. 53-159

11 Claims



By the apparatus of the invention paper bags containing potato chips, pastries or other goods are mechanically packed into outer containers in a manner preventing the crushing or



breaking of the contents of the bags and ensuring that the bags are constantly maintained in a fixed array during their passage through the apparatus. The apparatus comprises a bag conveying path, a bag lifting means cooperating with said path and having the form of parallel rows of outwardly projecting pegs moving along endless paths and adapted to receive therebetween groups of bags in a predetermined array, a horizontally and vertically movable carriage the rear portion of which lifts a group of bags from the bag lifting means onto a bag receiving platform and the front portion of which moves the group of bags along said platform, a vertically movable holder for said group of bags arranged above the platform, a means for further advancing the group of bags along the platform, and a means for transporting the group of bags onto a blank from which the outer container is subsequently formed.

3,822,529

## PARTICLE SEPARATION SYSTEM

Rodolfo G. Kilian, Rio Panuco 82, Mexico

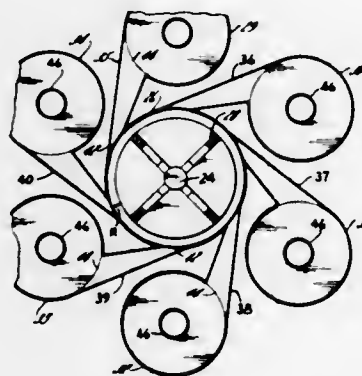
Division of Ser. No. 76,487, Sept. 29, 1970, Pat. No.

3,738,090. This application Apr. 17, 1973, Ser. No. 352,011

Int. Cl. B04c 5/04

U.S. Cl. 55-1

2 Claims



Apparatus is illustrated for separating particles from a carrier gas comprising, in combination, a centrifugal fan having impeller blades and a fan casing with the casing being radially separated from the ends of the blades and a plurality of cyclone collectors radially arranged in close proximity with respect to the fan. Conduits are positioned between the fan and the collectors with one end of the conduits opening into the fan casing and the other ends thereof opening into individual collectors. The walls of the conduits are arranged such that particles entering the conduits from the fan continue to the collectors substantially along an undisturbed trajectory and the conduits have a substantially continuously increasing cross-sectional area from the fan to the collectors.

3,822,530

## CHROMATOGRAPHIC COLUMN PACKING

Edward N. Fuller, and Michael E. Bartholomew, both of c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Continuation-in-part of Ser. No. 44,596, June 8, 1970,

abandoned. This application Nov. 8, 1971, Ser. No. 196,763

Int. Cl. B01d 15/08

U.S. Cl. 55-67

10 Claims

A chromatographic column packing comprising a polymeric film on a support, the formation of the polymer and its deposition on the support being made in situ.

3,822,531

## DEVICE FOR AGGLOMERATING AND SEPARATING PARTICULATES FROM A GAS

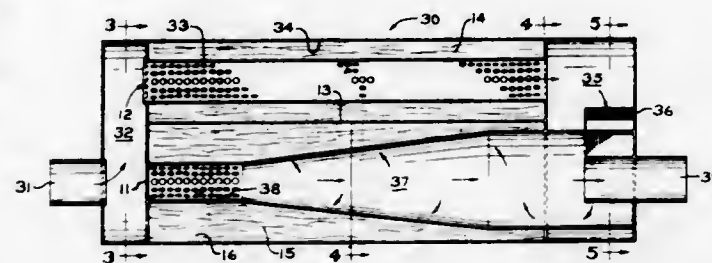
John P. Wisniewski, Corpus Christi, and Martin B. Treuhart, San Antonio, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 27, 1973, Ser. No. 336,318

Int. Cl. B01d 50/00

U.S. Cl. 55-315

12 Claims



An apparatus is described for conditioning gaseous emissions from an internal combustion engine, e.g., an automobile engine, said emissions containing particulate matter, e.g., lead and other particulates, said apparatus comprising an agglomerator coupled to an inertial separator in a housing and which apparatus is preferably coupled to a filter.

3,822,532

## OIL MIST RECOVERY APPARATUS

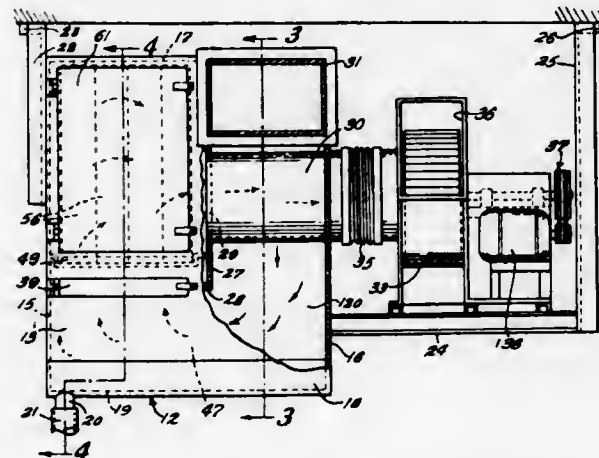
Harold W. Weisgerber, Reading, Ohio, assignor to The Kirk and Blum Manufacturing Co., Cincinnati, Ohio

Filed Nov. 12, 1971, Ser. No. 198,265

Int. Cl. B01d 50/00

U.S. Cl. 55-324

2 Claims



Apparatus is disclosed for effecting separation of oil mist from a carrier air stream particularly for use in the reclamation of oil mist that is generated in or near factory equipment and to the cleaning and return of the carrier air stream to the factory area. The apparatus includes a horizontally operable centrifuge chamber disposed above one end portion of an oil collecting pan, a primary oil mist filter located above the opposed end portion of the pan and a secondary oil mist filter positioned above the primary oil mist filter. The relative dispositions of the filters and the centrifuge chamber provide a number of sharp changes in direction of the oil mist laden air stream through the apparatus to effect optimum oil mist-from-air stream separation.

3,822,533

## DEVICE FOR REMOVING IMPURITIES FROM GASES

Leendert Oranje, Marsmanhof 4, Haren, Netherlands, assignor

to N.V. Nederlandse Gasunie, Groningen, Netherlands

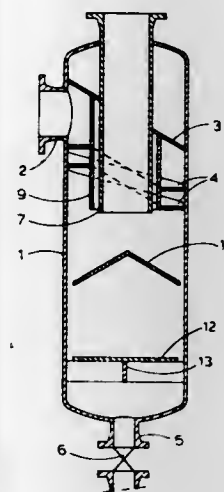
Filed Mar. 2, 1973, Ser. No. 337,540

Claims priority, application Netherlands, Mar. 4, 1972, U.S. Cl. 56-16.4 722901

Int. Cl. B01d 45/00

U.S. Cl. 55-394

3 Claims



An improved separator of the type having a cylindrical vessel, a feed tube extending into the vessel normal to its axis, an axial discharge tube and a first plate mounted perpendicular to the vessel axis under the axial discharge tube. To avoid undue wear on the separator bottom, a second plate is mounted beneath the first plate, which may be conical at specific distances and having specific dimensions.

3,822,534

## FRONT MOUNTED HARVESTER

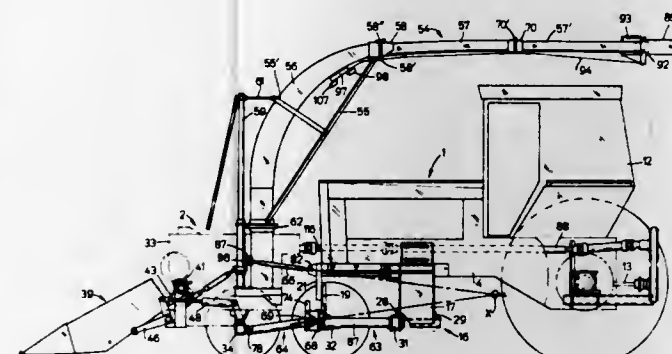
Virgil B. Martin, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Jan. 9, 1973, Ser. No. 322,129

Int. Cl. A01d 45/02

U.S. Cl. 56-13.9

10 Claims



Flexibility between a tractor and a front mounted harvester unit is provided by an articulated connecting linkage which positions the harvester unit in longitudinally aligned, vertically floating and laterally tiltable relation to the tractor. Crop material cut by the harvester unit is discharged into a trailing wagon through a deflector which extends upwardly from the harvester unit and rearwardly over the tractor, the connecting linkage functioning automatically to keep the deflector aimed into the wagon while the harvester unit floats up and down and tilts laterally relative to the tractor.

3,822,535

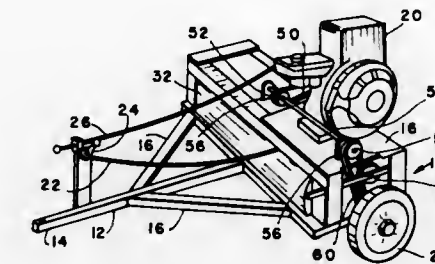
## POWERED LAWN RAKER

Roger Wehrman, Sheboygan, Wis.

Filed Jan. 11, 1973, Ser. No. 322,752

Int. Cl. A01d 51/00

4 Claims



A powered, towable lawn rake having a rigid frame, a rake and drive means on said frame with the drive to said shaft being through a series of belts and pulleys. Mounted on said rake shaft are a multiplicity of torsionally wound coil springs, the ends of said springs being raking fingers to agitate and loosen dead grass and other matter from lawn.

3,822,536

## GRASS CATCHER

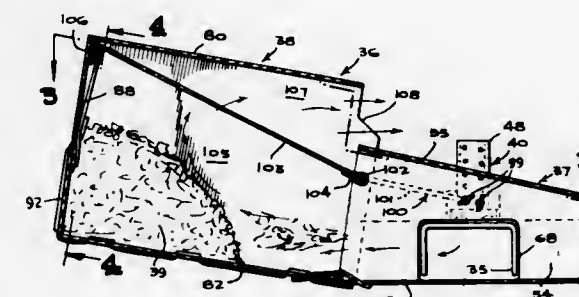
Harold P. Leader, Box 325, Helena, Ala. 35080

Filed May 24, 1973, Ser. No. 363,421

Int. Cl. A01d 35/22

U.S. Cl. 56-202

2 Claims



A grass and litter catcher for lawn mowers that includes a unit that has sections that are adjustably connected together, and wherein there is provided a filter member in the unit.

3,822,537

## APPARATUS FOR HARVESTING GRAPES

Abdul Harry Sell, Southport, N.C., assignor to Darf Corporation, Edenton, N.C.

Division of Ser. No. 178,021, Sept. 7, 1971, Pat. No.

3,772,866. This application Dec. 8, 1972, Ser. No. 313,321

Int. Cl. A01g 19/00

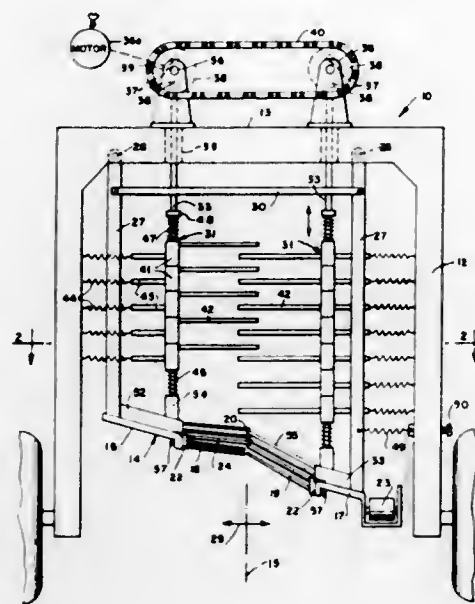
U.S. Cl. 56-330

15 Claims

A high chassis vehicle adapted to straddle and travel along a row of plants has a catcher floor divided along its longitudinal



center for passing along opposite sides of the plant row. The catcher floor includes two sets of resiliently flexible brushes

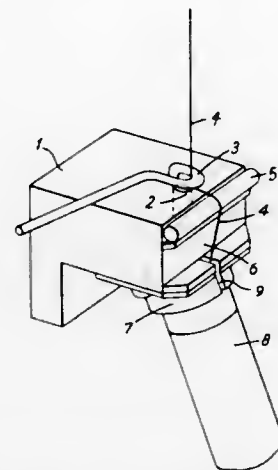


which are bridged at the central floor division. Vertically reciprocable plant shakers are provided above the floor.

**3,822,539**  
**THREADABLE YARN TREATMENT TUBE**  
Harrison Heap; Robert Reid Coats, and John Michael Greenway, all of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England  
Filed Oct. 24, 1972, Ser. No. 299,800  
Int. Cl. G03b 1/56

U.S. Cl. 57—34 R

1 Claim

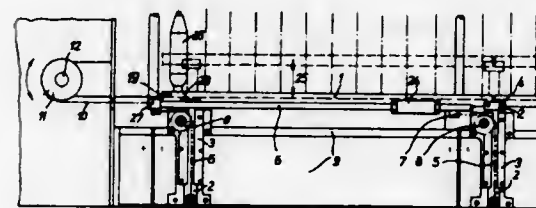


In apparatus comprising a passageway through which an advancing yarn must be threaded, yarn guides and locating means for a suction gun are provided, whereby the yarn may be led close to the passageway entrance and on cutting may be entrained through the passageway into the gun.

**3,822,540**  
**DEVICE FOR MECHANICALLY LIFTING COPS ON RING SPINNING AND TWISTING MACHINES**  
Friedrich Thoma, and Peter Krusche, both of Bremen, Germany, assignors to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany  
Filed Oct. 6, 1972, Ser. No. 295,491  
Claims priority, application Germany, Oct. 8, 1971, 2150212  
Int. Cl. D01h 9/08

U.S. Cl. 57—52

4 Claims



A device for mechanically lifting cops on ring spinning and twisting machines in which in the longitudinal direction of the spinning machine fork rails are arranged one behind the other and are mounted in forks which are adjustable as to height, the fork rails are provided with lifting means for each of the cops, and the forks are adapted to be raised and lowered by actuating means, for instance, in the form of a gear spindle, chains, draw rods, or reversing means.

**3,822,541**  
**OPEN END SPINNING APPARATUS**  
Fred Croasdale, Whalley, and Raymond Victor Evans, Blackburn, both of England, assignors to Platt International Limited, Oldham, England  
Filed Jan. 12, 1973, Ser. No. 322,980  
Claims priority, application Great Britain, Jan. 14, 1972, 1903/72

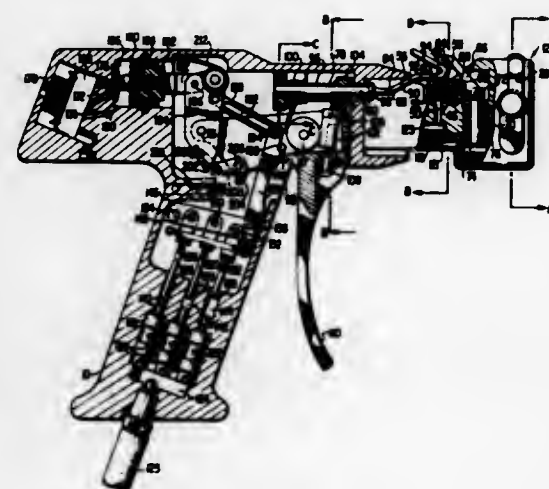
U.S. Cl. 57—58.89

12 Claims

An open end spinning apparatus comprises a hollow spinning rotor which is open at its upper end and closed at its

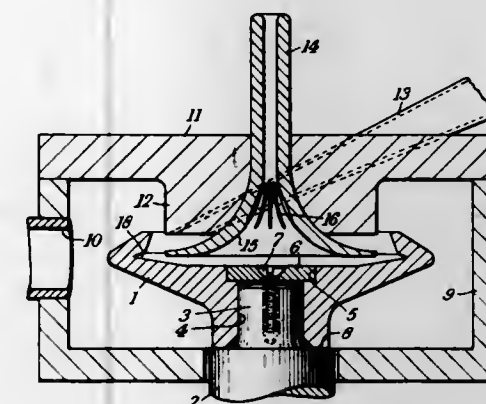
**3,822,538**  
**YARN SPLICING APPARATUS**  
Max L. Cardell, Shelby, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.  
Filed Oct. 31, 1973, Ser. No. 411,581  
Int. Cl. D01h 15/00

19 Claims



An improved yarn splicing apparatus having particular utility in the joining together of undrawn multifilament yarn ends is described which comprises a pair of spaced-yarn clamps, means for drawing and relaxing a yarn segment intermediate said clamps, an air entangling jet for entangling the filaments of the yarns, and means for operating the aforesaid elements in sequence, whereby the two yarn ends are clamped then, drawn to a predetermined ratio and relaxed prior to air entanglement of the filaments.

lower end and which has an inner surface free from apertures and concentric with respect to the rotary axis of the rotor, said inner surface of the rotor having a rotor wall portion which extends from the open upper end of the rotor radially outwardly with respect to the rotor axis and downwardly to a region of maximum diameter at which region there is formed a localized fibre collecting circumferential groove, the diameter of the groove when measured from the base of the groove in a plane

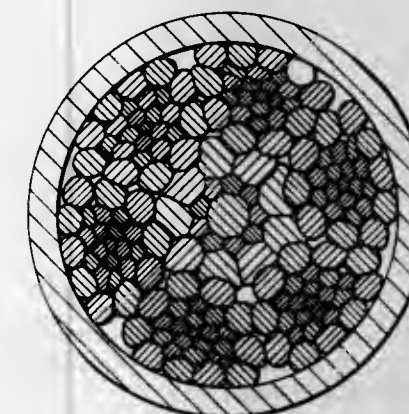


at right angles to the rotary axis of the rotor being at least eleven times greater than the height or mean height of said open upper end above the base of the fibre collecting groove when measured parallel to the axis of the spinning rotor. The lower end or base portion of the rotor may lie in a plane at right angles to the rotor axis or partly in such a plane and partly in a frusto-conical plane. The fibre collecting groove may lie above or below said base portion and may be of any of several radial sections.

**3,822,542**  
**SWAGED WIRE ROPE AND METHOD OF MANUFACTURE**  
John Raymond Naud, Pierrefonds, Quebec, and John H. Simpson, Dollard des Ormeaux, Quebec, both of Canada, assignors to Wire Rope Industries Ltd., Pointe Claire, Quebec, Canada  
Filed Aug. 10, 1973, Ser. No. 387,277  
Claims priority, application Canada, Aug. 11, 1972, 149288  
Int. Cl. D07b 1/06; D02g 3/36

U.S. Cl. 57—145

10 Claims

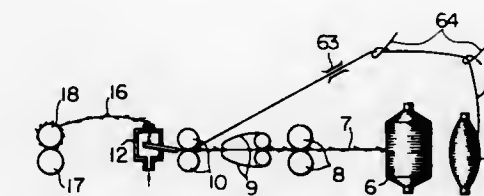


An improved swaged wire rope is produced by winding in a predetermined manner a plurality of strands about a flexible core of greater diameter than that of said strands and swaging the so formed wire rope construction until a smooth, void-free exterior surface of the rope is obtained. The new swaged wire rope is particularly suitable for operations where abrasion, shock loading and general rope abuse are prevalent.

**3,822,543**  
**SPUN-LIKE YARN AND METHOD OF MANUFACTURING SAME**  
Hiroshi Edagawa; Ituo Nakamura, and Kozo Susami, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan  
Filed May 4, 1972, Ser. No. 250,176  
Claims priority, application Japan, July 12, 1971, 46-51092  
Int. Cl. D02g 1/16, 3/04, 3/36

U.S. Cl. 57—160

10 Claims

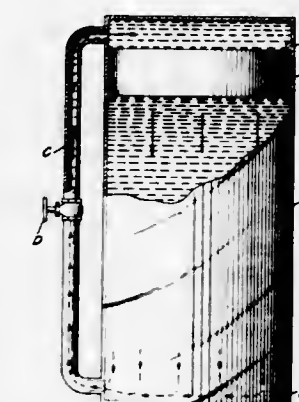


A yarn having soft, attractive handle and a structure such that staple fibers are intertwined with each other to cohere into a substantially non-twist yarn. The yarn is manufactured by supplying a substantially non-twist strand of staple fibers to a fluid treatment zone where the staple fibers are intertwined with each other by the turbulent flow, at least part of said staple fibers to be supplied to the treatment zone having a length larger than the distance L between the fiber grasping point in the fiber feed zone and the point where the intertwinement due to the turbulent flow most effectively occurs.

**3,822,544**  
**HYDRAULIC TIMING DEVICE**  
Thomas Conrad Groves, Box 171-A, R.D. 3, Reynoldsville, Pa. 15851  
Filed Aug. 3, 1972, Ser. No. 277,513  
Int. Cl. G04b 4/00; G04f 1/06

U.S. Cl. 58—2

8 Claims



The invention consists of a time measuring device, the operation of which is based on fluid resistance slowing and regulating the motion of a material under force in such a manner that the distance which the material travels can be used as an accurate indication of the amount of time which has elapsed since the motion of that material began.

**3,822,545**  
**ELECTROMECHANICAL DIGITAL READOUT CLOCK**  
Kenneth A. Catto, and Harold R. Burt, both of Beaverton, Oreg., assignors to Data Time, Inc., Portland, Oreg.  
Continuation of Ser. No. 220,923, Jan. 26, 1972, abandoned.  
This application Dec. 22, 1972, Ser. No. 317,735  
Int. Cl. G04c 3/00

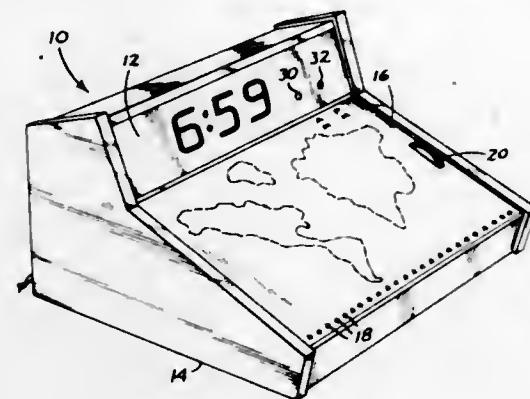
U.S. Cl. 58—23 R

10 Claims

An electromechanical digital readout clock including electrical digital readout devices. The readout devices are



operated by different, periodically closed electrical circuits that are established through contacts (connected to the



devices) engaged by conductors carried by a plurality of interengageable, intermittently driven rotors.

### 3,822,546 WATERPROOF WATCHCASE

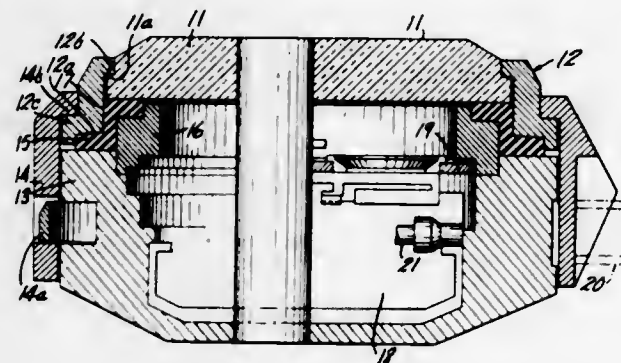
Hideo Nozawa, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 19, 1973, Ser. No. 408,078

Int. Cl. G04b 37/08

U.S. Cl. 58—90 R

7 Claims



A waterproof watchcase having a crystal provided with a peripheral flange resting on an inwardly extending support flange of a highly resilient gasket with which it effects a watertight seal. The gasket rests on a support surface of a back cover with which it effects a watertight seal. The gasket is sandwiched between the peripheral flange of the watch crystal and the back cover by the band of the watchcase which can be constructed as a simple band or a band and bezel. The seals are effected without use of adhesives.

### 3,822,547

#### DIGITAL WRIST WATCH HAVING TIMER FUNCTION

Kinji Fujita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 22, 1973, Ser. No. 325,697

Claims priority, application Japan, Jan. 22, 1972, 47-8059; Jan. 22, 1972, 47-8060; Jan. 22, 1972, 47-8061

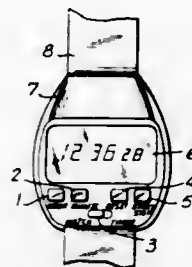
Int. Cl. G04b 37/12, 23/12

U.S. Cl. 58—152 B

5 Claims

A digital wrist watch is provided with a quartz oscillator, counting and distribution circuits and a digital electronic display device. The watch is provided with a memory circuit for the performance of a timer function. A switch and selecting circuit is provided for the selective application of either time

keeping or timer signals to the display device so that said display device may serve both the time keeping and timer func-



tions. Said switch and selecting circuit also serves to permit the use of a single set of switches for both time correction and setting of the timer function.

### 3,822,548

#### METHOD AND APPARATUS OF MANUFACTURING C-SHAPED LINKS

Paul Esser, Melissenweg 23, 5 Cologne 51, Germany

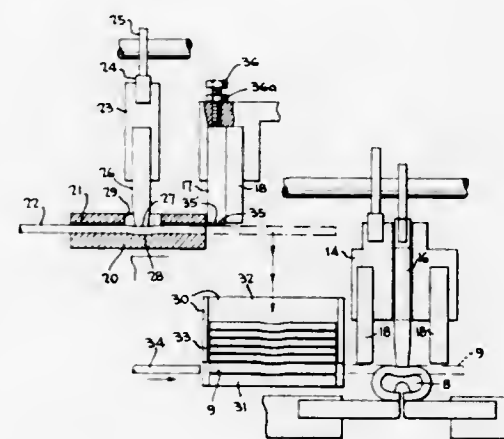
Filed July 2, 1971, Ser. No. 159,425

Claims priority, application Germany, July 2, 1970, 2032692

Int. Cl. B21H 1/02

U.S. Cl. 59—27

6 Claims



The manufacture of "C" shaped wire links wherein a continuously fed wire has a reverse curve pre-bent into it before the wire is placed into a bending device. This reverse curve is in that section of the wire which will be opposite the two ends of the link after it is bent into a "C" shape. The pre-bending device bends the wire prior to cutting into the desired length. Furthermore, the pre-bent cut wire sections can be directly fed from the pre-bending device into the bending device, or alternatively, fed into a magazine which in turn successively feeds the pre-bent cut wire sections into the bending device.

### 3,822,549

#### CHAIN COUPLERS

Werner Rieger, Haus Haselbach, 7084 Unterkochen/Württemberg, and Hans Horst Dalferth, Haydnstrasse 21, 7083 Wasseralfingen, both of Germany

Filed July 5, 1972, Ser. No. 269,283

Claims priority, application Switzerland, July 5, 1971, 9822/71; Sept. 21, 1971, 13753/71

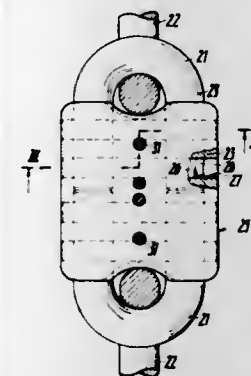
Int. Cl. F16g 15/04

U.S. Cl. 59—85

14 Claims

This disclosure relates to chain couplers for interconnecting the end links of two chain lengths. The coupler includes two cooperating half links, with each half link having at least one cylindrical leg or shank portion adapted to be inserted within a cylindrical sleeve-like socket of an element fixedly associated

with the cooperating half link. Each cylindrical leg portion has grooves on its opposite sides, which are staggered in the coupling direction, there being correspondingly disposed apertures in the element with the sleeve-like socket, for the receipt of locking pins, which engage in the grooves, to lock



the cylindrical leg portion in the socket in which it has been inserted. The element with the sleeve-like socket may be integral with the cooperating half link or it may be a separate coupling element interposed to interconnect the two cooperating half links.

### 3,822,550

#### MULTICYLINDER THERMODYNAMIC RECIPROCATING MACHINE IN WHICH THE FUEL SUPPLY TO BURNER DEVICES IS CONTROLLED BY MEANS OF TEMPERATURE-SENSITIVE ELEMENTS

Klaus Brandenburg, Kirchen-Wehbach, and Joachim Kuhl-morgen, Aachen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 234,074, March 13, 1972. This

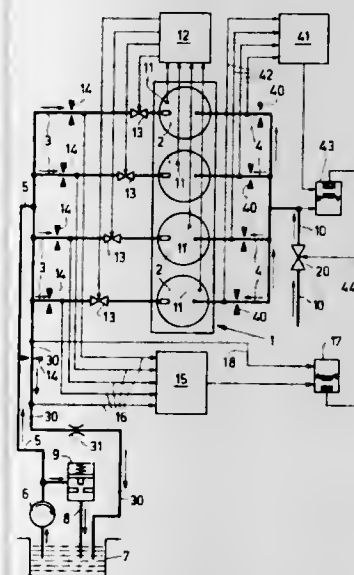
application June 29, 1973, Ser. No. 374,904

Claims priority, application Netherlands, Mar. 18, 1971, 713610

Int. Cl. F03g 7/06

U.S. Cl. 60—24

11 Claims



A multicylinder thermodynamic reciprocating machine in which a fuel supply and a supply for air of combustion communicate with each burner device, in which the ends of the fuel supplies remote from the associated burner device communicate with a common fuel supply duct in which a pressure control device during operation maintains a constant pressure and the ends of the supplies for air of combustion remote from the associated burner device communicate with a common supply duct for air of combustion, in which, taken in the direction of flow, a flow restricting element and a fuel control mechanism are incorporated in each fuel supply, in which a

selecting device for the automatic selection of the maximum or minimum fuel pressure from several fuel inlet pressures is present and the outlet sides of the flow restricting elements communicate with the same number of inlets of the selecting device, the pressure differential between the constant fuel pressure in the common fuel supply duct and the selected maximum or minimum fuel pressure influencing a control member which actuates a control mechanism for air of combustion in the common supply duct for air of combustion.

### 3,822,551

#### NOISE REDUCTION APPARATUS AND METHOD

Fred T. Smith, 1745 Stonewall Dr., Newark, Ohio 43055

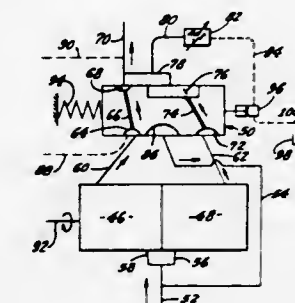
Division of Ser. No. 274,798, July 24, 1972. This application

Sept. 27, 1973, Ser. No. 401,222

Int. Cl. F16h 39/48

U.S. Cl. 60—428

8 Claims



An apparatus and method for operating an auxiliary hydraulic load at low noise levels. A pump having a capacity which is sufficiently large to supply the load with the necessary volume of hydraulic fluid at relatively low pump speeds is driven by an engine operating at a speed near its idling speed. Throttle control means control the fuel supply to the engine at a level sufficient to drive the pump while maintaining the engine speed near its idling speed. When the engine speed is increased to a predetermined level in excess of its idling speed, means are provided to maintain the output from the pump at or below a predetermined flow rate to not overload the pump means or the auxiliary load. The pump may include a variable displacement pump or a plurality of fixed displacement pumps with means to vary the pump output in response to the pressure demand from the auxiliary load to maintain the torque input requirements for the pump below a predetermined level. The throttle control means may be actuated in response to the pressure demands of the auxiliary load to vary the torque from the engine in response to the torque input required for operation of the pump while the engine is operating at a speed near its idling speed.

### 3,822,552

#### PIPE CONFIGURATION FOR HOT GAS ENGINE

Jan Ragnar Palmgren, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Mar. 15, 1973, Ser. No. 341,378

Claims priority, application Great Britain, Apr. 27, 1972, 19509/72

Int. Cl. F02g 1/04

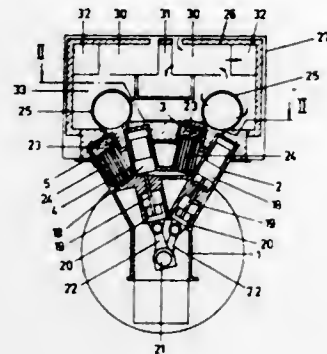
U.S. Cl. 60—517

7 Claims

A Stirling cycle type hot gas engine passes working gas from cylinders to regenerators through pipes which are exposed to



heated combustion gases. These pipes are arcuately shaped and disposed with centers along a common horizontal straight line to permit placing a combustion chamber at the end for directing the combustion gases along the line.



3,822,553

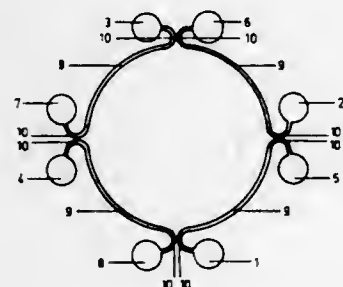
## HOT GAS ENGINE HEATER HEADS

Per Goran Grahn, Malmö, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmö, Sweden  
Filed Aug. 15, 1973, Ser. No. 388,563  
Claims priority, application Great Britain, Aug. 22, 1972, 38971/72

Int. Cl. F03g 7/06; F25b 9/00

U.S. Cl. 60-517

2 Claims



Four pairs of manifolds of the heater head have four corresponding pipes disposed in 90° segments of a circle with the ends bent more than 90° to connect with the manifolds. This configuration provides improved engine efficiency by uniform heating and shielding of the manifolds from the most intensive radiation and convection by parts of the pipes disposed between the manifolds and the center of the heater head.

3,822,554

## HEAT ENGINE

Frederick Griffin Kelly, 2 Viking Rd., Dalkeith, Australia (6009)

Filed June 19, 1973, Ser. No. 371,519

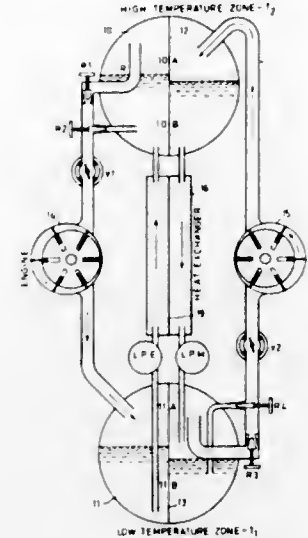
Claims priority, application Australia, June 26, 1972, 9461/72

Int. Cl. F01k 23/02

U.S. Cl. 60-655

9 Claims

A heat engine operating between temperatures T1 (low)



3,822,555

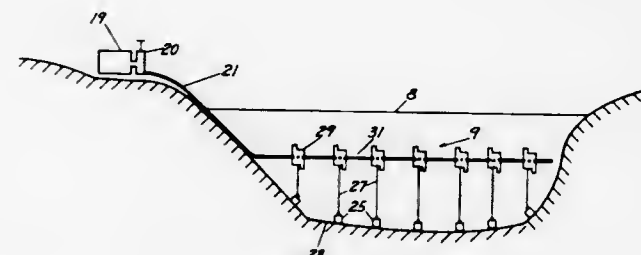
## MARINA PROTECTIVE WAVE BREAKER

L. C. Strawn, P.O. Box 1145, and Vernon W. Stanton, Sr., P.O. Box 693, both of Tucumcari, N. Mex. 88401  
Filed Mar. 12, 1973, Ser. No. 340,098

Int. Cl. E02b 3/04

U.S. Cl. 61-6

7 Claims



A simplified air burst wave breaker for the protection against wave action of Marina installations and the like. The air burst unit comprises a duct in the form of two vertical U portions arranged with their openings toward each other, having a common leg and in which at least the bottom free leg is longer than the common leg. The lower free leg provides a water inlet stem and the upper free leg provides the air burst or burp outlet stem. The U portion open at the bottom an air inlet connection in the upper bend thereof.

3,822,556

## METHOD OF LAYING WIDE ASPHALTIC OPEN MESH REINFORCED STRIPS

Arnaud Cramwinckel, Laren, and Rudolf Carlo Reintjes, De Bilt, both of Netherlands, assignors to Bitumarin N.V., Zaltbommel, Netherlands

Filed Jan. 7, 1972, Ser. No. 216,039

Claims priority, application Netherlands, Feb. 4, 1971, 7101469

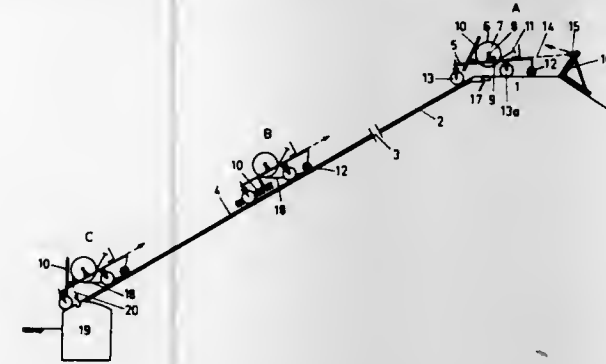
Int. Cl. E02b 3/12; E01c 23/03

U.S. Cl. 61-38

12 Claims

A water retaining earth surface is lined with a reinforced

layer of asphalt in which a unilaterally externally reinforced wide strip of asphaltic mastic wound onto a reel is unwound



onto the surface to be lined in such a way that the reinforced surface faces earth surface.

3,822,557

## JET SHEET AND CIRCULAR PILE WITH WATER HAMMER ASSIST

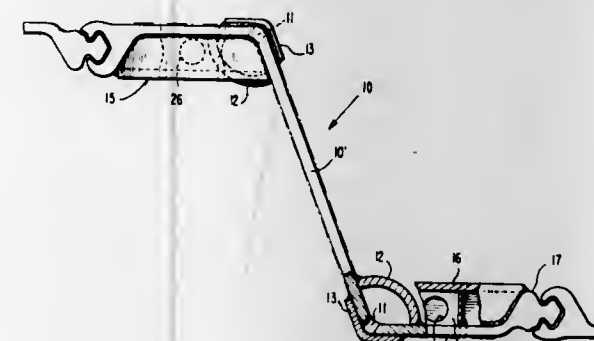
Leonard L. Frederick, 15 Crestview Ter., Whippany, N.J. 07981

Filed Sept. 29, 1972, Ser. No. 293,444

Int. Cl. E02d 5/00, 5/04

U.S. Cl. 61-53

15 Claims



The invention relates to a system of furnishing a supply of lubricant to the opposed sides of a section of piling and a movable drive shoe carried thereby to facilitate the driving of the piling in any type of earthen strata.

3,822,558

## ARCTIC DREDGING AND PIPELAYING

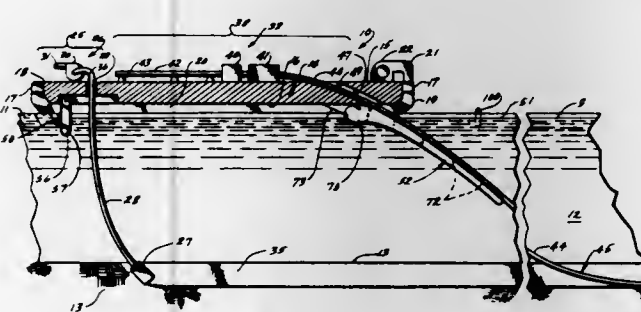
Owen D. Blankenship, Houston, Tex., assignor to Global Marine Inc., Los Angeles, Calif.

Filed July 28, 1972, Ser. No. 276,110

Int. Cl. F16l 1/00; B63b 35/04

U.S. Cl. 61-72.1

11 Claims



Apparatus for arctic dredging and marine pipelaying during ice-free and iced conditions is described. For dredging, a dredging facility is carried on a buoyant platform which is

adapted for support on a cushion of air. The dredging facility includes a dredging head which is operable, when engaged with the bed of a body of water to be dredged, for removing material from the bed. A dredgings conductor tube is connectible between the dredging head and the platform for conducting dredged material from the head to the platform. The dredging equipment also includes means carried by the platform for forming a channel through a layer of ice below the platform for passage of the conductor tube through the ice when the dredging apparatus is operated during iced conditions.

The pipelaying equipment includes a pipelaying facility carried by a buoyant platform, which is adapted for support on a cushion of air. The pipelaying equipment includes means carried by the platform operable for forming through an ice layer below the platform a channel through which pipe may be laid from the platform to the bed of the body of water across which the pipeline is to be laid. The portion of the pipeline which extends between the platform and the bed of the body of water is supported along at least a portion of its length adjacent the pipelaying platform. This support of the pipeline may be provided by a stinger assembly coupled to the platform with its upper end disposed within the area of air cushion support of the platform.

The dredging apparatus and the pipelaying apparatus may be provided on a common buoyant platform adapted for support on a cushion of air. In such case, the dredging facility is located on the platform forward of the pipelaying facility so that, during pipelaying operations through ice, pipe is laid through the channel formed in the ice for the dredgings conductor tube.

3,822,559

## CONTROLLED YIELD STINGER

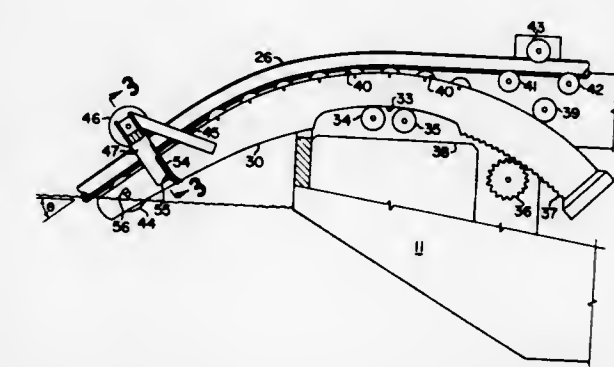
Jamie F. Matthews, Jr., Houston, Tex., and Martin O. Pattison, Palos Verdes Estates, Calif., assignors to Esso Production Research Company, Houston, Tex.

Filed Jan. 29, 1973, Ser. No. 327,272

Int. Cl. F16l 1/00; B21b 23/00

U.S. Cl. 61-72.3

15 Claims



A marine pipeline is laid by lowering the line into place over a retractable curved stinger which is mounted on the vessel and extends over its stern. The curved stinger is provided with rollers or similar members which are mounted at spaced intervals along an arc having a radius of curvature sufficiently small to exceed the elastic limit of the pipe as the pipeline moves over the rollers and with straightening means near the outer end of the apparatus. By extending or retracting the curved stinger, the angle of departure of the pipe as it leaves the vessel and enters the water can be varied.



3,822,560

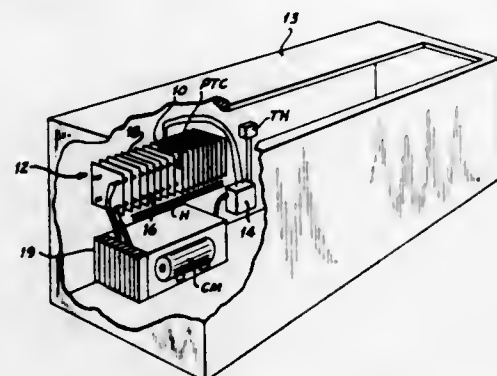
## DEFROST SENSOR AND CONTROL CIRCUIT

James E. Hansen, Oak Creek, and Joel P. La Pointe, Mequon, both of Wis., assignors to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed Sept. 29, 1972, Ser. No. 293,452  
Int. Cl. F25d 21/02

U.S. Cl. 62-140

9 Claims



An apparatus for regulating frost buildup in a refrigeration apparatus. A photocell and lamp are mounted to function within an open housing having essentially non-reflective interior wall surfaces. The housing is located adjacent the refrigeration apparatus permitting cold air to circulate therethrough and allow frost buildup on such surfaces. As frost forms thereon, illuminance intensity of the lamp light within the housing increases due to the light scattering characteristics of the frost causing the photocell to function to initiate the defrost cycle.

3,822,561

## SELF CONTAINED AIR COOLING UNIT

Allan Sinclair Miller, Dinedor, Hereford, England, assignor to Denco Miller Limited, Hereford, England

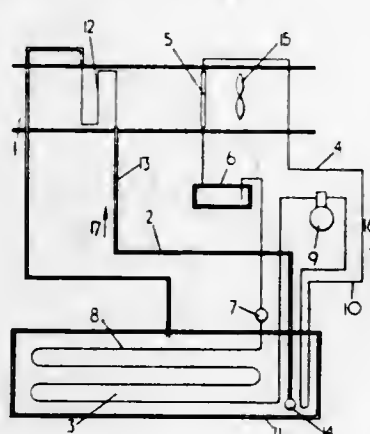
Filed Dec. 13, 1972, Ser. No. 314,844

Claims priority, application Great Britain, Apr. 14, 1972, 17239/72

Int. Cl. G05d 23/32

U.S. Cl. 62-157

9 Claims



A self contained air cooling unit, comprising: a refrigeration circuit, the condensing system of which is located in the space to be cooled; a thermal reservoir consisting of an ice bank contained in a flexible tank and in heat exchange relationship with the cooling system of the refrigeration circuit, a circulating system in communication with the ice bank and including a heat exchanger located in the space to be cooled for exchanging heat from the air in the space to chilled water circulated through the heat exchanger from the ice bank by means of a pump, a fan for circulating air in the space both through the heat exchanger and through the condensing system of the refrigeration circuit; and means for selectively and alternatively operating the refrigeration circuit and the circulating system to heat or to cool the space as desired.

3,822,562

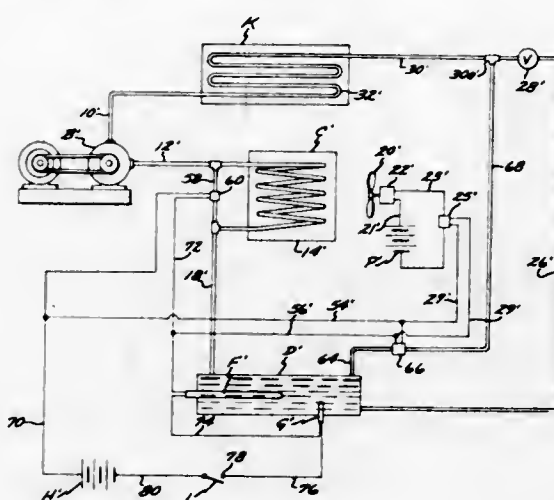
## REFRIGERATION APPARATUS, INCLUDING DEFROSTING MEANS

Millard W. Crosby, 7050 Pellet St., Downey, Calif. 90241  
Division of Ser. No. 138,232, April 28, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 332,041

Int. Cl. F25b 41/00

U.S. Cl. 62-196

4 Claims



A mechanical refrigeration system that includes improved means for defrosting the evaporator coils to remove excessive accumulations of frost and ice therefrom. Frost and ice is removed from the evaporator coils by heating means provided in the receiver with the compressed gas from the compressor being bypassed by the condenser, and the heated gas then being directed to the evaporator coils down stream from the expansion valve. During the defrosting operation, the compressor continues to operate in a normal manner, but with the gas during the defrosting operation being heated as it forms in the evaporator coils rather than being cooled as occurs when the refrigeration equipment is operated in the normal manner.

3,822,563

## REFRIGERATION SYSTEM INCORPORATING TEMPERATURE RESPONSIVE WAX ELEMENT VALVE CONTROLLING EVAPORATOR OUTLET TEMPERATURE

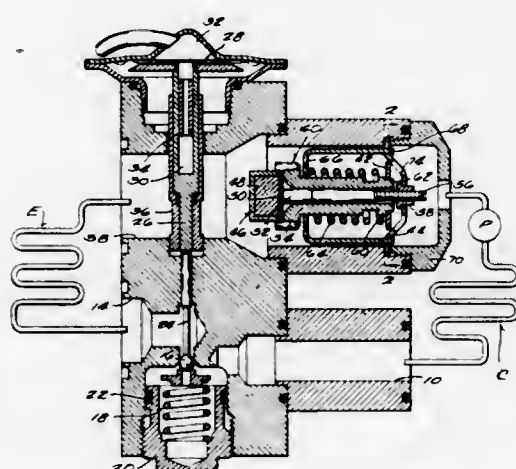
Charles D. Orth, Cedarburg, Wis., assignor to Controls Company of America, Schiller Park, Ill.

Filed Apr. 25, 1973, Ser. No. 354,234

Int. Cl. F25b 41/00

U.S. Cl. 62-217

8 Claims



The compressor provides hot refrigerant gas to the condenser and flow from the condenser to the evaporator is regulated by the thermostatic expansion valve, the sensing point of

3,822,565

## BEVERAGE DISPENSER

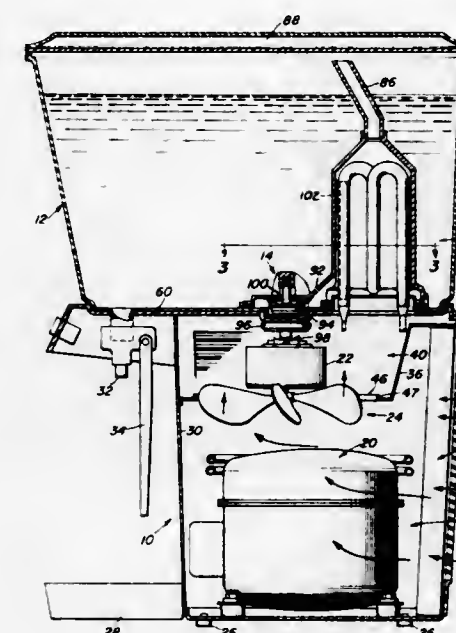
William A. Arzberger, Medfield, Mass., assignor to Jet Spray Cooler, Inc., Waltham, Mass.

Filed June 19, 1972, Ser. No. 263,783

Int. Cl. B67d 5/62

U.S. Cl. 62-392

14 Claims



A refrigerated beverage dispenser having a base and a beverage bowl on the base. A pump in the bowl circulates the beverage in the bowl, and the pump is magnetically driven by a motor in the base. A refrigeration system includes an evaporator within the bowl having a prime surface exposed to the beverage circulated by the pump for cooling the beverage. The condenser and compressor of the refrigeration system are in the base, and a fan driven by the same motor which drives the pump circulates air through the base for cooling the condenser, compressor and motor.

3,822,564

## COMBINATION TYPE REFRIGERATOR

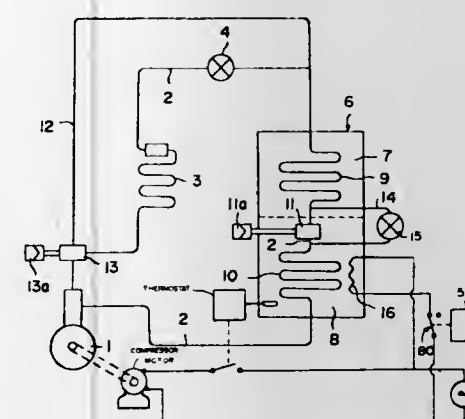
Kiyoichi Nijo, Osaka, Japan, assignor to Naniwa Sangyo Kabushikigaisha, Osaka-City, Japan

Filed Aug. 1, 1972, Ser. No. 276,954

Int. Cl. F25d 21/06

U.S. Cl. 62-156

4 Claims



A combination type refrigerator having a freezing storage compartment provided with a heat exchanger and a cold storage compartment also provided with a heat exchanger, wherein a cooler is on-off controlled in response to the detection of a certain predetermined temperature in the cold storage compartment and the defrosting of the freezing storage compartment is effected by connecting both the heat exchangers in series and directly supplying pressurized hot gas to the heat exchanger for the freezing storage compartment. It is characterized by a heating means disposed in a suitable position within the cold storage compartment, and which heating means is capable of generating an amount of heat just sufficient to permit continuous operation of the cooler without causing any temperature rise in the cold storage compartment during the defrosting operation in the freezing storage compartment and is operated during the defrosting operation in the storage compartment.

3,822,566

## PORTABLE UTILITY SYSTEM

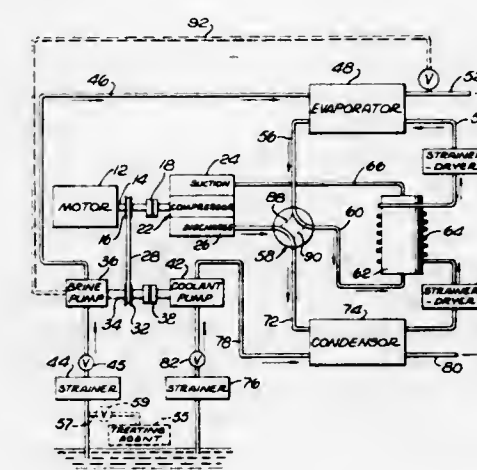
Alvin Lowi, Jr., 2146 Toscanini Dr., San Pedro, Calif. 90732

Filed July 13, 1972, Ser. No. 271,457

Int. Cl. F25d 17/02

U.S. Cl. 62-435

4 Claims



A portable utility system particularly useful for drastically cooling seawater and/or forming an ice/brine slurry for application to fish. A tube-in-tube evaporator is provided for cooling the seawater while it is drawn into the evaporator by means of a positive displacement brine pump. Seawater is drawn into a tube-in-tube condenser by a coolant pump to remove heat from the system refrigerant and is continuously



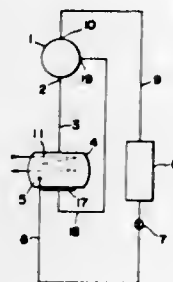
discharged after it is passed through the condenser coils. A compressor is provided to raise the pressure and temperature of the gaseous refrigerant. A reversible valve enables the flow of refrigerant through the system to be reversed, producing hot water at the output of the evaporator, when desired. The evaporator is formed of a first tube for conveying refrigerant and a second tube positioned in heat exchange relation within the first tube, the second tube conveying seawater to be refrigerated. The condenser may also be formed of a tube within a tube wherein the refrigerant is conveyed in the inner tube and the cooling seawater is conveyed in the outer tube. An in-line dispenser for bacteriostatic agents, or the like, can be provided. The system can supply electrical as well as hydraulic needs and can be used onshore with air cooling in place of water cooling.

3,822,567

## REFRIGERATING APPARATUS

Keisuko Kasahara, Tokyo, Japan, assignor to Kabushiki Kaisha Maekawa Seisakusho, Tokyo, Japan  
Filed Jan. 26, 1973, Ser. No. 327,102  
Claims priority, application Japan, Feb. 21, 1972, 47-17822  
Int. Cl. F25b 43/02

U.S. Cl. 62-473



This invention relates to a refrigerating apparatus.

Said apparatus comprises a compressor of the oil injection system, a condenser containing a liquid refrigerant, a line connecting an outlet port of said compressor to said condenser, an evaporator, a line connecting an upper portion of a liquid sump in said condenser to said evaporator, a line connecting said evaporator to a suction port of said compressor, an oil sump formed in a bottom portion of said condenser, and a line connecting said oil sump to an oil injection port of said compressor.

Said refrigerant in a high pressure gaseous state from said compressor is injected together with oil into said liquid refrigerant so as to effect condensation of the refrigerant gas, separation of the refrigerant from the oil and cooling of the oil in said condenser.

3,822,568

## FLEXIBLE SHAFT COUPLING

Heinz-Dieter Bohm, Unna; Werner Rugen, Holzwickede; Herbert Krellmann, Rhynern, and Wilhelm Schluckebier, Unna-Uelzen, all of Germany, assignors to Maschinenfabrik Stromag G.m.b.H., Unna, Germany  
Filed May 7, 1971, Ser. No. 141,048

Claims priority, application Germany, May 8, 1970, 2022527

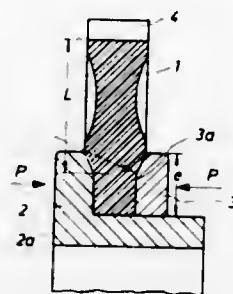
Int. Cl. F16d 3/18

U.S. Cl. 64-11 R

7 Claims

A flexible shaft coupling including a pair of coupling members of which one is provided with a coupling flange, a substantially disc-shaped torque-transmitting member of a resilient or rubber-like material for transmitting torques from one of said pair of coupling members to the other, and clamping means for clamping a zone of said torque-transmitting

member against said clamping flange. The coupling is provided with means for causing a progressive decrease of the



coefficient of friction between said torque-transmitting member, said clamping flange and said clamping means in radial direction.

3,822,569

## SET INCLUDING FIVE DISTINCT ELEMENTS BASED ON A HOLLOW CUBE

Knud Laurrup-Larsen, 144 Naerumvaenge, DK-2850 Naerum, Denmark

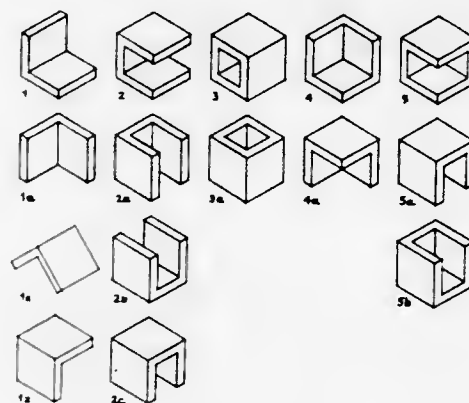
Filed Dec. 12, 1972, Ser. No. 314,459

Claims priority, application Denmark, Dec. 13, 1971, 6067/71

Int. Cl. A63h 33/06

U.S. Cl. 46-24

2 Claims



A set of five different toy building elements, each of which is formed as two, three or four mutually connected side walls of a hollow cube. The elements may be combined with each other or with duplicate blocks in rectilinearly aligned relation to form a total of 977 different configurations of pairs of elements.

3,822,570

## CONNECTION OF RESILIENTLY DEFORMABLE SEALING MEMBERS TO GENERALLY CYLINDRICAL ARTICLES

Leslie George Fisher, Birmingham, England, assignor to GKN Transmissions Limited, Birmingham, England  
Filed Aug. 14, 1972, Ser. No. 280,127

Claims priority, application Great Britain, Aug. 14, 1971, 38236/71

Int. Cl. F16d 3/84

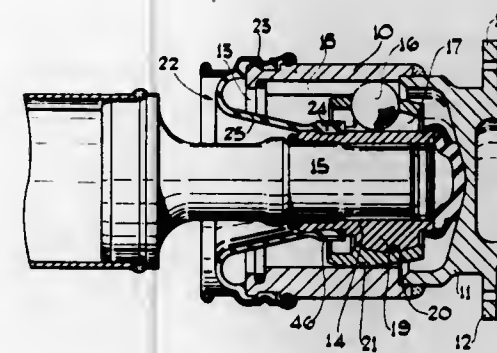
U.S. Cl. 64-32 R

3 Claims

A universal joint comprising an open-ended outer member, an inner member movable universally therein and coupled thereto by torque transmitting balls, the open end of the outer member being closed by a sealing member of resilient material having a sleeve-like attachment portion embracing the outer member adjacent to its open end and itself embraced exter-

nally by a metal sleeve which has a terminal portion projecting axially beyond the attachment portion of the sealing member, with the terminal portion deformed radially inwardly over a

above the conveyor and in a horizontal plane with respect to it. The elements are arranged on axes which are in tandem along the edge of the conveyor and the elements are moved to engage the hide in a sector of a circle the beginning of which



ring seated in a circumferential groove in the outer member, so as to interlock the metal sleeve with the outer member and prevent its axial withdrawal therefrom.

3,822,571

## LIQUID DIVERTER SYSTEM FOR AN AUTOMATIC WASHING MACHINE

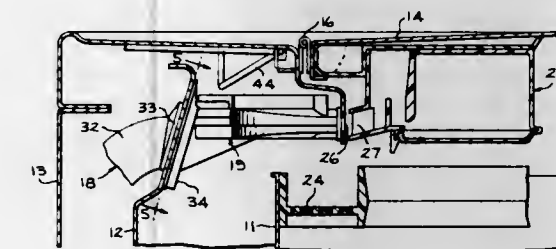
Richard A. Waugh, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 8, 1973, Ser. No. 321,743

Int. Cl. D06f 39/02

U.S. Cl. 68-17 R

5 Claims



A liquid diverter for use with an additive dispenser system of an automatic fabric washing machine. The diverter includes an inlet for receiving liquid and a pair of outlet nozzles one of which is disposed for normally delivering liquid into the machine tub during a fill operation, the other inlet being disposed to deliver liquid to a treating agent dispenser. The diverter is provided with valving means which, under control of the machine sequence controller, diverts the flow of liquid from the machine wash tub to the dispenser for flushing treating agent out of the dispenser.

3,822,572

## METHOD OF SURFACE TREATING DISCONTINUOUS SHEET MATERIALS

Vladislav Janirek, Gottwaldov; Zdenek Miculka, Oktrokovice, and Jan Duba, Halenkovice, all of Czechoslovakia, assignors to Statni vyzkumny ustav kozedelný, Gottwaldova, Czechoslovakia

Filed May 31, 1973, Ser. No. 365,575

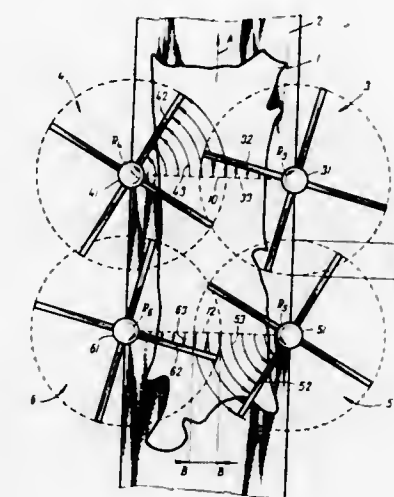
Claims priority, application Czechoslovakia, July 13, 1972, 4958-72

Int. Cl. C14b 1/14

U.S. Cl. 69-39

7 Claims

Method and apparatus for treating discontinuous sheets such as animal hides. The hide is placed on a moving conveyor. At least one pair of elements are arranged to rotate



lies along a line normal to the direction of movement of the conveyor and has a path extending arcuately to the peripheral edge of the conveyor. The elements at the front of the conveyor rotating in the direction of movement of the conveyor while that in the rear in the opposite direction.

3,822,573

## APPARATUS FOR LOCKING GEAR SHIFT STICK AND HANDBRAKE LEVER OF A MOTOR VEHICLE

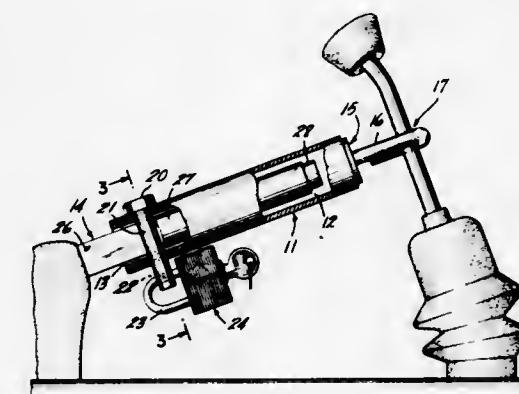
Calvin E. Meyers, Freeport, N.Y., assignor to Bug-Lok Corporation, Freeport, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,689

Int. Cl. B60r 25/06, 25/08

U.S. Cl. 70-200

4 Claims



An apparatus for locking the gear shift stick and handbrake lever of a motor vehicle. The apparatus is a cylindrical body having a bore therein terminating in an open end which fits over the handbrake lever. The open end of the body holds a bolt which can be locked therein by a padlock and which abuts an enlarged portion of the handbrake lever preventing removal of the body therefrom. The other end of the body has a hook-shaped gripping member which simultaneously tightly holds a portion of the gear shift stick.



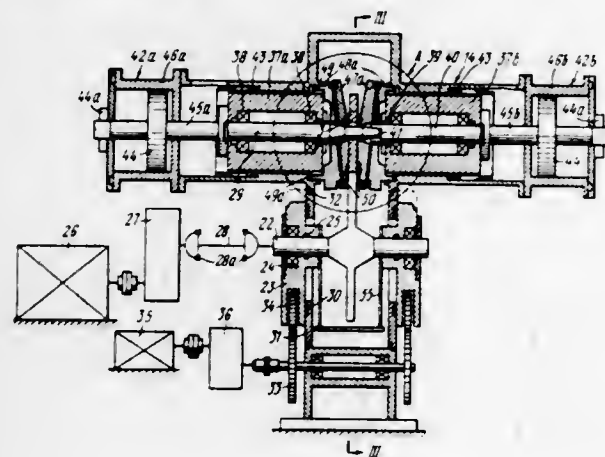
### 3,822,574 RING-ROLLING MILL

Alexandr Vasilievich Krupin, Valovaya ulitsa, 22/44, kv. 47; Valentin Fedorovich Roschin, Novo-Peschanaya ulitsa, 21, kv. 7; Leonid Petrovich Alekhin, Nagatinskaya naberezhnaya, 18, kv. 174; Valery Mikhailovich Izotov, ulitsa Akademika Pavlova, 40, kv. 117; Oleg Alexandrovich Burrov, Otkrytoe shosse 27, korpus 1, kv. 6; Viktor Mikhailovich Gavrilov, 3 linia, 11, korpus 1, kv. 41, all of Moscow; Alexandr Ermolaevich Chekanov, ulitsa Zhulyabina, 10, kv. 25, Elektrostal Moskovskoi oblasti; Viktor Petrovich Lepin, prospekt Lenina, 26, kv. 23, Elektrostal Moskovskoi oblasti, and Fedor Terentievich Vinogradov, ulitsa Pushkina, 4a, kv. 13, Elektrostal Moskovskoi oblast, all of U.S.S.R.

Filed Apr. 2, 1973, Ser. No. 346,886  
Int. Cl. B21h 1/06

U.S. Cl. 72-110

7 Claims



A rolling mill comprising a driven outside and a not-driven inside rolls adapted for radial reduction of the ring being rolled, and face rolls adapted for maintaining a constant dimension as to the height of the ring being rolled with the face rolls being made as conical rings and located so that their interiors accommodate the not-driven roll. The pivotal axes of the face rolls are arranged at an angle to that of the inside roll.

### 3,822,575

#### NON-SLIP NON-ACCUMULATING CONTINUOUS WIRE DRAWING MACHINE

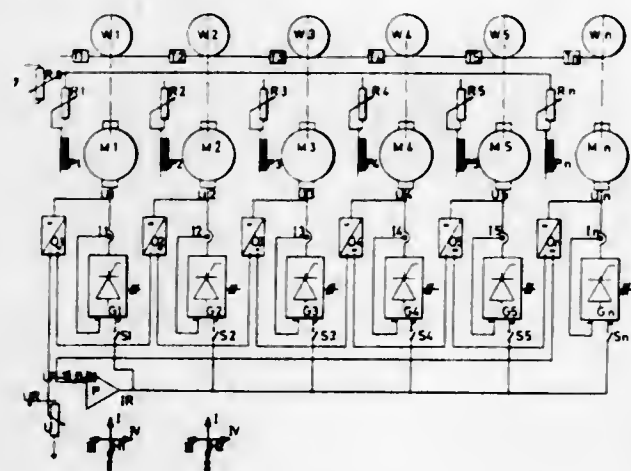
Luc Hoorelbeke, Kortrijk, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed July 14, 1972, Ser. No. 271,724

Claims priority, application Belgium, July 16, 1971, 770100  
Int. Cl. B21c 1/12

U.S. Cl. 72-288

4 Claims



A wire drawing machine has a plurality of drawing dies each associated with a drawing block powered by a direct current

electric motor, all the motors being connected in parallel and having current supply controlling circuitry which insures that the sum of all of the motor speeds are constant and that all torques are equal except for a proportionality factor.

### 3,822,576

#### REDRAWING APPARATUS

Jean Hardt, Fribourg, Switzerland, assignor to Aluminum Suisse S.A., Chippis, Switzerland

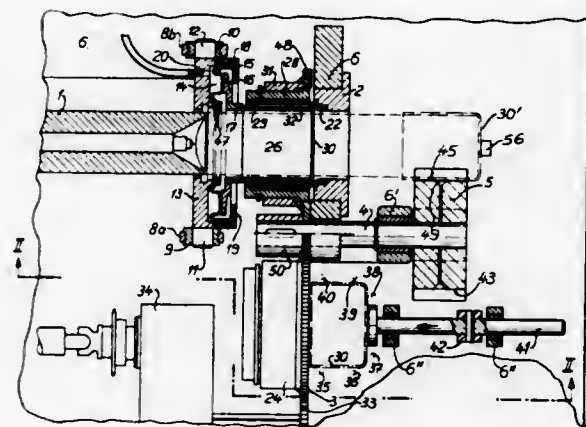
Filed Dec. 14, 1972, Ser. No. 315,228

Claims priority, application Switzerland, Dec. 17, 1971, 18537/71

Int. Cl. B21d 22/28, 43/05

U.S. Cl. 72-348

15 Claims



An apparatus for redrawing cup-shaped blanks comprises an indexed rotary platform including members for receiving blanks and conveying them to a redrawing station comprising a redrawing die and a punch, said members each including a tubular cylindrical blank-clamping piece axially slidably mounted in the platform. The redrawing station includes a pusher unit disposed coaxially about said punch for axially pushing the blank-clamping piece of each member successively located at said redrawing station to a position in which a blank carried by said member is clamped against said die during redrawing.

### 3,822,577

#### METHOD FOR MAKING UNIVERSAL BLADE CONSTRUCTION

Harry W. Roberts, Merrick, N.Y., assignor to Pylon Manufacturing Corporation, Ft. Lauderdale, Fla.

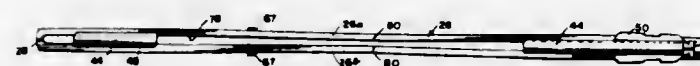
Division of Ser. No. 197,776, Nov. 11, 1971. This application

June 6, 1973, Ser. No. 367,245

Int. Cl. B21d 53/88

U.S. Cl. 72-379

4 Claims



A universal blade construction adapted to fit windshield wipers having yokes with different width dimensions between the blade-straddling claws that retain the blade construction. The blade construction includes a backing strip providing a longitudinal slot-like opening formed by a pair of substantially parallel side rails which are upset at the centers inwardly of the center line of each said rail to cause a lateral bowing effect between the center and each end, whereby the blade construction will fit snugly in between claws of different widths.

### 3,822,578

#### PIPE BENDING DEVICES

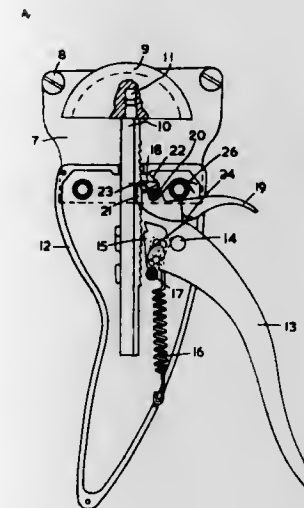
Leslie Arthur Le Breton, Preston Ln., Marston Dr., Maidstone, England

Filed Jan. 24, 1973, Ser. No. 326,336

Int. Cl. B21d 7/06

U.S. Cl. 72-389

1 Claim



A pipe bending device is disclosed having a pair of abutments and a ratchet operated anvil arranged to be advanced between the abutments to bend a pipe. The ratchet is manually operated. A spring loaded latch mechanism is provided and includes a lever pivoted on the body, a ratchet pawl pivoted to the end of the lever and the lever being releasably engageable with the manual operating means to allow the lever and pawl to be held out of engagement with the ratchet so that the anvil can be retracted.

### 3,822,579

#### HIGH-SPEED COUNTERSTROKE HAMMER

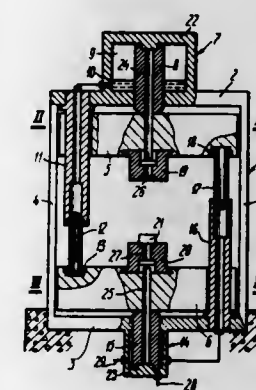
Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Igor Grigorievich Fedosenko, 602 mikrorayon dom 51, kv. 206, and Anatoly Stepanovich Chernyavsky, ulitsa Chkalova, 15, all of Kharkov, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,238

Int. Cl. B21j 9/12

U.S. Cl. 72-407

2 Claims



A hammer is disclosed having crossbars with actuating tools secured thereto, which effect a counterstroke under the action of two coaxial power cylinders mounted on relevant crossbeams of the hammer frame. The top crossbar is returned into the initial position under the action of hydraulic cylinders, mounted on the bottom crossbeam and having a connection through hydraulic means with the bottom power cylinder, while the bottom crossbar is under the action of air-hydraulic cylinders mounted on the top cross-beam and having a connection through hydraulic means with the top power cylinder made as an air-hydraulic receiver.

### 3,822,580

#### APPARATUS FOR THE MEASUREMENT OF HEAT EXTRACTION COEFFICIENTS

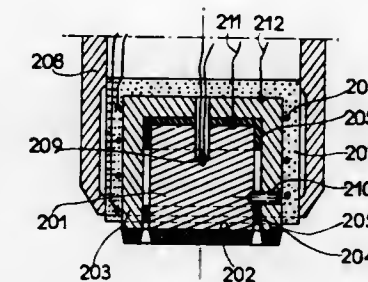
Jean F. Jamet, Janvry, and Daniel L. Balageas, Vincennes, both of France, assignors to Office National d'Etudes et de Recherches Aeronautiques, Chatillon-sous-Bagneux, France

Filed Dec. 13, 1971, Ser. No. 207,219

Int. Cl. G01h 25/00

U.S. Cl. 73-15 R

2 Claims



The apparatus includes a feeler constituted by two masses of good heat-conducting metal of which the central mass is called a measuring mass and the other mass is a protective mass surrounding the former mass at a short distance. The two masses are separated by a thin layer of a heat insulating medium. Each mass has a contact surface with the body to be measured. The contact surfaces are situated on a same continuous surface of measuring means for the temperature of the measuring mass. Means for measuring the difference in temperature of the two masses and electrical heating means surrounding the protective mass, are provided. Automatic controls can be included. The apparatus is useful for non-destructive testing.

### 3,822,581

#### AUTOMOTIVE ENGINE EXHAUST GAS COMPOSITION SENSING APPARATUS

Franz Hauck, Denkendorf, and Joachim Poppel, Reichenbach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

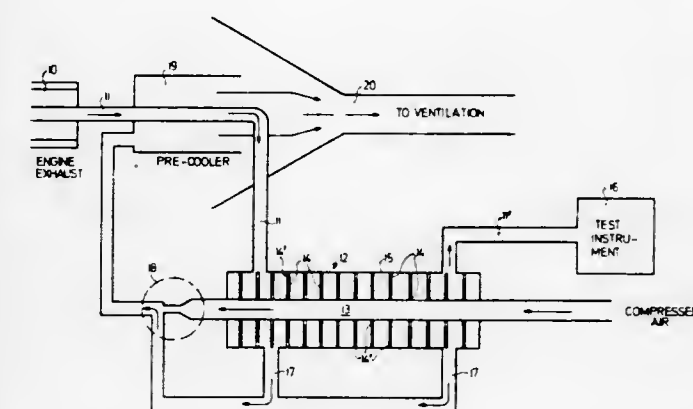
Filed Feb. 22, 1973, Ser. No. 334,925

Claims priority, application Germany, Mar. 30, 1972, 2215641

Int. Cl. G01m 15/00

U.S. Cl. 73-23

4 Claims



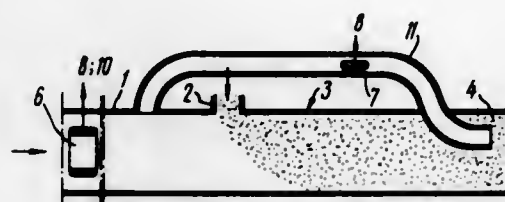
To prevent dirt, moisture, and other contamination present in the exhaust gases from automotive engines to reach sensitive sensing elements of exhaust gas sensing apparatus, a thermal condensing-type separator is interposed in the gas flow from the exhaust of the internal combustion engine to the sensing element, preferably cooled by compressed air which is additionally utilized to suck off precipitated, or separated contamination from the separating device, and to maintain a pressure differential of the contamination separated from the exhaust gases to provide for self-cleaning of the separator.



**3,822,582**  
**DEVICE FOR MEASURING THE CONCENTRATION OF SUSPENDED PARTICLES**  
 Vulf Borisovich Etkin, Vostochnaya ulitsa, 1/7, korp. 1, kv. 60, Moscow, U.S.S.R.  
 Filed Oct. 4, 1972, Ser. No. 294,876  
 Int. Cl. G01n 15/06

U.S. Cl. 73-28

3 Claims

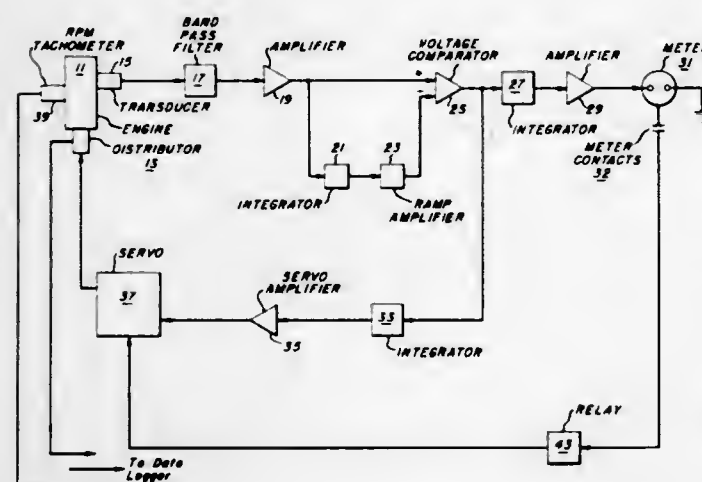


A device for measuring the concentration of suspended particles in which there is provided a pipeline wherein the suspended particles are transported pneumatically, with the pipeline being equipped with an element for introduction of these particles. An additional pipeline is located relatively to the principal pipeline so that one of its ends, being the outlet end with respect to the direction of flow of the carrier fluid, is disposed in the region of velocity stabilization of the suspended particles on the measuring portion confined by this region and the element for introduction of particles, and the other end is located outside the said measuring portion in the region free of particles transported in suspension. The principal pipeline contains a parametric converter of the parameter characterizing the mass flow rate of carrier fluid, and the additional pipeline in which only the carrier fluid flows contains a parametric converter, characterizing the mass flow rate of suspended particles, with the magnitude of the signals from the parametric converters being used to determine the concentration of the suspended particles.

**3,822,583**  
**METHOD FOR DETERMINING OCTANE RATINGS OF FUELS UNDER ROAD CONDITIONS**  
 Billy D. Keller, Valparaiso, Ind.; Irwin Ginsburgh, Morton Grove, and Lawrence T. Wright, Homewood, both of Ill., assignors to Standard Oil Company, Chicago, Ill.  
 Filed Nov. 30, 1972, Ser. No. 310,690  
 Int. Cl. G01l 23/22; G01n 33/22

U.S. Cl. 73-35

12 Claims

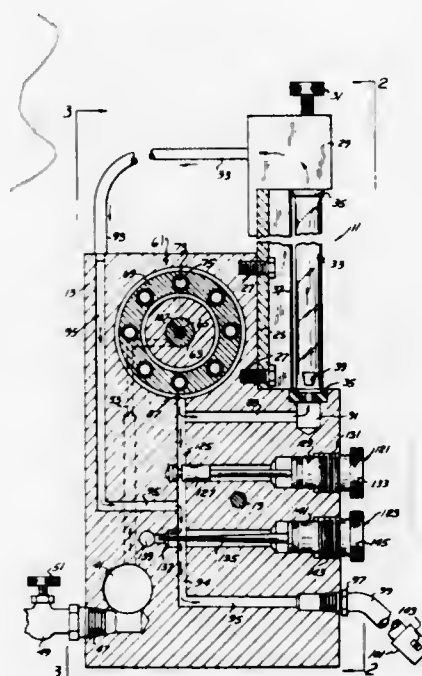


Method and apparatus for detecting engine knock and measuring octane ratings of petroleum fuels in automotive engines and of measuring octane number requirements of said engines. Method and apparatus are herein described for maintaining a controlled knock condition in an internal combustion engine throughout a controlled acceleration of said

engine by using a portion of the electrical output of at least one sensor device contacting said engine suitably processed to be proportional to the knock signal to control a servo device operating the spark timing for use in Modified borderline and Modified Uniontown knock rating. In octane number requirements work the signal is used to indicate the occurrence of knock.

**3,822,584**  
**AIR FLOW GAGING DEVICE**  
 William A. Minix, Detroit, Mich., assignor to Freeland Gauge Company, Detroit, Mich.  
 Filed Nov. 9, 1972, Ser. No. 305,145  
 Int. Cl. G01b 13/10; G01m 3/26  
 U.S. Cl. 73-37.9

8 Claims



An air flow device for gaging bores or the predetermined dimension of a part wherein air leakage from a gage element within said bore or relative to such part is visibly measured and compared with air leakage of said gage element within a predetermined master bore or part of predetermined dimension thus, providing a range for the selection or rejection of work pieces. The air flow device has a valve body with an intake chamber for the delivery of low pressure air to and through an air tube for the moving of a float therein, as well as a delivery passage which receives the air flowing through said air tube adapted for connection to air gage tooling. A manifold within the valve body is connected to a source of high pressure air and has an outlet which connects to the high pressure chamber of an automatic air flow control device. The air flow control device includes a cylinder and a spring biased piston which define a low pressure chamber which communicates with said intake chamber and with a needle valve nested in said high pressure chamber engaged by said piston for determining air flow of low pressure from said cylinder.

**3,822,585**  
**LEAK TESTER FOR BATTERIES**  
 Henry Toback, New Ringgold, Pa., assignor to General Battery Corporation, Reading, Pa.  
 Filed Sept. 5, 1972, Ser. No. 286,067  
 Int. Cl. G01m 3/26

U.S. Cl. 73-49.2

9 Claims

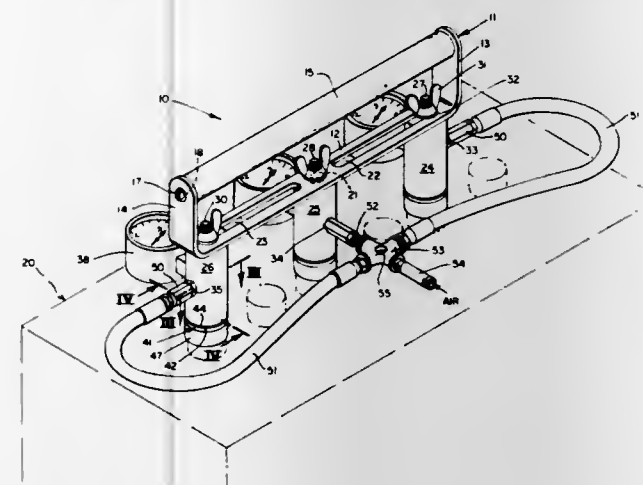
A device is provided, for testing batteries for leaks, preferably adapted for the testing of batteries in a "dry" condition, prior to introduction of liquid (acid) thereinto. The device is adapted to be engaged and applied to a battery, with inlets disposed over cell openings of a plurality of cells of the

battery, with gas (generally compressed air) being provided at some predetermined level of pressure to the batteries, and for

**3,822,587**  
**AXIAL FORCE MEASURING METHOD UTILIZING ULTRASONIC WAVE**  
 Takayuki Makino, Okazaki, and Haruhiko Toriyama, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Toyota-shi, Japan  
 Filed Nov. 9, 1971, Ser. No. 196,896  
 Claims priority, application Japan, Nov. 24, 1970, 45-103555

Int. Cl. G01h 13/00; G01l 5/12  
 U.S. Cl. 73-67.2

4 Claims

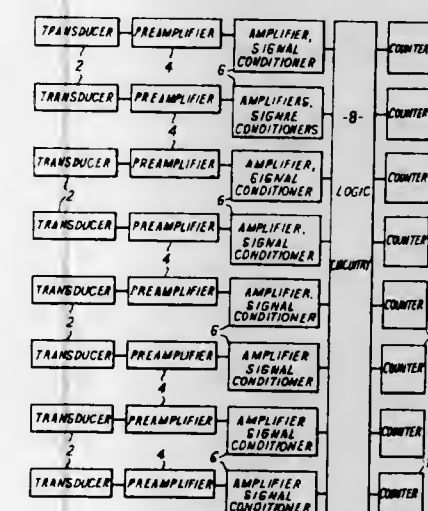


giving a visual indication regarding pressure of a plurality of cells at the same time. The device is constructed to be adjustable for accommodating variously sized batteries.

**3,822,586**  
**ELECTRICAL CIRCUIT MEANS FOR USE IN ACOUSTIC EMISSION DETECTING AND/OR RECORDING APPARATUS**  
 Adrian Anthony Pollock, Bar Hill, Cambridge, England  
 Filed Aug. 1, 1972, Ser. No. 276,955  
 Int. Cl. G01h 1/00

U.S. Cl. 73-71.4

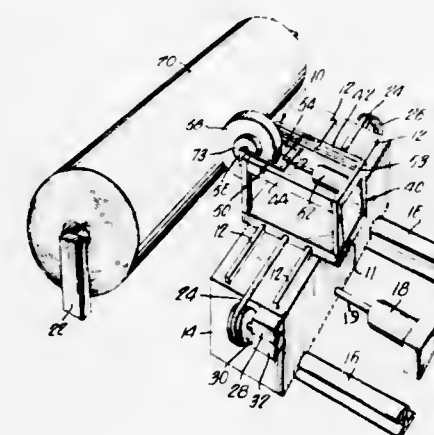
9 Claims



Electrical circuit means for use in acoustic emission detecting and/or recording apparatus comprises logic gates which in operation of the apparatus are connected to respective transducers so as to receive electrical signals representative in time of the distances of the transducers from a source of acoustic emission. Each gate is set prior to the receipt of a signal from the associated transducer to afford an output signal on receipt of a signal at its input. Further logic elements are provided which are connected with the logic gates and are adapted upon receipt by one of the gates by an input signal to reset for a predetermined time at least the remainder of the logic gates so as to prevent the appearance of an output signal on any of said remainder of the logic gates at said predetermined time.

**3,822,588**  
**APPARATUS FOR MEASURING THE HARDNESS OF MATERIAL**  
 Richard Langham Castle Knight, 10 Arnside Ave., Stockport, England, and George H. O. Blenes, 3500 Rutland Ave., Powell River, B. C., Canada  
 Continuation-in-part of Ser. No. 85,928, Nov. 2, 1970, abandoned. This application May 12, 1972, Ser. No. 252,861  
 Int. Cl. G01n 3/42  
 U.S. Cl. 73-81

27 Claims



A method and apparatus for testing and measuring hardness such as roll hardness or hardness of a single or multiple layers of material having a somewhat compressible surface. Contactor means are applied to a material having a compressible surface at a known force-loading ratio and permit generation of electrical signals proportional to this ratio which are used to provide an accurate indication of the hardness of the material. The apparatus and method can be used in a static or dynamic mode of operation. The method and apparatus may be used with either one or two contactor members which contact the compressible surface at known force loadings.



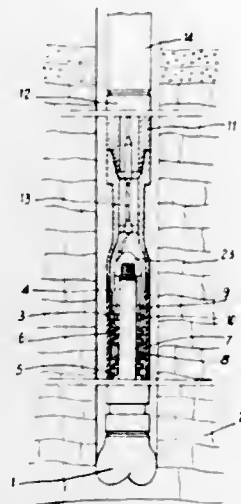
3,822,589

**SENSING DEVICE TO MEASURE THE SPEED OF ROTATION OF DRILLING TURBINES**

Jean-Pierre Le Peuvedic, and Jacques Tinchon, both of Pau, France, assignors to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine Tour Aquitaine, Paris, France  
Filed May 30, 1972, Ser. No. 257,763  
Int. Cl. E21b 45/00

U.S. Cl. 73-151

4 Claims



This invention concerns a sensing device to measure the speed of rotation of a drilling turbine, used with a device to transmit signals from the bottom of the well to the surface.

This sensing device consists of a detector working with a mobile magnetic flux transducer, a tube containing the leads, and a male plug for connection with the transmitting device, with a flange at the top end of the tube which rests on the conical base of the turbine neck.

The device, because of its design, offers the advantages of a removable unit, which will fit any type of turbine.

3,822,590

**TEXTILE SLIVER UNEVENNESS DETECTING**

James B. Tharpe, Taylors; Christoph W. Aurich, Clemson, and Joseph B. Wallace, Greenville, all of S.C., assignors to Marmont Corporation, Chicago, Ill.

Filed May 1, 1972, Ser. No. 249,292  
Int. Cl. D01h 5/32

U.S. Cl. 73-160

18 Claims



Method and apparatus for automatically reducing variations in the mass of moving staple fiber sliver including a novel textile fiber unevenness detector comprising a plurality of opposing members joined at one end so as to provide therebetween an enclosed passageway, wherein at least one of said members is inwardly and resiliently biased and bears a strain gage responsive to the outward displacement of the member for providing an electrical signal proportional thereto, whereby a textile fiber strand passing through the passageway displaces the unjoined end of the member outwardly thereof against the inward resilient bias thereof in proportion to the thickness and thus the instantaneous mass of the strand. The strain gage provides an electrical signal also proportional to the displacement. The invention also provides evening apparatus for continuously evening the mass of the moving fiber strand and presenting it to a drawing frame at uniform velocity including electrical and mechanical actuation means responsive to the electrical output signal of the unevenness detecting device.

3,822,591

**PRECISION, FLUID FLOW METERING DEVICE**

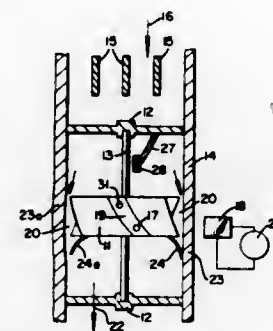
Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Filed Mar. 14, 1972, Ser. No. 234,539

Int. Cl. G01f 1/00, 3/00

U.S. Cl. 73-194 M

39 Claims



A device for metering fluid flow which comprises a fluid flow chamber, fluid inlet and outlet connected thereto, and a moving member cyclically movable with an operative clearance therein and through momentum exchange mechanically interacting with the fluid flow therethrough. The entire circumferential region of the moving member is relatively and automatically recedable from, and advanceable toward, the nearby inside wall of the flow chamber in accordance with, respectively, increasing and decreasing rates of the fluid flow. This feature controllably changes the circumferential clearance therebetween and insures that the cyclic speed of the member is proportional to the fluid flow rate, even at very low flow rates. The member may be provided with frictionless gas or liquid bearings for improved measuring accuracy and reliability. The device may also be mechanically temperature-compensated for measuring fluid mass flow, rather than fluid volumetric flow.

3,822,592

**INTEGRAL ORIFICE ASSEMBLY FOR HEAD METERS**

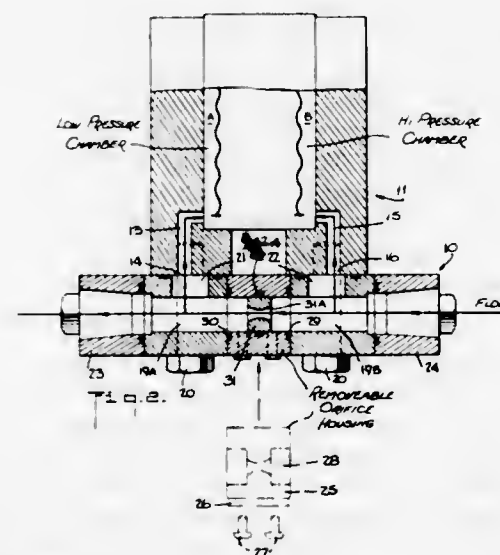
William A. Siegel, Norristown; Herman C. Aafjes, Jr., Hatfield, and Herman Marx, Southampton, all of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Mar. 29, 1973, Ser. No. 345,838

Int. Cl. G01p 5/14

U.S. Cl. 73-211

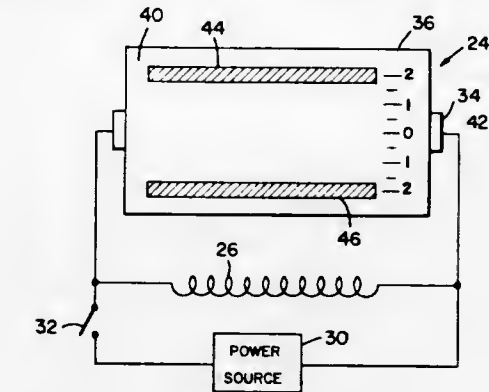
6 Claims



An orifice assembly serving as a primary element of a head flow meter whose secondary element includes a pressure capsule having a pair of pressure chambers disposed within a housing and coupled to respective inlets on the housing wall.

The assembly comprises a manifold body directly mounted on the housing wall and including a major longitudinal passage that is connectable to a line carrying the fluid whose flow rate is to be measured. The major passage is divided into two sections by an intermediate breach in the manifold body, the two sections communicating with respective lateral ports that register with the inlets leading to the pressure chambers. Receivable in the breach is a breach block provided with a minor longitudinal passage that links the two sections of the major passage when the block is in place. A replaceable orifice member is insertable in the minor passage to restrict the flow of fluid therethrough to induce a differential pressure that is sensed by the pressure capsule.

appliance and means for insulating said device to provide a cooling response of said liquid crystal composition analogous



3,822,593

**CLINICAL THERMOMETER PROBE AND DISPOSABLE COVER THEREFOR**

Martin J. Oudewaal, Del Mar, Calif., assignor to Diatek, Inc., San Diego, Calif.

Filed Jan. 12, 1972, Ser. No. 217,371

Int. Cl. G01k 1/08

U.S. Cl. 73-343 R

9 Claims



A hand-held elongated probe with a thermistor element at its end and a disposable sanitary cover therefor. The disposable cover has a thin flexible membrane at one end thereof. The membrane of the probe cover is normally held tightly at its end in a flat but substantially unstretched manner. When a cover is positively engaged with the probe, its membrane is stretched tightly about the thermistor unit to permit efficient heat transfer to the thermistor from the environment outside the probe cover.

to the cooling response of said heating appliance, when electrical energy is no longer being supplied to said heating element.

3,822,595

**BLIND RIVET SETTING ATTACHMENT FOR POWER TOOLS**

Manfred Elfein, Bad Neustadt/Saale, Germany, assignor to Nieten-und Metallwarenfabrik Alfred Honsel, Fronenberg/Ruhr, Germany

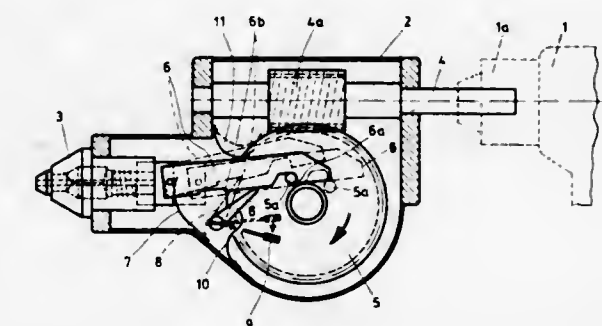
Filed Aug. 23, 1972, Ser. No. 283,065

Claims priority, application Germany, June 20, 1972, 2230082

Int. Cl. B21d 9/05

U.S. Cl. 72-391

2 Claims



A reciprocable blind rivet setting head is automatically coupled to and uncoupled from a continuously circulating drive lug by means of a swingable coupling bar to provide for a slow rivet pulling stroke of the head in one direction and for a fast return stroke under spring pressure in the opposite direction. Without stopping circulation of the drive lug, reciprocation of the setting head may be stopped by swinging the coupling bar out of reach of the drive lug.

3,822,596

**EQUALIZATION MECHANISM FOR DIFFERENTIAL PRESSURE METER**

John J. Bonner, Philadelphia, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Feb. 8, 1973, Ser. No. 330,662

Int. Cl. G01f 7/08

U.S. Cl. 73-407

4 Claims

**ELECTROTHERMAL ANALOG TEMPERATURE INDICATING DEVICE**

Robert Parker, 394 Harper Ln., Danville, Calif. 94526

Filed Jan. 12, 1973, Ser. No. 323,182

Int. Cl. G01k 1/12

U.S. Cl. 73-356

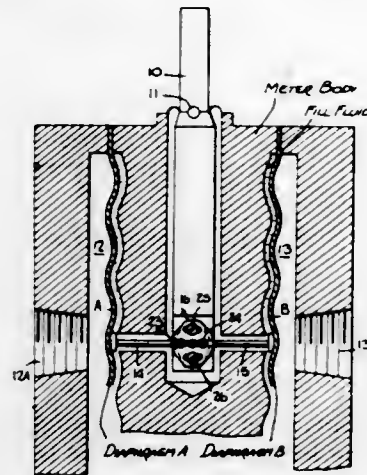
12 Claims

An electrothermal analog temperature indicating device is provided having an electrical heating resistance element with means for electrical connection to a heating appliance, a liquid crystal composition thermally responsive to said heating element to indicate at least one temperature of said heating

A differential pressure meter provided with a pair of nominally identical diaphragms linked by pins to the lower end of a pivoted force bar which is positioned intermediate the diaphragms. The diaphragms are mounted in pressure chambers respectively coupled to low and high pressure fluid inputs whereby the pins, as a result of diaphragm deflection, apply an input force to the bar that depends on the difference in input



pressures. In order to correct for any lack of identity between diaphragms, the ends of the pins are secured to the bar by an adjustable clamp assembly. The clamp is rotatable about its center on the bar within limits determined by a pair of slots



positioned above and below the center, the clamp being rotated to a degree adjusting the respective moment arms of the pins to balance the torque about the meter pivot. Screws passing through the clamp slots and received in the force bar serve to lock the clamp at its adjusted position.

3,822,597

**METHOD AND APPARATUS FOR SAMPLING LIQUIDS**  
James d'A. Clark, Chuckanut Point, Bellingham, Wash. 98225  
Filed Dec. 4, 1972, Ser. No. 311,920  
Int. Cl. G01n 1/12

U.S. Cl. 73-423 R

10 Claims



A method and apparatus is described for extracting periodically a sample of a liquid corresponding to a predetermined fraction of the whole flowing past the sampling location, with means to raise the sample to a higher level, means to discharge the sample into a container whose contents will correspond to the total volume of the stream that has flowed past that location during a known past interval, with simple means to cause the sample extractor to clear itself continually from any required slime or garbage that otherwise would affect the accuracy of the volume or the continuity of the samples taken.

3,822,598

**PORTABLE ELECTRONIC THERMOMETER AND METHOD OF TEMPERATURE MEASUREMENT**  
Benton H. Brothers; William O. Christianson; Larry L. Hunter; Max R. Hunter; Bob E. Stauder, and Donald D. Stiller, all of Tulsa, Okla., assignors to LaBarge, Inc., St. Louis, Mo.

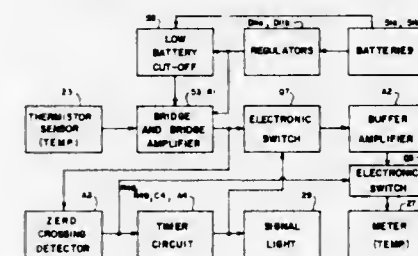
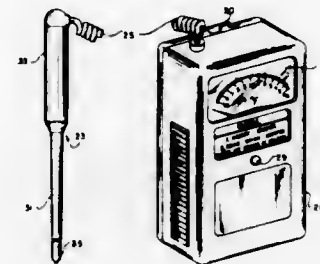
Filed Mar. 23, 1971, Ser. No. 127,243  
Int. Cl. G01k 7/24

U.S. Cl. 73-362 AR

34 Claims

An electronic thermometer having a probe for introduction into a region having a temperature to be measured. The probe

includes a temperature sensitive impedance element having a heat sensing relationship with the region when the probe is introduced thereinto. Timing means is provided for initiating a predetermined timing interval upon the temperature of the element exceeding a preselected level following introduction of the probe into the region. Circuitry measures the temperature of the element at the completion of the timing interval. A meter provides means for indicating a temperature which is a function of the measured temperature of the element at the



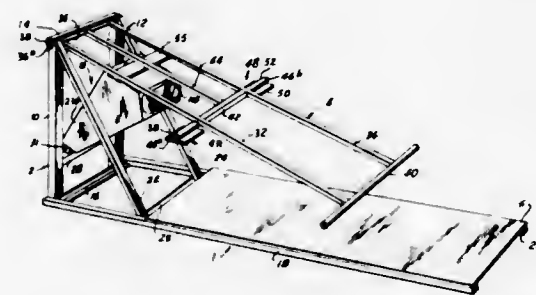
3,822,599

**EXERCISING DEVICE**

Jerry D. Brentham, Rt. 1 Box 197A, Temple, Tex. 76501  
Filed Oct. 16, 1969, Ser. No. 866,839  
Int. Cl. G01l 5/02; A63b 21/02

U.S. Cl. 73-379

19 Claims



An exercising device comprising a handle pivotally mounted on a frame with a hydraulic system connected to the handle to exert a regulated force restraining movement of the handle. The hydraulic system comprises a hydraulic cylinder, a reservoir, a valve arranged to prevent movement of the handle until a force of predetermined regulated magnitude is exerted on the handle, and a second valve arranged to control

the rate of movement of the handle when a force exceeding the predetermined magnitude is exerted thereon. A calibrated gauge indicates the magnitude of force exerted at various points on the handle.

3,822,600

**DEVICE FOR THE REMOVAL OF INDIVIDUAL SAMPLES FROM STATIC BULK MATERIAL**

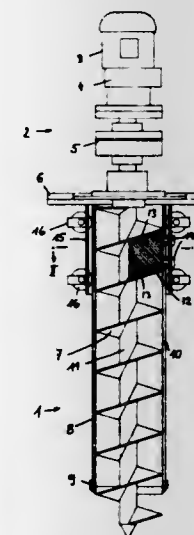
Alfred Stonner, Sickingerstr., D 4370 Marl; Rolf Kohling, Lohbusch 1, D 4640 Wattenscheid, and Manfred Debus, Erzbergerallee 101, D 5100 Aachen, all of Germany  
Filed Jan. 12, 1973, Ser. No. 323,323

Claims priority, application Germany, Jan. 15, 1972, 2201896

U.S. Cl. 73-424

Int. Cl. G01r 1/08

9 Claims



This disclosure relates to a sampling device which includes a casing having a drilling worm or auger mounted therein and wherein there is carried by the casing for movement axially thereof a scraper, the scraper being disposed between adjacent convolutions of the drilling worm and being operable both to form a top closure for the space within the casing during the taking of a sample and to effect a thorough cleaning of the drilling worm during the discharge of a sample whereby the sample discharged from the sampling device will be a complete sample and definitive of the area of the bulk material from which the sample is taken. The automatic cleaning of the sampling device both assures a complete sample and eliminates the unnecessary later cleaning of the sampling device.

3,822,601

**PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT**

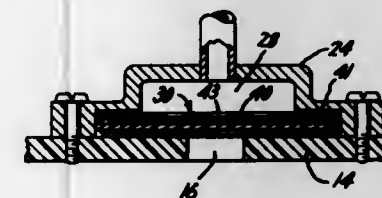
Marcus P. Borom, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,220

Int. Cl. G06g 5/00

U.S. Cl. 73-432 R

1 Claim



In this decompression computer, the computation function is performed by a composite membrane assembly of a gas-dif-

fusion membrane sandwiched between plastic reinforcing screens joined to the periphery of the membrane in an annular bond which also serves to gasket parts of the computer housing. An apertured metal retaining disc prevents gas pressure differential displacement of the central portion of the composite membrane.

3,822,602

**AXIALLY ADJUSTABLE GYRO**

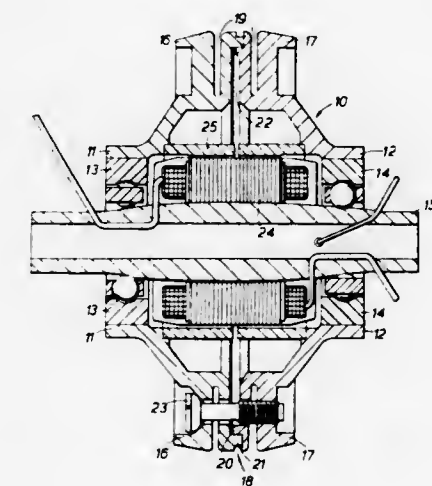
James Holmes, and William Robertson, both of Edinburgh, Scotland, assignors to Ferranti Limited, Hollinwood, Lancashire, England

Filed Oct. 18, 1972, Ser. No. 298,515

Int. Cl. G01c 19/06

U.S. Cl. 74-5 R

7 Claims



A gyroscope rotor is made so that its axial configuration may be simply adjusted by providing a resilient rim having grooves formed in it. Screws around the rim enable the resilient portion to be compressed so as to alter the configuration.

3,822,603

**SLIDE DRIVING LINKAGE FOR METAL FORMING PRESS**

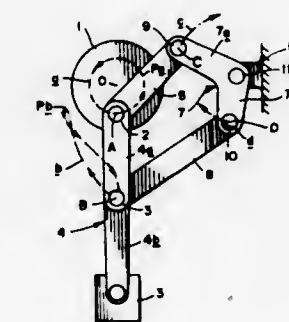
Toshimitsu Morita, and Jyousuke Kawachi, both of Osaka, Japan, assignors to U.S. Industries, Inc., New York, N.Y. and Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan, part interest to each

Filed Sept. 19, 1972, Ser. No. 290,333

Int. Cl. F16h 21/26

U.S. Cl. 74-38

4 Claims



The slide of a metal forming press is caused to rapidly approach the metal to be formed, then decelerate during the



working stroke, and thereafter rapidly return to the uppermost position thereof by means of a novel linkage arrangement.

3,822,604

# UNBALANCED VIBRATOR FOR AN OSCILLATING CONVEYOR OR A VIBRATING SCREEN

Klaus Jurgen Grimmer, A-8707 Leoben - Gob Alpenstrasse 39, Steiermark, Austria

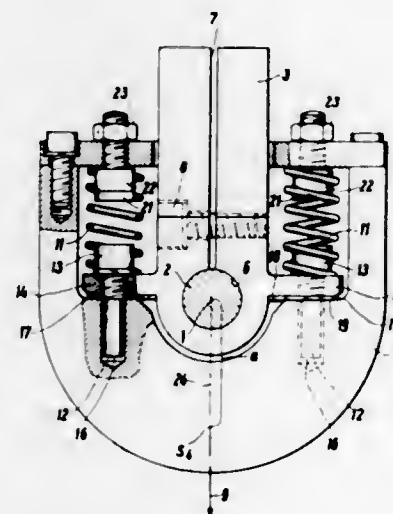
Filed June 2, 1972, Ser. No. 258,986

Claims priority, application Germany, June 3, 1971, 2127433

Int. Cl. F16h 33/10

U.S. Cl. 74-87

7 Claims



Vibratory power unit for vibrating conveyers and screens comprising an asynchronous polyphase motor, at least one pair of associated unbalanced masses disposed on the shaft of said motor, with the first mass of a pair of said unbalanced masses being rigidly fastened to said shaft and with said second mass of said pair being movably arranged relative to said first mass, means for controlling and regulating the conveying rate during conveyor operation by varying the rotational speed of said motor between predetermined minimum and maximum values, said second mass being movably outwardly by centrifugal force against the pressure of spring means, said spring means being prestressed in such a manner that said second mass is, at rotational motor speeds lower than said minimum speed, held in its initial position, and at motor speeds between said lower and upper values in positions which are radially offset with respect to the axis of said motor to an extent depending on the value of said rotational motor speed.

3,822,605

# JOURNAL MEANS FOR MOUNTING ROTARY DRUMS

Rainer Schurger, Arnsteing; Gunter Neder; Lothar Walter, both of Schweinfurt; Manfred Brandenstein, Aschfeld, and Kurt Feldle, Würzburg, all of Germany, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Feb. 9, 1973, Ser. No. 331,111

Claims priority, application Germany, Feb. 17, 1972, 7205917[U]

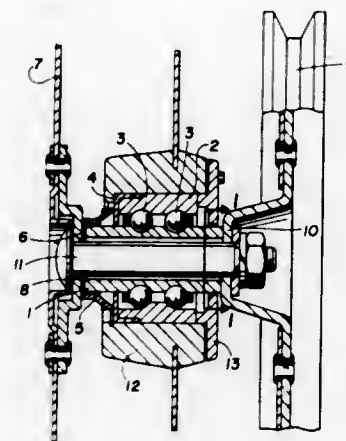
Int. Cl. F16h 55/34

U.S. Cl. 74-230.3

10 Claims

Apparatus for journalling the drum or basket of rotating machines and drying machines is provided comprising a bear-

ing having two axially spaced rows of rolling elements arranged between a common inner race ring and an outer race



ring. The inner race ring is wider (i.e.: axially longer) than the outer race ring and the rows of bearing elements are axially spaced from each other only a very small distance.

3,822,606

# ELASTIC BAR-SHAPED RACK

Miyao Yoshino, Tokyo, Japan, assignor to Kabushikigaisha Nittsu Sogokenkyusho, Tokyo, Japan

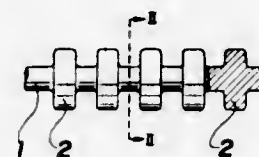
Filed Dec. 29, 1972, Ser. No. 319,650

Claims priority, application Japan, Feb. 1, 1972, 47-11008

Int. Cl. F16h 1/04

U.S. Cl. 74-422

5 Claims



A bar-shaped flexible rack for slidable linear motion under the action of a rotatable pinion within a curved guide, the rack being provided with rack teeth set at a fixed spacing on a spindle a plurality of elasticity, which spindle has a predetermined elasticity.

## ERRATUM

For Class 74-424 see:  
Patent No. 3,822,439

3,822,607

# DEVICE FOR THE LUBRICATION OF TOOTH FLANKS OF GEAR WHEELS

Nils Fr. Tharaldsen, Harald Lovenskiolds vei 42, Oslo 7, Norway

Filed July 13, 1972, Ser. No. 271,224

Claims priority, application Norway, July 15, 1971, 2716/71

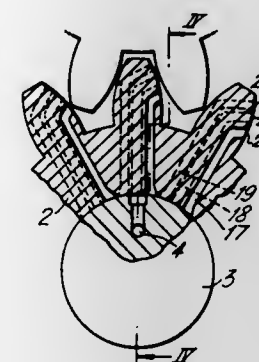
Int. Cl. F16h 57/04

U.S. Cl. 74-468

2 Claims

A device for lubrication of the tooth flanks of gear wheels, comprising a freely running toothed or spiked applying wheel each tooth or set of spikes corresponding to a tooth being pro-

vided with a plurality of radial passages each having one single outlet opening in the flank of the respective tooth or spike and



the inlet openings of the said passages being successively brought in communication with a source of lubricant under pressure.

3,822,608

# ENERGY ABSORBING STEERING ASSEMBLY

Genyo Murase, Nagoya; Hisahar Minoda, and Yozo Yamaguchi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

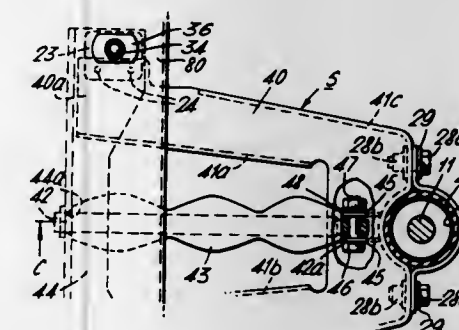
Filed May 25, 1972, Ser. No. 256,872

Claims priority, application Japan, May 25, 1971, 46-35819; May 28, 1971, 46-37156; May 31, 1971, 46-37678

Int. Cl. B62d 1/18

U.S. Cl. 74-493

8 Claims



An energy absorbing steering assembly for a motor vehicle having a steering column supporting assembly for supporting the steering column substantially at a right angle from the instrument panel of the vehicle and a steering wheel supporting assembly being able to forwardly deflect. The steering column supporting assembly is enabled to buckle to absorb forward impact energy when an impact force is exerted onto the steering wheel and the steering wheel supporting assembly functions to absorb further the forward impact energy in addition to the buckling operation of the steering column supporting assembly.

3,822,609

# CONNECTING ROD

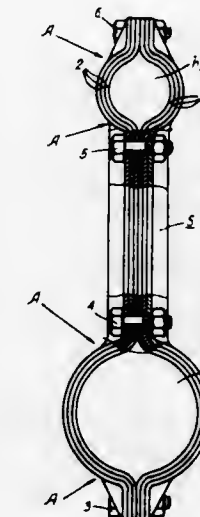
Stefan Kotoc, Praha, Czechoslovakia, assignor to Ustar pro uyzkum motorovych vozider, Praha, Czechoslovakia

Filed Apr. 17, 1972, Ser. No. 244,663

Int. Cl. F16c 7/08

U.S. Cl. 74-579 E

9 Claims



A connecting rod comprising a shank and at least one end connecting member, formed entirely of layers of strip sheet steel.

3,822,610

# TRACTION ROLLER TRANSMISSION WITH TORQUE LOADING MEANS

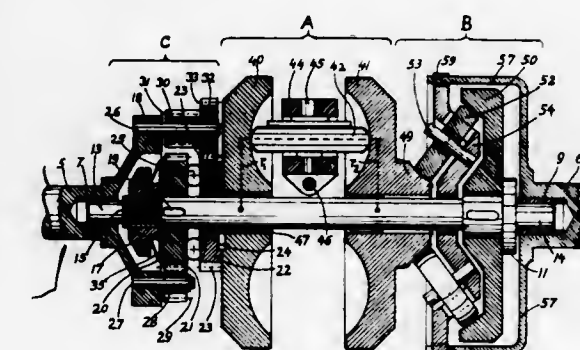
Richard T. Erban, 145-38 Bayside Ave., Flushing, N.Y. 11354

Filed Aug. 31, 1972, Ser. No. 285,517

Int. Cl. F16h 37/06

U.S. Cl. 74-691

6 Claims



This invention relates to traction roller transmissions with infinitely variable driving ratio, which are especially designed for the propulsion of automotive vehicles. In order to compete with presently used drives, an infinitely variable transmission must have a high efficiency of over 95 percent and a long service fatigue life when operating over long time periods at full engine power. Presently known designs can not meet these requirements. The transmission here disclosed is based on a novel concept and design and will deliver full engine power at 97 to 98 percent efficiency over the upper ratio range, including top speed ratio, and has a service fatigue life of over 100,000 vehicular miles. These results are achieved for a toric race and roller drive having a torque loading device for maintaining the required pressure in the tractive roller contacts by the combination with the torque load device of a novel planetary torque-split device, causing a preselected modification of the axial pressure forces and their characteristic over the entire ratio range; reducing the axial pressures produced by the



torque load device only for the upper part of the speed ratio range also reduces the losses of power in the tractive rolling contacts, thereby increasing the efficiency and the service fatigue life of the toric rollers and races. FIG. 7 and text give details of this modification of the axial pressure characteristic as against the characteristic obtained by a conventional torque load device.

3,822,611

**CONTROL CIRCUIT FOR AN AUTOMATIC GEAR BOX**  
Jean Piret, Bougival, France, assignor to Automobile Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, both of, France

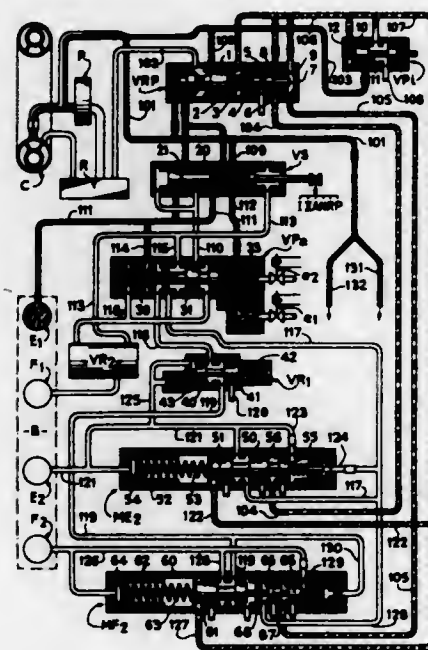
Filed June 27, 1972, Ser. No. 266,577

Claims priority, application France, July 21, 1971, 71.26636

Int. Cl. F16h 3/44, 57/10; B60k 17/02

U.S. Cl. 74-753

7 Claims



Hydraulic control circuit for a gearbox having planetary gear means and speed ratio selecting means which are associated with the planetary gear means and include clutch and brake devices the selective actuation of which determines the speed ratio. The control circuit includes means for modifying the value of the line pressure as a function of the speed engaged.

3,822,612

**CHANGEABLE SPEED AND TORQUE VALVE ACTUATOR**

Robert E. Sanctuary, Shewsbury, Mass., assignor to Worcester Controls Corp., West Boylston, Mass.

Filed Feb. 5, 1973, Ser. No. 329,950

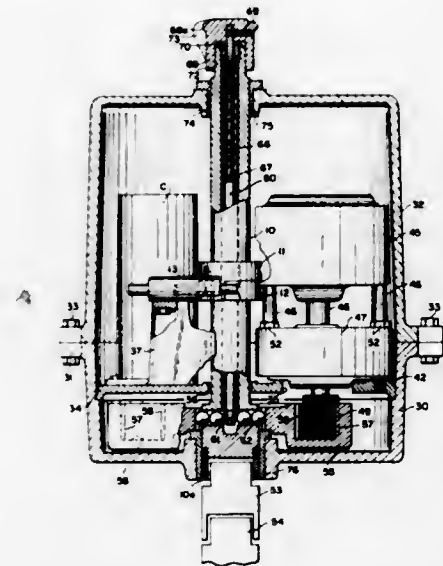
Int. Cl. C11d 17/00

U.S. Cl. 74-849

12 Claims

An electric actuator for varying the position of a valve stem comprises an output shaft adapted to be coupled to the valve stem. The output shaft is selectively rotated, between limit positions defined by a pair of electrical limit switches cooperating with cams carried by the output shaft, through the agency of a motor module comprising one or more electric motors and an associated gear box having an output pinion in drive engagement with an output gear coupled to the output shaft. The output gear includes two sets of concentric teeth disposed in spaced relation to one another, and adapted to be engaged individually by the motor module pinion, for driving the output shaft at different torques and speeds in dependence upon which set of output gear teeth is engaged by the pinion.

The motor module can be mounted in either of two different positions to cause its pinion to engage one or the other of the output gear teeth sets. The output pinion is preferably located



at an eccentric position relative to the motor module so that pinion engagement can be shifted from one to the other of the gear teeth sets by a 180° reversal in the motor module mounting position.

3,822,613

**BANDSAW GRINDER**

Vladimir Viktorovich Idel, ulitsa Gertsena, 3, kv. 37, Zavolzhie Gorkovskoi Oblasti, U.S.S.R.

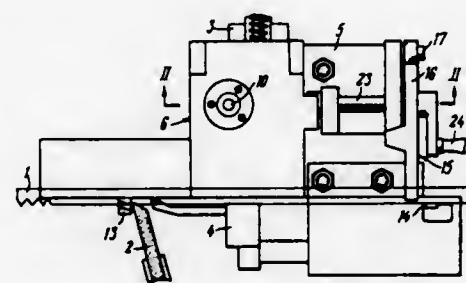
Filed Aug. 2, 1972, Ser. No. 277,255

Claims priority, application U.S.S.R., Feb. 22, 1972, 1746566

Int. Cl. B23d 63/08

U.S. Cl. 76-37

2 Claims



A band saw grinder comprising a flexible clamping device for holding the saw in a floating position and a device for braking the saw in the course of grinding.

3,822,614

**TOOL FOR USE AS JAR AND BOTTLE OPENER**

Radoslav Kovacevic, 300 N. State St., Chicago, Ill. 60610

Continuation of Ser. No. 795,284, Jan. 30, 1969, abandoned.

This application June 19, 1972, Ser. No. 263,814

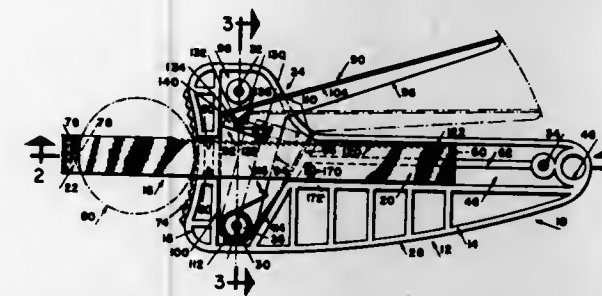
Int. Cl. B67b 7/14

U.S. Cl. 81-3.42

1 Claim

In a tool having opposed jaws and lever-actuated mechanism for drawing the jaws together to fit against

threaded parts of various sizes, the lever-actuated mechanism comprises a pivotally mounted lever and force transmitting



means movable over an arcuate path in substantially parallel relation to a sliding member formed with a series of ratchet teeth.

3,822,615

**WIRE AND CABLE INSULATION REMOVING DEVICE**

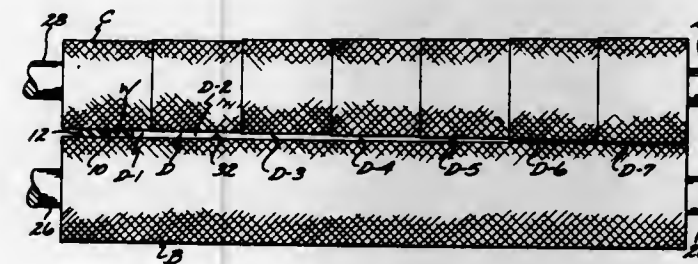
Clovis H. Reed, 421 Merced St., Avenal, Calif. 93204

Filed Sept. 29, 1972, Ser. No. 293,387

Int. Cl. H01b 15/00; B26f 3/04

U.S. Cl. 81-9.51

1 Claim



A power-operated device for removing insulation from various sized scrap wires and cables without burning, and thus improving the ecology by eliminating the discharge of smoke and fumes into the ambient atmosphere.

Leaf and stalk feed material, piled on a rotatable turntable, is removed in a continuous rope-like form by a cutting tool supported on one end of a boom. The boom is pivotally mounted at one end so that its other end supporting the cutting tool can swing inwardly from the outer circumferential periphery of the turntable toward its center as the cutting tool removes the material from the pile and directs it into a conveyor duct extending along the boom from its free end to its pivoted end. The drive arrangements for the boom, the cutting tool and the turntable can be interrelated to afford coordinated operation in removing the material from the turntable as the cutting tool swings inwardly and for returning the cutting tool to its starting position when the material has been completely removed from the turntable.

3,822,616

**NUT DRIVER**

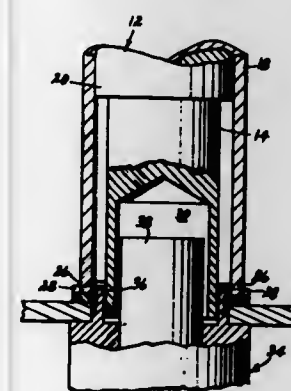
Ruben Verldon Phillips, Mason, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 23, 1973, Ser. No. 334,987

Int. Cl. B25b 13/48

U.S. Cl. 81-90 C

1 Claim U.S. Cl. 82-18



A tool for driving a notched ring nut to secure a device to a panel, with means for preventing lateral slippage of the tool while turning the same during engagement of the tool in notches of the notched nut having a clearance region providing clearance for internal interference of a projection on the device.

3,822,618

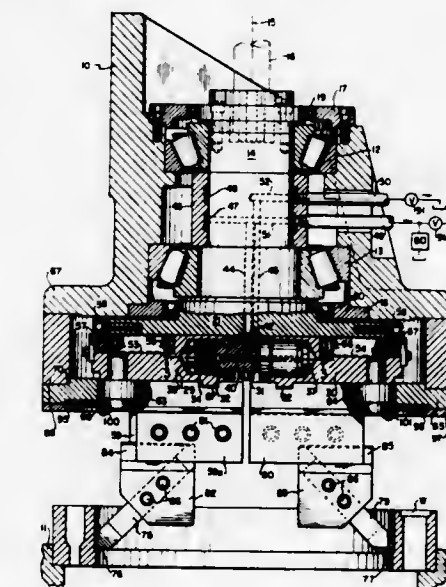
**CONTOUR MACHINING**

Arthur A. Tomenceak, Fairfield, Conn., assignor to The Bulard Company, Bridgeport, Conn.

Filed Nov. 13, 1972, Ser. No. 305,653

Int. Cl. B23b 3/28, 3/00

13 Claims



The disclosure relates to techniques in equipment for the machining with single point tooling of non-circular shapes and



contours. The procedure according to the invention involves the use of a rotary cutting head, carrying one or more cutting tools, arranged to be advanced axially to accomplish internal boring or external turning of non-circular shapes. The cutting head, which may be considered either a boring head or a turning head, depending on whether the cut is taken internally or externally, is mounted for controlled advancing and retracting movements along its rotational axis. The cutting tools themselves, which are carried by the cutting head, are mounted for controlled radial extending and retracting movements as a function of the rotational position of the spindle. The extending and retracting movements of the cutting tool or tools is controlled by means of a pre-shaped contour cam mounted in fixed relation to the workpiece. During each rotation of the spindle, the cutting tools are extended and retracted according to the pattern of the contour cam, resulting in a contoured, non-circular, cutting or boring of the workpiece. Because the tool-carrying spindle rotates, while the work remains stationary, the centrifugal force created by the spindle rotation is used to great advantage to assist in controlling movement of the tool slide in accordance with the path determined by the contour cam.

The process and apparatus of the invention can be utilized to outstanding advantage in connection with the machining of epitrochoidal chambers for rotary combustion (e.g., Wankel) engines. Significant process aspects of the invention are directed to that end. In this connection, the invention involves the two-stage machining of an epitrochoidal chamber, with the spindle axis of the machine offset a predetermined distance from the plane dividing the two principal lobes of the chamber. In accordance with an important aspect of the invention, by off-setting the spindle axis along the major axis of the chamber, to be located a short, predetermined distance from the transverse dividing plane, an entire half of the epitrochoidal chamber may be machined in one pass of the spindle, using single point cutting tools. The spindle axis is then symmetrically repositioned in offset relation on the opposite side of the dividing plane, to effect machining in a single pass of the other half of the chamber. This extraordinary technique permits exceptional time economies to be realized in the machining of the combustion chamber while at the same time achieving much greater levels of accuracy than has been obtainable with conventional machining processes.

3,822,619

#### TOOL HOLDER ASSEMBLY HAVING MEANS FOR SELECTIVELY ADJUSTING THE POSITION OF THE WORK TOOL

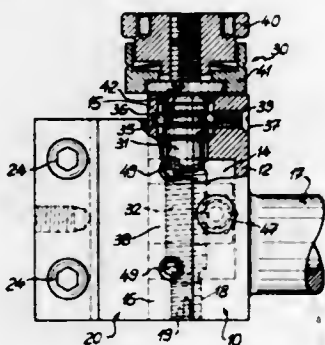
Charles Willen, Villeneuve, Switzerland, assignor to Charles Willen & Cie., Villeneuve, Switzerland  
Division of Ser. No. 386,297, Aug. 7, 1973, which is a continuation of Ser. No. 67,370, Aug. 27, 1970. This application Oct. 5, 1973, Ser. No. 404,127

Claims priority, application Switzerland, Aug. 29, 1969, 13108/69; Aug. 29, 1969, 13109/69; Aug. 29, 1969, 13110/69; Aug. 29, 1969, 13112/69

Int. Cl. B23b 29/10

U.S. Cl. 82—36 R

10 Claims



A tool holder assembly comprises a support member connectable to a machine tool and having therein a linear

slideway. A slide member is slideably mounted in the slideway and the slide member is provided with a tool-holding recess for releasably holding a work tool. An adjustment device coacts with the support member and the slide member for selectively adjusting the position of the slide member along the slideway to thereby accordingly effect adjustment of the work tool. The adjustment device comprises a screw mounted on the support member for rotational movement but not translational movement and the screw has a threaded portion which extends through a cavity provided in the support member. The slide member is provided with a threaded nut which extends into the cavity and in threaded engagement with the screw so that angular displacement of the screw effects linear displacement of the slide member along the slideway. A manually graspable knob is connected to the screw to enable manual adjustment of the slide member.

3,822,620

#### TOOL HOLDER ASSEMBLY HAVING MEANS FOR SELECTIVELY ADJUSTING THE POSITION OF THE WORK TOOL

Charles Willen, Villeneuve, Switzerland, assignor to Charles Willen & Cie., Villeneuve, Switzerland

Division of Ser. No. 386,297, Aug. 7, 1973, which is a

continuation of Ser. No. 67,370, Aug. 17, 1970. This

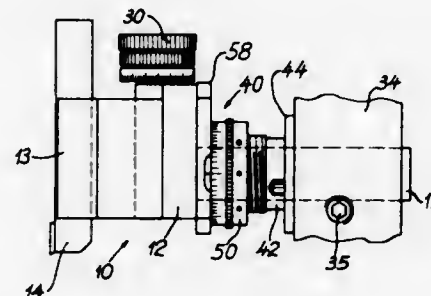
application Oct. 5, 1973, Ser. No. 404,128

Claims priority, application Switzerland, Aug. 29, 1969, 13108/69; Aug. 29, 1969, 13109/69; Aug. 29, 1969, 13110/69; Aug. 29, 1969, 13112/69

Int. Cl. B23b 29/10

U.S. Cl. 82—36 R

9 Claims



A tool holder assembly comprises a tool support having a tool-holding recess for releasably holding a work tool and a mounting shank slideably disposed within a bore provided in a machine tool so that the work tool position may be adjusted by adjustably sliding the mounting shank relative to the machine tool. An adjustment device connected between the tool support and the machine tool enables very accurate adjustment of the work tool position. The adjustment device comprises an externally threaded tubular shaft connected to the machine tool and slideably receiving therethrough the mounting shank, and an internally threaded hollow sleeve rotatably connected to the tool support and threaded onto the tubular shaft. The hollow sleeve is rotatably connected to a support flange affixed to the tool support by means of a set of antifriction rollable members housed in bearing races formed directly in the support flange and the hollow sleeve. A series of blind holes are provided around the outer surface of the hollow sleeve and a tool inserted into the blind holes enables manual rotation of the hollow sleeve to effect axial displacement of the tool support and thus the work tool relative to the machine tool.

3,822,621

#### METHOD AND APPARATUS FOR CUTTING ELONGATE ARTICLES

Richard Northan Knights, Gloucester, and Shore Robert Alexander, Stratford-upon-Avon, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Witton, Birmingham, England

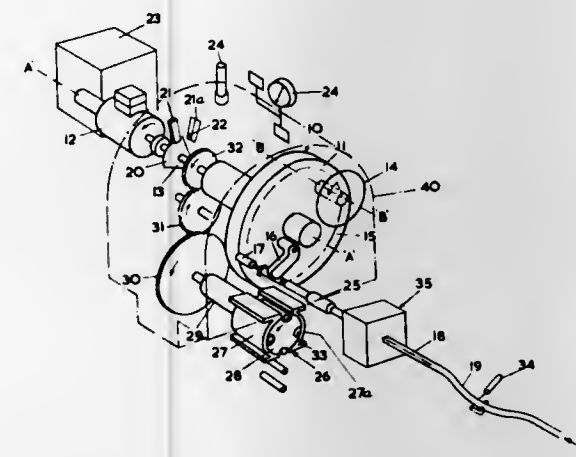
Filed Mar. 23, 1973, Ser. No. 344,085

Claims priority, application Great Britain, Apr. 7, 1972, 16151

U.S. Cl. 83—23

Int. Cl. B26d 5/32, 3/16

8 Claims



Apparatus and method for cutting elongate articles, particularly tube, into individual short lengths, the apparatus comprising a rotatable cutting blade of which the axis is movable along an eccentric path with respect to the tube.

3,822,622

#### APPARATUS FOR MAKING ANNULAR PARTS

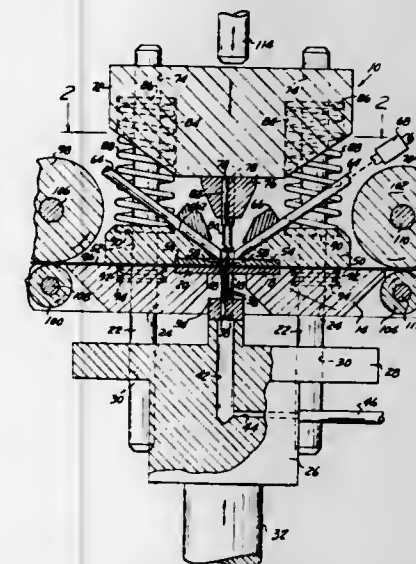
Joseph E. Smith, Birmingham; Raymond P. DeSantis, Royal Oak, and Georges D. Detroyer, Grosse Ile, all of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Aug. 7, 1972, Ser. No. 278,532

Int. Cl. B26f 1/02

U.S. Cl. 83—100

15 Claims



An apparatus for punching annular parts from a sheet of stock material, such as a continuous ribbon or tape of plastic material. The apparatus comprises means for feeding the ribbon or tape of stock material between two plate members, clamping a portion of the ribbon or tape between the plate members, and, by means of a pair, or a plurality of pairs, of opposed punch members adapted to be reciprocated in timed relationship to firstly punch from the stock material a slug for

forming the center aperture of the annular part, and secondly punch from the stock material the annular part itself. The slug punched from the stock material and the annular part are separated by appropriate aspirator means.

3,822,623

#### EXTRUSION CUTTING APPARATUS

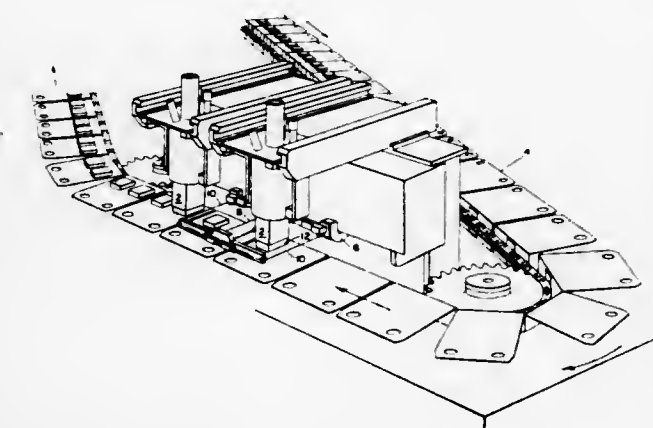
Edward M. Wight, Austin, Tex., assignor to Glacier Industries, Inc., Austin, Tex.

Filed Jan. 23, 1973, Ser. No. 326,057

Int. Cl. B26d 7/10, 1/56

U.S. Cl. 83—171

18 Claims



An electrically heated wire is moved through an elliptical path beneath an ice cream extrusion nozzle to slice the extruded stream into bars onto a conveyor which carries the bars into a freezing vault. Below the extrusion nozzle a carriage revolves in a substantially elliptical orbit. The ellipse is located, with respect to the extruded stream, such that the electrically heated cutting wire, mounted on the cutting carriage, makes contact with the stream only while travelling along the flatter side of the ellipse nearest the nozzle. The major elliptical axis can be slanted so that a nearly right-angle cut can be made across the extruding fluid stream. The cutting carriage is free to slide along two supporting bars, both of which are pivotally fastened to two cranks eccentrically mounted on two synchronized rotating shafts. A rotatable center crank revolves in a controllable phase relationship with the outer cranks. This center crank is free to travel within a groove perpendicular to the carriage supporting bars. The outer cranks impart a simple harmonic motion in one direction to the carriage and the center crank imparts another simple harmonic motion to the carriage in a direction perpendicular to the first motion. Changes in the orientation of the major axis are made by altering the phase relationship between the center and outer cranks. Since all points in the cutting carriage travel in parallel planes, multiple cutting wires can be attached to the carriage, thereby allowing it to simultaneously slice multiple nozzle streams. All the cranks are driven by the same motor through a mechanical linkage. The timing of the cutting motion can be changed through simple adjustments in the mechanical linkage.

3,822,624

#### FILM CUTTING DEVICE

Akira Shoji, Yokohama; Takao Toda; Kano Tanaka, both of Tokyo, and Takashi Hirashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 315,822

Claims priority, application Japan, Dec. 22, 1971, 46-104324; Dec. 24, 1971, 46-647; Jan. 14, 1972, 47-6531; Mar. 17, 1972, 47-27557

Int. Cl. B26d 5/32, 5/34

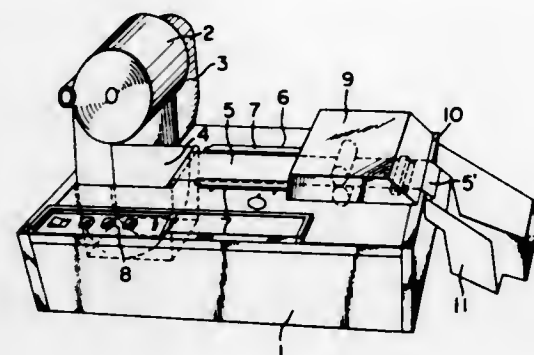
U.S. Cl. 83—208

5 Claims

An automatic film cutting device is used to cut rolled or strip film off into sheet film having a predetermined length.



This film cutting device comprises detecting means for detecting film cutting marks on film to be cut off, film advancing means for advancing the film, and measuring means for measuring the advancement of the film. The measuring means is



actuated in response to the output signal from the detecting means, and the film cutting means is actuated in response to the output signal generated by the measuring means when the film to be cut off is fed by a predetermined length, thereby cutting off the film into a predetermined length.

3,822,625

**ROTARY CUTTER WITH QUICK CHANGE KNIFE**

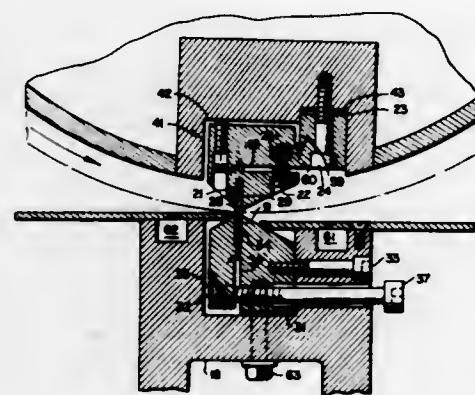
David Noel Obenshain, Swanton, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 330,965

Int. Cl. B26d 1/38

U.S. Cl. 83—342

14 Claims



A quick change knife blade support structure for a rotary cutter is disclosed wherein a fly knife support holder and a bed knife support holder are rigidly mounted respectively in a rotary cutter drum and bed plate, which holders include clamping portions for fixedly securing and retaining therein the fly knife and bed knife, with additional provisions included for adjusting the position of the fly knife with respect to the cutter drum.

3,822,626

**PRECISION BOOK CUTTING APPARATUS**

Peter Aspinwall, Carlisle, Mass., assignor to Comstock & Wescott, Inc., Cambridge, Mass.

Filed June 1, 1973, Ser. No. 366,133

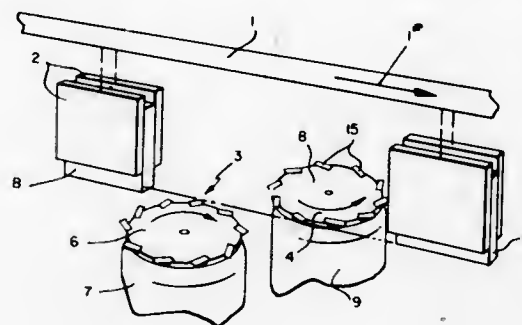
Int. Cl. B23d 45/10

U.S. Cl. 83—404.4

7 Claims

A machine for precise cutting of the collated pages of an unbound book has a conveyor with clamps for carrying successive books along a line past two oppositely rotating cutting

wheels or precision saws which cut into the book from opposite sides of the book line. Each wheel has a plurality of



identical cutting inserts or bits interchangeably fitting in sockets on the wheels. Each bit has four cutting corners or points two of which are effective on each wheel.

3,822,627

**PRESS WITH A WORKING TABLE PROVIDED WITH AN INFLATABLE CUSHION**

Vittorio Achille Bianchi, 37, avenue Paul Downer, Paris, France (75016)

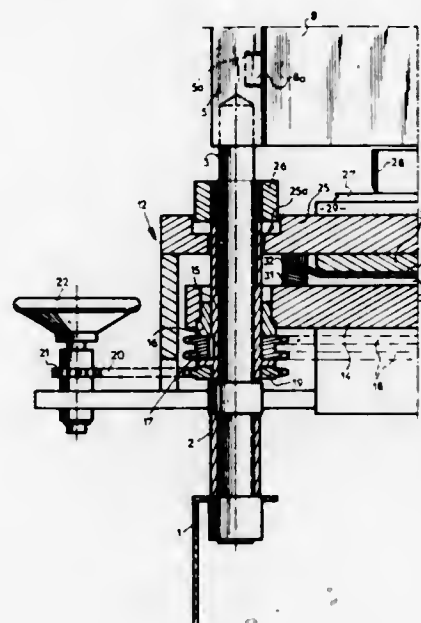
Filed Mar. 12, 1973, Ser. No. 340,176

Claims priority, application France, Apr. 10, 1972, 72.12458

Int. Cl. B26d 5/12

U.S. Cl. 83—529

10 Claims



The press comprises a horizontal cutting table intended to receive the material to be cut and the cutting tool placed on the said material and a horizontally slidable carriage located at a level higher than that of the table, said table comprising a positioning plate which is vertically movable with respect to the said carriage, a pressing plate arranged above the positioning plate and movable vertically with respect to the latter, and an inflatable element interposed between the said plates and serving to drive the pressing plate towards the carriage so as to cause the cutting tool abutting against the said carriage to penetrate into the material to be cut.

3,822,628

**VIOLIN**

William J. Quemore, Sr., 149 E. Church St., Blackwood, N.J. 08012

Filed Apr. 16, 1973, Ser. No. 351,571

Int. Cl. G10d 1/02

U.S. Cl. 84—275

6 Claims



A violin is constructed with its sounding box formed with a concave bottom surface to fit against the shoulder of the violinist and with a hook on its top surface that can be attached to a band around the violinist's body. In addition, the violin is formed in a pear shape with a longer neck section than in the classical violin. Thereby, the violinist can play the instrument without supporting it under the chin, and achieve full range of fingering without interference from the front edge of the sounding box.

3,822,629

**SLIDE BAR APPARATUS FOR GUITAR**

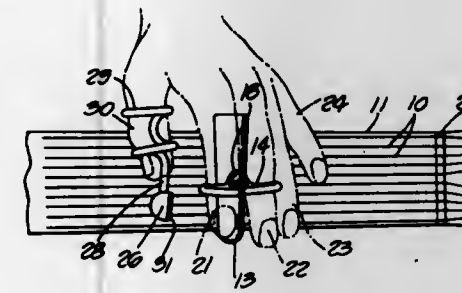
Walter E. Smith, P.O. Box A, Payette, Idaho 83661

Continuation-in-part of Ser. No. 260,899, Aug. 9, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,786

Int. Cl. G10d 3/00

U.S. Cl. 84—319

8 Claims



Slide bar apparatus for use on the strings of a guitar includes a long bar for contact with a plurality of strings and a separate short bar for contacting one string at a time. The long bar has a transverse retainer with loops for reception of fingers of the user. The short bar is mounted on a receptacle for the thumb of the user, and the short bar is provided with a vibration damper which can be turned to distribute wear.

3,822,630

**MUSIC TEACHING AID BASED ON THE HANDS AND SCALE DEGREES**

Verna M. Leonard, 6353 N. Blackstone, Fresno, Calif. 93721

Filed Feb. 8, 1973, Ser. No. 330,693

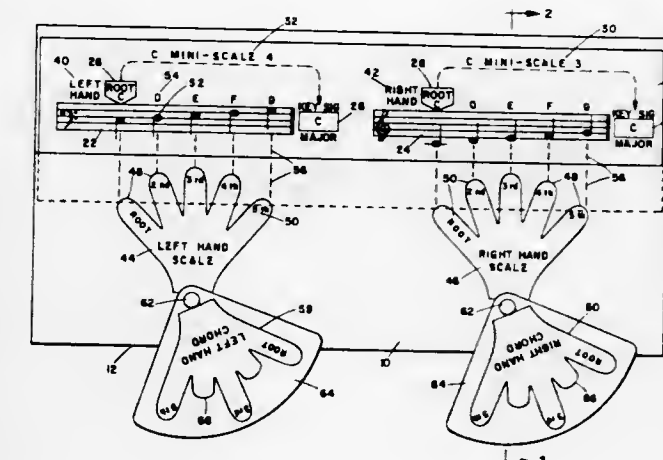
Int. Cl. G09b 15/02

U.S. Cl. 84—471

3 Claims

A device for teaching elementary musical relationships and notation particularly in regard to scale tones and chords and uniquely associated with pre-known names and order of the user's fingers on both hands. Incidentally the same numbering of the fingers, from left to right in each also teaches, by association, the first five degrees by numerical name. The two hands are on a panel which also supports one of a set of strip inserts carrying, for example, treble and bass clef notation for

a particular key signature and the first five, or lower five, notes or tones of that diatonic scale, it being proposed that the student will ordinarily have no difficulty whatever in extrapolating the "mini-scale" of five tones to the full octave and then to octaves above and below that learned by use of the device. For teaching chords a pair of hands are provided with three fingers only on each hand denominated as Root, 3rd and 5th degree



and also correlated as before with fingers named in that order, left to right so that the Root tone is associated with the little finger of left hand for the bass clef and the thumb of the right hand for the treble clef, the remaining tones following in this natural learning order, and every finger visually related with the corresponding notation by lead lines of obvious significance to the user.

3,822,631

**TRIMMING DEVICE FOR GEAR HOBBING MACHINE**

Otto Bauknecht, Friedrichshafen; Albert Bleyer, Tettnang-Dietmannsweiler, and Adolf Hori, Friedrichshafen, all of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Postfach, Germany

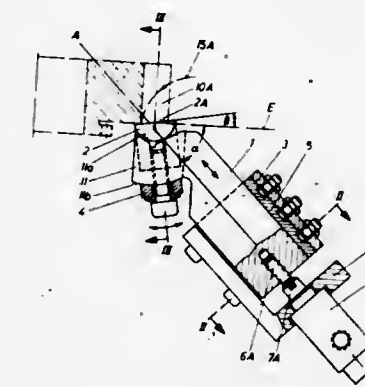
Filed Aug. 3, 1972, Ser. No. 277,570

Claims priority, application Germany, Aug. 7, 1971, 2139737

Int. Cl. B23f 19/10, 21/28

U.S. Cl. 90—1.4

7 Claims



The invention provides a trimming cutter mechanism for trimming the conical face at the ends of the teeth of a gear being hobbled. The arrangement includes a hydraulically operated linearly movable holder which can be advanced into cutting engagement, and withdrawn, in synchronization with the feeding and withdrawal movement of the gear work piece. Also included is a mount for the cutter which can automatically adjust to the angle of the tooth ends.



### 3,822,632 AUTOMATIC APPARATUS FOR SCARFING SEMIFINISHED PRODUCTS

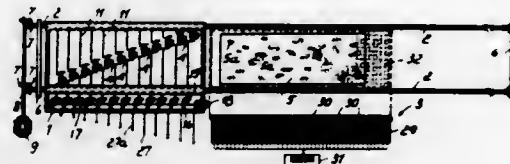
Mario Chigiotti, Genova, Italy, assignor to Bocami di Garibaldi Attilio S.p.A., Via Adamello, Santa Maria Rossa di Garbagnate, Italy

Filed Sept. 20, 1971, Ser. No. 181,661

Claims priority, application Italy, Sept. 24, 1970, 30177/70  
Int. Cl. B23c 3/14

U.S. Cl. 90—13 R

9 Claims



An automatic apparatus for scarfing semifinished products in steelworks and the like, comprising a plurality of working members such as cutters or the like, mounted staggered on a frame mobile preferably in a substantially horizontal direction and positionable above at least one piece on which scarfing is to be carried out, a programmer unit which can be preset in relation to the location of the defects to be eliminated in said pieces, means connecting said programmer unit to said mobile frame so as to make said working members act on said defect locations and means for operating said working members and moving said mobile frame.

### 3,822,633 CONTROL MEANS FOR A FLUID-POWERED DEVICE

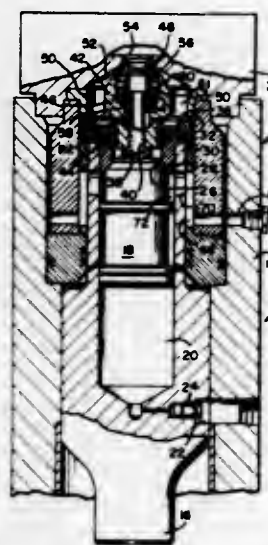
Jack B. Ottestad, La Jolla, Calif., assignor to Impulse Products Corporation, San Diego, Calif.

Filed Aug. 10, 1972, Ser. No. 279,694

Int. Cl. F01b 7/18; F01l 15/16

U.S. Cl. 91—224

10 Claims



Fluid control means, employing a pair of valving members, to automatically cycle the operation of the device. One valving member is translated in one direction, as the device is fluid-charged, to a point at which said one valving member opens fluid passages to a triggering chamber to fire the device. The second valving member holds the triggering chamber open to venting, to drain leak-through fluid, until the device is about to fire. Then, just prior to the firing, the first valving member opens passages to pressured fluid which drives the second valving member into closure of vent passages to halt the venting of the triggering chamber. Firing of the device returns the first valving member in the alternate direction for re-charging of the device.

### 3,822,634 HYDRAULIC SERVO MECHANISM

Jacques Falsandier, 32, Bd. Felix Faure 92 Chatillon-sous-Bagneux, Chatillon-sous-Bagneux, France

Continuation of Ser. No. 18,732, March 11, 1970, abandoned.

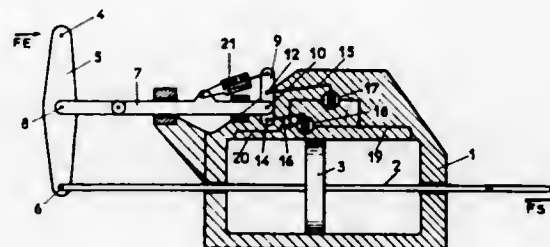
This application Feb. 11, 1972, Ser. No. 225,687

Claims priority, application France, Apr. 1, 1969, 69.09971

Int. Cl. F15b 9/10

U.S. Cl. 91—384

6 Claims



A hydraulic servo mechanism with two servo valves that normally operate in parallel. When one of the valves becomes seized a differential mechanism causes the valve to effectively operate differentially. In result, the gain of the mechanism is increased so that the operative valve produces a mechanism output substantially equivalent to the output when both valves are operating.

### 3,822,635 APPARATUS FOR CONTROLLING THE UPWARD AND DOWNWARD MOVEMENTS OF AN ELEVATOR

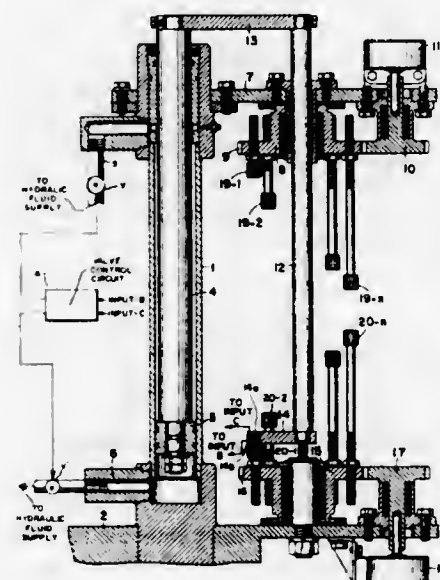
Matsuo Nishimura, Tokyo, Japan, assignor to Yasui Sangyo Company Limited, Shizuoka-ken, Japan

Filed Nov. 20, 1972, Ser. No. 305,506

Int. Cl. F15b 13/04, 11/08

U.S. Cl. 91—410

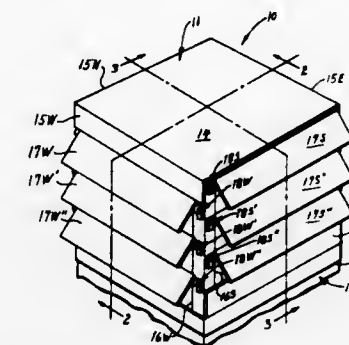
2 Claims



An apparatus for controlling the upward and downward movements of a piston rod of a hydraulically operated cylinder on a base in which a bracket is rigidly mounted on the

cylinder and upper and lower rotary members are rotatably mounted on the base and bracket, respectively. A control rod having its top end operably connected to the piston rod extends in parallel with the latter and slidably through the center of the upper rotary member and through the bracket so that the control rod is axially movable with the piston rod. The upper and lower rotary members have mounted thereon sets of elongated stops having different lengths and extending toward each other so that each of the upper stops cooperates with the corresponding lower stop to define therebetween a gap of a dimension different from those defined between other pairs of stops. The control rod has an engagement member extending laterally therefrom. The rotary members are rotatable to move a selected pair of stops into the path of the movement of the engagement member so that the latter engages the selected pair of stops. Limit switches are provided to discontinue the fluid pressure supply to the cylinder when the engagement takes place.

vided for pivotally interconnecting the shutters for each of the sets of the vented opposite sides of the member to provide two shutter sets wherein one shutter for each of the two sets of opposite vented sides of the member will be moved away from its vent when the other shutter of the set is moved towards its



### 3,822,636 INSULATED SMOKESTACK CONDUITS

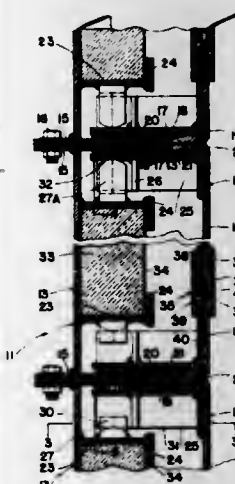
Brian Chadwick, 1 Fieldstone Bay, Winnipeg, Manitoba, Canada

Filed Oct. 16, 1972, Ser. No. 297,787

Int. Cl. F23j 11/00; F16l 3/16

U.S. Cl. 98—60

4 Claims



An outer cylindrical casing is provided and a concentrically located inner cylindrical casing is supported therein with means cooperating between the inner and outer casing to permit radial and longitudinal expansion of the inner cylindrical casing without transferring the stresses to the outer casing. The means cooperating between the two casings include floating support and centering devices. Insulation is provided between the casings and the heat reflecting shield between the insulation and the inner casing reduces transfer of heat from the inner casing to the outer casing.

### 3,822,637 CHIMNEY DRAFT CONTROL DEVICE

James T. Whitlock, 833 Vannah Ave., Louisville, Ky. 40223

Filed Apr. 9, 1973, Ser. No. 348,952

Int. Cl. F23l 17/02

U.S. Cl. 98—74

3 Claims

The present invention provides a draft control device for a chimney of a fireplace and the like. Basically, the device of the present invention comprises a generally hollow box-like member having six sides including one open side that can be fixed over the top of a chimney and a closed side opposite from that one side, and four other sides, including two sets of opposite sides, each having a vent. At least one shutter is pivoted on the member adjacent each of the side vents for movement by wind forces and rigid linkage means are pro-

vided for pivotal movement of the one shutter of the set by the wind forces. In particular accordance with the present invention, the linked shutters of one of the two shutter sets have their pivotal mountings to the member offset from those of the other of the shutter sets so as to avoid jamming of the linkage means.

### 3,822,638 FULL LEVEL INDICATOR FOR REFUSE COMPACTOR

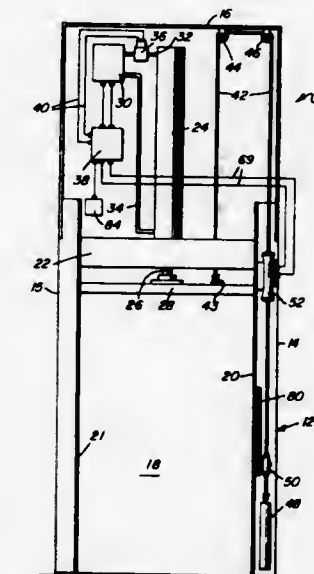
Eugene Merkin, Old Forge, Pa., assignor to Union Environmental Corporation, Philadelphia, Pa.

Filed Oct. 17, 1972, Ser. No. 298,381

Int. Cl. B30b 15/22

U.S. Cl. 100—52

23 Claims



A secondary control system for indicating when the compaction chamber of a refuse compactor is filled to capacity comprises a flexible cable strung over two pulleys secured to the ceiling of the compactor. One end of the flexible cable is secured to the compactor platen while the other end is secured to a free-hanging weight, and a "bullet" is attached to the flexible cord above the weight. A sleeve is positioned above the bullet, and a conventional switch is secured to the sleeve in such a way that passage of the bullet through sleeve triggers the switch. During compaction, downward travel of the compactor platen pulls the bullet into the sleeve and thereby triggers the conventional switch. If the compaction chamber is full of compacted garbage, the bullet remains in the sleeve, and the conventional switch remains triggered when a pressure sensitive switch indicates the end of the compaction stroke. Simultaneous activation of the conventional switch and the pressure sensitive switch indicates to the apparatus control system that the compaction chamber is filled to capacity.



3,822,639

## APPARATUS FOR PREVENTING PRINTING OF AN EMPTY MANDREL

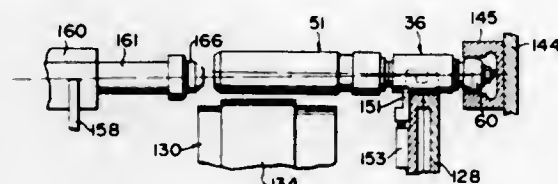
Wesley J. Szpitalak, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 242,110, April 7, 1972, which is a division of Ser. No. 501,372, Oct. 22, 1965, Pat. No. 3,683,799. This application Sept. 24, 1973, Ser. No. 399,830

Int. Cl. B41f 17/22

U.S. Cl. 101-40

3 Claims



An automatic coating and printing machine wherein can bodies and like tubular members are automatically positioned on mandrels and thereafter serially presented to coating and printing blankets wherein the necessary coating and printing is effected thereon with the mandrels being rotated as the can bodies carried thereby contact the blankets of the coating and printing cylinders to transfer coating and printing materials to the can bodies. Thereafter, the appropriately coated and printed can bodies are automatically transferred from the mandrels to another conveyor. The mandrels are so mounted wherein when no can body is on a mandrel, the mandrel does not come into contact with the printing or coating blankets.

3,822,640

## ELECTROMAGNETICALLY-ACTUATED PRINTING MECHANISM

Tsuneta Kawakami, Funabashi; Seiki Mizutani, Matsudo, and Yasuyoshi Kaneda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

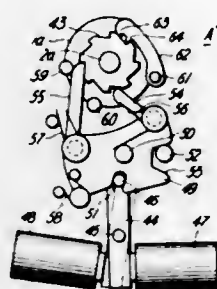
Filed Aug. 16, 1972, Ser. No. 281,188

Claims priority, application Japan, Aug. 17, 1971, 46-62472

Int. Cl. B41j 7/48

U.S. Cl. 101-93 C

9 Claims



A printing mechanism comprises a rotary print drum having around the periphery thereof a series of circumferentially spaced-apart rows of print type, a drive system for electromagnetically rotating the print drum in an intermittent manner to successively position the rows of type in a print position, paper feed means for feeding a paper strip to be printed on past the print drum, and an electromagnetically actuated print hammer for striking one of the rows of print type while same is stationary in the print position to print the information contained on that row of type on the paper strip. The drive system comprises a ratchet wheel connected to the print drum, two pawls engageable with different teeth of the ratchet wheel, two electromagnets responsive to alternate pulse signals for electromagnetically reciprocating the pawls in alternate sequence to effect intermittent rotation of the print drum, and an electric control circuit for alternately applying pulse signals to the electromagnets. The operation of the paper feed means is synchronized with the rotation of the print drum to incre-

mentally advance the paper strip one space per one revolution of the print drum and the print hammer is electromagnetically actuated one time during each revolution of the print drum to strike one of the rows of type while same is at rest in the print position.

3,822,641

## IMPACTOR ASSEMBLY FOR PRINTERS

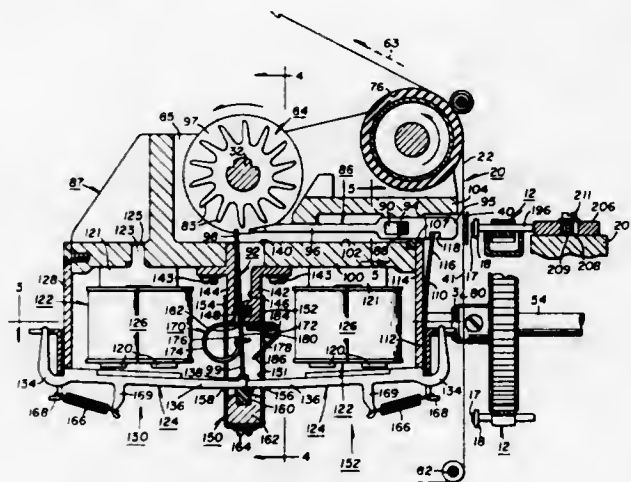
Egon S. Babler, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 3, 1972, Ser. No. 268,238

Int. Cl. B41j 9/30

U.S. Cl. 101-93 C

10 Claims



A plurality of self-restoring equally spaced apart print hammers selectively are driven lineally toward a printing position by continuously rotating impellers having equiangularly spaced radial impelling elements. Each impeller is effective through the agency of a rockable interponent, which is selectively elevated into the path of associated impelling elements upon latching of the armature of an electromagnet, for transmitting impeller force to a corresponding print hammer. An interponent when struck by its impeller is rocked for liberation from armature control, its descent and removal from the path of associated impelling elements being effected by a spring.

3,822,642

## APPARATUS FOR REMOVING FOREIGN PARTICLES FROM A LITHOGRAPHIC PRESS

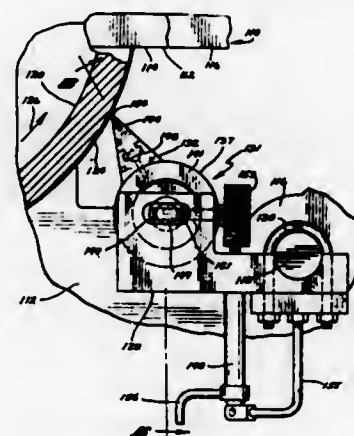
Gordon L. Grindeland, 7526 Harriet Ave., Minneapolis, Minn. 55423

Continuation-in-part of Ser. No. 167,920, Aug. 2, 1971, abandoned. This application July 26, 1972, Ser. No. 275,281

Int. Cl. B41f 35/00, 41/00

U.S. Cl. 101-425

6 Claims



A pickup blade of plastic material is slidably mounted for longitudinal movement in a block which is pivotally mounted

to a lithographic press frame. An actuating means is operable from a position where an operator can view the finished printed product coming from the press. The actuating means pivots the block to bring the pickup blade into contact with an entire longitudinal edge of a lithographic plate cylinder to pick up foreign particles or to dislodge them sufficiently so that they will be picked up by other existing rollers and removed from the printing surface. The pickup blade can be slid longitudinally off the block to position clear of the press and can then be replaced with a new blade or cleaned and returned to position in the block. This can be done without stopping the press and without inserting the operator's fingers into dangerous positions during operation of the press. In order to obtain rigidity of the support of the blade across the entire longitudinal edge of the plate cylinder, the blade and block can be mounted on a relatively thick walled cylindrical tube which is mounted to the press frame to rotate about its central longitudinal axis.

3,822,643

## DAMPENING CONTROL CIRCUIT FOR OFF-SET PRINTING APPARATUS

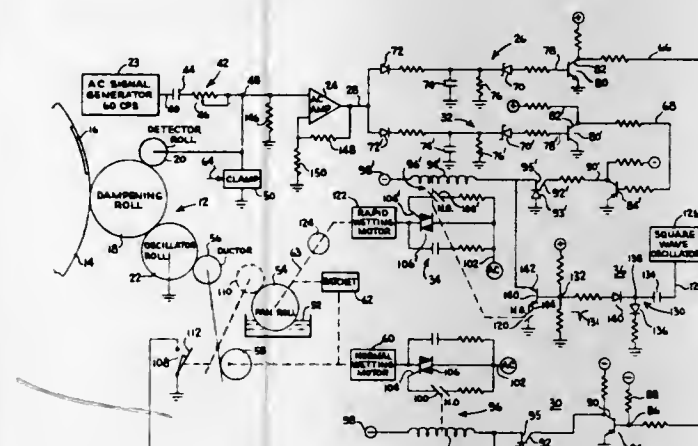
Donald G. Milkan, Ridgefield, and Achille A. Presti, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 26, 1973, Ser. No. 326,888

Int. Cl. B41l 23/04

U.S. Cl. 101-148

17 Claims



A control circuit for an off-set printing apparatus is described whereby a dampening roll, which is used to wet a printing surface with an ink repelling liquid, is automatically maintained at the proper level of wetness from start-up through completion of the printing operation. A rapid wetting network is employed to quickly wet the dampening roll by rotating a pan roll at a greater than normal speed. An AC liquid impedance signal is generated by applying an AC excitation signal across the dampening roll to sense its liquid impedance and thus the amount of liquid on the dampening roll. An AC amplified liquid impedance signal drives a pair of threshold detectors which respectively recognize a normally dry operating condition and an excessively dry condition of the dampening roll. The output signals of the threshold detectors operate a normal wetting motor and a rapid wetting motor with the latter motor limited in its wetting operation to bring the dampening roll quickly to an acceptable liquid dampening level.

3,822,644

## APPARATUS FOR MAINTAINING REGISTRY BETWEEN THE PLATES OF A MULTIPLE PLATE CYLINDER PRESS AND SHEETS SUPPLIED THERETO

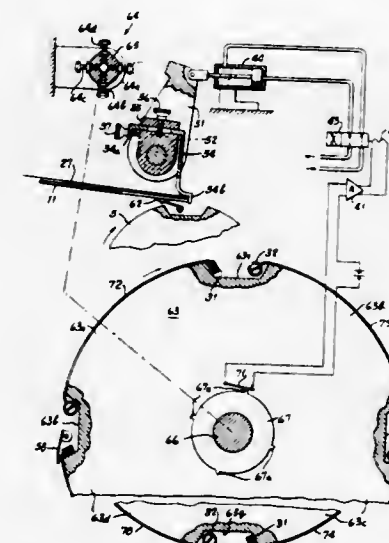
Ivaldo Gazzola, deceased, late of Lausanne, Switzerland (by Eles Gazzola); Lanfranco Gazzola, Lausanne, Switzerland (heirs); Salvatore F. D. Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,126

Int. Cl. B41f 33/06

U.S. Cl. 101-242

7 Claims



Apparatus for supplying sheets to be printed to the plate cylinder of a multiple plate intaglio press, including means for changing the registration of successive sheets with the cylinder to correspond with variations in the positions of successive plates on the cylinder with respect to the sheet feeding means.

The sheets move along an inclined feed board as they approach the first sheet transfer cylinder. The motion of each sheet is blocked by a movable stop means as it nears the end of the feed board. While the sheet is stopped, a set of grippers on the first sheet transfer cylinder engage the sheet at a location determined by the position of the stop means. The stop means is then retracted and the first and subsequent transfer cylinders then move the sheet along to the plate cylinder. The registry of the sheet with the plate cylinder is determined by the sheet blocking position of the stop means.

The sheet blocking position of the stop means is shiftable and is shifted for successive sheets, to correspond to the differences in position of the successive plates on the plate cylinder. The sheet blocking position is shifted synchronously with the rotation of the plate cylinder, either in response to a pick-up unit which detects a certain angular position of the plate cylinder and operates the stop shifting means, or by a synchronous drive between the plate cylinder and a shaft on the stop shifting means.

3,822,645

## ADVANCED REINFORCED GRAIN DESIGN

Earl L. Alexander, 19380 Halsted St., Northridge, Calif. 91324

Filed Nov. 23, 1962, Ser. No. 240,205

Int. Cl. F42b 1/02

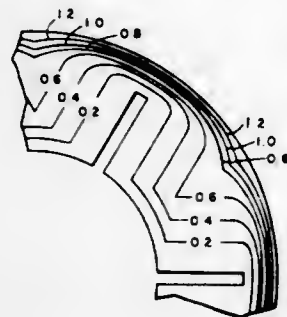
U.S. Cl. 102-102

4 Claims

A propellant grain comprising: a solid cylindrical decomposable polymeric matrix, a reinforcing metal lattice comprising an initially continuous and circumferentially aligned metal filament imbedded entirely throughout said matrix, comprising at least one continuous metal filament element primarily traversing a direction which is not parallel to any plane of



symmetry in said matrix, said matrix and said lattice forming an elongated generally cylindrically-shaped propellant grain having an inner cavity,



a plurality of recesses provided within said grain, said recesses communicating with said inner recess and intersecting a portion of said initially continuous and circumferentially aligned filaments.

3,822,646

### CONVEYOR SYSTEM WITH PRIMARY AND AUXILIARY CODE MECHANISMS

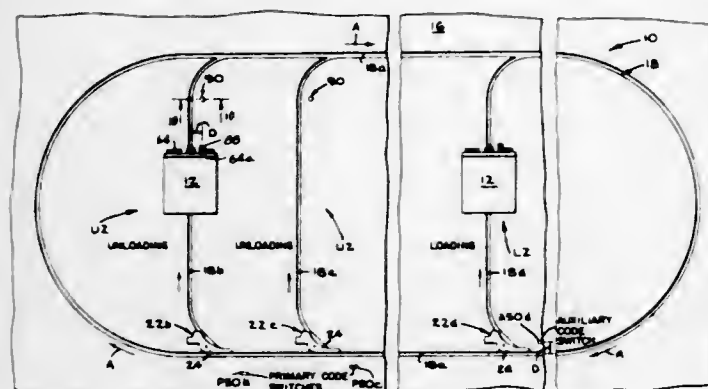
Chester A. Rosenberger, Jr., Perkasi, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 30, 1972, Ser. No. 302,374

Int. Cl. B61j 3/00; B41j 1/04

U.S. Cl. 104—88

12 Claims



A conveyor system is disclosed in which carriages with tow pins are towed along the floor by engagement of the tow pins with a drive chain beneath the floor. The paths of carriage travel include an endless main line and a plurality of spur lines. Switches at the junctions of the main and spur lines are operated by code probes on the carriages to direct the carriages into the appropriate spur lines. One probe on each carriage is actuated as the carriage leaves a spur line empty after unloading to code the carriage for a spur line for empty carriages. The probe so actuated also serves to disable the mechanism by which the other code probes are read to prevent return of the empty carriage to the spur line for which it was originally coded when full.

3,822,647

### PASSIVE SWITCHING SYSTEM

Charles C. Hill, and James A. Ross, both of La Jolla, Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed July 9, 1973, Ser. No. 377,608

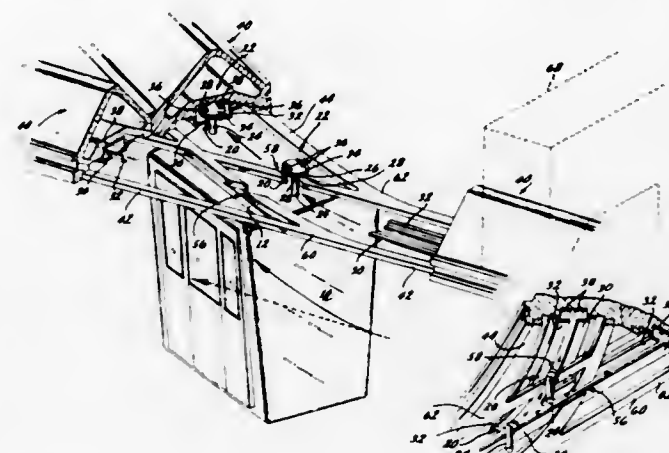
Int. Cl. H02k 41/04

U.S. Cl. 104—130

11 Claims

Apparatus for the switching of a magnetically suspended vehicle from a primary guideway through a curved intersection to a secondary guideway. The vehicle is equipped with a pair of electromagnetic motors which provide a magnetic force to suspend the vehicle from a pair of support rails posi-

tioned above and in a superimposed relationship with the electro-magnetic motors. The rails at the intersection of the guideways have increased width so as to maintain an essentially superimposed relationship with their respective electromagnetic motor throughout the curve of the intersection



and one rail of each guideway has at least one opening to allow the vehicle structure to pass through and the remaining rail of each guideway forms a unitary rail member. The vehicle is switched by a relative speed difference between the motors caused by input power frequency differences.

3,822,648

### GUIDING SYSTEM FOR STEERING A VEHICLE

Takemochi Ishii, and Masaki Koshi, both of Tokyo, Japan, assignors to Japan Society for the Promotion of Machine Industry, Tokyo, Japan

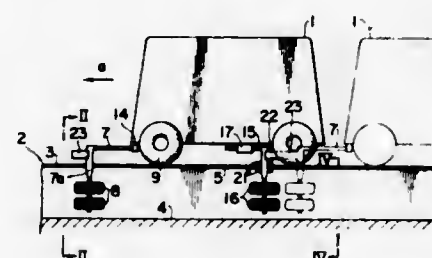
Filed Aug. 30, 1972, Ser. No. 284,713

Claims priority, application Japan, Aug. 31, 1971, 46-66792

Int. Cl. B61f 9/00

U.S. Cl. 104—245

7 Claims



A guiding system for a computer controlled vehicle including a flat track guide-way and a guide channel coextensive with and under the track surface. The vehicle is equipped with a steering guide link which carries at least two guide wheels in an offset or staggered relationship on a lower crank portion. Two of the guide wheels follow the vertical inner walls of the guide channel. The system further includes a safety mechanism, for preventing derailment, in the form of an additional linkage carrying two additional guide wheels. Emergency braking means is also provided.

3,822,649

### RAIL-RUBBER MINE CAR

Howard J. Walk; Ervin I. Pietsch, both of Saint Charles, and Garth R. Smith, Saint Peters, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed June 27, 1973, Ser. No. 374,015

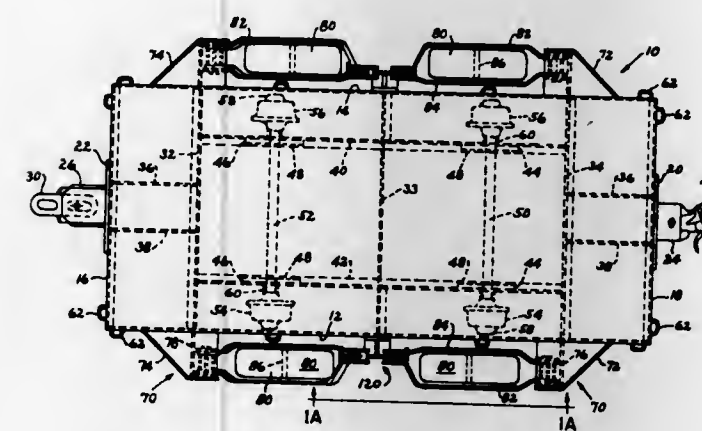
Int. Cl. B61f 13/00

U.S. Cl. 105—215 C

26 Claims

In accordance with the present invention a rail-rubber mine car is provided having rail wheels and rubber tire wheels on

the car for moving the car close to the mining operation. The rubber wheels are movable between a lower position wherein the car is supported by the rubber tires and an upper position for running on rails. The car preferably comprises two rubber tires on each side of the car which are pivotally mounted upon yokes at opposite ends of the car. The distal ends of the yokes for the respective wheels are located at about the mid point of the car and can be raised and lowered by the operator without



walking to opposite ends of the car. An automatic locking device is provided which urges the yokes into the locked position. A spring assist is provided to aid the operator in raising the rubber tires into the upper position. Various shaped bed contours may be utilized to provide a car with or without sides. A plurality of stake pockets may be provided around the circumference of the bed sections without sides to allow the use of removable side sections. Spacers may be provided on the axles to allow use of the car on a variety of track gauges.

3,822,650

### CONTROL BALLAST DOOR FOR HOPPER CANS

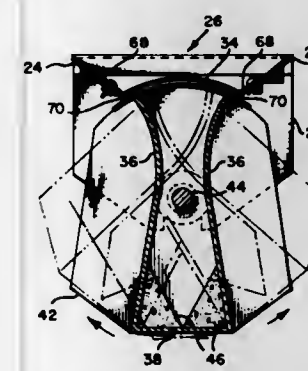
Joseph G. Fearon, Boise, Idaho, assignor to Morrison-Knudsen Company, Inc., Boise, Idaho

Filed Aug. 24, 1973, Ser. No. 391,499

Int. Cl. B61d 7/06

U.S. Cl. 105—239

4 Claims



An improved discharge control door over that described in U.S. Pat. No. 3,654,872, is described controlling flow of material from railway hopper cars or other containers holding material. The improved discharge control door includes curved discharge plates allowing better and greater material flow therethrough when in the open position, counterweight means keeping the door in its normally closed position covering the discharge opening and a spring biased friction element bearing against the side walls of the discharge control door which, in the absence of a force other than the material flowing over the discharge plates, keeps the door in a set open position.

3,822,651

### WATER COOLED KILN FOR WASTE DISPOSAL

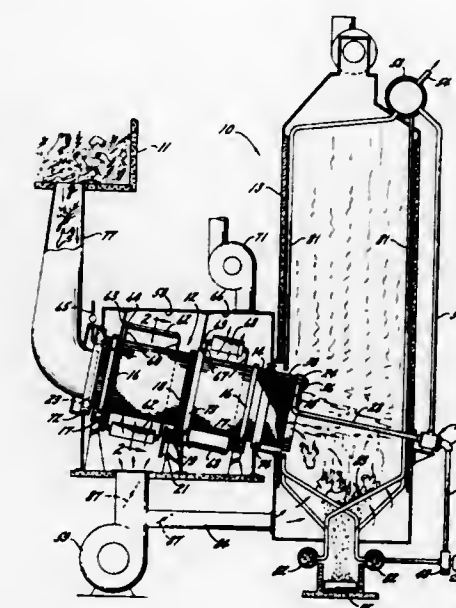
David W. Harris, 7135 Hollywood Blvd., Los Angeles, Calif. 90046, and Chadwell O'Connor, 2024 Galaxy Dr., Newport Beach, Calif. 92660

Filed Sept. 4, 1973, Ser. No. 394,050

Int. Cl. F23g 5/06

U.S. Cl. 110—10

4 Claims



A rotary kiln formed by a plurality of pipes joined to define an inner cylindrical surface and being interconnected to permit water flow through the pipes. Water from the pipes is circulated to a steam drum for steam removal. The pipes are joined so as to define a plurality of intermediate openings for gas porosity and provision is made for introducing controlled amounts of air into the kiln and for enclosing and capturing volatile gases generated by the burning. A nonclogging waste chute feeds the kiln, and an associated furnace both further utilizes the heat of combustion and provides a static burning location for exceptionally large items of waste.

3,822,652

### ROTARY AIR CUSHION TRANSPORTER

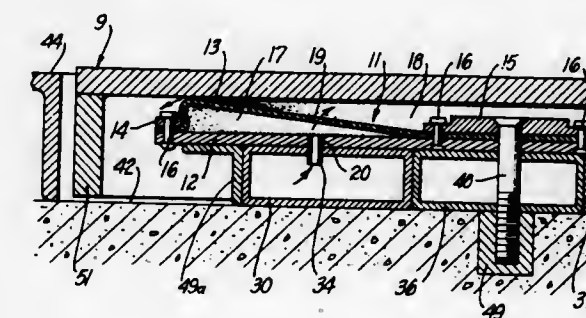
Robert E. Burdick, and Baxter K. Wolf, both of Santa Barbara, Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Dec. 7, 1972, Ser. No. 313,147

Int. Cl. A47b 11/00

U.S. Cl. 108—139

4 Claims



A low profile rotary transporter having a turntable supported by a plurality of air bearings. A separate tubular platform section underlying each air bearing and having a supply portion for carrying air under pressure from a supply line to the air bearing and a damping portion communicating with the air bearing. Each air bearing and its associated platform are fixedly mounted on a ground surface and the turntable is removably mounted on a positioning rod in the ground surface.

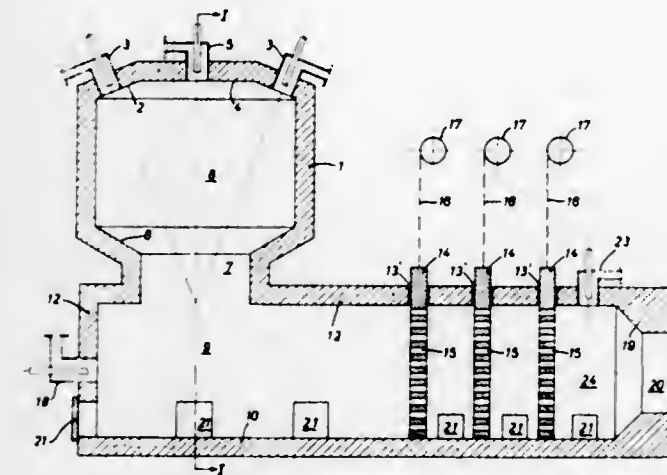


**3,822,653**  
**INCINERATING FURNACE FOR FLUID AND SLUDGED REFUSE**  
 Salvatore Ghelfi, 8610 Uster Bordackerstrasse 18, Uster, Switzerland

Filed Jan. 8, 1973, Ser. No. 321,986  
 Int. Cl. F23g 5/12

U.S. Cl. 110-7 R

6 Claims



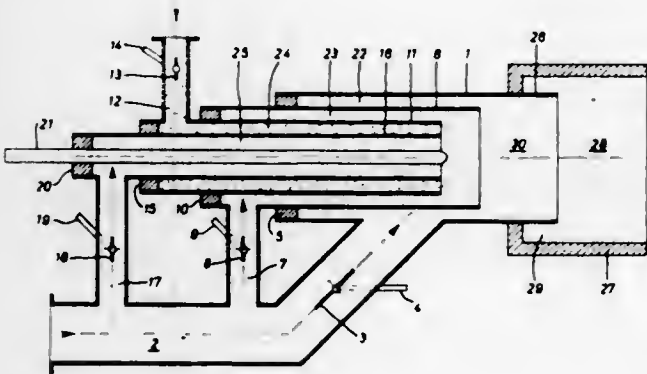
The present invention relates to an incinerating furnace for burning or incinerating liquid or sludged refuse and waste in which the materials to be incinerated are introduced or injected through the burners or injectors. The furnace comprises at least a vertical combustion chamber and a number of burners mounted in the upper part of said vertical combustion chamber, said burners being arranged in spaced relationship to one another and having their injection or flame axis inclined downwardly and directed substantially onto a common point on the central axis of the combustion chamber, and further comprising an outlet chamber at the lower end of said combustion chamber.

**3,822,654**  
**BURNER FOR BURNING VARIOUS LIQUID AND GASEOUS COMBUSTIBLES OR FUELS**  
 Salvatore Ghelfi, 8610 Uster Bordackerstrasse 18, Uster, Switzerland

Filed Jan. 8, 1973, Ser. No. 321,987  
 Int. Cl. F23g 7/00

U.S. Cl. 110-7 S

4 Claims



The present invention relates to a burner for burning various liquid and gaseous combustibles or fuels simultaneously, i.e., a burner which can operate and work simultaneously with gaseous and liquid combustibles and with liquids and or gas containing materials to be incinerated. The burner of the invention comprises a first tubular outer shell and a plurality of concentrically arranged tubular inner shells forming a number of ring shaped chambers opening into a common mixing chamber provided at the front end of said first shell each of

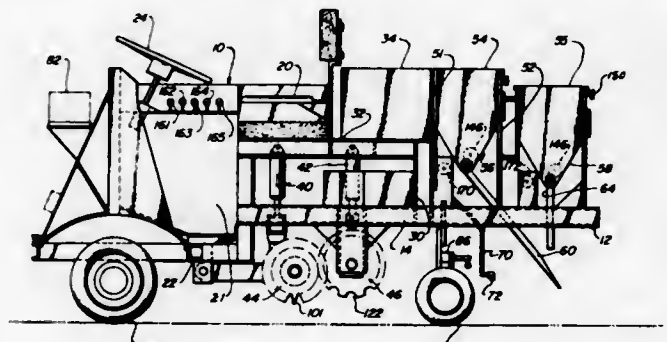
said chambers communicating with a source of combustion air or a source of fuels, the burner further comprising means for the controlled feeding of combustion air or fuel into said chambers.

**3,822,655**  
**LAWN CONDITIONING VEHICLE**  
 Dale Gene Benedict; Louis Richard Blasi, and Lowell G. Wilson, all of Marysville, Ohio, assignors to The O. M. Scott & Sans Company, Marysville, Ohio

Filed June 5, 1972, Ser. No. 259,441  
 Int. Cl. A01c 5/00

U.S. Cl. 111-1

8 Claims



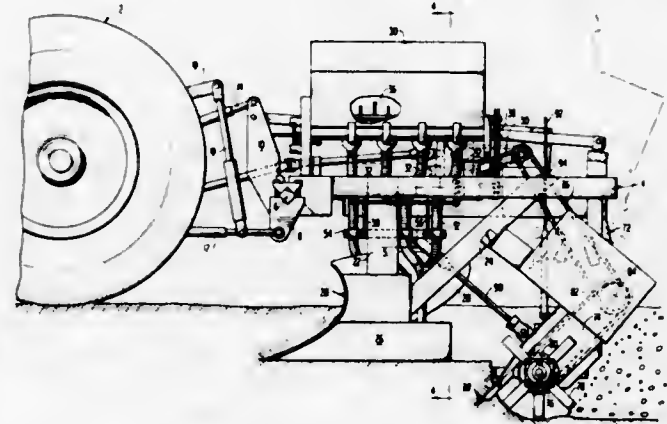
A self-contained, motorized riding vehicle is disclosed which provides a unitary apparatus for performing a series of operations on a lawn simultaneously. The unit has its own motor drive and has a plurality of operative implements such as an alignment of spiking members and an alignment of lawn slicing members. Also provided are a plurality of storage hoppers dispensing in a spread pattern solid or granular materials such as seed pesticide and feeding agents. The unit also has a pressurized liquid storage and dispensing system. All these operative components can be controlled individually from the driver's compartment of the vehicle. In operative sequence, from front to rear, are located the earth perforating or spiking members and earth slicing members. Rear of these members is a nozzle for discharging the liquid in a transverse pattern the full width of the vehicle body. Rearmost is a common spreader outlet from the discharge of the two hoppers to combine solid materials discharged from these hoppers, such as seed granular nutrients and/or weed-killing materials.

**3,822,656**  
**SUBSOIL AMENDMENT MATERIAL INCORPORATING METHOD AND APPARATUS**  
 William F. Lalor, 4505 Creedmoor Rd., Raleigh, N.C. 27612

Filed July 7, 1972, Ser. No. 269,882  
 Int. Cl. A01c 5/00

U.S. Cl. 111-14

10 Claims



Method and apparatus for preparing the soil prior to see planting. The apparatus is preferably drawn by a tractor and

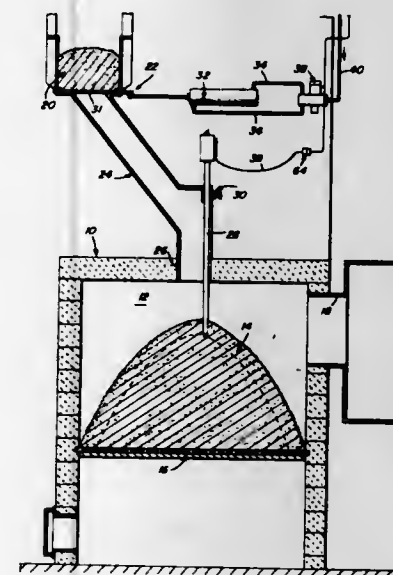
includes a plow which turns the topsoil to expose the subsoil as the apparatus advances. Dispensing apparatus conducts soil amendment material from a hopper through a plurality of tubes to a box behind the plow. The box has discharge outlets which are arranged across a substantial width of the furrow formed by the plow. A rotary tiller is positioned behind the box and mixes the amendment material into the subsoil to a depth greater than the plow.

**3,822,657**  
**FUEL FEEDING METHOD AND APPARATUS**  
 Cecil L. Midkiff, P.O. Box 308, Edmonds, Wash. 98020

Filed Apr. 10, 1973, Ser. No. 349,756  
 Int. Cl. F23k 3/22

U.S. Cl. 110-101 CD

9 Claims



The height of a cone, mound, or pile of fuel in the combustion area of a furnace is controlled by arranging a temperature sensor on a portion of a probe normally penetrating the burning fuel. When the fuel burns down sufficiently to expose the sensor to direct heat from the pile, a signal is sent from the sensor to a relay which opens a valve mechanism to feed fuel into the furnace. A timer may be used to limit the amount of fuel delivered.

**3,822,658**  
**PUNCH-TAPE-CONTROLLED SEWING APPARATUS**  
 William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Mich.

Continuation-in-part of Ser. No. 235,253, March 16, 1972, Pat. No. 3,771,477. This application Apr. 27, 1973, Ser. No. 355,076

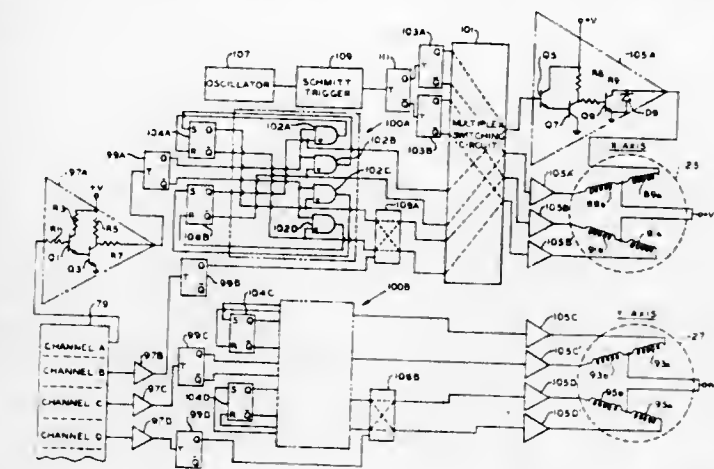
Int. Cl. D05b 21/00

U.S. Cl. 112-121.12

7 Claims

Apparatus for automatically controlling movement of material for sewing by a sewing machine in response to a pattern determined by a punch tape. A positioning device whose movement is controlled along respective axes by a pair of stepping motors effects relative movement of the material to be sewed with respect to the sewing machine. Each of the stepping motors is of the type having a plurality of windings producing stepwise movement of the motor shaft when energized with alternate changes in polarity. A punch-tape reader detects uncoded perforations progressively arranged in a predetermined sequence in channels of a punch tape with two channels controlling each axis of movement. Solid state control circuitry for each stepping motor is interconnected with the tape reader. The circuit includes a first flip-flop responsive to detection of certain perforations in the two tape channels to alternately be switched between two stable states, a pair of

flip-flops adapted for energizing the windings of one of the stepping motors, and a steering means including a plurality of AND gates interconnecting the first flip-flop to the pair of flip-



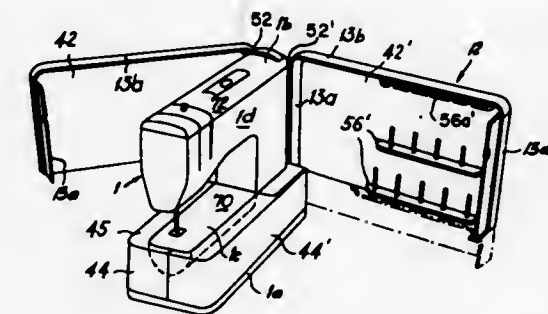
flops. The arrangement provides automatic sewing of the material at high speed according to the predetermined pattern.

**3,822,659**  
**PORTABLE SEWING MACHINE AND CASE**  
 Heinz Maag, Gumligen, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik, Steckborn, Sweden

Filed Jan. 12, 1973, Ser. No. 323,050  
 Int. Cl. D05b 77/00

U.S. Cl. 112-258

4 Claims



A portable sewing machine and case comprises a sewing machine having a lower usually horizontal free arm portion, an upright rear column portion and a generally horizontally extending top portion is provided with case-forming cover elements. The cover elements are pivoted about vertical axes which extend up adjacent the rear end of the column so that the covers may be folded inwardly to encompass the sides of the sewing machine. The cover elements advantageously include intumed edges which either engage directly over a base plate for the sewing machine or over a cover for the free arm portion which extends upwardly from the base flush with the top surface of the free arm portion. The cover elements for the free arm portion may be similarly pivotally mounted about an axis which extends vertically and which is located at the rear end of the column portion of the machine.

**3,822,660**  
**METHOD AND APPARATUS FOR SALVAGING A SUNKEN VESSEL**  
 Guy C. Throner, Jr., Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 8, 1973, Ser. No. 322,036  
 Int. Cl. B63c 7/12

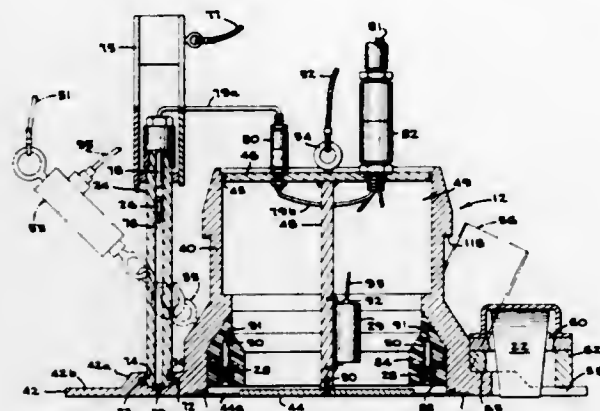
U.S. Cl. 114-50

14 Claims

For salvaging a sunken vessel, there is disclosed a closed, or water-tight, fitting which initially is held on the hull by mag-



nets, but which is thereafter securely fastened to the hull by the detonation of rivet guns on the fitting. A cutting charge in the fitting is detonated to blast a hole in the hull, and a clear-



ing charge is detonated to remove the cover from the fitting. A tube is then connected to the fitting to introduce buoyant plastic or glass spheres through the fitting and into the hull to float the vessel.

### 3,822,661 SHIP'S HULL

Robert Simpson, P.O. Box 159, Lantzville, British Columbia, Canada

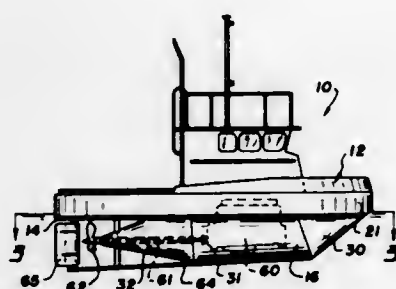
Filed Oct. 4, 1972, Ser. No. 294,884

Claims priority, application Canada, Oct. 2, 1972, 152973

Int. Cl. B63b 1/04, 1/12

U.S. Cl. 114—56

4 Claims



A ship's hull having a flat plate mounted above a keel-like portion formed of a rounded bow section, a cylindrical main section, and a conical stern section. The method of fabricating and assembling the hull.

### 3,822,662 SAFETY DEVICE FOR SHIP

Katsuo Morita, Hokkaido; Sadao Hashimoto, Hokkaido, and Hiroshi Miyamoto, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Chuo-ku, Tokyo and Hakodate Seimo Sengu Kabushiki Kaisha, Hokkaido, both of Japan

Filed Oct. 12, 1972, Ser. No. 296,750

Claims priority, application Japan, July 24, 1972, 47-87034; July 24, 1972, 47-73933

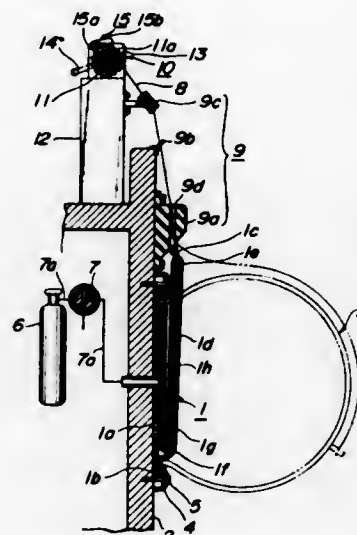
Int. Cl. B63b 43/14

U.S. Cl. 114—123

9 Claims

A ship safety device comprising normally-folded inflatable gas bags secured to broadsides of a ship, which gas bags are connected to a pressure-gas source through a valve for selec-

tive inflation in emergency. Each gas bag has a flange, which is secured to the ship broadside by fixtures, and two folding por-



tions extending in the longitudinal direction of the ship for facilitating the folding thereof in an easily inflatable and deflatable fashion.

### 3,822,663 METHOD AND APPARATUS FOR MOORING FLOATING VESSELS

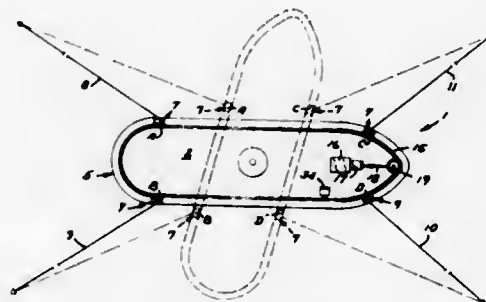
Henry C. Boschen, Jr., Rt. 4 Box 283, Chippewa Falls, Wis. 54729

Filed Oct. 10, 1972, Ser. No. 296,079

Int. Cl. B63b 21/50

U.S. Cl. 114—206 R

6 Claims



A method and apparatus for mooring floating vessels (e.g. ships) generally over a fixed location on the water bottom. The vessels are provided with guide means (e.g. a track) which encircle the hull of the vessel along a line which is spaced at or above the Plimsoll line and at or below the top edge of the hull. A plurality of movable carriages are carried by the guide means for separately attaching a plurality of anchor lines to the hull and for controlling the length thereof. Means are provided for selectively positioning the carriages at desired points along the track.

### 3,822,664 ANCHOR

John Gunnar Hedman, Postfach 96, S-941 01 Pitea, Sweden

Filed Feb. 3, 1972, Ser. No. 223,254

Claims priority, application Sweden, Feb. 8, 1971, 1524/71; Mar. 19, 1971, 3552/71

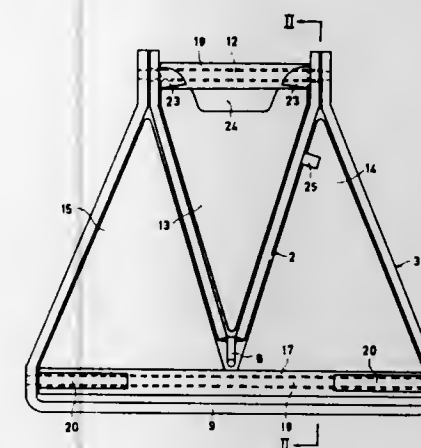
Int. Cl. B63b 21/24

U.S. Cl. 114—208 R

18 Claims

An anchor made up of at least two frame parts pivotally interconnected, at least one fluke hingedly connected to each

frame part, one frame part being pivotable for at least 180° from an unfolded position to a folded position into a second



frame portion, the first frame part and its fluke being received between the flukes of the second portion.

### 3,822,665 ANCHOR CROWN CONSTRUCTION

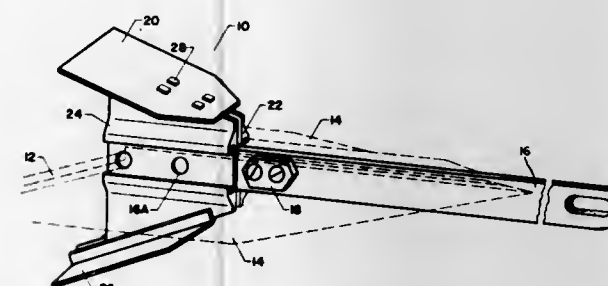
Daniel Comstock Hungerford, North Palm Beach, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 25, 1972, Ser. No. 283,914

Int. Cl. B63b 21/44

U.S. Cl. 114—208 R

4 Claims



A twin-fluke anchor having an improved crown construction which eliminates welding seams while improving strength and corrosion resistance. The improved crown is comprised of four plates arranged in a box-like structure, the plates being rigidly coupled together by providing malleable projections along the edge faces of the parallel side plates, each projection being received through a separate aperture in the top or bottom plate and being greater in length than the thickness of the top or bottom plates. Each protruding portion is then hammered, causing the malleable material to spread over the top of the aperture whereby the plate is then retained rigidly to the side plates.

### 3,822,666 ANCHOR

Erling Blomberg, Vastergatan 3, Goteborg, Sweden

Filed May 15, 1973, Ser. No. 360,602

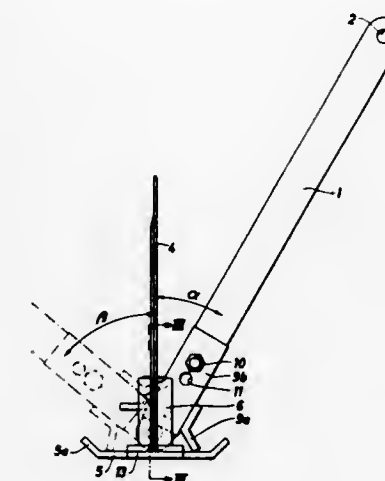
Int. Cl. B63b 21/44

U.S. Cl. 114—208 R

5 Claims

An anchor comprising a shank, two main flukes, an auxiliary fluke, the main and auxiliary flukes being pivotally con-

nected to the lower end of the shank with the pivot axis at right angles to the shank, the main flukes being in the form of flat plates, the extension of which in one direction substantially coincides with the pivot axis, the auxiliary fluke extending substantially in a plane parallel to the pivot axis and at right angles to the main flukes, and an abutment member dis-



placeable and securable to different positions on the shank, the abutment member having abutment points adapted to cooperate with corresponding abutment points on the auxiliary fluke to effect different maximum angles of swinging of the main flukes with respect to the shank when the abutment member is displaced toward or away from the pivot axis.

### 3,822,667 FLEXIBLE CONNECTION FOR ARTICULATING VESSELS

John E. Marriner, 555 E. Ocean Blvd., Long Beach, Calif. 90802

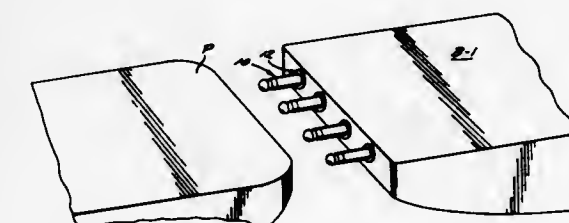
Division of Ser. No. 251,021, May 8, 1972, and a continuation-in-part of Ser. No. 88,938, Nov. 12, 1970. This application

Sept. 21, 1973, Ser. No. 399,423

Int. Cl. B63b 21/56

U.S. Cl. 114—235 R

5 Claims



A coupling apparatus interposed between two vessels to connect such vessels in an articulated manner. The vessels may be components of a barge train. The coupling apparatus permits the barges to be individually removed from such train. The apparatus includes one or more resilient posts removably interposed between the vessels. The resiliency of the posts permits the posts to flex and bend for accommodating simultaneous relative movement in roll, pitch, yaw, surge and heave between the vessels resulting from wave action.



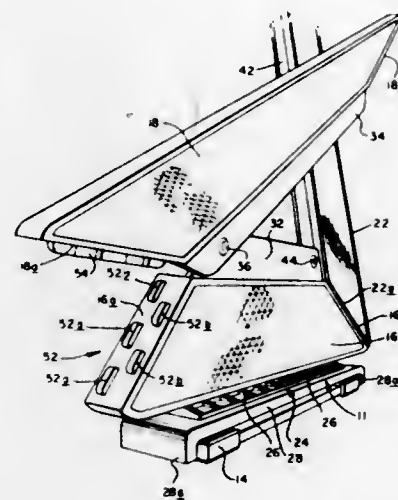
3,822,668

## ROADSIDE WARNING DEVICE

Richard H. Schradieck, 235 Bear Hill Rd., Wellesley Hills, Mass. 02154, and Taisto A. Lehti, Salo, Finland, assignors to said Schradieck, by said Lehti

Filed May 23, 1973, Ser. No. 363,025  
Int. Cl. E01f 9/10

U.S. Cl. 116—63 P



A foldable roadside warning device is composed of three reflective frame members, two of the frame members being of substantially equal length and being pivotally connected at their ends to the opposite ends of the third frame member. The first and second frame members are limited in their swing away from each other about their pivots so that they have to be forcibly spread apart in order for their free ends to meet one another. Interfitting surfaces on the free ends of the two frame members mate when the free ends meet so as to form a stable triangular frame which can then be supported upright in the roadway by a stand.

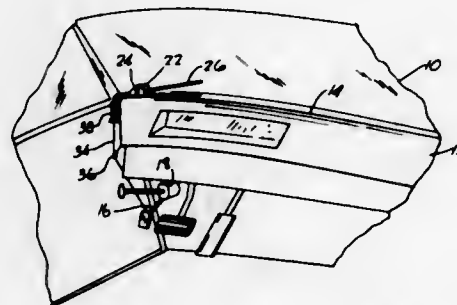
3,822,669

## EMERGENCY BRAKE LEVER POSITION INDICATOR

Adam Schrag, Box 812, Salina, Kans. 67401  
Filed June 5, 1973, Ser. No. 367,139

Int. Cl. G01d 21/00

U.S. Cl. 116—114 R



An elongated member is pivotally secured to the instrument panel of a vehicle at a point intermediate the ends but adjacent one end. Means interconnect the one end of the member to the emergency brake lever in such manner that when the lever is positioned to lock the brakes, the member is inclined with the other end raised and when the lever is positioned to unlock the brakes, the member is disposed horizontally. The means includes a cable extending between the one end of the member and the lever as well as a spring to damp the motion of the member and prevent oscillation.

3,822,670

## LIQUID DEVELOPMENT APPARATUS FOR ELECTROPHOTOGRAPHY

Masamichi Sato; Isoji Takahashi; Takao Komaki, and Satoru Honjo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

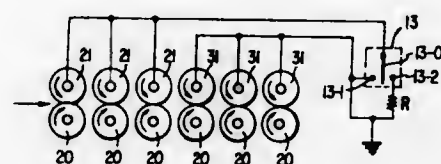
Filed Dec. 28, 1971, Ser. No. 213,089

Claims priority, application Japan, Dec. 28, 1970, 45-120320

Int. Cl. G03g 13/00

U.S. Cl. 118—637

3 Claims



An electrophotographic liquid development apparatus comprising developing electrodes positioned face to face with a thin clearance therebetween to receive an electrophotographic material bearing an electrostatic latent image, means for supplying liquid development agent to the thin clearance to develop the latent image, and switching means in circuit with the developing electrode which directly faces the electrostatic latent image, the switching means being provided with at least two circuit paths to change the grounding resistance according to an original image used to form the latent image, wherein if the latent image comprises a linear drawing, a high resistance circuit path is employed and if the latent image is of a continuously toned nature, a low resistance circuit path is employed as the medium through which the developing electrode is grounded.

3,822,671

## ANIMAL TOILET

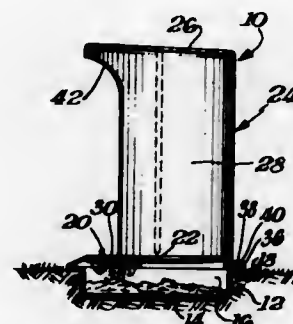
Isobel K. Rosenberg, Woodslea R.D. No. 1, Landenberg, Pa. 19350

Filed June 20, 1972, Ser. No. 264,428

Int. Cl. A01k 29/00

U.S. Cl. 119—1

3 Claims



Animal toilet comprises holding tank for waste material. Tank has bottom wall and side wall that extends upwardly to peripheral edge portion. Platform rests upon peripheral edge portion and covers holding tank. Platform has at least one opening therein that communicates with interior of holding tank. Partial enclosure for platform is secured to platform and holding tank and includes roof portion spaced from and directly above platform and partial side wall portion extending between platform and roof portion.

3,822,672

## MILKING INSTALLATION FOR COW STABLES

Stig Janson, and Ulf Stig Janson, both of Ryholms Gods, Moholm, Sweden

Division of Ser. No. 885,097, Dec. 15, 1969, Pat. No.

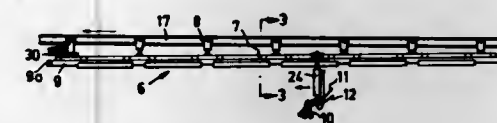
3,683,856. This application May 9, 1972, Ser. No. 251,733

Claims priority, application Sweden, Dec. 19, 1968, 17489/68

Int. Cl. A01j 05/00, 09/08

U.S. Cl. 119—14.11

13 Claims



A milking installation for a milking stable having a line of milking stations for cows arranged side-by-side, comprising a number of teat cup clusters, each of which has teat cups manually interconnectible by hoses to milk and vacuum pipes. The clusters being mounted on a carriage which moves along the milking stations. The clusters are movable relative to the carriage on a guideway. During an inactive phase of the movement of the clusters relative to the carriage, the clusters are automatically disconnected from the cows and from the milk and vacuum pipes; while during an active phase of the same movement they may be manually connected to the cows and to the milk and vacuum pipes.

3,822,673

## WATER FLUSHING EXCRETA REMOVAL SYSTEM FOR ANIMAL HOUSING SYSTEMS

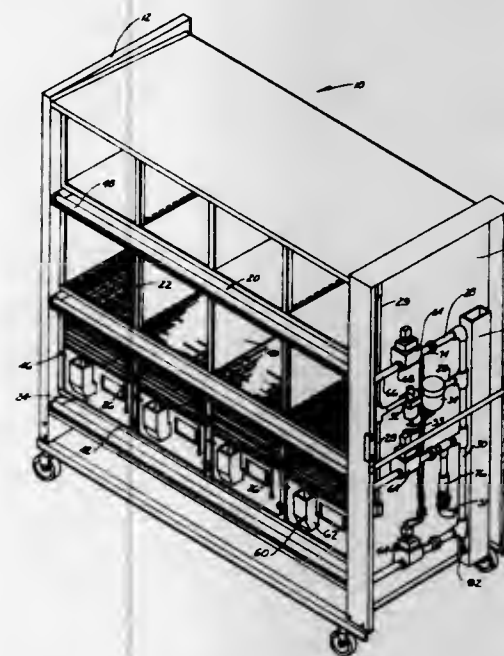
John R. Benny, Cincinnati, Ohio, assignor to Hoeltge, Inc., Cincinnati, Ohio

Filed Feb. 16, 1973, Ser. No. 333,353

Int. Cl. A01k 1/02

U.S. Cl. 119—22

7 Claims



A water flushing excreta removal system for animal housing systems of the type having at least one tier of cubicles and an inclined surface disposed beneath the cubicles of each tier adapted to catch debris from the cubicles and provided with flush water supply means for the removal of the debris. The flush water supply means includes a flush tube suspended over the front of the inclined surface to generate a slow moving, well distributed flushing pattern over the inclined surface. A water flushing solenoid valve is connected by flexible hose to the flush tube. A supply manifold, which includes one branch for each tier of cubicles, with the branch connected to the

solenoid valve, is connected to a source of water supply. A throttle-shut-off valve is located upstream of the supply manifold and control means are provided which will furnish timed sequential energization of the water flushing solenoid valves, permitting adjustment of the time interval between flush cycles, the length of tier flush time, and selection of various modes of operation.

3,822,674

## BIRD FEEDER

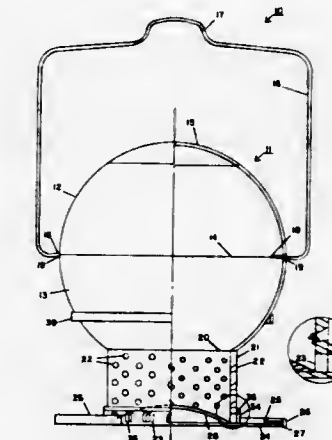
Robert A. Tobin, 67 Lake Bluff Rd., Rochester, N.Y. 14622

Filed Mar. 21, 1973, Ser. No. 343,350

Int. Cl. A01k 5/00

U.S. Cl. 119—53

6 Claims



A bird feeder has a spherical container suspended from a wire yoke for pivoting freely about a horizontal diameter, and a pipe and feeder table are secured to the bottom of this sphere. The pipe surrounds a bottom opening of the sphere, the feeder table is secured to the bottom of the pipe, and the pipe has bottom openings above the feeder table to dispense birdseed onto the feeder table. A rim around the feeder table retains the birdseed and serves as a perch, a deflector extends up into the bottom of the pipe to guide the birdseed through the bottom openings of the pipe, peck holes are drilled into the pipe wall to make small seeds accessible to small birds directly through the pipe wall, and a drip ring is secured around the underside of the sphere.

3,822,675

## BOILER FOR HEATING NON-BOILING HEAT TRANSFER LIQUIDS

Niklaus Rychen, Kanton Zurich, Switzerland, assignor to Nordalpine-Anstalt, Vaduz/Furstentum, Liechtenstein

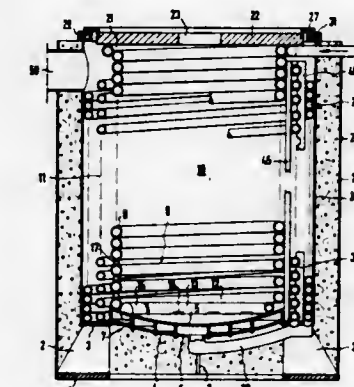
Filed Mar. 26, 1973, Ser. No. 344,564

Claims priority, application Germany, Mar. 28, 1972, 2215188

Int. Cl. F22b 27/08

U.S. Cl. 122—250 R

17 Claims



This invention relates to an improvement in a vertical boiler for heating non-boiling heat-transfer liquids having two tightly



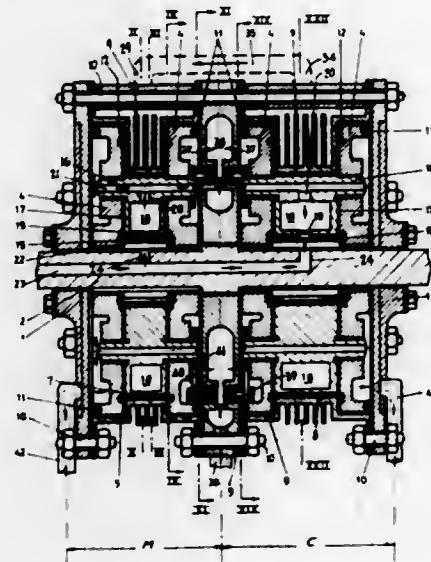
wound axially symmetrically coiled pipe walls concentrically positioned at a distance with respect to each other inside an axially symmetrical housing, the external wall extending to the boiler bottom and radially delimiting the outside of a riser for flue gas, said riser surrounding the internal wall, aperture means in the upper end of said housing for the introduction of heating means, and a coiled pipe spiral constituting the boiler bottom, the improvement comprising an internal pipe wall which extends to the boiler bottom, at least said internal wall with the lowermost pipe winding being supported by the boiler bottom, and gaps between the lower coils of said internal pipe wall forming a connection between the space enclosed by said internal wall and said riser.

3,822,676

**PENDULAR PISTON ROTARY EXPLOSION ENGINE**  
Ernest H. C. Richter, Aribau 177, Barcelona, Spain  
Filed July 19, 1971, Ser. No. 163,599  
Int. Cl. F02b 53/08

U.S. Cl. 123-8.41

4 Claims



A pendular piston rotary explosion engine having two sections of which one section compresses air fed to the second section in which fuel is mixed with the air and fired, each section has a pair of crank discs within a cylinder, a Maltese-cross shaped filling member, a shaft through the center of said discs and filling member, but eccentric to the axis of its cylinder and pendulum shaped pistons rotatably carried by said crank discs within said filling members.

3,822,677

**ELECTRIC FUEL PUMP CONTROL CIRCUIT FOR INTERMITTENT INJECTION ELECTRONIC FUEL CONTROL SYSTEMS**

Junuthala N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed June 30, 1971, Ser. No. 158,351

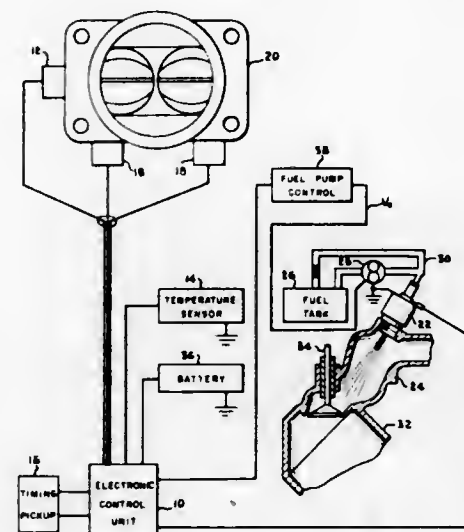
Int. Cl. F02m 51/00

U.S. Cl. 123-32 EA

8 Claims

A fuel pump control circuit is disclosed herein to provide optimum fuel delivery at constant operating pressure to the fuel injector valve means of an electronically controlled fuel supply system. By energizing the pump in response to the engine operating parameters which determine the engine fuel requirement, a minimum of fuel in excess of the fuel requirement is recirculated from the area of the engine back to the fuel reservoir. In order to suitably energize the fuel pump, the

pump is provided with a maximum voltage during the time period of the injection pulse with the energizing voltage decreasing thereafter so that a minimum of fuel is circulated



through the fuel supply system during the noninjection phase. This provides a variable level of average fuel pump energization.

3,822,678

**HIGH SPEED FUEL INJECTION SYSTEM**

Jacques Bassot, Paris, and Louis Monpetit, L'Etang La Ville (Seine et Oise), both of France, assignors to Societe Des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

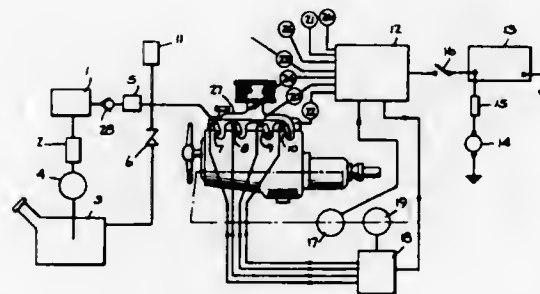
Continuation of Ser. No. 871,670, Nov. 10, 1969, Pat. No. 3,710,763, which is a continuation of Ser. No. 816,767, April 16, 1969, abandoned, which is a division of Ser. No. 630,035, April 11, 1967, Pat. No. 3,456,628. This application May 1, 1972, Ser. No. 249,275

Claims priority, application France, Apr. 13, 1966, 66.57392; Dec. 2, 1966, 66.85951; Dec. 9, 1966, 66.86830

Int. Cl. F02m 51/00

U.S. Cl. 123-32 EA

6 Claims



Construction of high speed injectors, a special type switch mechanism for synchronizing the operation of the injectors to the angular position of a motor shaft, a unijunction transistor time delay circuit whose base and emitter voltages are varied in response to variations in different parameters, rapid switching bistable control circuits, which control the injection period in one state, damping circuits for the injector, circuits for transferring the electromagnetic energy liberated by current interruption in one injector coil to the next injector coil to be activated, and circuits for regulating a motor driving a generator to correspond to the voltage, current or power output of the latter.

3,822,679

**FUEL CONTROL SYSTEM FOR FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE**

Nobuhito Hobo, Inuyama, and Yutaka Suzuki, Nishio, both of Japan, assignors to Nippondenso Co. Ltd., Aichi-ken, Japan

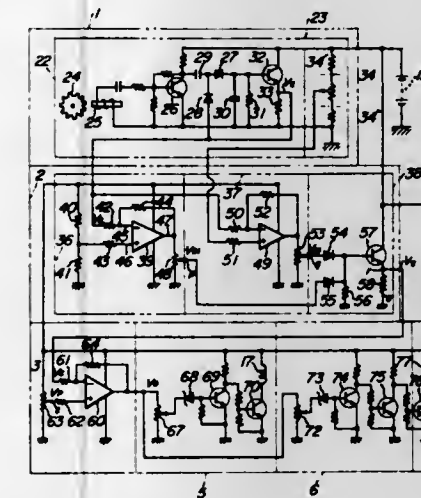
Filed Aug. 29, 1972, Ser. No. 284,474

Claims priority, application Japan, Sept. 8, 1971, 46-69417

Int. Cl. F02m 51/00

U.S. Cl. 123-32 EA

2 Claims



A fuel control system for fuel injection type internal combustion engines is provided. The fuel control system comprises an actuator chamber including a movable wall connected to the fuel injection characteristic controlling element of a fuel injection pump for a fuel injection type internal combustion engine, a forward controlling electromagnetic valve disposed in a passage interconnecting said actuator chamber and a source of high pressure fluid, a reverse controlling electromagnetic valve disposed in a passage connecting said actuator chamber to a low pressure exhaust, an operating condition detector for detecting an operating condition of the engine in the form of electrical operating condition signals, a control voltage generator for receiving said operating condition signals to produce a control voltage corresponding to a predetermined fuel injection characteristic of the engine, a position voltage generator for generating a position voltage corresponding to the position of said controlling element, a comparator for comparing said control voltage with said position voltage to produce an output voltage corresponding to the difference therebetween, and a forward controlling electromagnetic valve driving circuit and a reverse controlling electromagnetic valve driving circuit selectively responsive to the output voltage of said comparator to generate an electrical output for driving said forward controlling electromagnetic valve and said reverse controlling electromagnetic valve selectively.

3,822,680

**ISOTHERMAL VALVE SEAT FOR INTERNAL COMBUSTION ENGINE**

Merle Robert Showalter, 4733 Shoremead Rd., Richmond, Va. 23234, and Samuel Rhine, 134-26 229th St., Queens, N.Y. 11143

Filed Jan. 11, 1973, Ser. No. 322,762

Int. Cl. F011 3/14; F021 3/18

U.S. Cl. 123-41.16

8 Claims



A valve seat for internal combustion engines including a heat pipe passage around the seat to assure that the valve seat

is uniformly the same temperature all around even if the cooling of the valve seat from the engine head is not even all around. The heat pipe passage is a gas tight passage including wicked surfaces to assure that the valve seat is uniformly wet and containing a working fluid which is a liquid with a high vapor pressure under the operating temperature range of the valve seat. When the valve seat is heated, fluid evaporates from hot portions, absorbing the heat of vaporization, and the vapor flows hydrodynamically to of vaporization, cooler portions of the heat pipe surface, where the vapor recondenses at the same temperature, giving up its heat of vaporization. The gas contained in the heat pipe volume is totally or predominantly the working fluid vapor, so that the heat pipe always responds to maintain its entire surface area at an even temperature (this temperature will vary from time to time, but at any given time the entire surface of the heat pipe passage will be isothermal). Uniform valve seat temperatures produce uniform expansion so valve seats stay in round, leak less unburned hydrocarbon, and last longer.

3,822,681

**ROTARY INTERNAL COMBUSTION ENGINE**

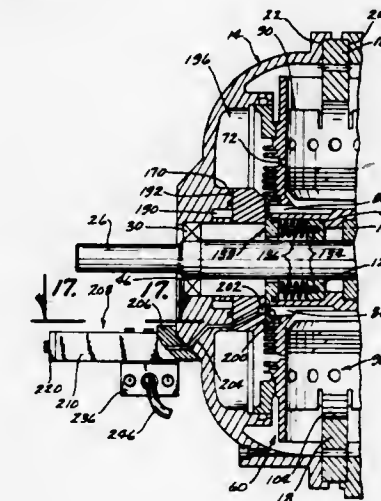
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 286,189, Sept. 5, 1972. This application Oct. 26, 1972, Ser. No. 301,097

Int. Cl. F02b 57/00

U.S. Cl. 123-44 E

9 Claims



A rotary internal combustion engine is disclosed herein and generally comprises a rotor means having a plurality of cylinders spaced radially around a pivoting core. A free floating piston is slidably mounted in each of the cylinders with the head of the piston being positioned towards the center or core of the rotor. A roller is mounted in the skirt end of the piston which rides against a circular cam. The centrifugal force created by the rotation of the rotor causes the pistons to follow the internal cam surface of the cam during rotation. The core of the rotor is provided with parts communicating to each cylinder respectively. A stationary valve plate is mounted against one face of the core so as to communicate fuel and air to the cylinders at the proper time during rotation of the rotor. An air pump is provided to supply air for purging and charging the cylinders and a fuel pump is provided to supply fuel under pressure to a metering valve in the valve plate. Ignition is accomplished through compression with the cam being shaped so that the compression is increased suddenly through the range of combustion. The shape of the cam is such that it is possible to inject the fuel as well as the air, at the expanded position of the piston. The piston is then suddenly compressed through the firing range. Preferably, the cam is shaped to provide a slight dwell at the area of maximum compression to provide ample time for the explosion of the fuel and air mixture. The cylinders are exhausted by means of openings extending around a portion of the cylinder which are in communication



with the exhaust manifold at the extreme expanded position of the pistons. The exhaust from each cylinder is exhausted through its individual exhaust openings rather than through a common exhaust port. The design of the valve plate and seal plate of the engine is unique and insures that the air and fuel will be properly injected at the proper time without creating objectionable pressures on the valve plate and seal plate thereby eliminating leakage and reducing damage to the components. The preferred embodiment includes an even number of cylinders, ordinarily two or four, with a cam plate having a pair of oppositely disposed lobes. The preferred cam plate includes upsweep portions on either side of the lobes to achieve more rapid compression and more rapid exhaust. Pressure sensing or heat sensing means are provided for at least one of the cylinders so that the timing of ignition of the fuel in the cylinder can be carefully controlled under varying atmospheric conditions.

3,822,682

## ROTARY VALVE ENGINE

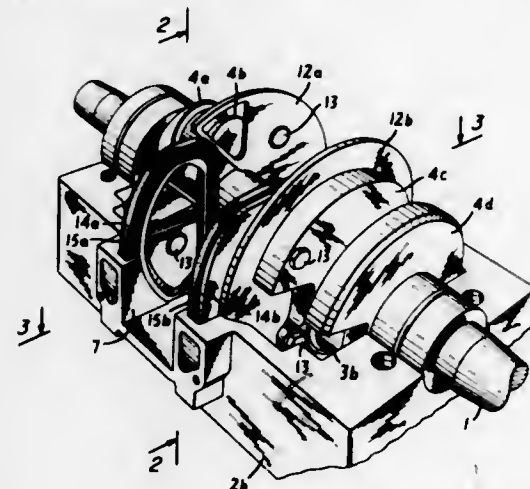
Noble Sherwood, Greenwich, Conn., assignor to Textron, Inc., Providence, R.I.

Filed June 30, 1972, Ser. No. 268,139

Int. Cl. F01I 7/12, 7/16

U.S. Cl. 123—73 D

11 Claims



The crank case of a twin cylinder engine is divided into two compartments, one for each cylinder. An intake chamber provided in the crank case between the two compartments has a port opening into each of the compartments. A valve disc on the crank shaft in each of the compartments overlies the port opening into the respective compartment and has an opening registrable with the port when the crank shaft is in a selected angular position to permit entry of a charge from the intake chamber into the respective compartment of the crank case. The charge may be a fuel-air mixture or, in the case of fuel injection into the crank case or the cylinder, it may be air. In either event oil may be included in the charge for lubrication. A seal is provided between the port of the intake chamber and the valve disc by a floating sealing ring of low friction material having a flat face which is pressed against the valve disc by a pressure ring of elastomeric material which may, for example, be of sponge structure or may be formed with a base portion and a selected number of flexible webs which press against the sealing ring and forming passageways for entry of crank case gas under pressure between the base portion of the elastomeric ring and the sealing ring to partially balance pressure tending to unseat the sealing ring.

3,822,683

## ROLLER BEARING RETAINING CLIP

Jerry A. Clouse, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 11, 1972, Ser. No. 313,697

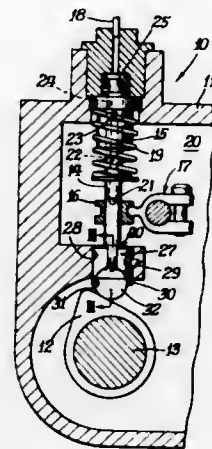
Int. Cl. F01I 1/10

U.S. Cl. 123—90.5

15 Claims

A plunger assembly employed in a fuel injection pump ter-

minates at its lower end at a roller bearing which engages a cam lobe of an engine driven cam shaft. A spring clip has a



ring portion and a pair of leg portions extending downwardly therefrom to engage opposite ends of the roller bearing to restrain axial displacement thereof.

3,822,684

## CONTROL SYSTEMS FOR VEHICLES

Peter Hugh Salway, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

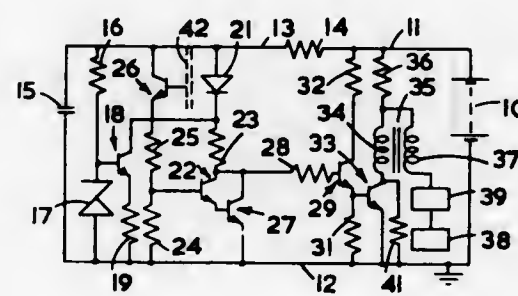
Filed Feb. 15, 1972, Ser. No. 226,547

Claims priority, application Great Britain, Feb. 17, 1971, 4880/71

Int. Cl. F04d 11/10

U.S. Cl. 123—102

4 Claims



A control system for a vehicle, which can be used for controlling an ignition system, a petrol injection system or an engine overspeed control, has an electrically powered radiation source and a radiation receiver which is exposed to the source from time to time through the intermediary of means driven by the engine. When the receiver is exposed to the source, the current flowing through the source is increased rapidly by regenerative action, and moreover there is a constant current flowing through the source which is just sufficient to cause it to radiate.

3,822,685

## CHARGE FORMING METHOD AND APPARATUS WITH OVERSPEED GOVERNOR

Warren D. Nutton, Grafton, Wis., and Bernard C. Phillips, Toledo, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 74,812, Sept. 23, 1970, which is a division of Ser. No. 766,580, Oct. 10, 1968, abandoned. This

application Nov. 1, 1972, Ser. No. 302,902

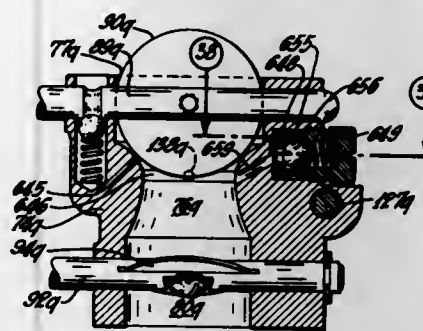
Int. Cl. F02d 13/00; F02m 13/06; G05d 13/04

U.S. Cl. 123—114 R

8 Claims

The invention disclosed embraces a charge forming method of and apparatus embodying an instrumentality responsive to

engine vibrations or disturbances brought into operation when the engine reaches a predetermined speed to automatically by a parameter representing the magnitude of the flow of air in the induction pipe and second means for regulating the flow of



deliver excess fuel to the engine thereby momentarily providing a nonignitable mixture preventing overspeeding of the engine.

3,822,686

## AUTO IGNITION SYSTEM

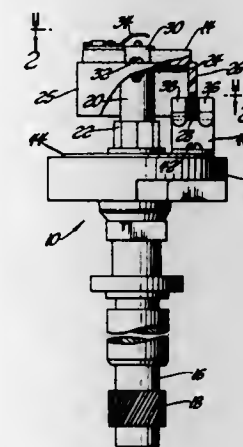
Michael R. Gallo, 3733 Quarton Rd., Bloomfield Township, Mich. 49228

Filed July 24, 1972, Ser. No. 274,357

Int. Cl. F02p 1/00

U.S. Cl. 123—148 E

2 Claims



Automotive distributor apparatus for replacing the standard mechanical breaker points and including a molded plastic rotor cap adapted to fit onto a rotor cap plate in the same manner as a standard rotor cap and having a skirt portion with molded-in, circumferentially arranged metallic teeth. A coil pair is placed on the stator support plate in a preformed locator hole. The coils of the pair are radially spaced so that the rotor cap skirt extends into the air gap therebetween. An output circuit for receiving the timing pulses generated by rotation of the cap between the coils is also disclosed.

3,822,687

## FUEL FEED DEVICE FOR GAS-OPERATED INTERNAL COMBUSTION ENGINES

Jean Perez, Levallois-Perret, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of, France

Filed Feb. 20, 1973, Ser. No. 333,569

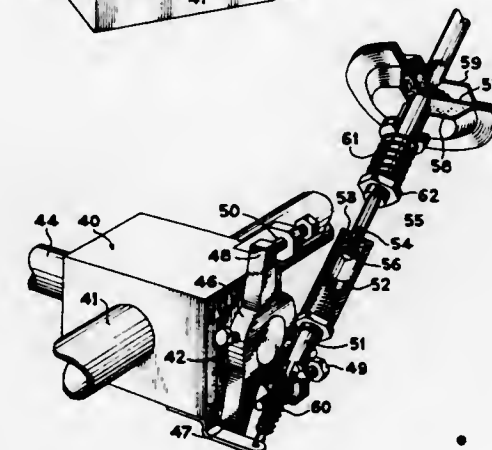
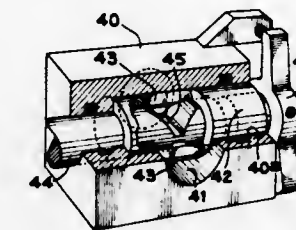
Claims priority, application France, Feb. 29, 1972, 72.6798

Int. Cl. F02d 33/00

U.S. Cl. 123—198 DB

5 Claims

The device comprises an induction pipe for the engine, first means for regulating the flow of gaseous fuel and controlled



gaseous fuel connected in series with the first means. The second means is controlled in accordance with the magnitude of the depression prevailing in the induction pipe.

3,822,688

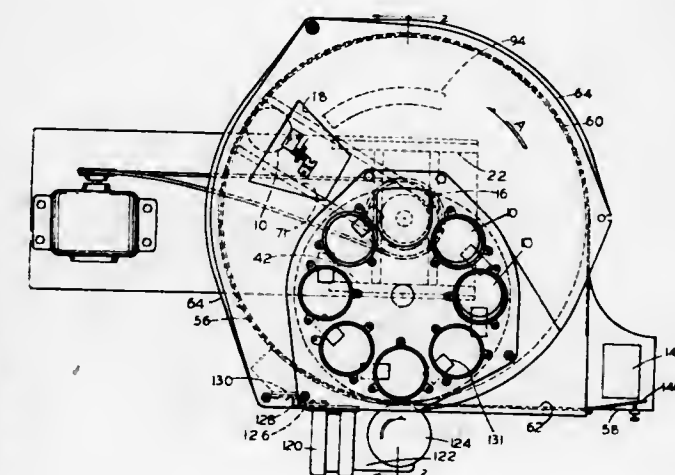
## HOCKEY PUCK SHOOTING MACHINE

David L. Mayne, R. D. 1, Yale Farm Rd., Clay, N.Y. 14541  
Continuation of Ser. No. 64,652, Aug. 17, 1970, abandoned, which is a continuation of Ser. No. 667,421, Sept. 13, 1967, abandoned. This application Dec. 19, 1972, Ser. No. 316,526

Int. Cl. F41b 3/04

U.S. Cl. 124—6

8 Claims



Apparatus for automatically ejecting a succession of hockey pucks in timed sequence and at considerable velocity as an aid in training players in blocking the pucks. The apparatus includes a stationary magazine for holding a plurality of vertical stacks of pucks and rotatable feeding device for supplying the pucks one at a time to an ejector member by which they are propelled by centrifugal force. The ejector member rotates within a cylindrical side wall having a tangential opening through which the puck is ejected. To insure against malfunction by reason of a puck becoming lodged between the end of the ejector member and an edge of the opening, a mechanism is provided to retain the puck at an intermediate position on the ejector member for release at a point in the rotation thereof where the puck will impact against the side wall before



reaching the opening. The puck feeding device is positioned between the bottom of the magazine and the ejector member for feeding the pucks to an opening through which they drop to the ejector member.

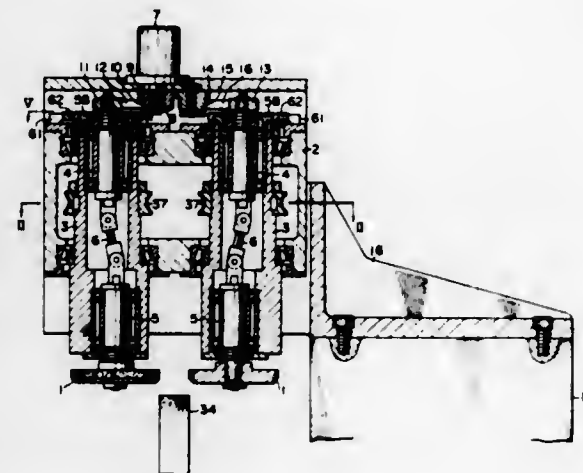
3,822,689

## SIDE DRESSING DEVICE

Susumu Oshima, Okazaki, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Aichi Prefecture, Japan  
Filed Mar. 5, 1973, Ser. No. 338,270  
Claims priority, application Japan, Mar. 8, 1972, 47-28270  
Int. Cl. B24b 53/02

U.S. Cl. 125—11 CD

4 Claims



A side-dressing device for grinding wheels comprising a carriage which makes a reciprocating slide motion relative to the body of the dressing device; a pair of main shafts attached to said carriage and rotatable relative to said carriage; shafts rotatable within said main shafts, set eccentrically to the axis of said main shafts and fitted with a rotary diamond truing cutter at their respective outer ends; and a drive mechanism for rotating said rotatable shafts in opposite directions to each other; said pair of rotary diamond truing cutters being so arranged that they may reciprocate and slide on each side surface of a grinding wheel to be dressed which is being rotated at a fixed position on the wheel slide. Said main shafts being externally fitted with gears, which mesh with gears which are linked with the feed shaft to cause the former gears to rotate in opposite directions; and said feed shaft being turned by a certain angle so that the rotary diamond truing cutter may be brought up to the grinding wheel.

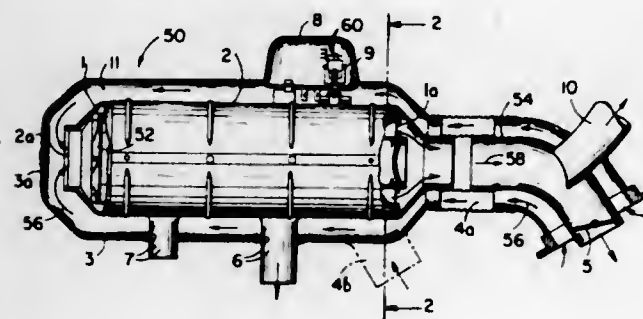
3,822,690

## SPACE HEATER PARTICULARLY FOR MOTOR VEHICLES

Siegfried Kofink, 7301 a. N., Lenzbalde 8, Germany, assignor to J. Eberspacher, Esslingen, Germany  
Filed May 13, 1971, Ser. No. 142,970  
Int. Cl. F24h 3/02

U.S. Cl. 126—110 B

1 Claim



A space heater particularly for motor vehicles comprises an inner tubular enclosure for a heat source, a first jacket defin-

ing a first annular space surrounding the tubular enclosure and traversed by heating air, a second jacket surrounding the first jacket and defining a second annular space, the second jacket having an open end and an axially opposite closed end spaced axially from the adjacent end of the first jacket and first annular space, a fresh air inlet communicating with the open end of the second annular space, and a heating air outlet communicating with that end of the first annular space adjacent the open end of the second annular space. The fresh air inlet and the heating air outlet preferably are concentric with each other and are arranged at one and the same end of the space heater or heating device. Fresh air enters through the inlet connection, flows through the second annular space to the closed end of the second jacket, then flows in the counter direction through the first annular space, and is discharged through the outlet connection. The tubular enclosure for a heat source may be a combustion chamber to which combustion air is admitted and exhausted by lateral connections extending across the heating air passage. The heater controls may be mounted in a hood secured adjacent a lateral opening in the second jacket.

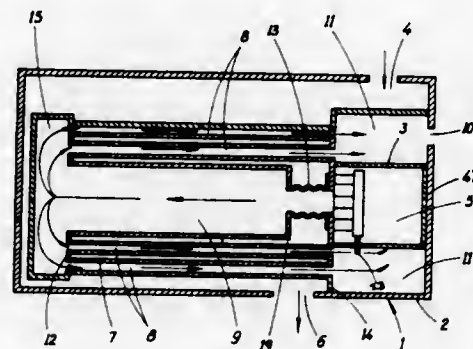
3,822,691

## GAS-FIRED FURNACE

Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.  
Division of Ser. No. 201,879, Nov. 24, 1971, Pat. No. 3,724,995. This application Nov. 8, 1972, Ser. No. 304,768  
Int. Cl. F24h 3/08

U.S. Cl. 126—110 R

9 Claims



A gas-fired furnace including a heat exchanger mounted in a housing in heat transfer relation with flowing air passing over the heat transfer surface of the heat exchanger and a gas burner assembly; the heat exchanger having a centrally disposed burner tube communicating with a rear tube sheet at one end and the gas burner assembly at the opposite end, and a plurality of return tubes disposed about the burner tube and affixed to the rear tube sheet at one end and a flue gas collector at the opposite end.

3,822,692

## CONTROLLED SOLAR ENERGIZED POWER GENERATOR

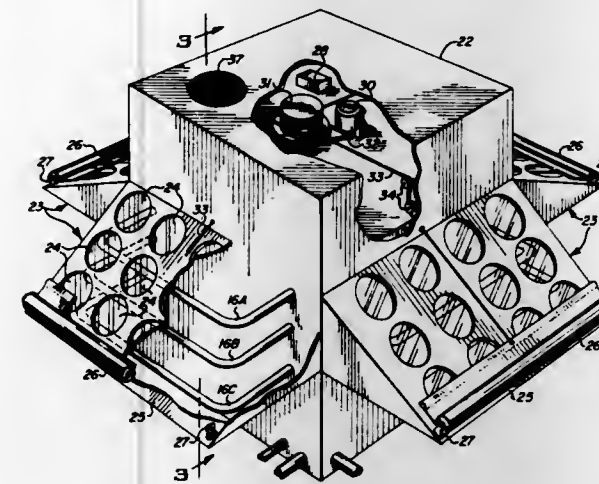
James A. Demarest, 3467 E. Voltaire, Phoenix, Ariz. 85023  
Filed May 25, 1973, Ser. No. 364,041  
Int. Cl. F24j 3/02

U.S. Cl. 126—271

8 Claims

A power generating system includes a closed fluid-flow circuit having tubes extending adjacent a plurality of lens which

direct the solar energy to the tubes. A thermostatic or pressure sensing unit operates a shade device or a separate heating unit



to control the temperature and the pressure of the liquid in the system to provide a constant source of pressurized gas for the power generator.

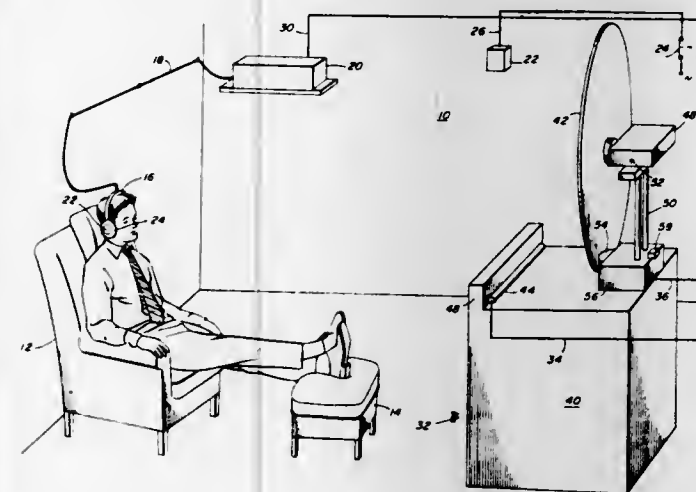
3,822,693

## METHOD FOR INDUCING HYPNOSIS

Paul C. King, 49 Emmeline Ave., Waltham, Mass. 02154  
Filed Dec. 22, 1972, Ser. No. 317,601  
Int. Cl. A61h 23/00

U.S. Cl. 128—1 C

1 Claim



A hypnotic state is induced in humans by placing a subject in a darkened chamber, applying stereo head phones to the subject, playing a pre-recorded hypnotic-inducing message through the ear phones and rotating at a selected speed a disc bearing an Archimedes spiral having alternate segments of black portions and fluorescent portions illuminated by a source of ultra-violet light. The apparatus employed for inducing the hypnotic state includes a special dark room, stereo head phones adapted to block out extraneous noises, a stereo tape player connected to the head phones and adapted to play pre-recorded messages thereon, and a variable speed disc bearing an Archimedes spiral illuminated by ultra-violet light. The spiral is formed with fluorescing and non-fluorescing portions to provide a focal point of attraction when rotated. Chamber illumination, the tape player and the operation of the disc are controllable by a single switch.

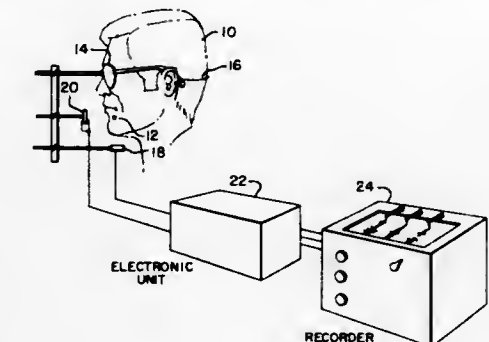
3,822,694

## METHOD OF MONITORING MANDIBULAR POSITIONS AND MOVEMENTS

Gordon E. Mills, Lynnwood, Wash., assignor to Bernard Jan-kelson, Seattle, Wash.  
Filed Oct. 24, 1972, Ser. No. 300,421  
Int. Cl. A61b 5/10

U.S. Cl. 128—2 S

9 Claims



A method of monitoring mandibular movements whereby a permanent magnet is secured to the mandible and one or more fluxgate magnetometers are located relative to the permanent magnet so as to sense changes in magnetic field which result from mandibular movement. The outputs of the fluxgate magnetometers are linearized, if necessary, and then recorded to provide an indication of mandibular movement in one or more planes. The output from the magnetometers may be differentiated by associated electronics to provide an indication of velocity and/or acceleration of the mandible during closure.

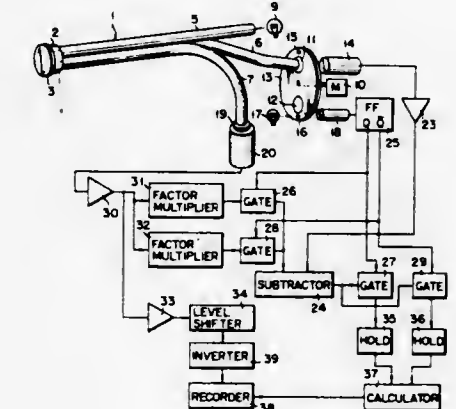
3,822,695

## CATHETER SYSTEM

Syuichi Takayama, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan  
Filed Dec. 27, 1972, Ser. No. 318,994  
Claims priority, application Japan, Dec. 29, 1971, 46-1442  
Int. Cl. A61b 5/02; G01n 33/16

U.S. Cl. 128—2 L

6 Claims



A catheter system in which an optical fiber bundle has one end divided into first, second and third sections and the other end so shaped as to be covered with an elastic film which is elastically deflectable under an external force and permit insertion into the blood vessel. When light including light signals of 8,050 Å, 6,600 Å and 5,300 Å is transmitted from said first section to said other end, the light signals of 8,050 Å and 6,600 Å are reflected from the blood to said second section through said elastic film and the light signal of 5,300 Å is reflected from said elastic film to said third section. A first detector associated with said second section alternately detects the light signals of 8,050 Å and 6,600 Å and produces first and second corresponding electrical signals as a serial output



which is corrected by an electrical signal corresponding to the light signal of 5,300 Å and generated from a second detector to provide an electrical signal required for obtaining information on the percentage content of oxygen contained in the blood. Since the elastic film may elastically deflect with variation in the blood pressure to vary the amount of the light of 5,300 Å reflected from the elastic film, information on the blood pressure may be obtained from the second detector.

3,822,696

## ELECTROCARDIOGRAPHY ST ANALYZER AND METHOD

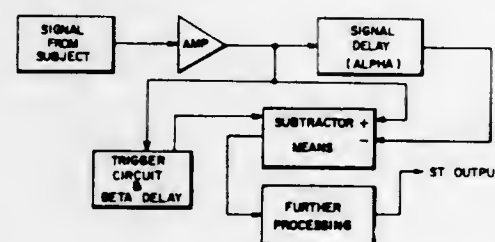
Philip A. Ekstrom, Seattle, Wash., and Ronald R. Taylor, Torrance, Calif., assignors to The Battelle Development Corporation, Columbus, Ohio

Filed Sept. 29, 1971, Ser. No. 184,716

Int. Cl. A61b 5/04

U.S. Cl. 128-2.06 A

6 Claims



In electrocardiology: a method and apparatus for measuring st depression, i.e., st level relative to pg level. The st depression is obtained for each wave by storing the wave in a signal time delay apparatus and measuring the level of the st segment of the wave relative to the pq segment of the delayed copy of the wave.

3,822,697

## ENVELOPE OF AN ENDOSCOPE

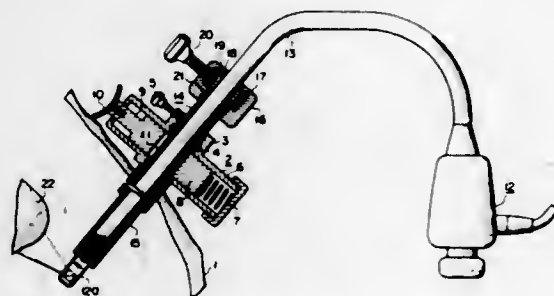
Osamu Komlya, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Mar. 20, 1973, Ser. No. 342,973

Int. Cl. A61b 1/00

U.S. Cl. 128-3

3 Claims



An envelope fitted to an endoscope provided with a flexible connection tube used in observing the stomach and liver, thereby enabling said flexible connection tube to have the same function as a rigid connection tube used in observing the abdominal and breast cavities.

3,822,698

## POWERED AIR-PURIFYING RESPIRATOR HELMET

Richard E. Guy, 450 S. Burnett Dr., Baytown, Tex. 77520

Filed Jan. 22, 1973, Ser. No. 310,724

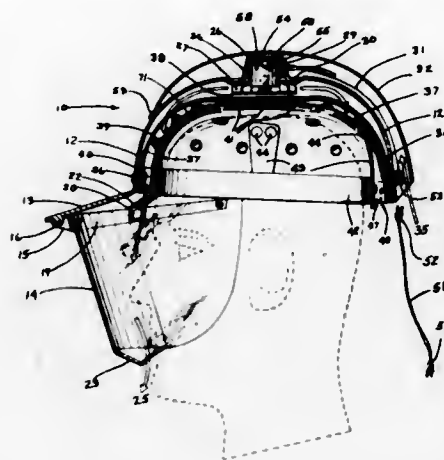
Int. Cl. A61f 9/06

U.S. Cl. 128-142.7

11 Claims

A helmet or hat equipped with a built-in powered air blower and air filtering system which removes contaminants from the

surrounding air and continuously delivers the purified air under positive pressure to an area between the wearers face and a fitted transparent face shield supported from the visor,



and from this area the wearer breathes normally while the excess filtered air and exhaled breath escapes through a slightly restricted opening between the bottom of the mask and the wearer's chin.

3,822,699

## INSTRUMENT FOR MEASURING MAXIMUM EXPIRATORY FLOW RATE

James M. Cleary, P.O. Box 541, Falmouth, Mass. 02541

Continuation-in-part of Ser. No. 186,663, Oct. 5, 1971, Pat.

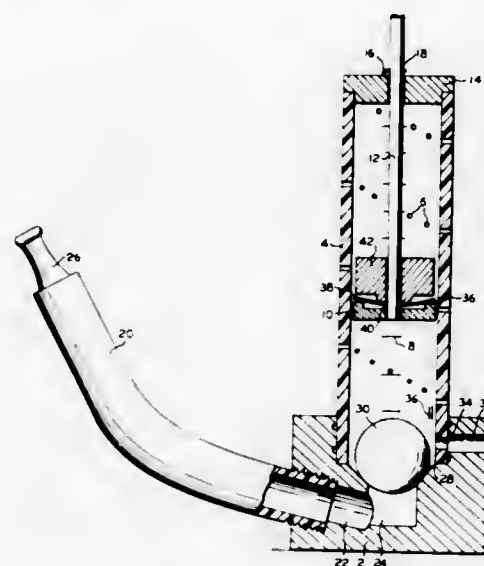
No. 3,720,202. This application Feb. 28, 1973, Ser. No.

336,406

Int. Cl. A61b 5/08; A61m 16/00

U.S. Cl. 128-2.08

15 Claims



An instrument for measuring maximum expiratory flow rate having a vertically-disposed cylinder with a plurality of equal sized orifices distributed along its length, a floating piston disposed in the cylinder having a guide rod passing through a closure on the top of the cylinder, a self-actuating brake means mounted on the guide rod above the piston and actuable against the side of the cylinder, a holdback clip mounted on the cylinder closure and operatively engaging the guide rod to prevent the guide rod from moving downwardly once the piston has moved upwardly in the cylinder and a suitable, flexible air tube having a mouthpiece at one end and connected in open communication with the bottom of the cylinder at its other end. The instrument can also be provided with a check valve at the lower end of the cylinder to prevent backflow of air through the air tube and adjustable port means adjacent the base of the cylinder to adjust the range of the instrument.

3,822,700

## INTRAVENOUS SOLUTION DISPENSER

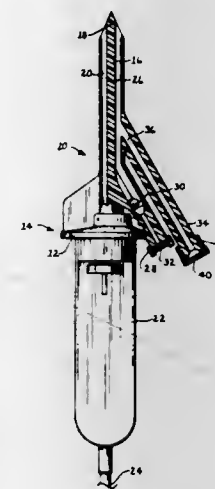
Marion G. Pennington, 53-310 30th St., Lubbock, Tex. 79407

Filed Mar. 16, 1973, Ser. No. 342,176

Int. Cl. A61m 5/16

U.S. Cl. 128-214 C

8 Claims



An unrestricted passage is provided through a piercing device; therefore, when the device pierces a stopper of a bottle containing intravenous solution, additives may be injected into the bottle or a portion of the liquid in the bottle may be withdrawn through the unrestricted passage. The unrestricted passage may be opened by removing the cap or by piercing a diaphragm with a needle.

3,822,701

## ADAPTOR FOR HYPODERMIC SYRINGE

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics Incorporated, Erie, Pa.

Filed Sept. 6, 1972, Ser. No. 286,682

Int. Cl. A61m 5/32

U.S. Cl. 128-221

4 Claims



An adaptor for a hypodermic syringe with a central outlet comprising a hypodermic needle having an inlet section at one end, an outlet section at the other end laterally offset from the inlet section and terminating in an insertion point and an intermediate section transverse to and connecting the inlet and outlet sections and a plastic body embedding the inlet, intermediate, and outlet sections with the insertion point exposed at one end of the body and with an integral fitting at the other end of the body surrounding the inlet end of the needle for mounting the needle on said discharge outlet and for connecting said discharge outlet to the needle.

3,822,702

## DISPENSING METHOD AND APPARATUS

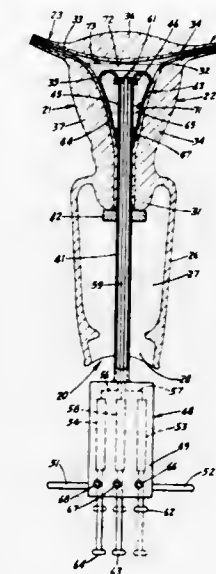
Lee R. Bolduc, Eugene A. Dickhudt, both of Minneapolis, Minn., assignors to Population Research Incorporated, Minneapolis, Minn.

Filed June 25, 1973, Ser. No. 372,971

Int. Cl. A61m 1/00

U.S. Cl. 128-235

13 Claims



A fluid dispensing instrument and method for introducing a fluid, as drug materials, into the canals of the Fallopian tubes of a primate female. The dispensing instrument has a tubular probe carrying an expandable balloon assembly. A stop collar on the probe positions the balloon assembly in the uterine cavity. The balloon assembly has a sleeve member which is initially expanded to close the lower portion of the uterine cavity. The drug material is introduced through the probe into the upper portion of the uterine cavity above the expanded balloon assembly. The balloon assembly is then further expanded to force the drug material from the upper portion of the uterine cavity into the canals of the Fallopian tubes. The expanding balloon assembly divides the material and forces the drug material into both of the canals.

3,822,703

## BREAST PUMP

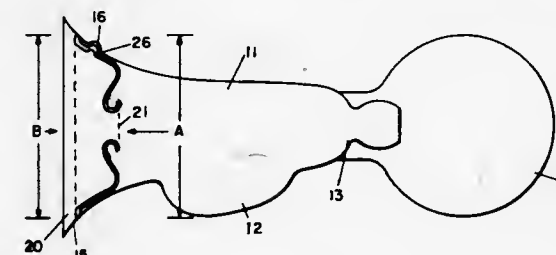
Patricia B. Davison, 15 Summit Rd., Wellesley, Mass. 02181

Filed Feb. 13, 1973, Ser. No. 332,062

Int. Cl. A61m 1/06

U.S. Cl. 128-281

7 Claims



A breast pump is disclosed for use in stimulating lactation, particularly of the female human breast. The pump is equipped with a hollow chamber having a breast receiving opening adapted to engage at least the nipple area and means for pressurizing and depressurizing said chamber when in engagement with the breast. The chamber's breast receiving opening is fitted with a diaphragm having an aperture large enough for only the nipple area to extend through, said diaphragm being comprised of elastic material capable of vibrating back and forth in response to the pressurization and depressurization of the chamber when said diaphragm is in engagement with the breast.



### 3,822,704 UROSTOMY DEVICE

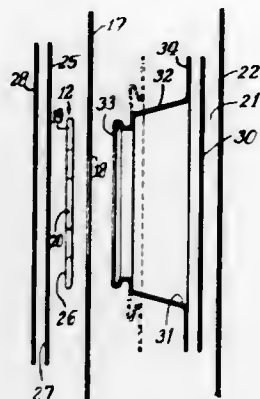
John L. Nolan, Glenview, Ill., assignor to Hollister Incorporated, Chicago, Ill.

Filed Nov. 20, 1972, Ser. No. 308,146

Int. Cl. A61F 5/44

U.S. Cl. 128—283

2 Claims

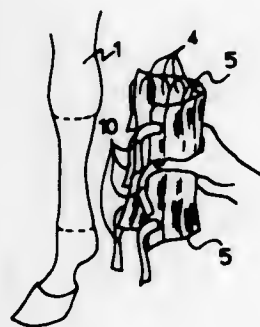


A valve device particularly useful in combination with a urostomy bag for collecting and holding urine discharged by a patient. The term "urostomy" as used herein refers to various urinary diversion surgical procedures, such as ureterostomy and ileal bladder operations in which an artificial opening is created for discharge of urine from a patient who is not able to pass urine in the normal manner. In its preferred form, the valve device comprises a tube-like frustoconical section having one end sealingly surrounding the inlet for the liquid and the other end closed by a cover secured to the end at spaced points. The material of the cover and of the tube-like section is flexible so that liquid may pass between the spaced points of connection of the cover to the tube-like section, with the flexibility of the material operating as a flap valve to prevent backflow of liquid. It is contemplated that the cover be secured to the tube-like section at spaced points around the 360° circumference of the cover so as to present an outlet regardless of the posture of the patient.

**3,822,705  
REFRIGERANT WRAP FOR AN ANIMAL'S LIMB**  
Roland Pilote, 6387 38th Ave., Rosemont, Quebec, Canada  
Filed Feb. 6, 1973, Ser. No. 330,030  
Int. Cl. A61N 5/00

U.S. Cl. 128—379

9 Claims



A device adapted to wrap around an animal's limb such as one leg of a horse and containing a refrigerant to allay fever, relieve pain and reduce inflammation into that limb or leg. The refrigerant wrap includes a plurality of refrigerant cells held side by side into a series of adjoining pockets interspaced by fold lines for simple manufacturing and to evenly wrap around the limb or leg for relatively uniform cooling treatment around the latter. The refrigerant wrap includes attachment bands of the Velcro type particularly suited for non-annoying and adjustable attachment of the wrap, such as for instance

around the leg of a horse. The refrigerant wrap preferably also includes a wire mesh to be at least partially shapable according to the concerned limb to evenly surround the latter and more securely hold into place.

### 3,822,706 MEDICAL LIGHT AND COMBATING OF HYPERBILIRUBINEMIA

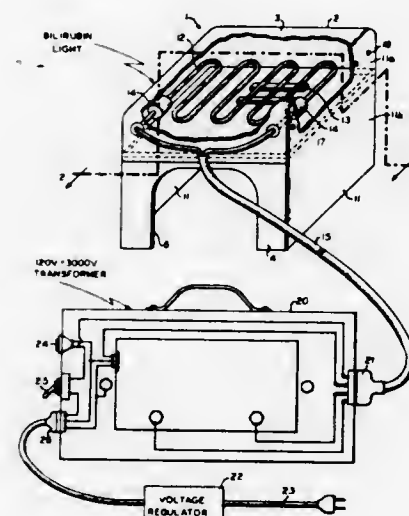
Pasquale Simone, and Julius S. Schneider, both of Whitestone, N.Y., assignors to Medi-Spec Corporation, Whitestone, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,360

Int. Cl. A61N 5/00

U.S. Cl. 128—396

29 Claims



A medical light especially useful in combating hyperbilirubinemia of neonates. The light comprises a neon bulb mounted in a housing of size and construction such that the light can be placed in an incubator.

### 3,822,707 METAL-ENCLOSED CARDIAC PACER WITH SOLID- STATE POWER SOURCE

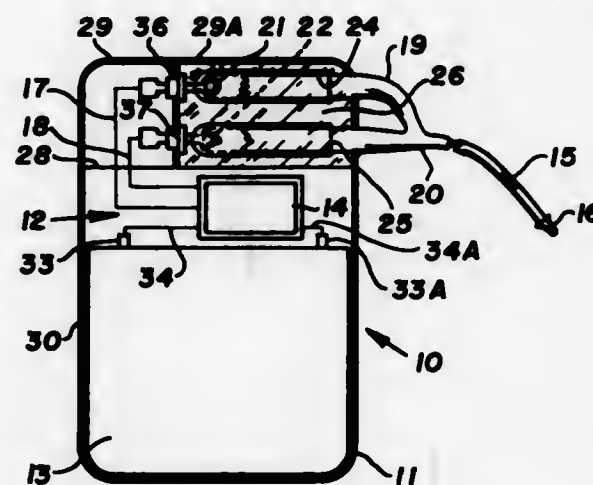
Anthony J. Adducci, Bear Lake, and Arthur W. Schwalm, Marshall, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Apr. 17, 1972, Ser. No. 244,755

Int. Cl. A61N 1/36

U.S. Cl. 128—419 P

3 Claims

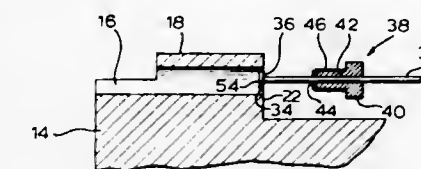


An improved heart pacer including the conventional combination of a pulse generator, electrode means, and electrode leads coupling the pulse generator to the electrodes, wherein the battery power source of the pulse generator is a solid-state battery with a lithium anode and a lithium-iodide electrolyte.

**3,822,710  
APPARATUS FOR MAKING CIGARETTES**  
Percy W. Bramhill, 200 Degaspe Apt. 1101, Nun's Island, Montreal, Quebec, Canada  
Filed Feb. 23, 1973, Ser. No. 334,983  
Int. Cl. A24c 05/42

U.S. Cl. 131—70

6 Claims

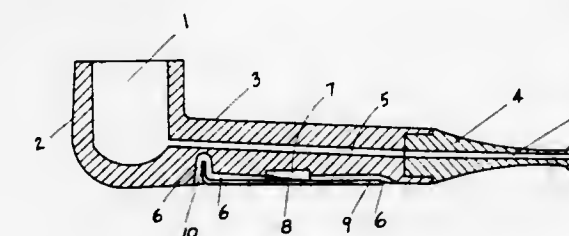


A machine for making cigarettes from empty filter tip cigarette tubes and from tobacco cartridges consisting of compressed tobacco contained in a thin sheath of cellulose film or other non-consumable material, the length of the cartridge being slightly greater than that of the cigarette tube. A cartridge is inserted into a cigarette tube, and the combination is slid along a trough and pushed against a stop. The stop, which is carried by a long rod coaxial with the trough, prevents movement of the tobacco while allowing movement of the sheath past the stop. The sheath is then stripped off by a slider which slides back and forth along the rod, thus leaving the tobacco in the cigarette tube.

**3,822,711  
SMOKING PIPE WITH TOOL**  
Raymond C. Egger, 906 N. Galvin Ave., Marshfield, Wis. 54449  
Filed Feb. 21, 1973, Ser. No. 334,305  
Int. Cl. A24f 03/02

U.S. Cl. 131—184 R

1 Claim

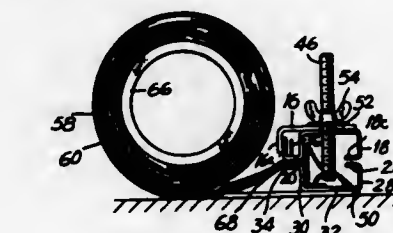


A tobacco pipe having an elongated recess in the lower portion of the stem is combined with a ferro-magnetic tobacco tamper and bowl scraper. A further recess is provided intermediate the elongated recess and a permanent magnet is placed therein so as to hold and retain the tamper and scraper in the elongated recess when not in use.

**3,822,712  
PRE-CURLED WIG**  
Sture Ostensen, Miami, Fla., assignor to Fashion Tress, Inc., Hialeah, Fla.  
Division of Ser. No. 174,703, Aug. 25, 1971, Pat. No. 3,756,254. This application Apr. 2, 1973, Ser. No. 347,206  
Int. Cl. A45d 2/00

U.S. Cl. 132—31

2 Claims



A curling tool is disclosed as including a curling mechanism and apparatus. The apparatus includes a hinged member and

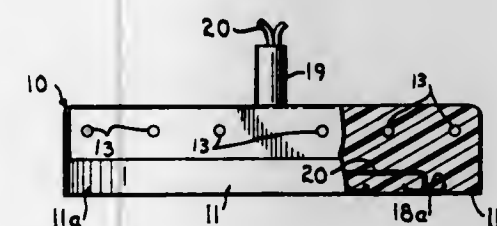
**3,822,708  
ELECTRICAL SPINAL CORD STIMULATING DEVICE  
AND METHOD FOR MANAGEMENT OF PAIN**  
Serge Zilber, Kansas City, Mo., assignor to Clinical Technology Corporation, Kansas City, Mo.

Filed Dec. 7, 1972, Ser. No. 312,935

Int. Cl. A61m 1/36

U.S. Cl. 128—419 R

7 Claims



Intractable pain that is transmitted by the spinal cord and sensed by the human body is suppressed by implanting an electrode carrying device near a nerve bundle in the spinal cord. The device is constructed of an electrical insulating substance inert to the body fluids and tissue and carries electrodes for supplying electric current to the spinal cord thereby suppressing the sensed quantity of pain. These electrodes are in aligned, spaced relationship with the alignment extending transversely of the nerve bundle. A switch may be positioned within the body and used to supply the current to certain of the electrodes in response to the quantity of pain sensed, thereby controlling same by varying the area of the spinal cord affected.

**3,822,709  
SHOE HAVING HEEL WITH REPLACEABLE INSERT  
MEMBER**  
Michael Gruner, Kilian Zollsgatan 15, S-217 56 Malmo, Sweden

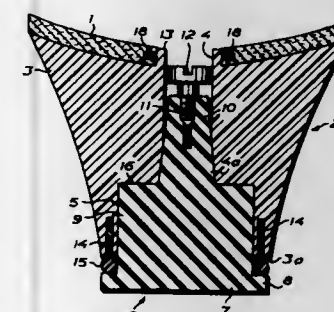
Filed Jan. 15, 1973, Ser. No. 323,474

Claims priority, application Italy, Jan. 19, 1972, 84101/72; Sweden, Dec. 5, 1972, 15787/72

Int. Cl. A43b 7/16

U.S. Cl. 128—614

8 Claims



A shoe is provided with a heel comprising a portion consisting of a relatively rigid material permanently attached to the shoe and having mounted therein a replaceable elongated inset member of elastic material projecting beyond the bottom surface of the heel.



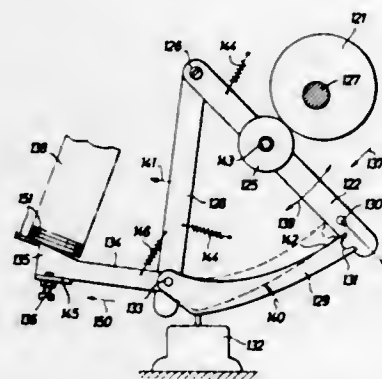
an anchor member, hingedly attached to each other so that the hinged member overlies the anchor member when a wig hair and wefting is inserted to the apparatus. The hinged member clamps the hair and wefting in a horizontal plane with the hinged member overlying the anchor member. Means are also included to prevent lateral movement of the hair and wefting. Clamping means extend from the anchor member through a slot in a hinged member to hold the apparatus in the overlying relationship. A reverse curl is thereby imparted to the wig hair to prevent curl separation and to avoid the necessity for teasing after setting the wig.

### 3,822,713 COIN DELIVERY MACHINE

Gerd Rainer Frahm; Ulrich Franz Meisel, and Ulrich Heine, all of Berlin, Germany, assignors to NGZ Geldzahlmaschinen-ges, mbH & Co. Fertigungs K.G., Berlin, Germany  
Filed June 27, 1972, Ser. No. 266,704  
Int. Cl. G07d 1/02

U.S. Cl. 133-2

6 Claims



A coin delivery machine has an electronic system operating through a matrix to control the mechanism for dispensing coins from the coin magazine and the controls are operated from a keyboard simulating that of an office calculating machine.

3,822,714  
CONDUIT SYSTEM FOR THE TRANSPORT OF LIQUID AND/OR GASEOUS MEDIA AND METHOD  
Conrad Dooce, Julich, Germany, assignor to Kernforschung-sanlage Julich Gesellschaft mit beschränkter Haftung, Julich, Germany  
Filed Mar. 24, 1971, Ser. No. 127,640  
Claims priority, application Germany, Mar. 24, 1970, 2013971  
Int. Cl. F16l 9/18; H01b 9/06

U.S. Cl. 137-1

6 Claims

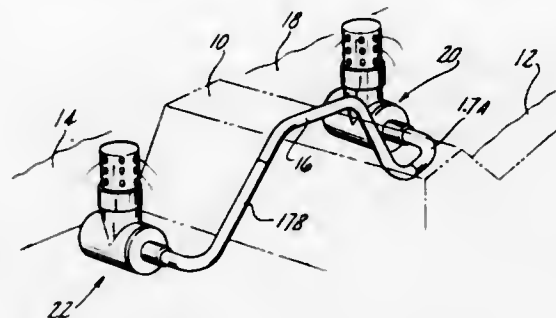


In a conduit system for transporting fluids which includes a vacuumized tubular casing containing fluid medium-carrying conduits, there is provided an outer protective tube surrounding the vacuumized tubular casing and defining therewith an annular jacket which contains an inert gas. The inert gas is such that it does not condense during a possible entry into the vacuumized tubular casing, exhibits a pressure which is higher than the pressure of the environment surrounding the protective tube and higher than the pressure of the fluid being transported, and has a boiling point below the operating temperature of the fluid being transported.

3,822,715  
IRRIGATION SIPHON APPARATUS  
Eddy Gopalakrishna Rao, Katekar Mangalore S. K., India  
Filed Jan. 23, 1973, Ser. No. 326,109  
Int. Cl. F16l 43/00

U.S. Cl. 137-140

6 Claims

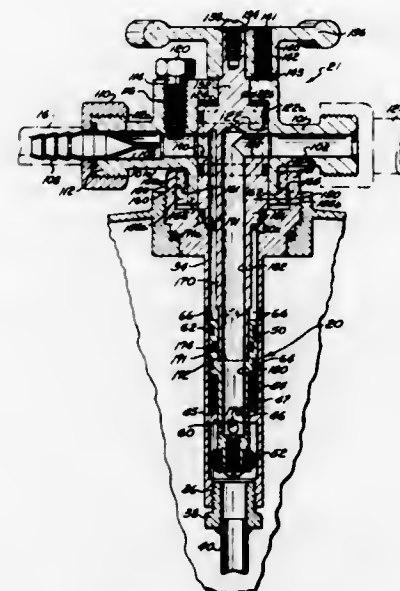


An irrigation siphon having a pair of float-operated valves on opposite ends of an elongated conduit. The conduit is disposed on a levee to receive water through one of the valves for delivery out the other valve. Each valve has a float arranged such that when the water at the inlet end of the conduit falls below a predetermined level, the outlet valve is closed such that the siphon is continually primed even though it is not passing water.

3,822,716  
BEVERAGE TAPPING DEVICE  
Richard E. Martin, Willoughby; Anthony M. Gildone, Euclid, and Sandor Frankfurt, Shaker Heights, all of Ohio, assignors to GMF Inc., Cleveland, Ohio  
Filed June 29, 1972, Ser. No. 267,670  
Int. Cl. B65d 83/00

U.S. Cl. 137-212

3 Claims

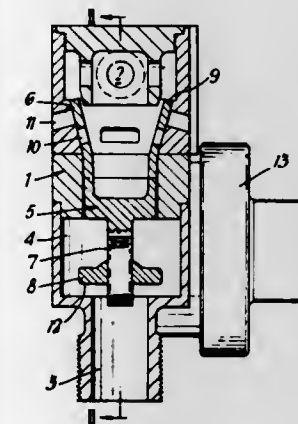


Apparatus for tapping a container comprising a container valve unit secured to the container. The container valve unit includes a fluid-dispensing passage and a self-closing valve with a fluid-dispensing passage, and which valve has a closed position blocking fluid flow therethrough. A tapping unit cooperates with the container valve unit and effects opening of the self-closing valve of the container valve unit when locked thereto by a bayonet connection. The tapping unit has a passageway for receiving fluid from the container valve unit and an outlet for directing fluid therefrom to the use location. A valve means controls the flow of fluid from the tapping unit outlet and closes prior to disconnection of the tapping unit from the container valve unit.

3,822,717  
ANTI-SIPHON DEVICE  
Eric Thorne-Symmons, deceased, 95 Hamlet Gardens, late of London, England. (Freda Irene Thorne-Symmons, administratrix)  
Filed Feb. 8, 1972, Ser. No. 224,473  
Claims priority, application Great Britain, Feb. 25, 1971, 5427/71; Jan. 5, 1972, 504/72  
Int. Cl. F16k 45/00

U.S. Cl. 137-218

9 Claims

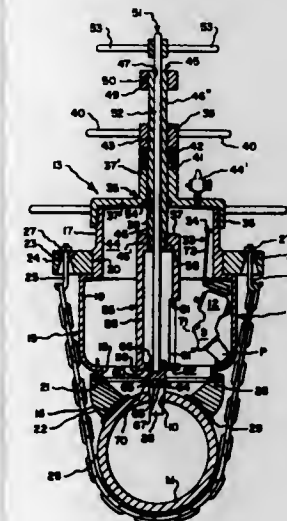


An anti-siphon device particularly for use with a ball float valve assembly in a water storage tank, having an inlet and an outlet with a passageway therebetween, a closure member seated in the passageway and being freely movable from a seated position in which it seals a plurality of ports leading from the passageway to atmosphere to an unseated position in which the ports are open when any suction occurs at the inlet to prevent return flow of water through the device.

3,822,718  
APPARATUS FOR MOVING A PLUG FITTING  
Ralph L. Peterson, 27 Woodward Dr., West Seneca, N.Y. 14224  
Filed Oct. 2, 1972, Ser. No. 293,763  
Int. Cl. B23b 41/08; F16e 41/04

U.S. Cl. 137-317

13 Claims

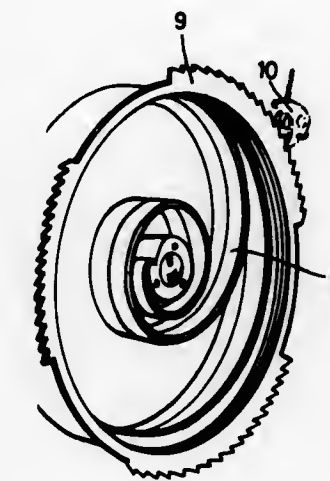


Apparatus is provided for moving a plug fitting relative to a hole in a conduit. A housing is mounted on a conduit over a fitting to be removed. An aligned drawbar mounted on the housing, is descended and interlocked with the fitting. The fitting is withdrawn from the hole and moved to an out-of-the-way position. A rod holding a second fitting is slidably mounted within the drawbar to descend, insert and release the second fitting when properly inserted in the hole.

3,822,719  
APPARATUS FOR REMOVING GASES  
Bill Nederman, Gransgatan 9, S-252 28 Helsingborg, Sweden  
Filed Apr. 16, 1973, Ser. No. 351,352  
Claims priority, application Sweden, Apr. 18, 1972, 4973/72  
Int. Cl. B65h 75/46

U.S. Cl. 137-355.26

3 Claims

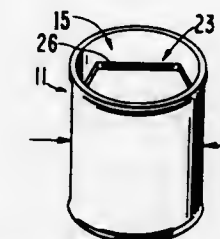


An apparatus for removing gas and similar fluids from closed areas comprises a frame in which a drum is rotatably mounted. An outlet socket is set axially into one end of the drum in fixed relation to the frame and a hose is wound on the drum and has one end connected inside the drum to the outlet socket. A spiral spring device is mounted on a shaft fixed axially to the other end of the drum for rotating the drum to wind up the hose. Stop elements are provided on the hose and the frame to stop the winding of the drum and a releasable catch is secured to the frame and cooperates with tooth segments on the spring device to hold the drum in the desired position.

3,822,720  
FLOW CONTROL ASSEMBLY  
Augustine A. Souza, San Jose, Calif., assignor to Robert N. Noyce, Los Altos, Calif.  
Filed Mar. 4, 1971, Ser. No. 120,963  
Int. Cl. F16k 15/16

U.S. Cl. 137-525.1

2 Claims



An integral one piece flow control assembly is described having a hollow cylindrical main body defining a passage therethrough and a pair of lip members extending inwardly and longitudinally of said main body to a terminal end for controlling the flow through the passage. The lip members have a peripheral portion connected to the inner surface of the body and a central body portion extending from the peripheral portion to a terminal end portion defining a normally closed slit opening. Each lip member is curved inwardly toward the axis of the main body. Pressure in one direction presses the slit closed, and pressure in the opposite direction opens the slit. A pair of such flow control assemblies oriented in the same direction within a passage provide an inexpensive pump.



3,822,721

**OIL/WATER PIPELINE INLET WITH OIL SUPPLY VIA A LARGE CHAMBER**

Eke Verschuur, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

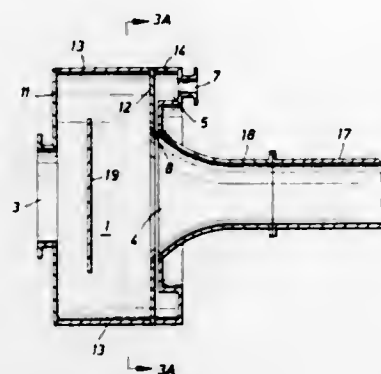
Filed Jan. 13, 1972, Ser. No. 217,486

Claims priority, application Netherlands, Apr. 29, 1971, 7105971

Int. Cl. F17d 1/16

U.S. Cl. 137-604

3 Claims



An inlet piece for a pipeline for the transport of a viscous liquid surrounded by an annular layer of a liquid with a lower viscosity, which liquids are entirely or substantially insoluble with respect to each other, composed of a first chamber, provided with at least one inlet and with an exit for the viscous liquid, a second chamber, provided with at least one inlet for the liquid with a lower viscosity and with an annular outlet for that liquid which is so positioned as to surround the exit for the viscous liquid, and a rotation-symmetrical connecting piece for the connection to the pipeline; and a process for the transport of those liquids through a pipeline.

3,822,722

**MULTIPLE VALVE ASSEMBLY**

Antonio Romanelli, Via Omoded 120, Naples, Italy

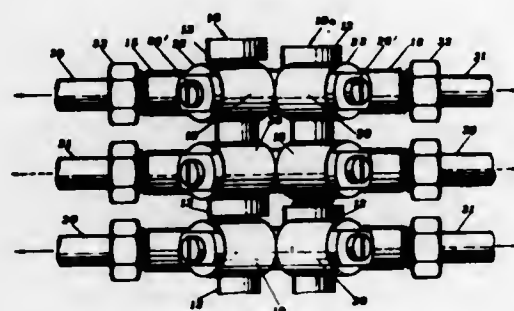
Filed June 23, 1972, Ser. No. 265,595

Claims priority, application Italy, June 23, 1971, 89526/71

Int. Cl. F16k 1/10

U.S. Cl. 137-608

9 Claims



This invention relates to a multiple valve assembly, or manifold wherein a plurality of single, equal members may be easily connected to each other, and particularly pertains to a manifold that, when said single, equal members are assembled, provides not only a main lengthwise flow passage from an upstream pipe to a downstream for fluid flow, but also two opposite coaxial branches in each member, to form corresponding crosswise flow passages for fluid flow in either crosswise direction which may independently be regulated by a suitable valve.

3,822,723

**APPARATUS FOR CONTROLLING ADDITION OF REPLENISHMENT SOLUTION TO A PHOTOGRAPHIC PROCESSOR**

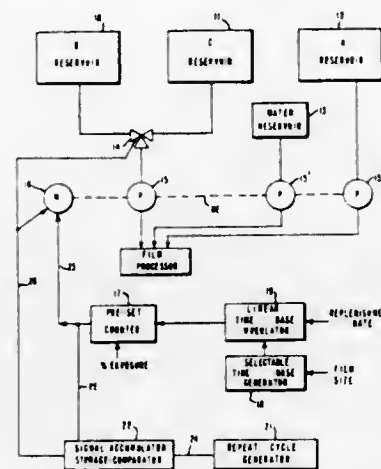
John A. Crowell, and Alan D. Bull, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 287,664, Sept. 11, 1972, abandoned. This application May 10, 1973, Ser. No. 358,860

Int. Cl. G03d 3/00

U.S. Cl. 137-624.15

14 Claims



An apparatus for controlling make-up and addition of replenishment solution to a photographic processor, having one or more reservoirs and metering pumps for selecting make-up solution concentrates, and electronic controls for determining the volume of replenishment solution. Replenishment can be accomplished taking into consideration all of the operating variables such as film size, replenishment rate, and percent exposure, as well as the cumulative effect of any additions and aerial oxidation of the solution while not in use.

3,822,724

**FAST ACTING DISC VALVE**

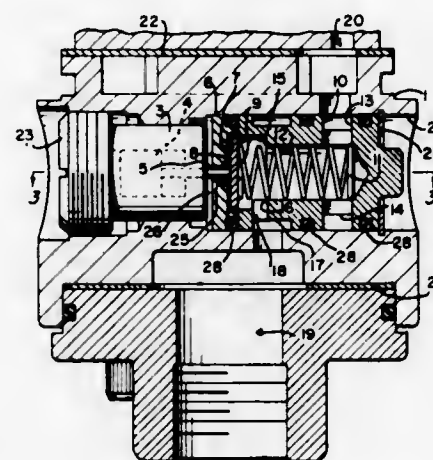
John M. Clapp, Sayre, and Lewis C. Pritchard, Athens, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 14, 1973, Ser. No. 341,118

Int. Cl. F16k 31/06

U.S. Cl. 137-625.5

9 Claims



A small fast acting solenoid operated disc valve having a free fluid accelerated disc triggered by a solenoid plunger in response to an over voltage D.C. short duration pulse. The resulting valve is suitable for torque control purposes and the like requiring valve closing times in the order of 5 milliseconds and small size.

3,822,725

**PULSATION DAMPING DEVICE FOR USE WITH PRESSURE FLUID OPERATED APPARATUS**

Wilhelm Zirps, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

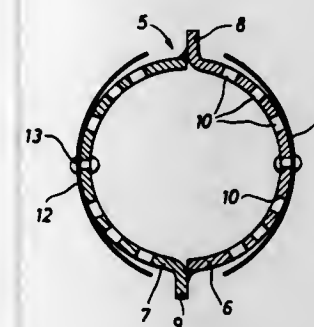
Filed Aug. 24, 1973, Ser. No. 391,288

Claims priority, application Germany, Oct. 4, 1972, 363929[U]

Int. Cl. F16l 55/04

U.S. Cl. 138-28

14 Claims



An inner tube is concentrically surrounded by an outer tube with clearance. The inner tube is provided with apertures and in the clearance there is located a flexible tubular diaphragm which subdivides the clearance into an outer chamber containing a body of pressurized fluid, and an inner chamber including the interior of the inner tube, through which pressure fluid for the fluid-operated apparatus can pass. Arcuately curved valve plates of elastically yieldable material are mounted in the inner chamber and are normally out of contact with the exterior side of the inner tube. The diaphragm is flexible so that it can move to a position in which it contacts the outer side, in which case it deflects the valve plate into contact with this outer side so that they overly the apertures in the inner tube.

3,822,726

**SLEY DRIVING SYSTEM WITH SINGLE OR DOUBLE CONTACT FOR POWER LOOMS OR HAND LOOMS**

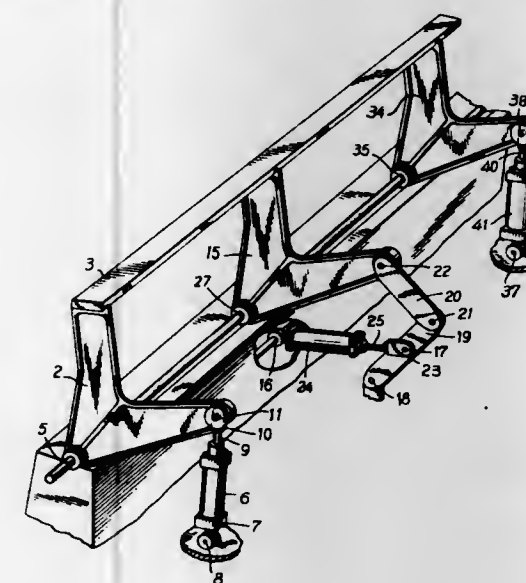
Heinz Kuster, Malilla, and Bjorn Brorsson, Vimmerby, both of Sweden, assignors to Aktiebolaget Rosenfors Bruk, Malilla, Sweden

Filed Apr. 13, 1972, Ser. No. 243,709

Int. Cl. D03d 49/60

U.S. Cl. 139-190

4 Claims



Sley driving apparatus for at least two sley swords in a loom, wherein the advance and retraction of the sley is effected by three separate pneumatic or hydraulic operating means con-

nected in parallel. One of the operating means is directly connected between one of the sley swords and the loom support and is operative only during a first part of the sley movement. A second of the operating means is connected to a toggle joint, one link of which is coupled to the loom support and a second link of which is coupled to the associated sley sword, such that the toggle joint is straightened when the sley sword is in its advanced position. The third operating means is a cylinder coupled directly between a sley sword and the loom support and is connected to an adjustable source of pressure, so that the weight of the sley sword causes energy storage in the cylinder when the sley sword is in its retracted position, the latter cylinder and the first operating means being capable of stopping the sley sword in its forward position.

3,822,727  
**FABRIC WEAVE**

Kathryn Small, 1850 Fullerton, and Thomas Vranko, 970 19th St., both of Costa Mesa, Calif. 92627

Filed Aug. 7, 1972, Ser. No. 278,189

Int. Cl. D03d 13/00

U.S. Cl. 139-383 R

15 Claims



A novel fabric weave providing integrally woven folds or creases. Each fold has a weave characterized by a void, a pivot thread or a group of threads which run the length of the fold and act as the point of creasing in the fold. The pivot thread or group of threads are interlaced as one at intervals along the length of the pivot thread or threads by a plurality of float threads. The float threads float or pass over at least three of the threads lying on each side of the pivot thread or group of threads. Above and below the float threads are one or more holding threads which hold the float threads in place. The tension created by the float threads along either side of the pivot thread or threads causes a natural and inherent tendency of the fabric weave to form a fold or crease which is permanent. The novel weave of the invention is particularly suited for the weaving of draperies.

3,822,728

**APPARATUS FOR FLATTENING AND TRIMMING THE LEADS OF ELECTRICAL COMPONENTS**

Martin G. Heller, 68 Harvey Dr., Short Hills, N.J. 07078; Donald D. Kelly, Roseland, and Richard L. Cheney, Lake Hiawatha, both of N.J., assignors to said Heller, by said Kelly and Cheney

Filed June 22, 1973, Ser. No. 372,639

Int. Cl. B21f 5/00, 11/00

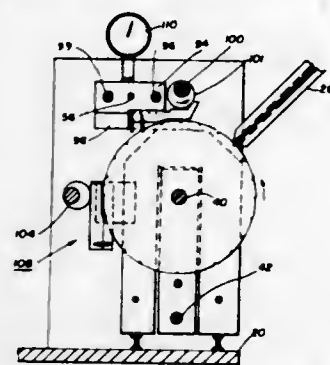
U.S. Cl. 140-1

16 Claims

In apparatus for processing electrical components characterized as having leads extending from both ends of the body member there is provided a transport wheel which receives



the components one at a time and while nested in notches in the wheel carries them to lead flattening and cutting dies



where the leads are flattened to a determined degree and cut. At a later station these flattened leads are trimmed and/or shaped to the precise desired length and/or configuration.

3,822,729

**AUTOMATIC BARS**

Georges Omer Rochette, 7 Eastwood Pl., Apt. 4, Vanier, Ontario, Canada

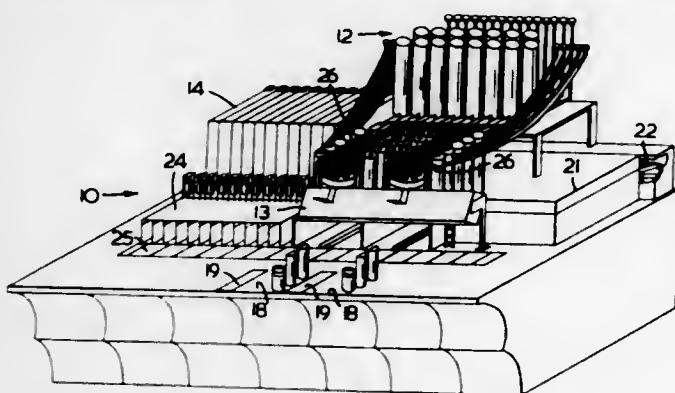
Filed Sept. 10, 1971, Ser. No. 179,278

Claims priority, application Canada, Sept. 14, 1970, 93228

Int. Cl. B65b 3/06; B67c 3/24; B67d 5/02

U.S. Cl. 141-92

3 Claims



The automatic bar machine is housed in a cabinet having an "empty indicator board", some exit openings to serve the orders on a counter beside an order console. The machine comprises an automatic glass washer, a glass distribution conveyor, some spare trays of glasses, and a glass distributor to provide empty glasses to the exit ejector and mixing stations; the bottled ingredients are carried by the main conveyor from the bottles dispensing station to the order console. A dirty glass conveyor system conveyed the dirty glasses to the automatic glass washer.

3,822,730

**APPARATUS FOR FELLING TREES**

Gustaf Matteus Hultdin, and Ove Anders Hultdin, both of Mala, Sweden, assignors to Hultdins Verkstads AB, Mala, Sweden

Filed Dec. 3, 1971, Ser. No. 204,659

Claims priority, application Sweden, Dec. 4, 1970, 16482/70

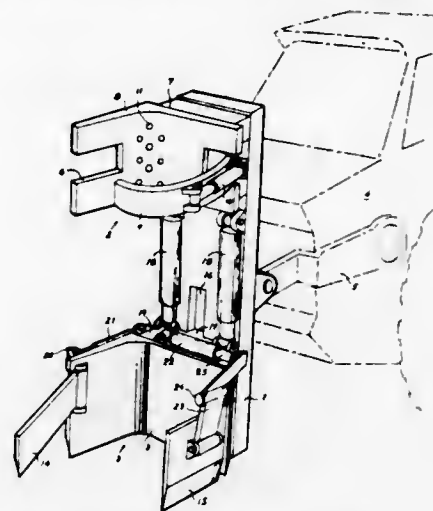
Int. Cl. A01g 23/08

U.S. Cl. 144-34 R

18 Claims

The invention relates to an apparatus for machining trees, for example for pruning trees and/or felling trees. In particular, the invention refers to an apparatus for felling trees by separating from the trunk of a tree those roots and any root swelling extending peripherally outward from the trunk so that the same remain substantially in their original position under the ground. For this purpose the apparatus comprises a gripping member to hold the tree, a machining member provided with cutting means for machining the tree, one of said members being movably arranged on a frame through a

longitudinal guide means immovably fixed to the frame, the other of said members being fixed to the frame which is in turn connected to a vehicle by means of crane or operating



arms, and force transmitting means laterally spaced from the longitudinal guide means for moving said members away from each other along a line of movement guided by the longitudinal guide means.

3,822,731

**HACKSAW FRAME**

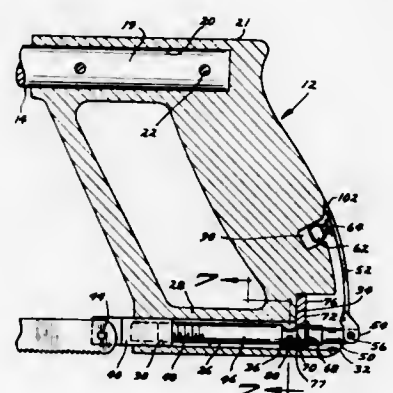
Mark W. Keymer, Hopkins, Minn., assignor to Malco Products, Inc., Annandale, Minn.

Filed July 30, 1973, Ser. No. 384,031

Int. Cl. B27b 21/00

U.S. Cl. 145-33 A

8 Claims



A hacksaw frame for a blade, the handle portion of which has a socket extending from front to rear therethrough, a take-up pin rotatably mounted in the socket and restrained from axial movement therein, an external crank for rotating the take-up pin, and a blade connector block axially but non-rotatably mounted in the forward end of the socket. The take-up pin is threaded at its forward end to the blade connector block so that cranking of the handle draws the connector block rearwardly in the socket, thus tightening the hacksaw blade.

3,822,732

**RESILIENT VEHICLE WHEEL WITH CORRUGATED TREAD WALL AND INWARDLY-DISHED CORRUGATED END WALLS**

Hugo S. Ferguson, and Frank E. Raymond, both of Averill Park, N.Y., assignors to Air Cushion Vehicles, Inc., Poestenkill, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,735

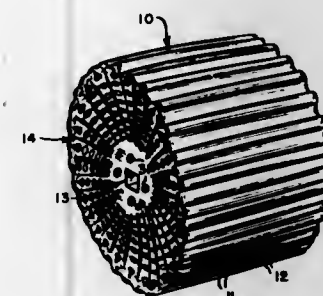
Int. Cl. B60b 9/10

U.S. Cl. 152-7

20 Claims

A resilient vehicle wheel, particularly for off-the-road vehicles, comprises a generally cylindrical tread wall of resilient

material having circumferentially-spaced corrugations, an inner hub section, and a pair of inwardly-dished end walls of resilient material joining respective ends of the tread wall with the hub section. The end walls have angularly-spaced corrugations joining the corrugations of the tread wall and extending inwardly toward the hub section. Preferably the ridges of the end wall corrugations join the valleys of the tread wall corrugations, and vice versa, and the end wall valleys extend to a



radius equal to, and advantageously greater than, the radius of the innermost portions of the tread wall valleys at respective ends of the wheel. The valleys of the end wall corrugations advantageously have respective series of alternate deeper and shallower portions spaced therealong, e.g., depressions. The resilient end walls and tread wall provide at least a major portion of the support for a load, and desirably the interior of the wheel is at atmospheric pressure.

3,822,733

**DEVICE FOR ROTABLE SUPPORT OF ROLLS COMPRISING A WEB OF CLOTH OR SIMILAR**

Bjorn T. Lindelow, Korshamnsvägen 8384, 430 41 Kullavik, Sweden

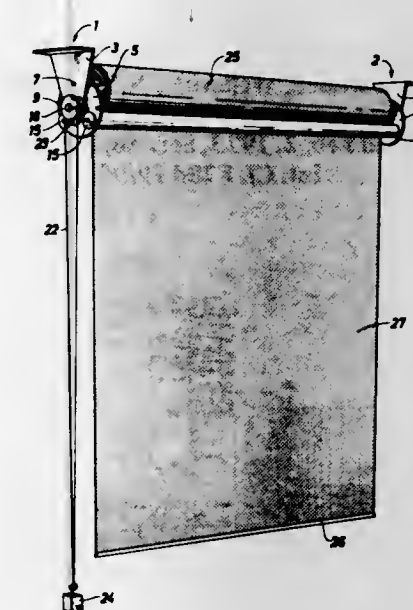
Filed Nov. 3, 1970, Ser. No. 86,434

Claims priority, application Sweden, Nov. 5, 1969, 15136/69

Int. Cl. A47h 1/00; 47g 5/02

U.S. Cl. 160-120

2 Claims



A device for the rotatable support of rolls of cloth or the like webs, which webs can be lowered from the device by the rotation of the roll to serve as a back ground screen, for example, in photographic studios and the web raised by rewinding the same to roll form on the device which is supported at an appropriate height when in use.

3,822,734

**HOOING-ON PROFILES FOR THE ATTACHMENT OF WALL COVERING FABRICS**

Gerard Tombu, rue des Bouchers, 8, 02 St. Quentin, France

Filed Mar. 5, 1973, Ser. No. 338,276

Claims priority, application Belgium, Mar. 10, 1972, 780464

Int. Cl. A47h 13/01

U.S. Cl. 160-383

7 Claims



Improvements to fixed and mobile elements for the hooking-on of wall cloths, consisting in providing said elements with at least one zone covered with protrusions in order to promote the adherence between the cloth and aforesaid hooking-on elements.

3,822,735

**PROCESS FOR CASTING MOLTEN SILICON-ALUMINUM KILLED STEEL CONTINUOUSLY**

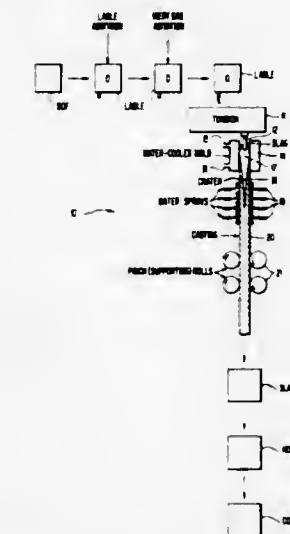
Robert S. Miltenberger, Weirton, W. Va., and David W. Wilcher, Winterville, Ohio, assignors to National Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 841,134, July 11, 1969, abandoned. This application June 16, 1972, Ser. No. 263,626

Int. Cl. B22d 27/20

U.S. Cl. 164-56

20 Claims



A molten silicon-aluminum killed steel consisting essentially of 0.04-0.30% of carbon, 0.20-1.50% of manganese, 0.02-0.15% of silicon, 0.04-0.10% of aluminum, and the remainder iron and incidental impurities is introduced into a mold for continuously casting steel and is cast therein to produce a solidified steel shape continuously. The molten steel is introduced into the mold through a tundish nozzle hav-



ing a size sufficiently large to prevent plugging by nonmetallic inclusions. The solidified steel shapes may be cast in the form of slabs which may be hot rolled to produce flat rolled products such as steel strip or plate. In one preferred variant, the quality of the solidified steel shapes is improved by preventing oxidation of the aluminum content of the molten killed steel prior to casting, by providing a fluid slag over the molten steel in the mold to aid in separating nonmetallic inclusions therefrom prior to solidification, and/or by agitating the molten killed steel in the ladle with an inert gas to reduce non-metallic inclusions and assure uniformity of composition and temperature.

**3,822,736**  
**METHOD FOR MANUFACTURING COOLING MEMBERS FOR COOLING SYSTEMS OF METALLURGICAL FURNACES**

Sergei Mikhailovich Andoniev, prospekt Pravdy, 5, kv. 60, Kharkov; Nikolai Nikitovich Alexandrov, Sharikopodshipnikovskaya, 2, kv. 147, Moscow; Nikolai Ivanovich Klochnev, Sharikopodshipnikovskaya, 2, kv. 190, Moscow; Evgeny Vladimirovich Kovalevich, Frunzenskaya naberezhnaya, 24, kv. 38, Moscow; Gennady Alexandrovich Kudinov, prospekt Pravdy, 5, kv. 202, Kharkov; Dorina Borisovna Kutsykovich, prospekt Lenina, 39, kv. 54, Kharkov; Vasily Ivanovich Kulikov, Novorossiyskaya, 9, korpus 1, kv. 9, Moscow, and Oleg Vladimirovich Filipiev, prospekt Pravdy, 5, kv. 41, Kharkov, all of U.S.S.R.  
Continuation of Ser. No. 77,023, Sept. 30, 1970, abandoned.  
This application Aug. 17, 1972, Ser. No. 281,533  
Int. Cl. B22d 19/00

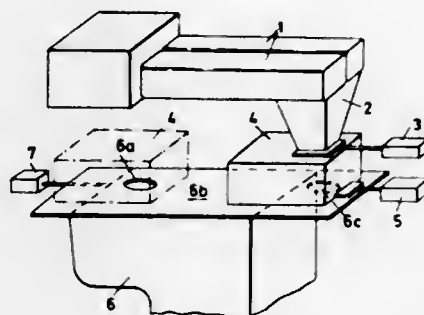
U.S. Cl. 164—100 2 Claims

A method of preventing carbonization of metal pipes during the manufacturing of cooling members for metallurgical furnaces, according to which steel pipes for passing cooling liquid are coated externally with a refractory material and inserted into a mold after which molten iron maintained at a temperature range of from 1,180° to 1,250°C is poured into the mold.

**3,822,737**  
**APPARATUS FOR PREPARING FOUNDRY MOLDS OR CORES FROM COLD QUICK SETTING SAND/BINDER/CATALYST MIXTURES**

Albert Edwards, Peterborough, England, assignor to Baker Perkins Limited, Peterborough, England  
Filed Mar. 24, 1972, Ser. No. 237,699  
Claims priority, application Great Britain, Mar. 29, 1971, 8094/71; Dec. 22, 1971, 59541/71  
Int. Cl. B22c 15/22

U.S. Cl. 164—158 12 Claims



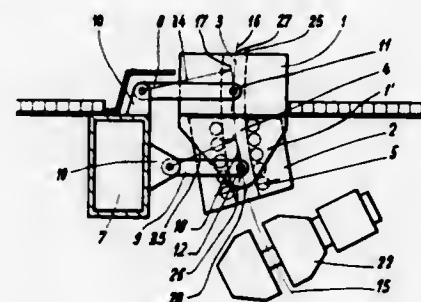
A method and apparatus for preparing foundry moulds or cores wherein separate charges of sand and binder on the one hand and sand and catalyst on the other hand are supplied to a mixing chamber in which the separate charges are mechanically intermixed to produce a final sand/binder/catalyst mixture. The final mixture is then passed by gravity into a blowing chamber and the mixing chamber and the blowing chamber

are moved apart to allow the final mixture to be blown from the blowing chamber into a mould or core box and further to allow the mixing chamber to be cleaned by suitable cleaning means.

**3,822,738**  
**APPARATUS FOR GUIDING AN OSCILLATING CONTINUOUS CASTING MOLD AT A CONTINUOUS CASTING INSTALLATION WITH CURVED PATH OF TRAVEL OF THE STRAND**

Adam Rotarides, Brentwood, England, and Werner Bruderer, Feldmeilen, Switzerland, assignors to Concast AG, Zurich, Switzerland  
Filed Jan. 31, 1973, Ser. No. 328,408  
Claims priority, application Switzerland, Feb. 1, 1972, 1466/72

Int. Cl. B22d 11/00 U.S. Cl. 164—260 13 Claims

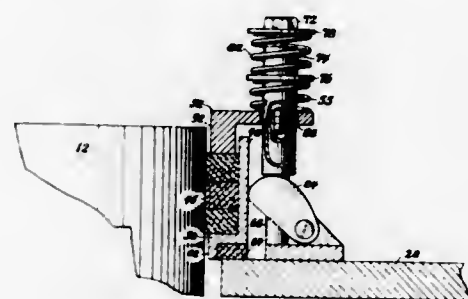


An apparatus for guiding an oscillating or reciprocating continuous casting mold at a continuous casting installation having a curved axis of the path of travel of the strand, by means of a hinge or linkage mechanism equipped with at least four elements, wherein one element with a respective hinge at the ends thereof is formed by a mold arrangement which may be the mold itself or the mold and an extension thereof and another element serving as a frame is formed by a part of the structure of the installation. The paths of movement of the hinges are curved at the mold opposite to the axis of the path of travel of the strand.

**3,822,739**  
**MULTI-DIRECTIONAL SEAL BIASING MEANS**

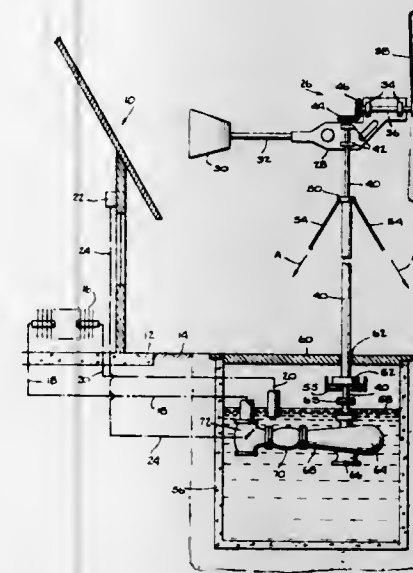
Hermann E. Kurschner, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.  
Filed Feb. 2, 1973, Ser. No. 329,267  
Int. Cl. F28d 19/00

U.S. Cl. 165—9 6 Claims



A sealing arrangement for an air preheater that precludes fluid flow between a rotatable shaft and a relatively fixed element of a surrounding housing structure. The sealing arrangement is adapted to be simultaneously biased in an axial direction by a spring biased sleeve and in a radial direction by a spring biased cam to close a clearance space that would permit leakage of fluid therebetween.

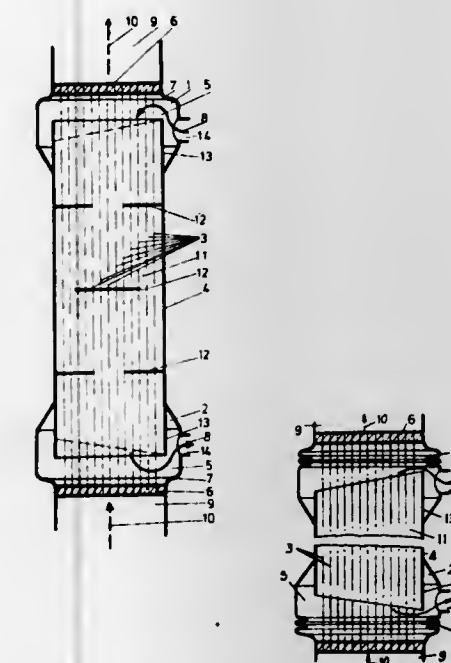
**3,822,740**  
**HEATING SYSTEM**  
Robert S. Hackett, 13 Fox Meadow Rd., Scarsdale, N.Y. 10583  
Filed Mar. 6, 1972, Ser. No. 231,948  
Int. Cl. F28d 15/00  
U.S. Cl. 165—45 4 Claims



A wind driven heating system in which a windmill wheel is connected to drive a liquid pump which agitates a heat transfer liquid to heat it and to drive the heated liquid through a circuit to a radiator.

**3,822,741**  
**TUBULAR HEAT EXCHANGER WITH STRESS-RELIEVING STRUCTURE**  
Josef Lippitsch, Graz, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria  
Filed Mar. 9, 1973, Ser. No. 339,531  
Claims priority, application Austria, Mar. 13, 1972, 2075/72

Int. Cl. F28b 7/00 U.S. Cl. 165—83 7 Claims

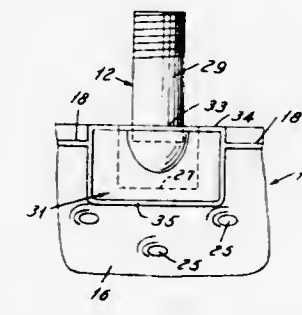


A tubular heat exchanger which has a structure for relieving stresses which otherwise would occur from temperature fluctuations. A plurality of tubes are connected at their opposite ends to a pair of tube plates which in turn are fixed to opposed

enlarged end portions of an elongated vessel which surrounds the tubes and which extends between the tube plates. The enlarged end portions of the vessel are flexible and of a sufficient yieldability to absorb stresses which otherwise would occur due to elongation and contraction of the tubes.

**3,822,742**  
**PLATE TYPE HEAT EXCHANGER AND PRODUCTION**  
Sheldon J. Stowell, Dimondale, Mich., assignor to Tranter Manufacturing, Inc., Lansing, Mich.  
Filed Oct. 16, 1972, Ser. No. 297,892  
Int. Cl. F28f 3/14

U.S. Cl. 165—170 17 Claims



A pair of like flat rectangular steel sheets are superposed face-to-face and seam-welded together marginally, as well as being further united rigidly between margins by a pattern of elongated seam weld and interrupted seam or spot weld-type unions. The latter are arranged in longitudinally extending rows paralleling horizontal and intermediate seam welds, the interrupted welds of successive rows being in a longitudinally and laterally staggered relationship defining a symmetric pattern of uniformly diamond-shaped areas between sets of four of the interrupted welds. Either before or after the sheets are weld-united in this fashion, they are punched to afford a pair of registering rectangular notches which are optionally located, depending upon the ultimate configuration of the product, at spaces at which a pair of special inlet and outlet pad sub-assemblies for the heat transfer fluid are to be applied. Each of these units consists of a nipple-like cylindrical pipe length about the circumference of which a pair of like stamped sheet metal pad-like plates are welded. Flat portions of these plates are in turn telescoped in parallel relation to and over a portion of the notched margin of the prior-welded heat transfer plate or sheet sub-assembly, spanning the respective notches, and are thereafter welded leaktight to said plates about the margins of the two fitting pad components. The full welded assembly is then clamped rigidly along outer margins in an expansion fixture, whereupon hydraulic pressure is applied to the inlet pad fitting (the other being plugged), thus to controllably inflate interior spaces not held by weldments, thus in turn to produce a multiplicity of identical and symmetrically distributed, staggered diamond-shaped pillow-like sub-volumes, as defined by the weld patterning described above; through these spaces a heat transfer fluid medium travels in a well distributed but generally serpentine, parallel flow path from inlet to outlet.

**3,822,743**  
**HEAT PIPE WITH PLEATED CENTRAL WICK AND EXCESS FLUID RESERVOIR**  
Elmer Dale Waters, 412 Delafield St., Richland, Wash. 99352  
Division of Ser. No. 182,038, Sept. 20, 1971, Pat. No. 3,720,988. This application Nov. 20, 1972, Ser. No. 307,790  
Int. Cl. F28d 15/00

U.S. Cl. 165—105 5 Claims  
A heat pipe wick structure including a homogeneous central wick is fabricated by forming a plurality of laterally disposed longitudinal pleats in a sheet of wire screen, and compressing



the formed pleats laterally together and inserting the same longitudinally into the tubular container of a heat pipe. The pleats can be formed in a laterally central portion of the sheet with a flat screen portion on each side thereof, and the side portions are turned back over opposite sides of the formed



central wick to serve as wall screens in the tubular container. Reservoir screens having a generally U-shaped cross section normally engaged by the formed pleats can be additionally installed on both sides of the central wick in the tubular container.

3,822,744

**STRAINING TUBE FOR PIPE WELL**

Yrjo Johannes Reijonen, and Veli Elias Reijonen, both of Siltaasarekatu 14 A, Helsinki 53, Finland

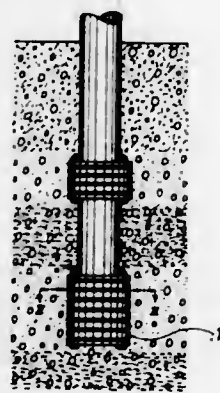
Filed Sept. 18, 1972, Ser. No. 290,209

Claims priority, application Finland, Oct. 11, 1971, 2838/71

Int. Cl. E03b 3/18; E21b 43/00

U.S. Cl. 166—235

4 Claims



Straining tube for a pipe well, consisting of separate rings mutually joined by means of rods and which are separated by spacers disposed between them, located at a distance from each other and the cross section of which has the shape of a wedge tapering in the direction towards the interior of the tube. On the surface of the rings there are grooves for facilitating the entrance of water into the straining tube.

3,822,745

**METHOD OF KILLING A WELL USING A COMPLETION AND KILL VALVE**

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 138,947, April 30, 1971, Pat. No.

3,750,752. This application Apr. 9, 1973, Ser. No. 349,010

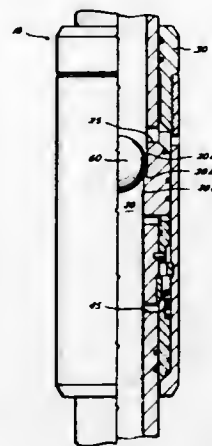
Int. Cl. E21b 41/00

U.S. Cl. 166—244 R

16 Claims

A completion and kill valve adapted to be placed immediately above a packer in the well production tubing including a tubular member having an inner bore and a circulation channel therein permitting communication between the inner bore and the well annulus area adjacent the exterior of the tubular member. A movable sleeve closes or opens com-

munication through the circulation channel in response to various pressures and a spring bias acting on the sleeve. Provi-



sions for locking the sleeve in the open position and subsequently unlocking the sleeve in response to inner bore pressure are provided.

3,822,746

**USE OF VISCOELASTIC FLUIDS FOR MOBILITY CONTROL**

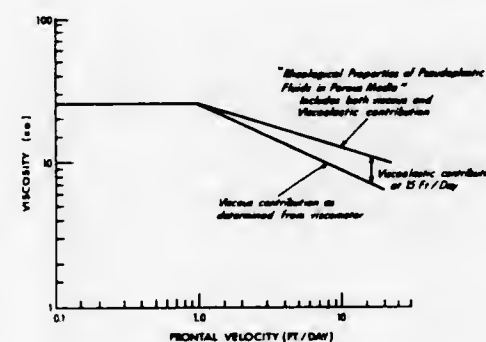
William B. Gogarty, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 28, 1972, Ser. No. 293,294

Int. Cl. E21b 47/00

U.S. Cl. 166—252

7 Claims



Viscoelastic fluids are efficiently utilized in flooding subterranean reservoirs by first flooding a porous medium representative of the reservoir rock with the formation fluids at the desired velocity of the oil recovery process, then flooding a similar porous medium with the viscoelastic fluid at the same velocity and observing the viscosity thereof and thereafter designing the oil recovery process based on this viscosity. It has been observed that the viscosity of viscoelastic fluids is dependent on the velocity. Examples of useful viscoelastic fluids include micellar solutions, aqueous solutions of polyacrylamides, etc.

3,822,747

**METHOD OF FRACTURING AND REPRESSURING SUBSURFACE GEOLOGICAL FORMATIONS EMPLOYING LIQUIFIED GAS**

James Q. Maguire, Jr., 210 N. Sherry, Norman, Okla. 73069

Filed May 18, 1973, Ser. No. 361,475

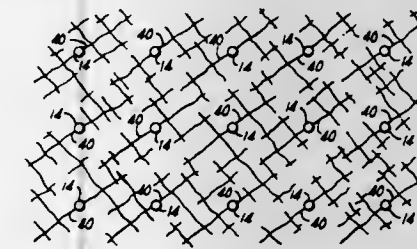
Int. Cl. E21b 43/26, 43/24

U.S. Cl. 166—259

12 Claims

A method of forming a fracture system in a fracturable subsurface geological formation intersecting a closed borehole including introducing a quantity of liquified gas into the closed borehole to communicate with the fracturable formation; allowing the quantity of liquified gas to vaporize in the closed borehole whereby the resulting increase in pressure exceeds

the fracture pressure of the formation to form an initial group of fractures of a fracture system in the formation; rapidly introducing an additional quantity of liquified gas into the initial fractures in the formation; allowing the additional liquified gas in the initial fractures to rapidly vaporize therein to form a second group of fractures in the fracture system, some of which being aligned substantially normal to the initial fractures; rapidly introducing a third quantity of liquified gas through the initial fractures into the second group of fractures; and allowing the liquified gas within the second group of fractures to rapidly vaporize therein to form a third group of fractures in the fracture system, some of which being aligned substantially normal to the second group of fractures. The method also includes the steps of allowing the liquified gas in



the fracture system to completely vaporize therein; allowing the pressure in the borehole to decrease relative to increased gas pressure in the formation whereby a portion of the oil in the formation is driven therefrom into the borehole; and producing the oil from the borehole to the ground surface. The method also includes introducing pressurized steam into the fracture system to thermally stimulate the flow of oil from the formation into the borehole. The method also discloses introducing air into the fracture system; and burning the oil on the fracture faces to thermally stimulate flow of oil from the formation into the borehole. The method further includes introducing pressurized steam into the fracture system to thermally stimulate flow of oil from the formation into the borehole.

3,822,748

**PETROLEUM RECOVERY PROCESS**

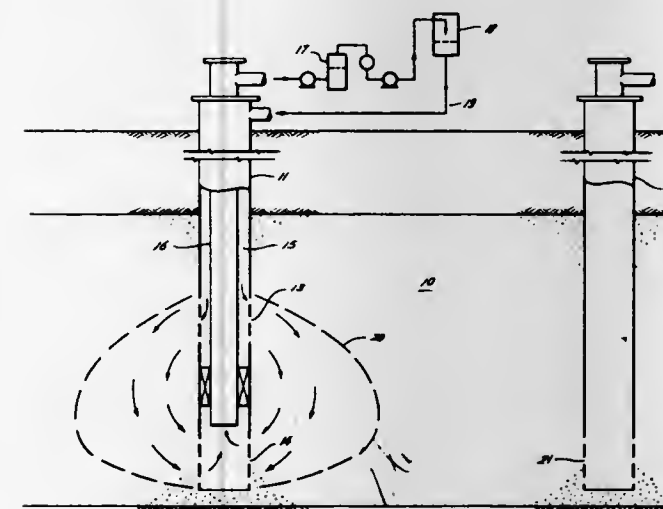
Joseph C. Allen, Bellaire; Marc F. Fontaine, Houston; Alfred Brown, Houston, and Jack F. Tate, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,408

Int. Cl. E21b 43/16

U.S. Cl. 166—269

12 Claims



A process for producing petroleum from a subterranean reservoir is provided whereby a solvent equal in density or more dense than water is circulated between upper and lower perforations in a first well in order to dissolve petroleum in an

ever-widening volume around the well bore until communication is established to a second well. At this point the production side of the first well is shut in, injection of solvent is ceased, an aqueous fluid is injected into the first well and production is taken from the second well.

3,822,749

**METHOD OF TREATING SUBTERRANEAN FORMATIONS TO IMPROVE PERMEABILITY**

Arnold B. Thigpen, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,904

Int. Cl. E21b 43/20, 43/24

U.S. Cl. 166—303

18 Claims

A method of treating wells drilled in the earth and the subterranean formation surrounding and in fluid communication with the wells by injecting into the wells and surrounding formation a gaseous mixture comprising steam and an aliphatic polyamine such as ethylenediamine, diethylenetriamine, triethylenetetramine, or piperazine, to increase the fluid permeability of the formation, especially formations which have sustained a permeability decline due to contacting water sensitive clay with fresh water.

3,822,750

**METHOD AND APPARATUS FOR CLEANING A PRODUCING WELL**

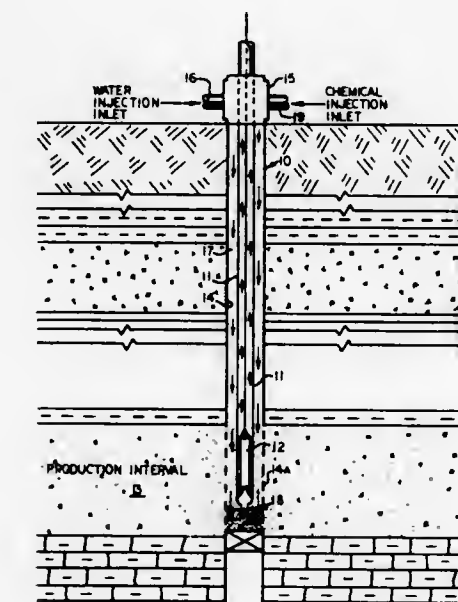
Willard H. Ping, Coalinga, Calif., assignor to Texaco Inc., New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,175

Int. Cl. E21b 43/00

U.S. Cl. 166—309

5 Claims



A method for cleaning the sand from an oil-bearing sand producing well penetrating a sandy stratigraphy and at least one apparatus for carrying out the method is disclosed. The apparatus comprises an injector at the top of a production tube for injecting water and a soap concentrate down the annulus externally of the tube in the well for forming a sand-bearing aqueous solution at the sand level and a pump in the tube at the sand level for forcing the sand-bearing foamy aqueous solution with the oil-bearing sand through the pump and up the production tube to the surface.



3,822,751

**MOUNTING ASSEMBLY FOR ATTACHING A MATERIAL TREATING BLADE TO A VEHICLE**

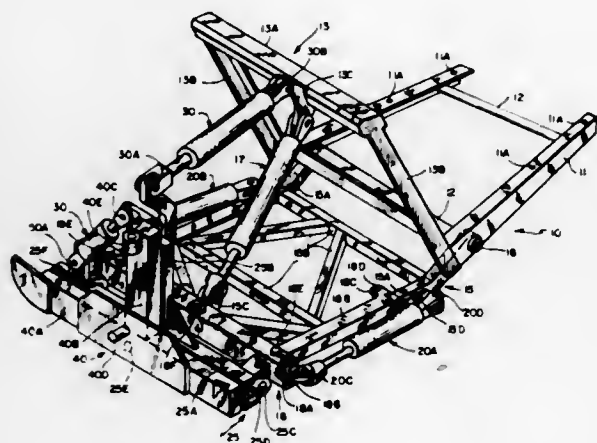
Donald H. Waterman, Poland, Maine, assignor to Valley Engineering, Inc., Gary, Maine

Filed June 12, 1973, Ser. No. 369,238

Int. Cl. E02f 3/76

U.S. Cl. 172-776

8 Claims



A mounting assembly for attaching a material treating blade to a vehicle such as a tractor which provides a material treating blade which is adjustable in height and the cutting angle of which is adjustable in three planes so that it is better adapted to grading, shaping and plowing soil and snow surfaces and to developing desired grades in movable matter. The assembly comprises first frame means for attachment to a vehicle, second frame means extending forwardly from the first frame means, first pivot means for securing one end of the second frame means to the first frame means for movement about an axis which is substantially horizontal and substantially normal to the longitudinal centerline of the second frame means when viewed from the top, first double acting hydraulic motor means pivotally connected between the first and second frame means for moving the second frame means about the first pivot means, third frame means adjacent to the forward end of the second frame means, second pivot means for securing the third frame means to the second frame means for movement about an axis which is substantially vertical and substantially normal to the longitudinal centerline of the second frame means when viewed from the side, second double acting hydraulic motor means pivotally connected between the second and third frame means for moving the third frame means about the second pivot means, fourth frame means adjacent to the forward end of the third frame means, third pivot means for securing the fourth frame means to the third frame means for movement about an axis which is substantially horizontal and substantially normal to the longitudinal centerline of the third frame means when viewed from the top, third double acting hydraulic motor means pivotally connected between the first and fourth frame means for moving the fourth frame means about the third pivot means, fifth frame means adjacent to the forward end of the fourth frame means, fourth pivot means for securing the fifth frame means to the fourth frame means for movement about an axis which is substantially horizontal and fourth double acting hydraulic motor means pivotally connected between the fourth and fifth frame means for moving the fifth frame means about the fourth pivot means.

3,822,752

**ROCK DRILL**

Roger Montabert, 19 Avenue des Colonnes, Bron, France

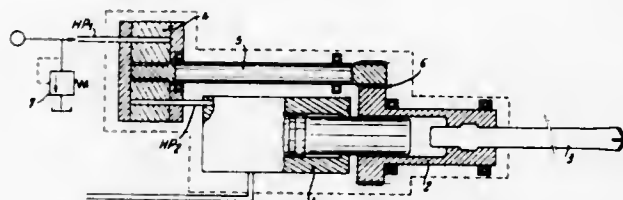
Filed Feb. 25, 1972, Ser. No. 229,311

Claims priority, application France, Mar. 18, 1971, 71.10059

Int. Cl. B25d

U.S. Cl. 173-106

3 Claims



A rock drill actuated solely by a liquid medium under pressure comprises a hydraulic motor for rotating the drill steel and another hydraulic motor for applying axial blows to drill; said motors are hydraulically connected in series, with a valve regulator inserted in the supply circuit upstream of the rotational motor. The striker motor is supplied with liquid both from the outlet of the rotational motor and from an additional source of fluid under a pressure equal to the outlet pressure of said rotational motor, a pressure-adding valve being mounted as a buffer valve between the liquid inlets of the two motors.

3,822,753

**DUAL ACTION DRILL PIPE MUD WIPER**

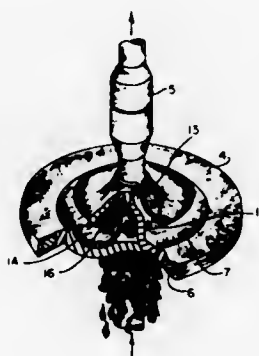
Robert B. Tate, 945 Locust Ave., No. 16, Long Beach, Calif. 90813

Filed July 25, 1973, Ser. No. 382,514

Int. Cl. E21b 33/08

U.S. Cl. 175-84

10 Claims



A resilient drill pipe mud wiper having a dual wiping action that is capable of being mounted on the drill pipe below a split bushing of a rotary table that drives a Kelly. As the drill pipe is moved upwardly from a bore hole containing drilling mud, the mud wiper by a dual wiping action removes mud adhering to the drill pipe therefrom and allows the scraped drilling mud to drain downwardly into the bore hole by gravity. The mud wiper is of such structure that a bit of greater transverse cross section than that of the drill pipe to which it is secured, may pass through the mud wiper without damage to the latter.

3,822,754

**AUTOMATIC SWIMMING POOL CLEANER**

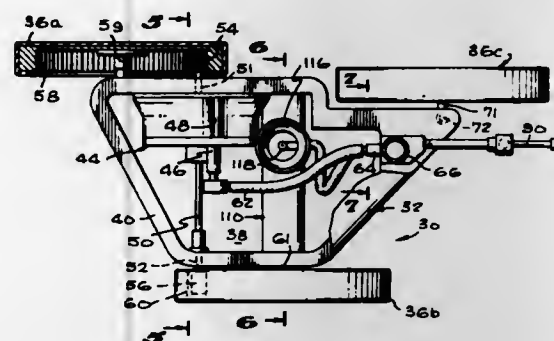
Melvyn L. Henkin, 19640 Greenbriar Dr., Tarzana, Calif. 91356, and Jordan M. Laby, 3940 Davana Rd., Sherman Oaks, Calif. 91403

Filed July 26, 1972, Ser. No. 275,173

Int. Cl. E04h 3/20; A47I 5/00

U.S. Cl. 180-1 R

19 Claims



An automatic swimming pool cleaner comprised of a car adapted to travel underwater along a random path on the pool vessel surface for dislodging debris therefrom. The car wheels are driven by a water powered turbine to propel the car in a forward direction, along the vessel surface. In order to prevent the car from being driven into a position, as for example against a vertical wall, from which it cannot emerge, a wheel geometry is employed which, upon contact, develops a horizontal force component parallel to the vertical wall, to thus enable the car to spin off. Alternatively, or in combination, a water flow produced reaction force can produce a torque to turn the car with respect to the engaged wheel to enable the car to spin off. The car is designed with a low center of gravity and a relatively buoyant top portion so as to produce a torque which maintains the car correct side up when on the pool bottom. Means are provided on the car for producing a water flow having a force component perpendicular to the vessel surface to provide good traction between the car wheels and the vessel surface. Further, a water flow produced suction is created adjacent to the vessel surface for collecting debris into a basket carried by the car. In addition, one or more hoses is pulled by the car and whipped by water flow to sweep dirt from the vessel surface.

3,822,755

**KIT FOR CONVERTING CONVENTIONAL MOTORCYCLE INTO SNOWMOBILE**

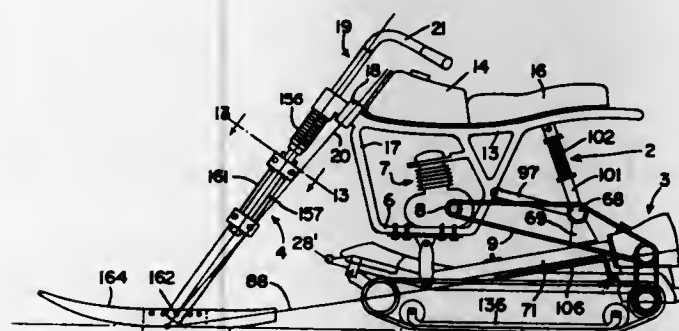
Derek L. Hine, Palo Alto, Calif., assignor to Advanced Recreation Equipment Corporation, Mountain View, Calif.

Filed July 21, 1972, Ser. No. 273,972

Int. Cl. B62m 27/02

U.S. Cl. 180-5 R

16 Claims



Presented is a kit for attachment to the frame and power unit of a conventional motorcycle from which the front and rear wheels have been removed to convert the conventional motorcycle into a snowmobile.

3,822,756

**MULTIPLE IMPLEMENT COUPLING STRUCTURE**

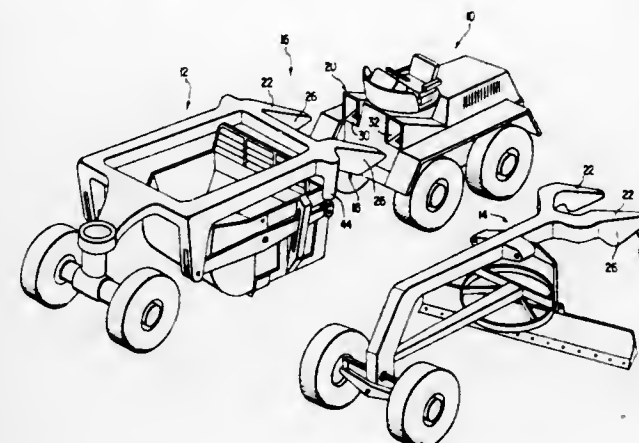
William E. Martin, Martin Company, P.O. Box 187, Kewanee, Ill. 61443

Filed Mar. 17, 1972, Ser. No. 235,543

Int. Cl. B60d 1/00

U.S. Cl. 180-14 R

37 Claims



Each of a plurality of implements may be precisely aligned and rigidly coupled with the same traction unit through the intermediary of coacting cam surfaces and power operated latching means. The aligning and coupling as well as decoupling operations are controlled from the operator's station on the traction unit. Separate coacting cam surfaces on each of the implements cooperate with complementary cam surfaces on the traction unit to effect both horizontal and vertical alignment as a function of driving the traction unit into engagement with the selected implement. Immediately following this alignment procedure, by driving, which automatically effects three dimensional adjustment between the implement and traction unit, the power operated latch is actuated to rigidly couple the implement and traction units into an integrated unit.

One purpose of the very precise alignment is to facilitate a concomitant hydraulic coupling between the traction unit and implement while another advantage, relying more on the rigidity of the coupling, is to provide that functionally unitary frame structure characterizing certain conventional earth moving equipment such as scrapers and patrol graders.

3,822,757

**INDIVIDUAL VEHICLE WHEEL DRIVE AND SUSPENSION ASSEMBLY**

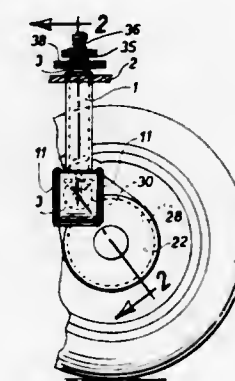
William George Spence, 2372 Wilson Ave., Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 68,618, Sept. 1, 1970, Pat. No. 3,689,101. This application June 26, 1972, Ser. No. 266,135

Int. Cl. B60b 39/00

U.S. Cl. 180-43 A

9 Claims



A drive and suspension assembly for an individual roadwheel of a vehicle including a rearwardly and downwardly inclined lever arm pivotally connected to the vehicle frame at its upper end and rotatably supporting the



roadwheel at its lower end, a main gear fast with the roadwheel and a drive pinion journaled on the lever arm and meshing with the main gear to drive the same. The pinion, during rotation to produce forward movement of the vehicle tends to walk around the main gear so as to produce an upward bias on the lever arm and consequently on the vehicle frame thereby forming a drive induced suspension for the vehicle and increasing the traction of the roadwheel. Abutment means limit the rotation of the lever arm with respect to the vehicle frame in both directions of rotation. The driving train includes a serially connected yieldable drive link to absorb the variations in the rotational speed of the driving pinion caused pivoting movement of the lever arm with respect to the vehicle frame. The pivotal mounting of the lever arm on the vehicle frame is angularly adjustable to allow the use of the drive assembly on either side of the vehicle. The assembly is adapted for steerable mounting of the roadwheel.

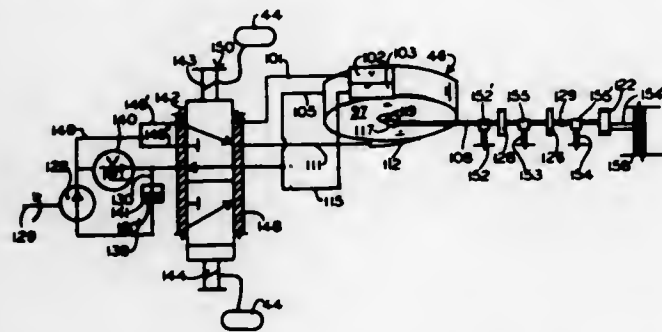
3,822,758

**HYDRAULIC MULTIPLIER VEHICULAR SYSTEM**

Ervin M. Panconst, Box 242, Vega, Tex. 79092  
Filed Feb. 20, 1973, Ser. No. 333,498  
Int. Cl. B60k 17/02

U.S. Cl. 180—70 R

10 Claims



High torque multiplication with ready reversibility and absence of surging are obtained by a pair of oppositely toothed circular rotors fixed to a circular separator therebetween and smoothly rotatably fitted in a co-axial cylindrical chamber and fed by high pressure fluid. The combination of such rotor and chamber is utilized in a system including a clutch drive switchably passing fluid through or past such combination of rotors and rotor chamber and in reversible directions. The preferred system is a vehicle.

3,822,759

**POWER STEERING GEAR ASSEMBLY**

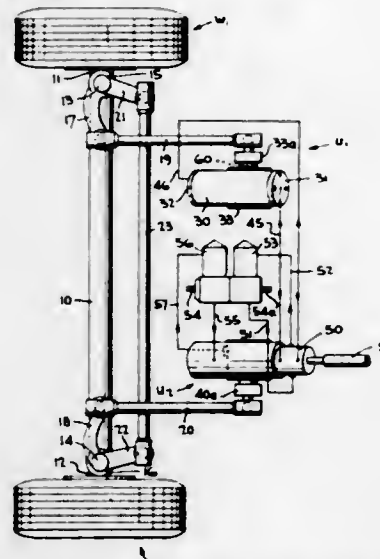
Richard H. Sheppard, c/o R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Mar. 7, 1972, Ser. No. 232,420

Int. Cl. B62d 5/10

U.S. Cl. 180—79.2 R

8 Claims



The cylinder housing of a power steering gear is provided with a hollow piston having a rack meshing with the output

gear, also enclosed within said housing. Fluid check valve means are provided at each end of the piston to prevent passage of high pressure working fluid during the power stroke but to allow the escape of high pressure fluid from the hollow interior of the piston to the exhausted or soft side of the piston. Lateral ports are provided in the piston communicating with the hollow interior and with the rack to bleed high pressure fluid from the enclosing space of the output gear so that buildup of fluid pressure due to leakage past the piston sealing rings is prevented. The check valve means are mounted in caps closing off the hollow interior of the piston and fluid is supplied and withdrawn from the chambers through a single fluid transfer hose at each end. The gear assembly is particularly adapted to use as a slave power steering gear unit, which is designed to provide 50 percent of the force in a dual system with 50 percent being handled by the master unit.

3,822,760

**SAFETY BELT ARRANGEMENT FOR INDIVIDUALS**

Oskar Lennart Lindblad, Hedsagatan 16, 77020 Vargarda, Sweden

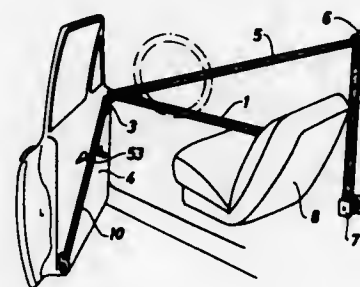
Filed Sept. 9, 1971, Ser. No. 179,134

Claims priority, application Sweden, Sept. 9, 1970, 12225/70; Sept. 25, 1970, 13045/70; Nov. 2, 1970, 14714/70; Dec. 30, 1970, 17726/70; Dec. 31, 1970, 17858/70; Feb. 10, 1971, 1094/71

Int. Cl. B60r 21/10

U.S. Cl. 180—82 C

20 Claims



Safety belt arrangement for vehicles which includes belts positions for extending across the body of a person sitting on a seat in the vehicle with one end of the strap secured to the vehicle on a side of the seat opposite a side wall of the vehicle and the other end of the strap slideably connected on the inside of a door of the vehicle and means for automatically displacing the belt along said door upon operation of the ignition circuit from in front of the seat to across the person.

3,822,761

**LOAD BEARING AIR CUSHION APPARATUS**

Jack F. Vaughn, 26807 Spring Creek Rd., Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 819,860, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 734,361, June 4, 1968, abandoned. This application Dec. 16, 1971, Ser. No. 208,879

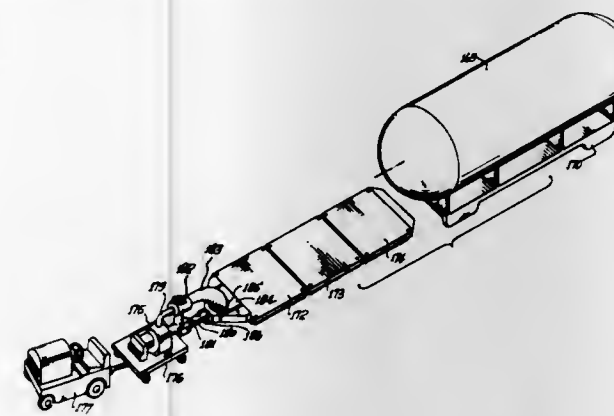
Int. Cl. B60v 1/16

U.S. Cl. 180—121

18 Claims

Apparatus capable of lifting, supporting, and moving weight on cushions of air wherein air is controllably admitted under pressure into areas encompassed by bounding sealing assemblies to form supporting cushions between the base of said apparatus and a support surface over which the apparatus moves, or alternatively between the base of said apparatus and a flat-bottomed load moved across its air cushions, with faces of said sealing assemblies spaced a small distance from said support surface or flat-bottomed load by air leakage under the

sealing means, each said sealing assembly comprising a flexible airtight hanger and annular structure projecting downward



from the hanger. The annular structure includes resilient mounting means attaching the sealing means to the hanger.

3,822,762

**DECORATIVE ACOUSTIC PANEL**

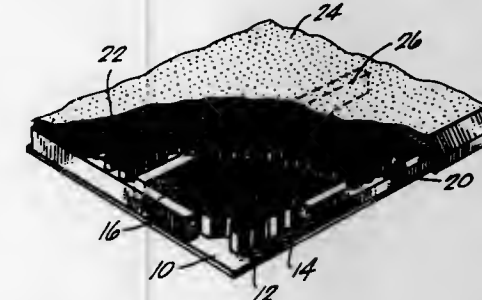
Thayer S. Crispin, Newport Beach, and Fred E. Duskin, Garden Grove, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 23, 1971, Ser. No. 183,161

Int. Cl. B23b 3/12

U.S. Cl. 181—33

5 Claims



An acoustic panel having a honeycomb core with edge members for mounting. A second honeycomb material over the first and the edge members spaces them from the decorative face sheet to prevent undesirable surface imperfections called markoff from appearing on the face sheet.

3,822,763

**ANTI-NOISE ROCKER ARM COVER**

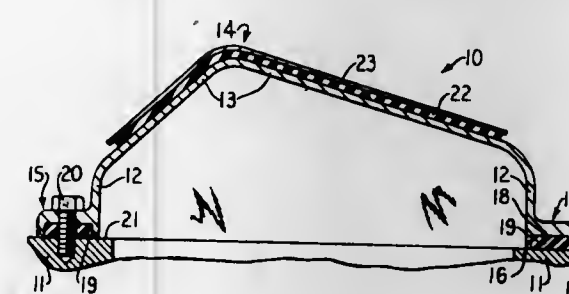
Robert E. Adams, Chillicothe; Gary O. Bragg, Peoria; Nelson A. Jones, Peoria, and Roger E. Treick, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 2, 1972, Ser. No. 294,254

Int. Cl. E04b 1/99; G10k 11/04

U.S. Cl. 181—33 K

13 Claims



A rocker arm cover is attached to an internal combustion engine by circumferentially disposed cap screws which extend

through a peripheral flange formed on the cover. An elastomeric gasket is disposed between the flange and the engine to form a static seal thereat. An elastomeric, noise-suppressing pad is bonded to an outer surface of the cover and to a plate, overlying the pad. In one embodiment, the pad constitutes a continuous sheet which is substantially coextensive with the top wall of the cover whereas in a second embodiment the pad constitutes an endless strip.

3,822,764

**STRUCTURAL ELEMENTS HAVING HIGHLY IMPROVED SOUNDPROOFING CHARACTERISTICS**

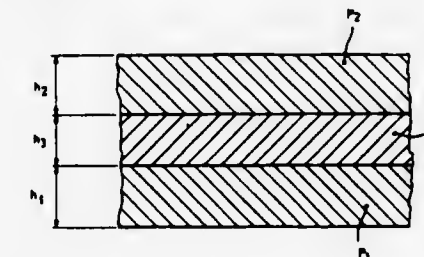
Marcel Marie Antoine Val, Clermont-De-L'Oise, France, assignor to Saint-Gobain Industries, Neuilly-Sur-Seine, France  
Filed Sept. 22, 1972, Ser. No. 291,190

Claims priority, application France, Nov. 25, 1971, 71.42221; July 20, 1972, 72.26130

Int. Cl. E04b 1/84

U.S. Cl. 181—33 G

39 Claims



Structural elements exhibiting extraordinary soundproofing characteristics comprised of two rigid layers with an intermediate layer of resilient material integrated in composite unitary mass wherein the thickness of the layers, their moduli of elasticity and shear, as well as physical properties, are critically interrelated to impose sound-deadening effects therethrough. Such structural elements are especially effective when used as facings for insulating elements of fibrous, porous or cellular materials, especially where such are applied to the opposite side of the latter, in which case the resulting insulating assemblies present many advantageous features in the fields of building constructions and other industrial locales.

3,822,765

**PLANETARY POWER STEER CROSS DRIVE TRANSMISSION AND CONTROL SYSTEM WITH LUBRICATION PASSAGES IN PLANET CARRIERS**

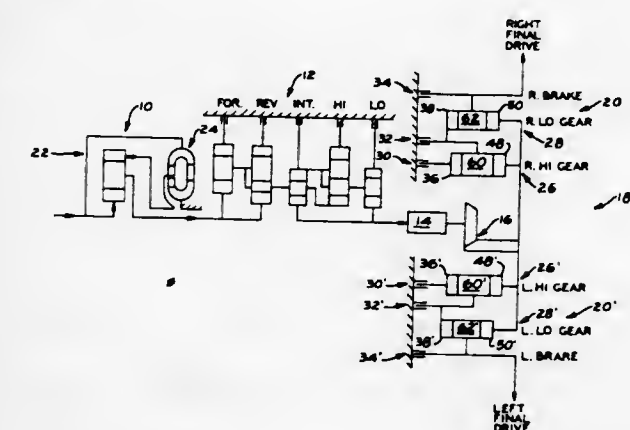
Walter D. Heller, Washington, and William W. Blake, Wyoming, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 10, 1972, Ser. No. 233,552

Int. Cl. F16h 37/08

U.S. Cl. 184—6

3 Claims



An improved track-type tractor transmission cross drive having a minimum reduction through use of planetary gears is



provided. The cross drive enables modulation of power to an inside track for all but the smallest radius turns, while modulated brake operation enables essentially pivot steering to be accomplished. Enhanced oil distribution and cooling of brake elements are also provided. Also provided is a control system that produces powered turns as a function of steering wheel rotation. Phasing and modulation of low, high, and service brakes on each track are achieved by a cam controlled and boosted modulating reducing valve, selector spools, and an overriding service brake valve.

3,822,766

# PROCESS AND A DEVICE FOR THE FINE POSITIONING OF A VERTICALLY MOVABLE PLATFORM IN FRONT OF A PALLET LOCATION

Walter Suter, Buchs, Switzerland, assignor to Oehler-Wyhlen-Lagertechnik AG, Aarau, Switzerland

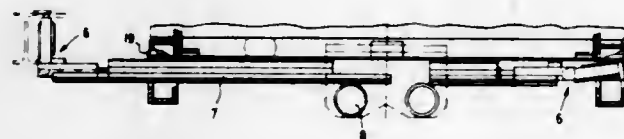
Filed July 19, 1972, Ser. No. 273,143

Claims priority, application Switzerland, July 20, 1971, 10775/71; Aug. 11, 1971, 11836/71

Int. Cl. B66b 1/40

U.S. Cl. 187-29 R

18 Claims



A process for automatically positioning a platform in front of a pallet location to effectuate the deposit or removal of a palletized load therein which is accomplished by moving the platform to an approach position above the floor of the pallet location, actuating sensing means disposed on said platform after the approach position is reached, lowering the platform thereby causing the sensing means to compare the distance traversed by the downwardly moving platform in relation to the pallet location with a predetermined reference distance to and when such distances are equal the sensing means causes the drive motor for said platform to stop. The sensing means disclosed may be either an electromechanical device which is extended from its recessed position within the platform to a working position and has a tongue member attached to a pivotal portion of the device which engages the pallet floor and operates switching means controlling the movement of the platform or the device may be a photoelectric scanner comprised of a transmitter which emits a focused light beam, e.g., a microlaser, and a receiver which receives the reflected beam from the pallet floor through an adjustable aperture in front of the receiver.

3,822,767

# ELEVATOR SYSTEM

James Lowry, Maplewood, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 15, 1973, Ser. No. 388,532

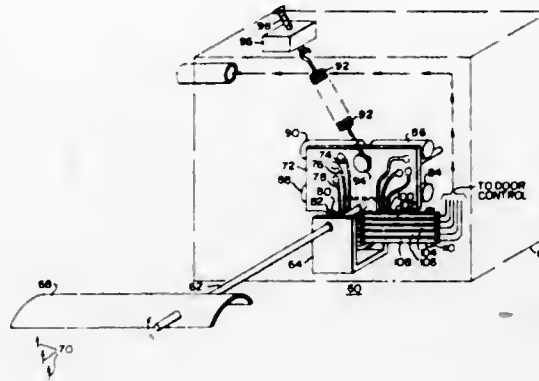
Int. Cl. B66b 13/14

U.S. Cl. 187-52

7 Claims

An elevator system including an elevator car having doors operable to a closed position according to a predetermined force pattern, and force modifying apparatus which increases

the magnitude of the predetermined force pattern in response to the velocity of wind in the hoistway which applies a drag to



the closing doors, to overcome the drag and close the doors without exceeding a predetermined resultant closing force.

3,822,768

# CONE FRICTION BRAKE

Johannes Sebulke, Gevelsberg, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

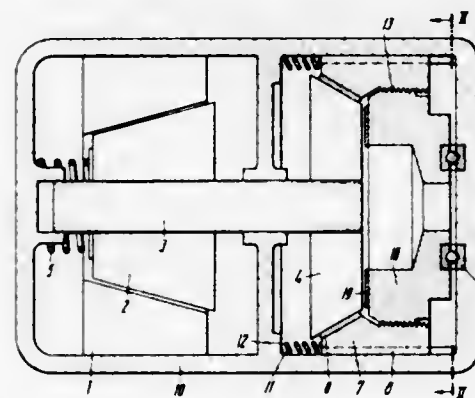
Filed Sept. 25, 1972, Ser. No. 292,082

Claims priority, application Germany, Oct. 20, 1971, 2152256

Int. Cl. F16d 53/00

U.S. Cl. 188-70 R

9 Claims



Disclosed herein is an improved cone friction brake with an interior brake drum and an exterior brake ring having a brake lining disposed therebetween. The brake drum is connected to an axially displaceable shaft on the apparatus, e.g., an electric motor, to be braked, while the brake ring, which is non-rotatable, is mounted for limited displacement in the apparatus housing by a unique self-adjusting mechanism.

3,822,769

# PANHEAD DRAG MECHANISM

Chadwell O'Connor, 2024 Galaxy Dr., Pasadena, Calif. 92660

Filed Sept. 27, 1972, Ser. No. 292,789

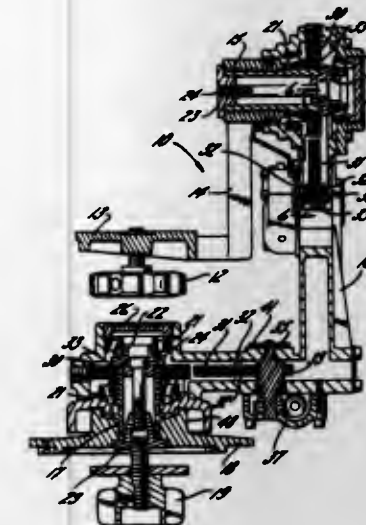
Int. Cl. F16d 57/04

U.S. Cl. 188-290

4 Claims

A panhead for mounting, panning and tilting instruments such as cameras having a smooth, uniform drag mechanism, requiring virtually no initial extra breakaway force, in which drag resistance is provided between a shaft and a relatively rotatable housing by the interaction between a plurality of disks fixed perpendicularly on the shaft and a stack of drag

plates mounted to slide into interleaved relationship with the disks. The disks and plates are surrounded by a viscous fluid



3,822,770

# SPEED SENSITIVE CONTROL SYSTEM FOR SLIPPING CLUTCH

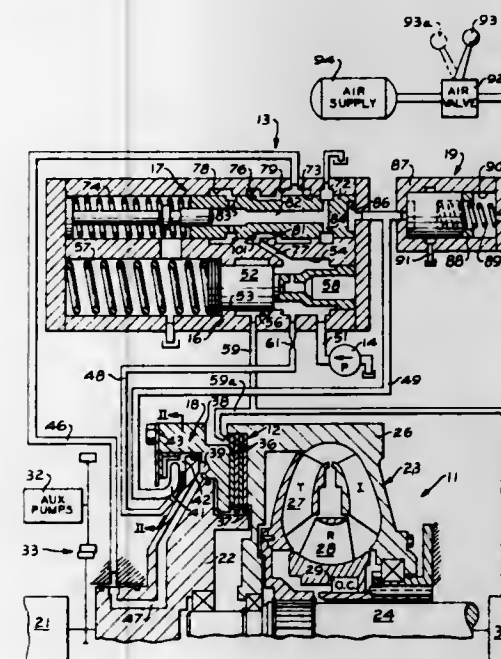
Kenneth F. Golan, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 8, 1972, Ser. No. 251,101

Int. Cl. F16d 43/284

U.S. Cl. 192-103 F

4 Claims



A control system for regulating a hydraulically actuated variable coupling or slipping clutch in a drive train including a source of fluid under pressure, a reducing valve for adjustably communicating the source with the clutch, a speed sensor in the drive train to which the reducing valve is responsive, and a manual control for selectively biasing response of the valve to the speed sensor. The speed sensor preferably comprises a pitot tube arranged to develop fluid pressure in proportion to rotating speed of a part of the drive train. In a preferred embodiment, the drive train has a torque converter with an input shaft coupled to a prime mover and auxiliary driven equipment, the variable coupling or slipping clutch being adapted to vary torque absorption capacity of the torque converter.

3,822,771

# INTERRELATED CONTROLS FOR A MOTOR AND SLIPPING CLUTCH

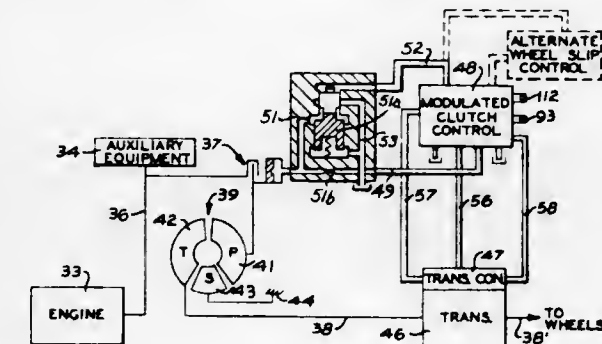
Sidney J. Audiffred, Washington; David W. Bump, Morton; Raymond N. Erkkila, Morton; Lowell S. Johnson, Morton, and Shairyl I. Pearce, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1971, Ser. No. 212,206

Int. Cl. B60k 29/00

U.S. Cl. 192-.084

14 Claims



A control system for a vehicular drive train including a slipping clutch for proportioning power from a prime mover to implements and a primary output shaft of the vehicle including a manual control conditioned by a manual selector to vary engagement of the slipping clutch through a regulating valve in a first mode of vehicle operation and to regulate acceleration of the prime mover in a second mode of vehicle operation. Additional elements of the control system include an adjustable wheel slip sensing mechanism preferably associated with the manual control, a bypass valve associated with the regulating valve and preferably with a hydraulically operable transmission in the drive train for maintaining a positive drive coupling through a torque converter coupled with the slipping clutch and an input valve also associated with the transmission to condition the slipping clutch for receiving a substantial portion of shock loading applied to the drive train.

3,822,772

# CLUTCH DISC RELEASING SPRING WITH AUTOMATIC WEAR COMPENSATOR

Kiyoharu Murakami, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Prefecture, Japan

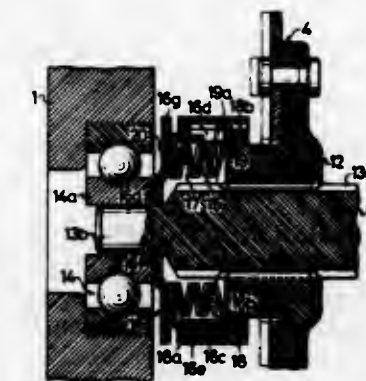
Filed Feb. 27, 1973, Ser. No. 336,367

Claims priority, application Japan, Mar. 10, 1972, 47-25015

Int. Cl. F16d 13/75

U.S. Cl. 192-111 A

4 Claims



An apparatus comprises a holder fixedly mounted on a main drive shaft, a spring member retained in the holder to move a clutch disc to its neutral position when the clutch is disengaged, an adjusting member supported by the holder and governed by the holder with respect to the amount of its axial



movement, and a dished spring member interposed between a free end of the spring member and an end face of spline hub of the clutch disc and having an outer conical slanting face in engagement with the free end of the spring member and an inner conical slanting face in engagement with the end face of the spline hub. A plurality of hornlike extensions extending from the slanting portion of the dished spring member have distal ends in elastic engagement with the inner face of the adjusting member. Upon a clutch disengaging operation, the dished spring member forcibly brings the clutch disc to its neutral position. The space between the friction surface of a flywheel and the friction facing of the clutch disc in its neutral position is always kept constant by automatic adjustment.

3,822,773

**EMBOSSING TOOL WITH CONTROLLED SPACING**

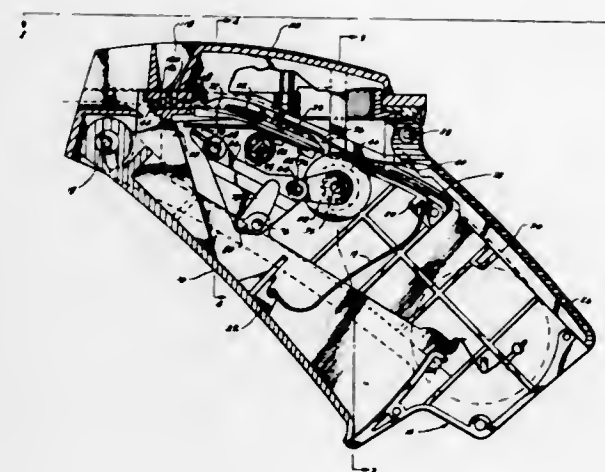
Donald E. Van Arnem, Surfside, and Clifton P. Colwell, Claremont, both of Calif., assignors to Avery Products Corporation, San Marino, Calif.

Filed Dec. 8, 1972, Ser. No. 313,269

Int. Cl. B41j 1/30

U.S. Cl. 197-6.7

10 Claims



There is described an embossing tool for embossing characters on plastic tape in which the incremental feed of the tape with each stroke of the operating lever of the embossing tools may be controlled from a selector knob. The same selector knob can be used to prevent any incremental advance of the tape during an embossing stroke of the tool's operating lever. The character punches are molded on a single annular flexible ring which is rotatably mounted on a stationary hub together with a second rigid ring on which the character dies are formed. The punch and die rings are locked on the hub to form an assembly having a large central opening in which can be positioned the tape guiding and advancing mechanisms, and which can be readily removed and replaced as an assembly.

3,822,774

**TYPE HOLDER POSITIONING DEVICE FOR TELETYPEWRITER OR THE LIKE**

George Edward Bucksey, Burgess Hill, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 25, 1972, Ser. No. 274,974

Claims priority, application Great Britain, July 29, 1971, 35645/71

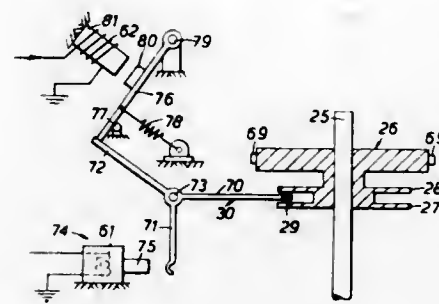
Int. Cl. B41j 1/22

U.S. Cl. 197-18

2 Claims

A type holder positioning device for a teletypewriter or the like including a shaft to which the holder is fixed, a pair of flanges on the shaft between which a rod is located to raise and to lower the shaft and holder. The holder therefore does

not interfere with the reading of a typed message during intervals of non-use or where one or a series of spaces are upcoming. A solenoid operator and a solenoid releasable latch work



3,822,775

**VENDING MACHINE WITH VARIABLE CAPACITY COIN TRAPS**

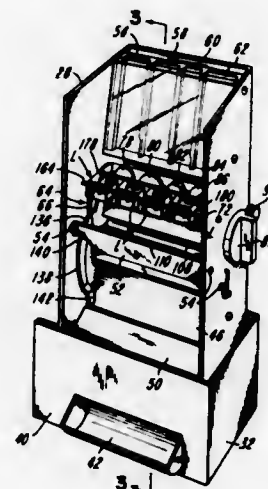
Mitchell Adam Hall, Ft. Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.

Filed Dec. 21, 1972, Ser. No. 317,705

Int. Cl. G07f 1/02

U.S. Cl. 194-63

32 Claims



The invention relates to improved means for accumulating a given number of coins or tokens of different values or denominations, which together will equal a predetermined sum or total valuation required to initiate dispensing of a priced commodity or service. Throughout the disclosure, the terms "coins" and "tokens" are used interchangeably, in order to avoid undesirable prolixity of verbiage.

3,822,776

**TACTILE KEYCAP**

Albert R. Pratt, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 268,418, July 3, 1972, abandoned. This application Jan. 26, 1973, Ser. No. 326,919

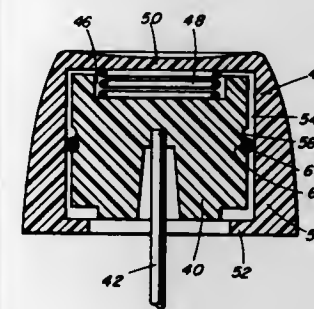
Int. Cl. B41j 5/12

U.S. Cl. 197-103

4 Claims

A keycap for attachment to the keys of a keyboard such as used on typewriters, computers, key punchers and the like, comprising a shell carried by a key-mounted hub, and spring

means between the shell and hub for providing a sensory indication of key operation to the operator when the key is



depressed, which spring means may be a click or snap to simultaneously also provide an audible signal.

3,822,777

**JUNCTION SWITCH FOR CONVEYING SYSTEMS**

Jens Thomsen Jepsen, Hjeriting, Denmark, assignor to K. J. Maskinfabriken A/S, Hjeriting, Denmark

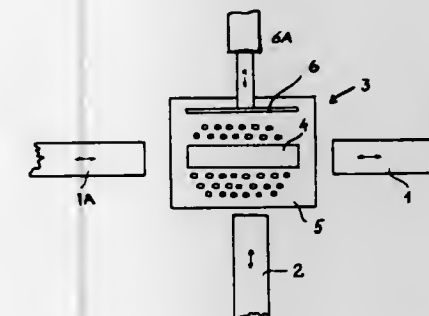
Filed May 17, 1972, Ser. No. 254,081

Claims priority, application Denmark, June 2, 1971, 2674/71

Int. Cl. B65g 47/26

U.S. Cl. 198-31 AB

3 Claims



Conveyor system for bundles of papers, such as newspapers and weeklies, having several conveying tracks meeting at a junction which includes an air cushion table. A conveying track on the table that runs in the direction of one output conveying track is vertically adjustable and a transverse conveyor is provided to push the air cushion-supported bundles transversely of the running direction of the track on the table when this last-mentioned track is lowered. Hence the bundles can be pushed onto a second output conveying track without damage to the lower sheets in the bundle.

3,822,778

**LUMBER CAM LIFTING MECHANISM**

Jesse C. Coats, P. O. Box 167, Horse Shoe Bend, Idaho 83629

Filed Jan. 27, 1971, Ser. No. 110,227

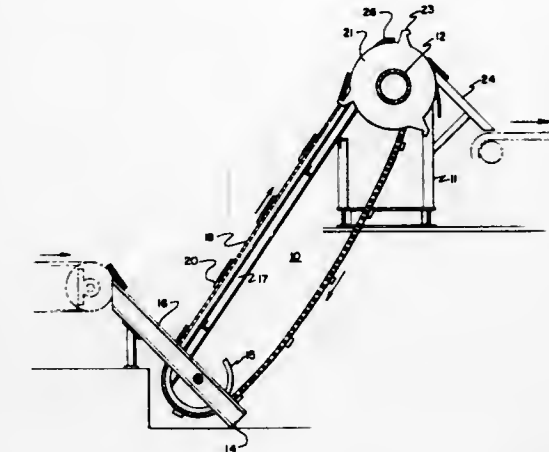
Int. Cl. B65g 37/00; B15g 47/00

U.S. Cl. 198-103

1 Claim

The cam lifter feed mechanism of this invention comprises an inclined endless chain conveyor carried by an upper framework and a lower framework including a multiplicity of lug-like lumber engaging means mounted at intervals on the endless chains of the conveyor, a driven shaft journaled for rotation in the upper framework including sprockets operatively engaged with endless chains of the conveyor, a plurality of cam lifters mounted on the shaft at opposite terminal sides of the endless chain conveyor including outwardly projecting hook-like foot portions being operable to engage the lowermost terminal edge of lumber carried on the conveyor by the lug-like engaging means and to carry the lumber over the shaft

to a point of discharge, a downwardly inclined discharge feed guide means mounted on the upper framework between cam lifters. The lower framework having a pair of opposing hopper forming downwardly inclined side frame members being operable to guide lumber toward the endless chain conveyor, means mounting the endless chain conveyor distally near the



3,822,779

**FLEXIBLE MATERIAL CONVEYING CHAIN OF INTERLOCKING IDENTICAL WIRE LINKS**

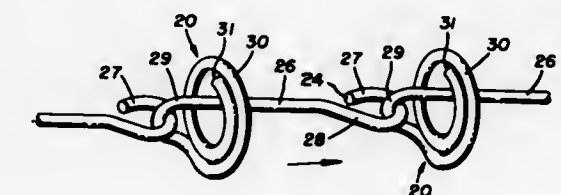
James H. McAuley, Bremen, Ohio, assignor to McAuley Manufacturing Inc., Bremen, Ohio

Filed Jan. 26, 1973, Ser. No. 326,583

Int. Cl. B65g 19/00

U.S. Cl. 198-168

9 Claims



A chain consisting of interlocking links all of which are identical and each of which is formed from a single piece of wire. Each link includes a circle in a plane transverse of the center line of the chain to provide a flight for conveying granular or other material through a tube or trough in which the chain may be mounted.

3,822,780

**SOFT CONTACT LENS CASE**

Walter R. Ulmer, Huntington Beach, and Kiran J. Randori, Santa Ana, both of Calif., assignors to Allergan Pharmaceuticals, Irvine, Calif.

Filed Aug. 7, 1972, Ser. No. 278,427

Int. Cl. A45c 11/04; B08b 3/04

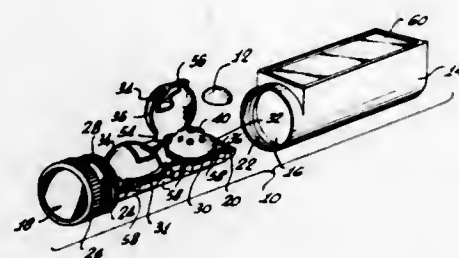
U.S. Cl. 206-5.1

12 Claims

A case for storing soft contact lenses, usually in a liquid which cleans and sterilizes the stored lenses, comprising a container having a threaded, fluid-tight closure cap, a base plate on the cap insertable in the container as the cap is placed on the container, and two upwardly opening compartments in the base plate for receiving two lenses, each compartment containing a perforated hemispherical lens support that is mounted in the compartment for movement between a



lowered, retracted position and a raised, extended position. A hinged cap covers each compartment and is releasably latched in a closed position over the lens support, which is movable to the raised position by means of a push button extending



through the underside of the base. A lost-motion connection limits the back and forth motion of each lens support, and the cover cups are held in spaced relation with the base and with the lens supports, when closed, to prevent damage to lenses on the supports.

3,822,781

## ARTICLE DISPLAY CONTAINER

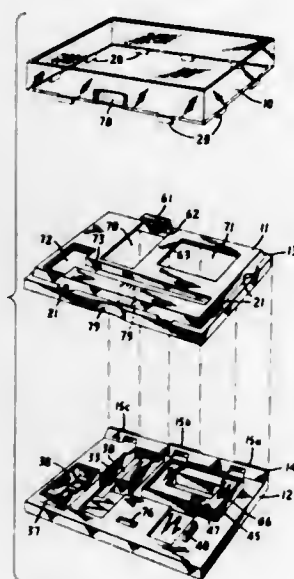
Paul A. Braginetz, Augusta County, Calif., assignor to Phillips Morris Incorporated, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 232,164

Int. Cl. B65d 25/10, 77/28

U.S. Cl. 206—45.14

4 Claims



A container of plastic material for articles comprising as a particular embodiment a razor and concomitants such as a blade dispenser, the container embodying three main elements comprising a base, a masking platform and a cover, the base having depressions or pockets or other means for releasably holding the article parts in predetermined positions, the platform being normally positioned over the base and having viewing openings therethrough registering with the respective article parts, the base and platform being cast of plastic as a one piece unit with integral flexible hinges, the cover being originally cast separately but in assembly permanently secured over the platform, and the base and platform unit being composed of opaque material and the cover of transparent material whereby with the container closed the article parts are viewable through the cover at the platform window openings.

3,822,782

## COIN DISPLAY DEVICE

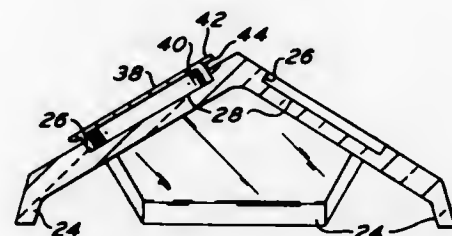
Louis A. Ringle, Wilmington, Del., and Jack M. Brown, Jr., Sharon Hill, Pa., assignors to The Franklin Mint, Inc., Franklin Center, Pa.

Filed Feb. 14, 1972, Ser. No. 225,779

Int. Cl. A45c 11/28

U.S. Cl. 206—83

7 Claims



A coin display device comprised of three generally pentagonal supports that are interconnected along adjacent sides and their included angle. Each of the supports has a recess for receiving a closure. The closure has nibs therein for frictionally engaging a coin to be displayed.

3,822,783

## DISPLAY HOLDER OR SALES UNIT

Louis Aackersberg Mortensen, Petersholm, Hillerodvej 1, DK-3480, Fredensborg, Denmark

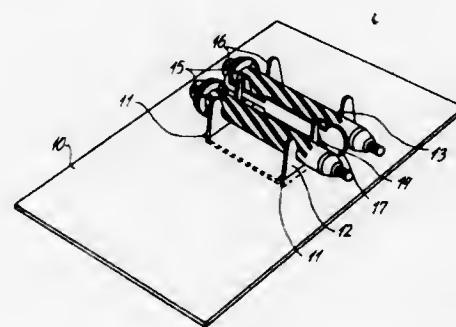
Filed Mar. 22, 1972, Ser. No. 237,143

Claims priority, application Denmark, Mar. 22, 1971, 137571

Int. Cl. B65d 73/00

U.S. Cl. 206—223

6 Claims



The invention relates to a display holder for holding elongated objects, for example substantially cylindrical screw anchoring devices, drills, etc., and to a sales unit comprising such display holder in which objects of the said type are mounted. The display holder comprises a sheet or plate member, such as a cardboard member which may carry advertising and/or informative printed matter, and a holder member having an abutment part engaging one side of said sheet or plate member and one or more transverse parts extending through slots or openings in the plate member and being adapted to retain elongated objects adjacent to the other side of the plate member. The holding member is preferably formed as a channel member with spaced parts extending through said slots or openings in the plate member. Furthermore, these flange parts may be provided with holes or pairs of projections defining recesses between them for resiliently receiving and retaining said elongated objects adjacent to said second side of the plate member. When retained by the holding member these objects prevent the holding member from being separated from the plate member.

3,822,784

## COMBINED SHIPPING AND DISPENSING CARTON FOR CONTINUOUS BONDING STRIP AND INSULATED TUBING THEREFOR

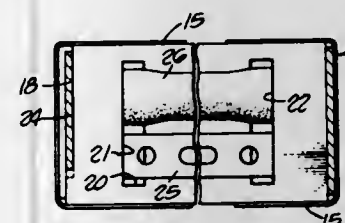
John T. Thompson, 244 Loring St., Los Angeles, Calif. 90024, and George W. Gillemot, 2331 20th St., Santa Monica, Calif. 90405

Filed May 30, 1972, Ser. No. 257,693

Int. Cl. B65d 85/67

U.S. Cl. 206—391

8 Claims



A combined shipping and dispensing carton of continuous lengths of separately coiled bonding strip or strap and insulated tubing therefor. The two coils lie side by side in a one-piece carton having a cover flap extending along one end edge and selectively lockable in either of two closed positions. In one position the flap lies flush against the end edge of the carton and, in the other, it is arched away from the end edge to provide a carrying handgrip. The leading ends of the strip and tubing are held captive by the cover in each locked position thereof.

3,822,785

## SLEEVE CONTAINER FOR LAMP BULBS OR THE LIKE, AND RESULTING PACKAGE

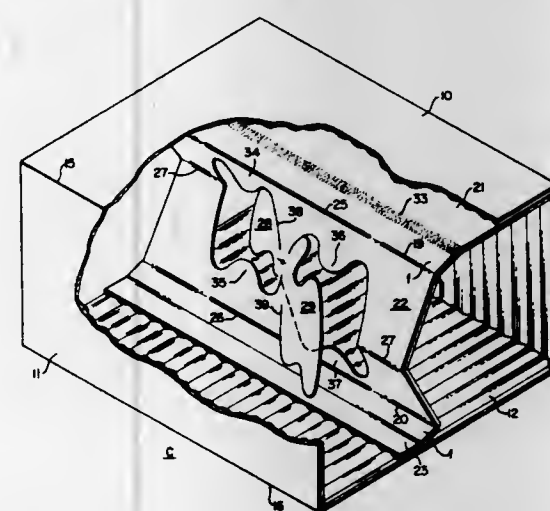
Edward J. Getz, Irvington, and Thomas Barbieri, Peapack, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1972, Ser. No. 297,526

Int. Cl. B65d 85/42, 5/04

U.S. Cl. 206—422

14 Claims



A pair of lamp bulbs are retained within an open-ended tubular wrapper of stiff paperboard by a partition which includes a pair of hinged flaps that are displaced by the inserted bulbs. The partition is slit and scored and secured to the walls of the sleeve in such a manner that it controllably buckles and provides a "floating" action which securely locks the bulbs within the sleeve without rupturing the partition or causing the sides of the sleeve to bulge. Bulb retention is also enhanced by using flaps which are contoured to provide tubular segments on the partition which engage and press the bulbs against the sleeve walls.

3,822,786

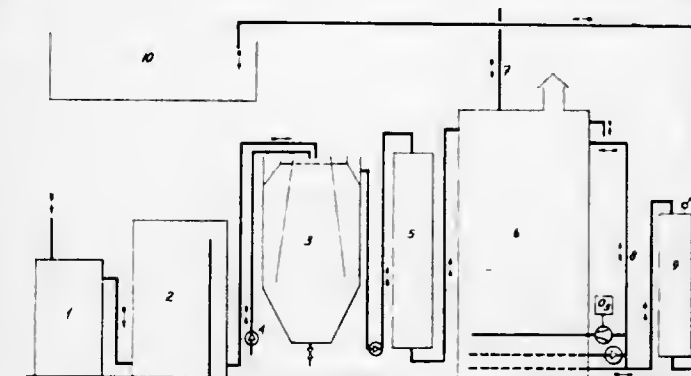
## APPARATUS FOR TREATING AND PURIFYING SEWAGE, PARTICULARLY SEWAGE CONTAMINATED WITH DETERGENTS

Karl Marshall, 317 Zenogame, Vienna, Austria  
Division of Ser. No. 96,246, Dec. 8, 1970, Pat. No. 3,733,268.  
This application June 30, 1972, Ser. No. 268,203

Int. Cl. C02b 1/38

U.S. Cl. 210—108

9 Claims



The sewage purification apparatus includes an ozonizing container in which the sewage is recirculated and purified by contact with ozone at substantially atmospheric pressure after passing through a separator container where oil, grease, fat, and solvents are separated and a reaction container where dirt and colloidal matter sedimented by a flocculating agent, are removed. The purified water withdrawn from the ozonizing container passes through an activated carbon filter where residual ozone in the water is converted into oxygen, and the gasses in the upper portion of the ozonizing container pass through an activated carbon filter where surplus ozone is converted to oxygen before the gasses escape to atmosphere.

3,822,787

## FLUID FILTER DEVICE

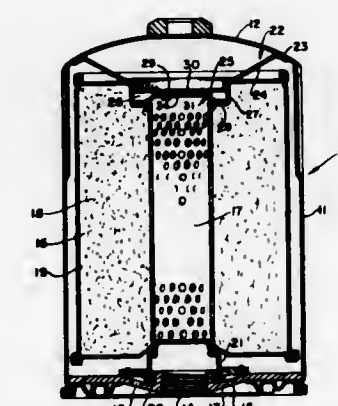
Robert J. Shaltis, and David Woltjer, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Continuation-in-part of Ser. No. 206,713, Dec. 10, 1971, Pat. No. 3,722,683. This application May 8, 1972, Ser. No. 250,925

Int. Cl. B01d 35/14, 27/10

U.S. Cl. 210—132

24 Claims



A housing has a closed end and a closure plate at its other end, the plate being provided with a fluid inlet and a fluid outlet. A filter cartridge is positioned in the housing against a support on the closure plate, the cartridge including a central tubular discharge member which communicates with the fluid outlet. A leaf spring adapter is interposed between the other end of the cartridge and the closed end of the housing to bias the cartridge against the support on the plate. The adapter has a central opening which is normally covered by a spring-pressed valve element, but the valve element is deflectable



from the adapter to uncover the opening by excessive fluid pressure differential between the outside of the cartridge and the inside of the discharge member. In some embodiments the valve element is imperforate and normally closes the opening in the adapter, becoming open when flow through the cartridge is blocked. In another embodiment the valve element has an opening in register with that in the adapter and the opening in the valve element is covered by a screen which constitutes a secondary filtering medium additional to the primary filtering medium afforded by the cartridge. In that embodiment the valve element becomes open when the screen is blocked, as it does in still other embodiments where the valve element may be the screen itself.

3,822,788

## SEWAGE FLOCCULATING AND SEDIMENTATION TANK UNIT

Karl Ragnar Dunkers, Taby, and Jarl Harald Johansson, Alvsjö, both of Sweden, assignors to Johnson Construction Company AB, Solna, Sweden

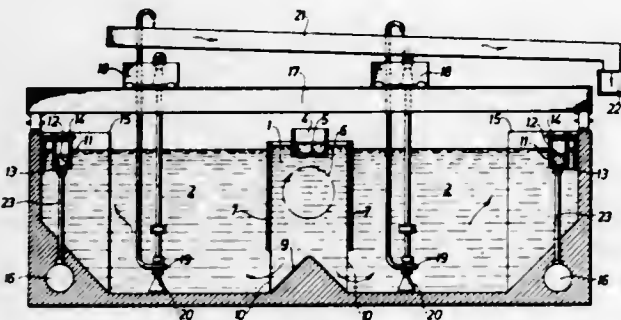
Filed Oct. 24, 1972, Ser. No. 299,947

Claims priority, application Sweden, Nov. 1, 1971, 13.902/71

Int. Cl. C02b 1/20

U.S. Cl. 210-200

9 Claims



A rectangular tank for purifying domestic sewage and industrial sewage is disclosed. The tank comprises a flocculating section extending the length of the tank for introducing sewage therein, a sedimentation section in fluid communication with the flocculating section including an outlet weir at the upper portion of the sedimentation section. A plurality of compartments are formed in both the flocculating and sedimentation sections to substantially uniformly distribute the incoming sewage the length of the tank. Outlet means at the bottom of each of the flocculating sections opens into the sedimentation section to guide the sewage from the flocculating section in a direction substantially perpendicular to the longitudinal axis of the tank and upwardly towards the outlet weir for discharge as clarified water. Means for agitating the incoming sewage is provided in each of the flocculating compartments. The deposited sludge is collected and transported by a suction device.

3,822,789

## OIL SKIMMER MODULE WITH FREE FLOATING WEIR TROUGH

Angelo J. Crisafulli, Box 1051, Glendive, Mont. 59330

Continuation-in-part of Ser. No. 142,282, May 11, 1971, Pat. No. 3,756,414. This application Feb. 6, 1973, Ser. No. 330,079

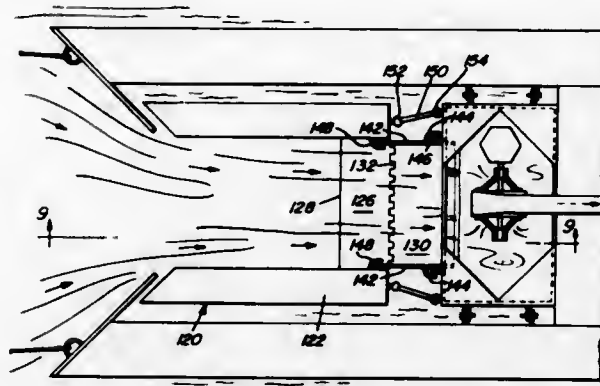
Int. Cl. E02b 15/04

U.S. Cl. 210-242

3 Claims

A skimmer for removal of a layer of oil or other floating pollutants from the surface of a body of water incorporating a sump box having a pump disposed therein for conveying material from the sump box into a floating barge, vessel or other area. A free floating weir forming means is disposed forwardly of the sump box and connected and communicated therewith in such a manner that the weir forming means may

vary in elevational relation to the sump box without the sump box being elevationally varied in relation to the surface of the



water. The weir forming means is supported by float means which orients the weir of the weir forming means in desired relationship to the surface of the water.

3,822,790

## TOOL-HOLDING DEVICES

Richard Rodney Armour, and Anthony James Thomas Evans, both of London, England, assignors to Molins Limited, London, England

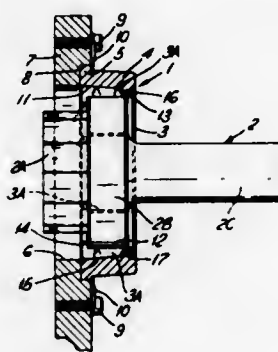
Filed Sept. 5, 1972, Ser. No. 286,101

Claims priority, application Great Britain, Sept. 9, 1971, 42211/71

Int. Cl. B23q 3/157

U.S. Cl. 211-60 T

5 Claims



A tool-holder has a housing with an inner tapered bore in which a correspondingly tapered resilient collet is axially movable, the tool being gripped inside the collet. Axial movement of the collet is limited by a bead on the housing bore fitting loosely in a groove in the collet. When the tool is inserted in the tool-holder the collet is moved towards the wider part of the bore, allowing easy insertion, but withdrawal of the tool causes movement in the opposite direction, producing a limited increase in the grip on the tool.

3,822,791

## MOBILE CRANE

Peter Eller, Dusseldorf-Benrath, Germany, assignor to Gottwald Leo K. G., Dusseldorf, Germany

Filed Aug. 7, 1972, Ser. No. 278,204

Claims priority, application Germany, Aug. 11, 1971, 2140233

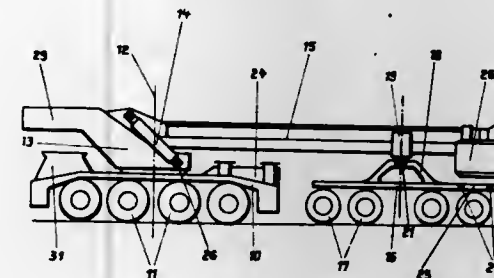
Int. Cl. B66c 23/72

U.S. Cl. 212-49

10 Claims

A mobile crane comprises a multi-axle chassis carrying a slewing frame with a luffing jib mounted on the frame. There is also a single or multi-axle trailer having, between its axles, or above its single axle when there is only one, a device for supporting a counterweight and also for supporting the jib

when the jib is in a lower travelling position. Means are provided for supporting the counterweight from the peak of the jib behind the supporting device on the trailer when the jib is in its lowered travelling position so that the jib acts as a lever



pivoted on the trailer and the counterweight applies a lifting force to the chassis through the slewing frame so that the axle loads of the chassis are decreased and the axle load or loads of the trailer are increased.

3,822,792

## AIR FLOTATION CARGO HANDLING SYSTEM

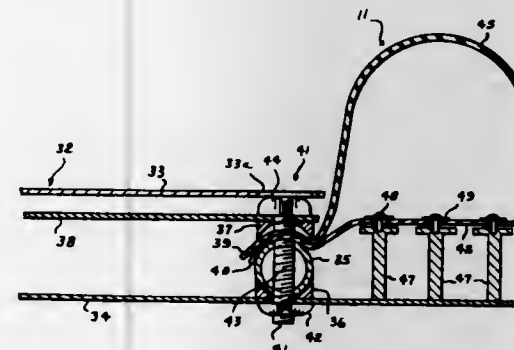
Joseph L. Weingarten, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Nov. 28, 1972, Ser. No. 310,037

Int. Cl. B60r 3/04

U.S. Cl. 214-1 BE

5 Claims



A cargo handling system including a flexible trunk means, normally positioned in a relatively flat, uninflated manner on the floor of a cargo aircraft, and inflatable to a cargo supporting position above the level of the floor by the action of compressed air or other gas admitted thereto. Air passages incorporated in the trunk means automatically transmit the pressurized air or other gas therethrough to form a thin layer-air cushion providing for the floating support thereon of one or more cargo carrying-containers or pallets.

3,822,793

## APPARATUS FOR STACKING FLEXIBLE SHEETS

Rudolph Stobb, Bethlehem, Pa., assignor to Stobb Development Corporation, Inc.

Filed Apr. 14, 1972, Ser. No. 243,981

Int. Cl. B65g 57/14

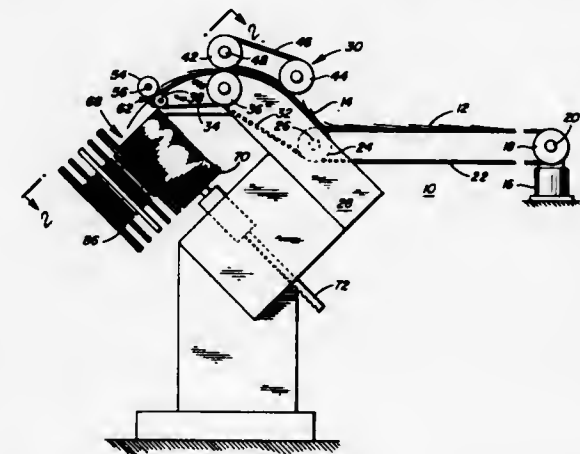
U.S. Cl. 214-6 H

11 Claims

Apparatus and methods for stacking flexible sheets, including signatures of magazines, books, newspapers and the like: A stream of overlapped signatures, continuously transported toward the left along a horizontal path from an initial location to a second location, is then intermittently fed about an inclined path from the second location at an inclined angle upward toward the left and about an arcuate path and downward to the left at an angle of 45° with the horizontal to feed the overlapped signatures, serially, to a V shaped input bin. The

input bin has a first movable wall and a second wall, whereby the leading edge of each of the signatures abut against the second wall and wherein each of the signatures fed into the input bin operate to form a stack therewithin with the bottom surface of the bottommost signature resting on first wall, and the other signatures aligned in a stack thereabove with the leading edges of each of the stacked signatures resting against the second wall. The overlapped signatures are fed, at an average surface speed, until the input bin is full. The feeding is then halted to enable the input bin to be unloaded. The transporting and feeding operation are so performed with the input bin that an imaginary point on one of the signatures travels in a first locus lying in a single plane.

Similarly, an output bin, including a V shaped trough having a first wall and a second wall, and a third bin, intermediate the



two bins, including a V shaped trough having a movable first wall and a second wall, are provided. The third bin further includes a fixed ceiling opposed to its first wall. A conveying means is coupled to each of the second walls of the three bins, which second walls are likewise movable. The second bin, the intermediate third bin, the output bin, and a conveying means are so oriented that the aforesaid imaginary point on one of the signatures travels in a second locus lying wholly in a plane perpendicular to the single plane. A stack of signatures, formed in the input bin, is indexed to the third bin, wherein they are compressed by the action of the first wall moving up against the compression ceiling, and, later, a compressed stack of signatures in the third bin is transported to the output bin, whereupon such compressed stack of signatures can be unloaded manually or by other suitable means.

3,822,794

## PLANT FOR FILLING MOLDING CAVITIES ARRANGED IN ONE OR MORE BAYS

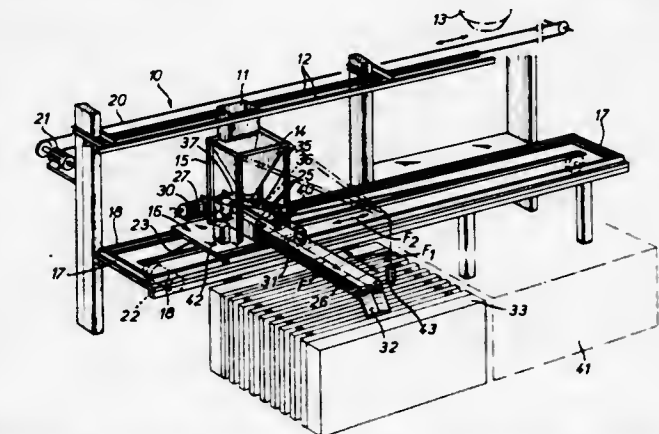
Edouard Marie Fougea, Paris, France, assignor to Constructions Edmond Coignet S.A., Paris, France

Filed Nov. 3, 1972, Ser. No. 303,599

Int. Cl. B65g 65/32

U.S. Cl. 214-59 A

7 Claims



A plant for filling molding cavities arranged in one or more bays. The plant comprises a framework of beams, a bucket



mounted on the framework for horizontal displacement between a cement mixer station and a hopper. The hopper is mounted on a carriage which is displaceable in the same direction as the bucket. A conveyor is mounted on the carriage in alignment with the hopper for delivering concrete from the hopper to the molding cavities. The conveyor extends in a direction perpendicular to the direction of movement of the carriage. The entire conveyor assembly is displaceable along its own longitudinal axis between positions corresponding to the various molding cavities. The downstream end of the conveyor is fitted with a chute for directing concrete into a particular molding cavity. The operator may control the various elements such as the bucket, conveyor and carriage either from a console on the carriage or a control panel situated in the vicinity of the downstream end of the conveyor.

3,822,795

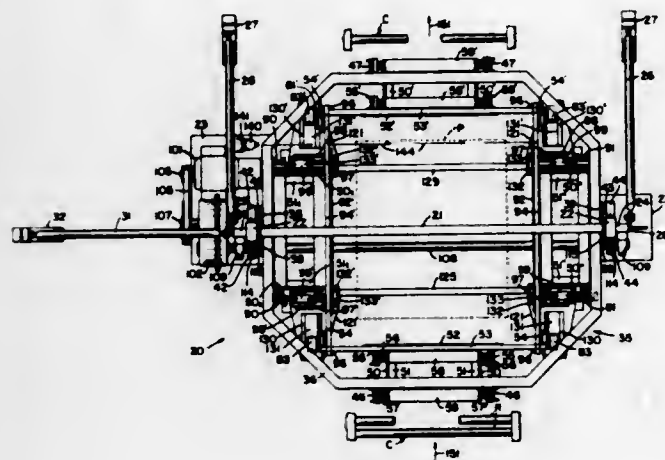
## LOAD SQUARING DEVICE FOR PALLETS

Frederic S. Salsburg, Victor, and Weston R. Loomer, Canandaigua, both of N.Y., assignors to Hartman Metal Fabricators, Inc., Victor, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,607  
Int. Cl. B65g 57/00

U.S. Cl. 214-6 S

14 Claims



Four panels are mounted at the front and back and at the two sides, respectively, of a carriage which is reciprocable vertically above a conveyor. When a loaded pallet has been brought beneath the carriage, the carriage descends; as it descends, curved, stationary cams mounted adjacent the conveyor engage rollers on the lower edges of the panels to urge the panels inwardly to engage and square the load on the pallet. The carriage then rises to inoperative position, retracting the panels.

3,822,796

## DIFFERENTIAL AUGER MATERIAL COLLECTOR

Floyd E. Buschbom, Long Lake, Minn., assignor to VEDA, Inc., Long Lake, Minn.

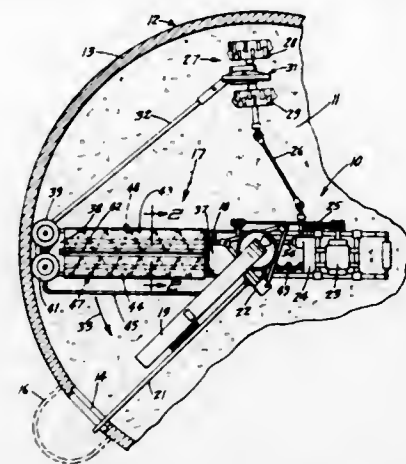
Filed Nov. 24, 1972, Ser. No. 309,520  
Int. Cl. B65g 65/46

U.S. Cl. 214-17 DB

16 Claims

A surface or top silo unloader of the type having leading and trailing counter-rotating augers for gathering material to the

center of the silo and delivering it to an impeller which discharges the material from the silo. The trailing auger has a



diameter greater than the leading auger and operates at a slower rate of speed. The augers have outwardly projected knives for cutting the material.

3,822,797

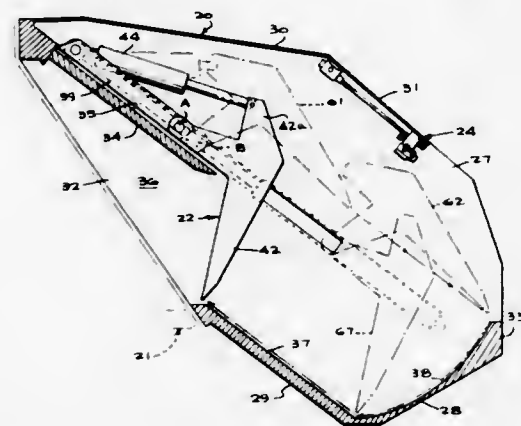
## CONTROL VALVE OPERATING MECHANISM

Roland W. McKenzie, and Richard Stansberry, both of Culpeper, Va., assignors to City Tank Corporation, Culpeper, Va.

Filed June 23, 1972, Ser. No. 265,710  
Int. Cl. B65f 3/00

U.S. Cl. 214-83.3

16 Claims



A mechanism for operating a control valve mounted on a support structure and provided with slideable spools, generally including a first control rod mounted on the support structure for rectilinear motion along its axis, a second control rod mounted on the support structure for pivotal movement about its axis, a third control rod mounted on the support structure for pivotal movement about its axis, means operatively connected to the first and second control rods for independently moving the first control rod rectilinearly along its axis and pivoting the second control rod about its axis, means operatively connected to the third control rod for pivoting the third control rod about its axis, means operatively interconnecting the first control rod and a first valve spool for translating the rectilinear movement of the first control rod to rectilinear movement of the first valve spool, means operatively connecting the second control rod to a second valve spool for translating the pivotal movement of the second control rod to rectilinear movement of the second valve spool, means for pivoting the third control rod, means operatively interconnecting the third control rod with a third valve spool for translating the pivotal movement of the third control rod to rectilinear movement of the third valve spool, and means interconnecting the second and third control rods for trans-

mitting pivotal movement of the second control rod to the third control rod in only one direction and transmitting pivotal movement of said third control rod to said second control rod in only an opposite direction.

3,822,798

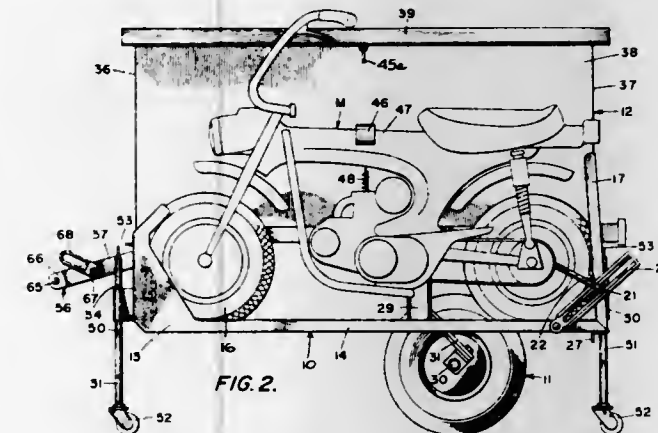
## TRAILER FOR MOTORCYCLES

Wayne W. Neff, 679 Vine Ave. NE, Warren, Ohio 44482  
Filed Dec. 13, 1972, Ser. No. 314,859

Int. Cl. B60p 3/06

U.S. Cl. 214-85

9 Claims



A trailer to be towed by a draft vehicle, such as an automobile. The trailer comprises a frame having wheel means depending therefrom and adapted to roll along a roadway. A container is supported on the frame and is adapted to contain camping gear, parts, tools and the like. Tracks are carried by the frame and disposed on opposite sides of the container, each track being aligned with the towed direction of the trailer and adapted to receive the front and back wheels of a motorcycle. The forward end of each track has a stirrup for receiving the front wheel of a motorcycle, and the rear end of each track has a ramp portion that may be swung to an upright position to abut against the rear wheel of the motorcycle.

3,822,799

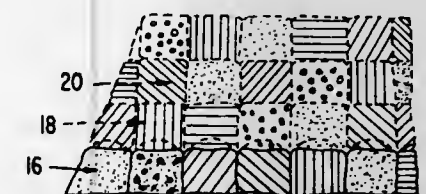
## METHOD OF PRODUCING BLAST FURNACE SLAG PRODUCTS

Raymond H. Evans, Yardley, Pa., assignor to The Calumite Company, Trenton, N.J.

Filed Jan. 7, 1972, Ser. No. 216,000  
Int. Cl. B65g 3/02, 65/28; C03c 13/00

U.S. Cl. 214-152

5 Claims



A blast furnace slag product adapted for use in the manufacture of glass is produced by depositing successive loads of slag each having a composition within a predetermined range, in spaced locations within a storage area so as to produce a layer composed of numerous individual loads each differing more or less in composition within said range. Several such layers are arranged one upon another after which the material required for use is removed from the storage area in a direction transverse to said layers and the material thus removed is ground and subjected to magnetic separation whereby a product of highly uniform composition is obtained.

3,822,800

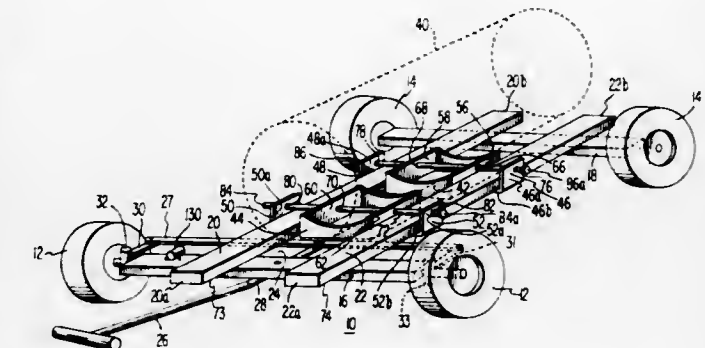
## APPARATUS FOR TRANSPORTING TRANSFORMERS AND THE LIKE

Stanley Leszczynski, Elk Creek Rd., Schenectady, N.Y. 12155  
Filed Nov. 4, 1971, Ser. No. 195,592

Int. Cl. B62b 3/08

U.S. Cl. 214-370

11 Claims



An apparatus suitable for transporting a relatively large body, e.g., an electrical transformer, that includes one or more projections thereon, including a structure comprising a plurality of wheels and means defining a slot adapted to receive the projection therewithin, the body being removably connectable to the apparatus at the projection or projections.

3,822,801

## VEHICLE RACK

William A. Morgan, Jr., 1820 N. Main Ext., Butler, Pa. 16001  
Filed Nov. 17, 1972, Ser. No. 307,482

Int. Cl. B60i 9/00

U.S. Cl. 214-450

3 Claims



A rack for loading and transporting an article, such as an animal carcass, which can be mounted on a vehicle bumper. The rack includes a tubular frame and tubular cross-members bent in a V-shape forming two sections. Adjustable flexible straps connect opposite edges of the frame sections to a bumper permitting it to be raised from a ground-contacting loading position to an article transporting position.

3,822,802

## REFUSE COLLECTOR

Eugene Evans, Jr., No. 1 Tamzine Ct., St. Louis, Mo. 63033

Filed May 5, 1972, Ser. No. 250,591

Int. Cl. B65f 3/04

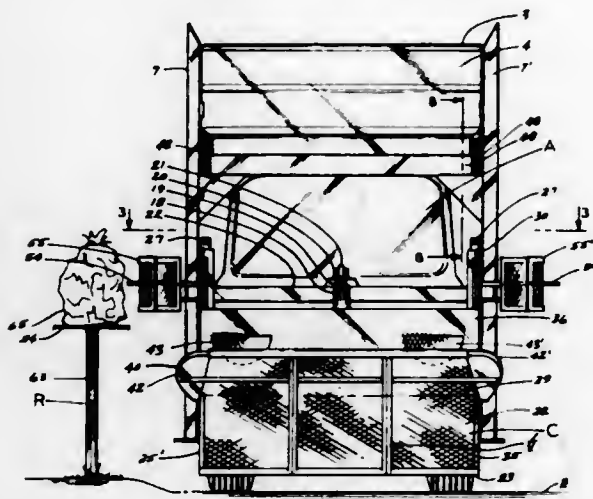
U.S. Cl. 214-518

10 Claims

A refuse collector for disposition upon the front end of vehicles comprising an upwardly opening collection basket, means for elevating said basket and rocking same for discharge of the contents thereof into a hopper located in the upper portion of



said vehicle and means for returning the basket downwardly into operative position after discharge. Arms swingable



through lateral arcs are provided adjacent each side of the basket for engaging prepositioned refuse or trash for directing same into said basket.

3,822,803

## MATERIAL HANDLING EQUIPMENT

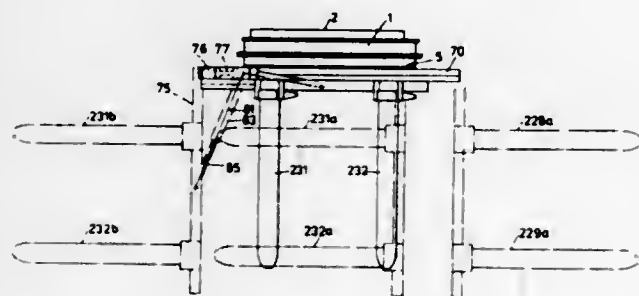
Richard Davis Thompson, Leeds, England, assignor to R. E. Barker & Co., Yorkshire, England

Filed Mar. 22, 1973, Ser. No. 343,941

Int. Cl. B66f 9/14, 9/16

U.S. Cl. 214—620

10 Claims



An attachment for a lifting vehicle, comprising a rear frame having means for attachment to a vehicle, a mid-frame rotatably mounted on the rear frame for rotation relative thereto about an axis substantially perpendicular to the plane of the rear frame, a front plate hinged at one side thereof to the mid-frame, means for opening and closing the hinge to pivot the front plate away from and towards the mid-frame, means for moving the hinge longitudinally of the mid-frame from side to side thereof and mounting means at both opposite longitudinal edges of the front plate to which material handling members may be attached.

3,822,804  
SIDE LOADERS

George Neville Bowman-Shaw, Toddington, England, assignor to Lancer Boss Limited, Bedfordshire, England

Continuation of Ser. No. 111,588, Feb. 1, 1971, abandoned.

This application May 21, 1973, Ser. No. 362,547

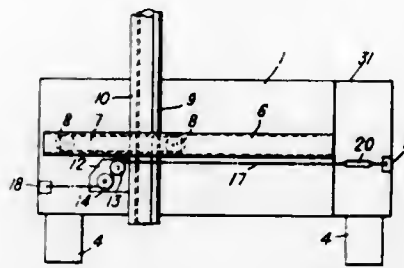
Int. Cl. B66f 9/10

U.S. Cl. 214—670

5 Claims

For a side loader vehicle having a transverse recess between front and rear body portions with mast guides adjacent to the recess, a mast traversing mechanism comprising at each side of the recess a mast-trolley moving along the guide, a shaft journaled in the mast-trolley assembly and extending across

the mast, a first sprocket fast with the shaft, a second sprocket rotatably mounted on each side of the mast in alignment with the first sprocket, a chain anchored at its extremities to the



vehicle chassis and passing over one sprocket and under the other sprocket, a tensioning device to tension the chain round the sprockets, and a prime mover drivingly connected to the shaft to cause the mast to travel along the recess.

3,822,805

## SAFETY CLOSURE FOR CONTAINERS

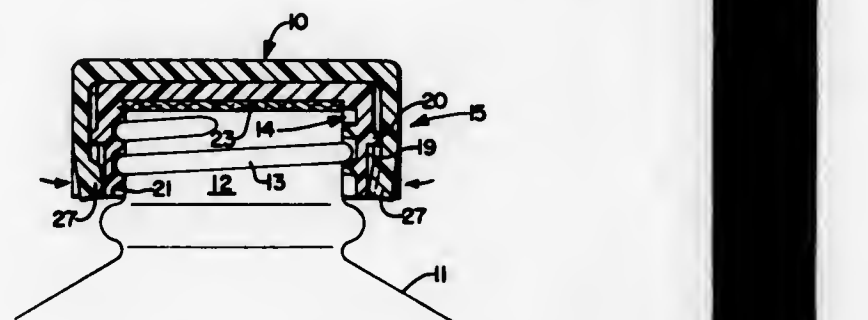
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed Sept. 22, 1972, Ser. No. 291,329

Int. Cl. B65d 55/02

U.S. Cl. 215—9

7 Claims



A safety closure for containers having a threaded neck, which closure includes an inner closure adapted to be threadably received on the container neck and an outer or overclosure covering, and normally freely rotatable on, the inner closure. The inner closure is provided with continuous engaging means around the lower portion of its skirt, which means are engageable by means provided on two downwardly projecting flexible tabs provided in the lower portion of the skirt of the overclosure. Application of pressure between the thumb and finger compresses the tabs of the outer closure to engage the inner closure, thereby permitting rotation of the locked inner and outer closures to remove the safety closure from the neck of the container.

A second embodiment includes a plurality of integrally formed projections on both the top surface of the inner closure and on the bottom surface of the outer closure. The projections are adapted to engage to rotate the inner closure when the outer closure is rotated to attach the safety closure to the container and to disengage when the outer closure is rotated to detach the safety closure without pressing the tabs to lock the outer closure into engagement with the inner closure.

3,822,806

## INFANT FEEDING MEANS

Gary S. Grimes, Kent, Ohio, assignor to Quester Corporation, Toledo, Ohio

Division of Ser. No. 201,723, Nov. 24, 1971, Pat. No.

3,762,542. This application Apr. 9, 1973, Ser. No. 349,105

Int. Cl. A61j 9/04

U.S. Cl. 215—11 E

3 Claims

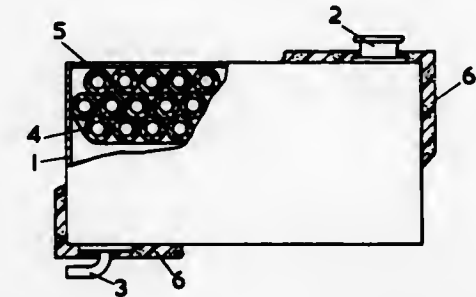
A nurser includes a presterilized disposable bag of thin, flexible, elastic, waterproof material, such as polyethylene, sup-

ported inside a rigid, tubular holder having slotted sides or an open bottom or both. The holder converges slightly from one end to the other. Adjacent the latter end the holder is reentrant, forming an external annular channel, and forming a radially extending flange at the lip of the opening at that end. The open end of the bag is turned back over the lip and pulled over and beyond the annular channel and down tight around the tapered body of the holder.

A sterilized nipple has a flange at its base and an elastic band integral with the outer periphery of the flange. The nipple flange is sealed to the bag at the lip of the holder and the nipple and bag are secured to the holder by snapping the elastic band around the holder into the annular channel adjacent the lip of the holder, the bag lying between and being gripped by the holder and the rubber band.

The bag is formed from a continuous tube which, while flattened, has been transversely arcuately perforated and, ad-

the balls and within the container a volume equivalent to more than 50 per cent of the total interior space within the con-

3,822,808  
FUEL SUPPLYING APPARATUS HAVING A REVERSIBLE  
PLATE TYPE FLOW INDICATOR

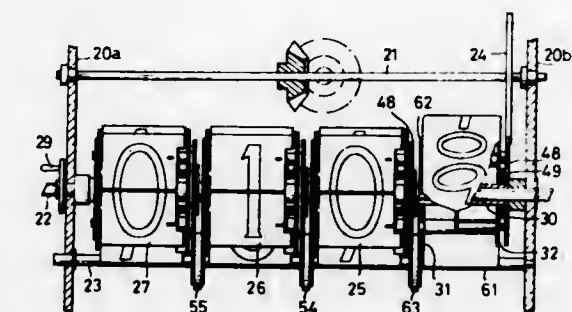
Shiro Katakura, Tokyo, and Shinichi Nojima, Yamanashi, both of Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan

Filed Mar. 20, 1973, Ser. No. 343,118

Int. Cl. B67d 5/26

U.S. Cl. 222—33

6 Claims



acent and parallel to the perforations, transversely arcuately heat sealed, so that a bag torn from a roll of the tube will have an arcuate bottom which does not form ears when filled with liquid and an arcuate top which provides tabs facilitating folding the top back over the holder and pulling it tight upon its tapered body, thereby to effect sanitary assembly.

The bag has an outer diameter closing fitting the inner periphery of the holder below the reentrant portion and only slightly smaller than the outer diameter of the lip and upper part of the holder adjacent the channel, whereby with the aid of the tabs it can easily be manually pulled down over the lip, channel, and upper part of the tapered holder, frictionally elastically engaging therewith.

The extra length of the bag required to extend down beyond the channel provides sufficient length to permit use of the bag also in narrow mouth holders provided with screw cap type nipple and bag retention means.

A fuel supplying apparatus comprises a flowmeter and a reversible plate type flow indicator. The reversible plate type flow indicator includes shift means of a decimal system actuated in a mechanical manner and resetting means for zero-resetting the indication. This reversible plate type flow indicator is preferably provided in a stationary stand post secured to an island in a servicing area of a fuel supplying station.

3,822,809

## LOOSE PRODUCT METERING APPARATUS

Pierre A. Foucault, 12 Avenue du General de Gaulle, 78 Croissy S/Seine, and Jacques P. M. Pellerin, 57 Boulevard de la Republique, 91 Soisy S/Seine, both of France

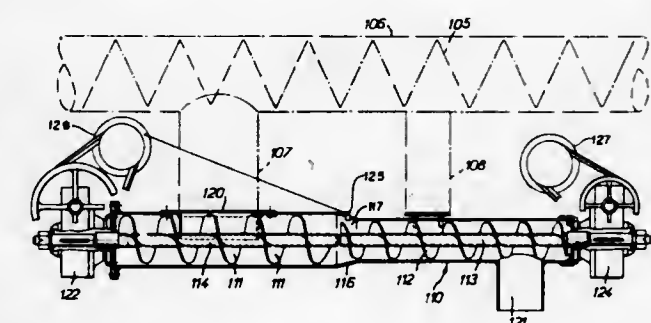
Filed Feb. 8, 1973, Ser. No. 330,745

Claims priority, application France, Dec. 18, 1972, 72.44967

Int. Cl. B67d 5/16

U.S. Cl. 222—71

9 Claims

3,822,807  
CLOSEABLE CONTAINERS HAVING MEANS FOR  
SUPPRESSING FIRE AND/OR EXPLOSIONS

John Angus MacDonald, Farnborough, and Harold William Gerald Wyeth, Aldershot, both of England, assignors to The Secretary for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 13, 1972, Ser. No. 233,993

Int. Cl. B65d 25/00

U.S. Cl. 220—88 R

9 Claims

A closeable container having therein a plurality of foam balls having a porosity of 15–25 pores per linear inch, which balls together with the void spaces therein occupy the space within the container to an extent that there is left externally of

Apparatus for metering loose products such as powder or granules, comprises co-axial metering and compensating



worms rotatable in a casing from which the metering worm delivers product into a delivery tube. The worms are independently driven and servo-control means dependent on the torque of the metering worm controls the rate of rotation of the compensating worm which feeds product to the metering worm. By this means the amount of product distributed by the metering screw is strictly proportioned to the speed of rotation of the metering screw.

3,822,810

## BEVERAGE DISPENSING DEVICE

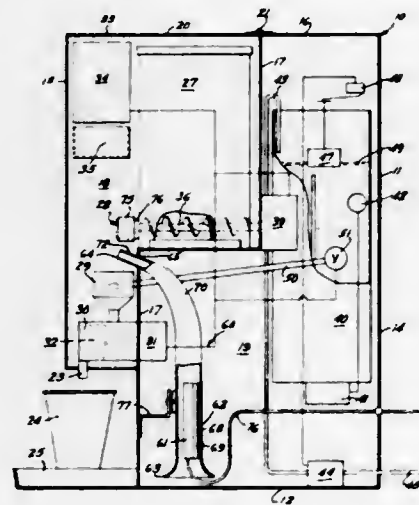
Norman L. Fuqua, South Hill, Va., assignor to The Cornelius Company, Anoka, Minn.

Filed Jan. 17, 1972, Ser. No. 218,399

Int. Cl. B67d 5/62

U.S. Cl. 222-146 HE

12 Claims



A beverage dispensing device for dispensing a stored beverage from a dispensing section of the device, the device having associated therewith means for providing a flow of warm air to the dispensing section via a conduit from a heater element positioned exterior of the dispensing section, the supply relying upon convective flow independent of fans, blowers or the like.

3,822,811

## SAFETY CLOSURE

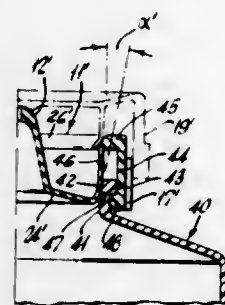
William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.

Filed Apr. 10, 1972, Ser. No. 242,335

Int. Cl. B67d 3/00

U.S. Cl. 222-562

16 Claims



The invention contemplates selectively openable closure means that is tamper-proof, in the sense that a correct sequence of two deliberate and independent movements of two parts is necessary in order to achieve access to the contents of the bottle or the like container which is protected by the closure.

The invention is particularly concerned with protection of containers for liquid, such as oil, lighter fluid, etc. and having a dispensing nozzle. The nature of the inventive closure is such as to close and seal the nozzle, and to protect against loss of or access to dripped liquid around the nozzle, as well as to achieve the tamper-proof or safety locking feature.

3,822,812

## POURING ATTACHMENT FOR PAINT CANS

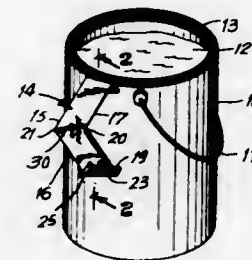
Joseph E. Shorin, New York, N.Y., and Vero Ricci, Collingswood, N.J., assignors to Aggogle Inc., New York, N.Y.

Filed July 27, 1973, Ser. No. 383,135

Int. Cl. B65d 5/74

U.S. Cl. 222-570

5 Claims



The present invention is directed to an improved paint can pouring attachment adapted to facilitate the predictable pouring of paint, with reduced likelihood of spillage and leakage along the edge of the paint can, the apparatus functioning, in addition, to prevent the entry of paint into the rim of the paint can, thereby assuring that the lid of the paint can may be reapplied without compromising the seal afforded thereby.

The apparatus is characterized by a body portion having a pressure sensitive adhesive backing, the body portion being chevron-shaped, the depth of the chevron being substantially greater than the horizontal dimension of the rim of the paint can, whereby when the pouring device is mounted by adhesive attachment over the said rim, the trailing edge of the chevron will overlie the interior of the can and the leading edge of the chevron will extend beyond the rim.

3,822,813

## BACK PACK FRAME FOR SUPPORTING A TENT

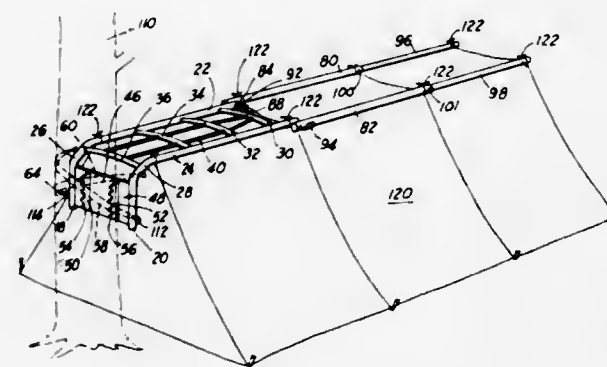
Stephen D. Carter, 1238 Renee Dr., Lilburn, Ga. 30247

Filed Mar. 19, 1973, Ser. No. 342,417

Int. Cl. A45f 3/10, 4/04

U.S. Cl. 224-25 A

7 Claims



A back pack is convertible into a tent support frame and includes a pair of spaced parallel L-shaped frame members. A gripping structure including saw-toothed projections is supported between a first pair of legs of the frame members and serves, in conjunction with straps secured to the frame members, so secure the back frame to an upright support member, such as a tree. The second legs of the upright frame members

are extendable by providing extension frame members pivoted to the second legs of the L-shaped frame members and additional frame members telescoped within the extension frame members. In this way, the back pack may be secured to an upright support, such as a tree, and the second legs of the extension frame members may be extended to form a tent support frame.

3,822,814

## BUMPER MOUNTED SPARE WHEEL CARRIER

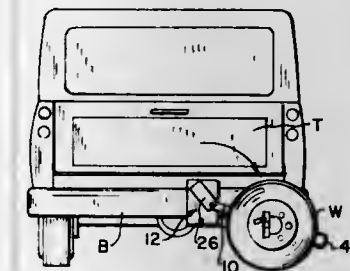
Nick A. Baldi, 36 Genie Way, Longmont, Colo. 95240

Filed Apr. 26, 1973, Ser. No. 354,740

Int. Cl. B62d 43/02

U.S. Cl. 224-42.06

1 Claim



A bumper mounted spare wheel carrier for pickup trucks or other vehicles for normally supporting a spare wheel in a generally vertical position behind and primarily above the bumper and swingable about a horizontal axis to a position where the wheel rests upon the ground to permit opening of a tailgate or door blocked by the wheel in its normal position. An elongate arm is pivotally mounted at one end upon a mounting bracket adapted to be attached to the bumper of a vehicle. An inclined armrest fixedly mounted on the bracket establishes a normal rest position of the arm in which the arm is inclined upwardly to one side of its point of pivotal attachment to the mounting bracket. Spare wheel mounting means are located upon the arm approximately midway of the length of the arm, the arm being of a length such that the end of the arm remote from the pivot projects radially beyond the periphery of a wheel mounted upon the wheel mounting means. A latch is provided for latching the arm in its normal wheel carrying position against the armrest, the latch including a latch actuator accessible at the remote or outer end of the arm. A lock assembly for locking the wheel in place on the carrier includes an angle member of "L"-shaped transverse cross-section having a stud receiving bore through one web by means of which the angle member is clamped against the wheel by the wheel retaining nut on the stud. A retainer member of sheet metal or similar material is formed with a closed loop dimensioned to loosely surround the nut, while a tangentially projecting arm portion integral with the loop lies against the other web of the angle member. Aligned bores through the arm portion and other web of the angle member provide a means whereby the retainer member may be padlocked to the angle member, the loop portion surrounding the nut and prohibiting access to the nut flats thereby to prevent removal of the nut without first removing the retainer member.

3,822,815

## BUILDING FRAME FABRICATING MACHINE

Jack Davis, Bristol, Tenn., assignor to Davis Building Systems, Ltd., Bristol, Tenn.

Continuation-in-part of Ser. No. 215,824, Jan. 6, 1972, Pat. No. 3,765,587, which is a continuation-in-part of Ser. No. 110,196, Jan. 27, 1971, abandoned. This application Mar. 21, 1973, Ser. No. 343,485

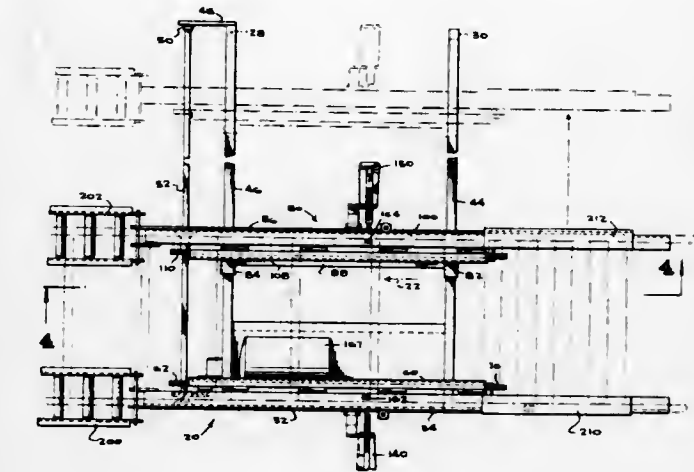
Int. Cl. B27f 7/02

U.S. Cl. 227-7

19 Claims

A frame fabricating machine is disclosed including a fixed frame having transverse support beams on which a carriage is

transversely adjustable. Stationary guide rails on a fixed portion of the frame and adjustable guide rails on the carriage support longitudinal frame members for axial movement through the machine with two conveyor chains having pivotal lugs on upper horizontal flights engaging transverse spreaders perpendicularly oriented between the longitudinal frame members to move the spreaders and longitudinal members past nailing means on opposite sides of the frame which are actuated by two air valve sensors to detect a properly posi-



tioned spreader aligned with the nailing means. The pivot lugs on the chains pivot downwardly out of engagement with the frame members under cam control as they reach a position near the end of the upper flight of each chain. Transverse adjustment of the carriage adjusts one guide rail and one conveyor chain for accommodating different width frame constructions. Outfeed conveyors are provided for removing the completed frame.

3,822,816

## APPARATUS FOR DRIVING STAPLES

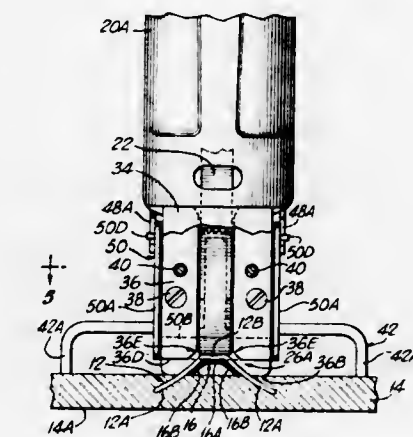
Richard H. Doyle, 104 S. Albert St., Mount Prospect, Ill. 60056

Filed Apr. 17, 1972, Ser. No. 244,746

Int. Cl. B25c 5/02

U.S. Cl. 227-83

10 Claims



An apparatus for fastening metal studs to drywall panels use staples driven against anvil surfaces formed integral with the



metal studs so that the staple crowns overlie the studs with the legs curled into the drywall panels from the backside. Since staples are driven from the back of the panel and do not project through the other side, the usual need for covering the fasteners or their heads is avoided. The nosepiece of the staple driving tool is recessed to accept the metal stud, and the drive track in which the staple driver is reciprocated is outwardly open or flared adjacent the received stud to control the curling of the staple legs within the panel. The tool is provided with stabilizers to insure balanced penetration of the workpiece by the staple legs, and the relative positions of the anvil surfaces on the stud and the various portions of the drive track are controlled in dependence on the staple used so as to obtain predictable controlled curling of the legs within the drywall panel. A safety prevents operation of the tool when it is placed against the panel unless and until the stud is also disposed in the recess in the nosepiece.

3,822,817

## SEMI-AUTOMATIC GUN MOUNT

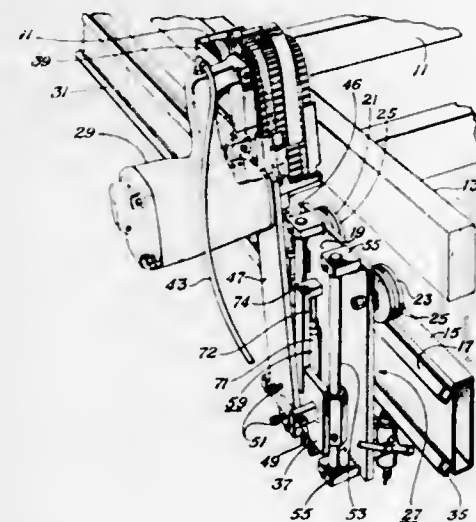
Kenneth D. Umphress, 2751 Ludell, Fort Worth, Tex. 76105

Filed May 22, 1972, Ser. No. 255,414

Int. Cl. B25c 7/00

U.S. Cl. 227—110

8 Claims



A semi-automatic gun mount allowing an operator to fasten together respective members to form a plurality of lineally spaced joints, characterized by at least one rail, referred to as a monorail, disposed adjacent the location where the lineally spaced joints will be formed; a carriage guidably supported on the monorail with minimal lateral extension; a first means, such as spaced apart wheels gripping the monorail and a vertically disposed rail, for facilitating movement of the carriage longitudinally of the monorail with minimal friction, for retaining the carriage on the monorail with sufficient force to carry a cantilevered gun and for facilitating removal and installation of the carriage and its gun from and onto the monorail; vertically movable support plate on the carriage for supporting the gun; stop for limiting vertical movement of the support plate; and adjustable biasing means yieldingly urging the support plate upwardly into its uppermost position in engagement with the stop. The support plate is movable downwardly by an operator against the force of the adjustable biasing means to position the gun in a plurality of vertically spaced nailing positions adjacent each joint. Also disclosed are specific preferred embodiments.

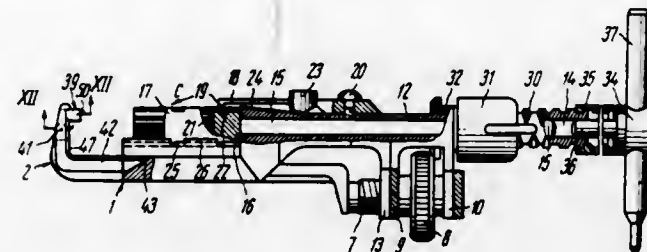
3,822,818  
SURGICAL INSTRUMENT FOR JOINING OSSEOUS TISSUES BY STAPLES

Alexei Alexeevich Strekopytov; Tatyana Andreevna Strekopytova, both of ul. Vsevoloda Vishnevskaya 10, kv. 67; Lev Konstantinovich Bogush, ul. Lizy Chaikina, 5, kv. 189, all of Moscow; Georgy Sergeevich Kuklin, ul. Kirova, 50, kv. 67, Kolonna Moskovskoi oblasti; Naum Aronovich Super-Fainshtein, ul. Bashilovskaya 10, kv. 8, Moscow, all of U.S.S.R.; Viktor Sergeevich Severov, deceased, late of 6 kilometr Severhol Zheleznol dorogi, korpus 2, kv. 17, Moscow, U.S.S.R. (by Ljudmila Mikhailovna Efimova); Sergei Ivanovich Severov, and Zinaida Pavlovna Severova, both of 2 mikrorakon, 37, Egorievsk Moskovskoi oblasti, U.S.S.R. (heirs)

Continuation-in-part of Ser. No. 333,463, Feb. 20, 1973, abandoned, Continuation of Ser. No. 117,981, Feb. 23, 1971, abandoned. This application June 6, 1973, Ser. No. 367,382 Int. Cl. B25c 5/02

U.S. Cl. 227—124

10 Claims



A surgical instrument for joining osseous tissue by V-shaped staples, comprising a bearing stock with a hook carrying a removable dies with depressions for bending staple legs; a staple carrier accommodating a staple magazine, said staple carrier being mounted in the guideways of the bearing stock so as to be moved freely therealong, and a staple ejector mounted in the staple carrier so as to move freely therealong the hook of the bearing stock comprising two component members movable lengthwise relative to each other permitting them to be disposed at different distances from the staple magazine, the dies likewise comprising two portions fixed relative to one of the respective component hook members and serving as bearing surfaces for the respective legs of the staple when the legs are being bent, whereby dimensional variations between osseous tissue being joined is compensated for while the portions and stabilized while being jointed; and the danger from trauma due to protruding sharp staple-edges is minimized.

3,822,819

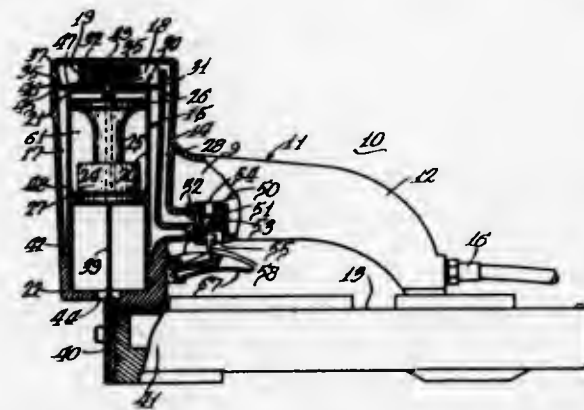
FASTENER DRIVING TOOL WITH IMPROVED VALVE  
Steven J. Wilson, 1936 Orrington, Evanston, Ill. 60201, and Frank C. Howard, 1646 Barberry Ln., Mt. Prospect, both of Ill. 60056

Filed July 10, 1972, Ser. No. 270,189

Int. Cl. B25c 1/04

U.S. Cl. 227—130

8 Claims



A snap-action valve for a fluid motor that includes a cylinder and a piston reciprocally mounted therein. The snap-

action valve is located at the upper cylinder end and includes a diaphragm supported about its periphery with one surface facing the upper cylinder end and movable between a position spaced from that end and a position adjacent thereto. The diaphragm divides a housing into an upper chamber and a lower chamber, the latter continually provided with pressurized air. A resilient flat disc is secured at its center to the surface of the diaphragm facing the cylinder. A control valve admits pressurized air to the upper chamber to drive down the diaphragm to its cylinder-adjacent position against the force exerted by the pressurized lower chamber to carry the disc into sealing engagement with the cylinder end. After the control valve begins to release the upper chamber air, the pressurized air in the lower chamber moves the diaphragm upwardly away from the cylinder end but initially maintains the disc in sealing engagement with the cylinder. After a predetermined movement of the diaphragm, the disc snaps upwardly against the diaphragm back to its flat configuration to instantaneously provide a large opening at the upper cylinder end thereby minimizing the pressure drop of the high-pressure air being admitted into the cylinder. The pressurized air from the lower chamber upon entering the cylinder then drives down the piston, whereafter the control valve resupplies the upper chamber with pressurized air to again seal off the cylinder in preparation for subsequent cycles.

3,822,820

## SONIC AGITATION OF MOLTEN METAL

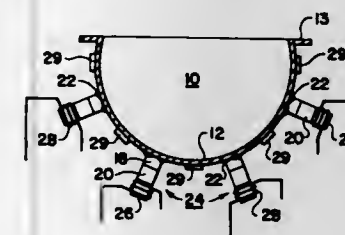
Nicholaas L. Brouwer, Allegheny Township, Westmoreland County, and David E. Smucker, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 20, 1973, Ser. No. 398,946

Int. Cl. B23k 1/06

U.S. Cl. 228—1

11 Claims



Simultaneous fluxless joining, tinning and/or coating of components or workpieces is effected by the use of a sonically agitated molten metal bath maintained at a uniform temperature and contained in a vessel comprised of a curved (in cross section), solid, unitary shell. The sonic agitation is provided by multiple arrays of sonic energy transducers disposed about and along the shell, and in energy transfer relationship with the bath via the shell. The arrays of transducers are grouped, and the groups individually energized by sonic power generators each having means for controlling the sonic power output thereof, as well as the sonic frequency, to provide individually controllable zones of sonic energy within the vessel and molten metal bath.

3,822,821

## FRICTION WELDING APPARATUS

Donald Bernard Clarke, Birmingham, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Oct. 2, 1972, Ser. No. 294,297

Claims priority, application Great Britain, Oct. 2, 1971, 45948/71

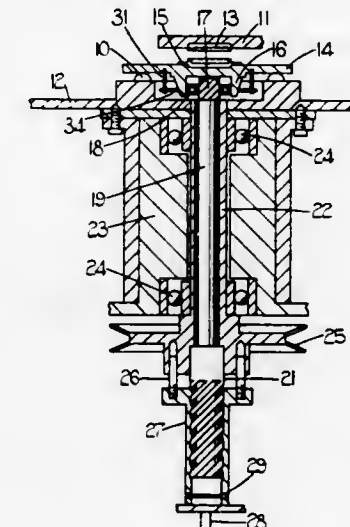
Int. Cl. B23k 27/00

U.S. Cl. 228—2

8 Claims

Friction welding apparatus includes a support, which, in use, carries a workpiece and a carrier member arranged to

receive a component to be friction welded to the workpiece. In use, the component and the workpiece can be pressed against one another and the component can be moved with the carrier member relative to the support to allow the component to be friction welded to the workpiece. A drive member is provided for moving the carrier member relative to the support, the drive member also being capable of rotational movement relative to the carrier member about an axis of the drive member. A first cylindrical shaft is secured to the drive member so that the axis of the shaft is parallel with, but spaced from, the axis of rotation of the drive member. A second cylindrical shaft is mounted around the first shaft so that the axis of the first shaft is parallel with the axis of the second shaft, but is spaced from the axis of the second shaft by a distance equal to



the space in between the axes of the first shaft and the drive member respectively. Drive can be supplied to the second shaft to rotate the second shaft and the first shaft is movable angularly relative to the second shaft between an inoperative position and a welding position. In the welding position, the axis of the drive member is spaced from the axis of the second shaft so that rotational movement of the second shaft causes the drive member to move the carrier member relative to the support along a circular path centered on the axis of the second shaft. In the inoperative position, the axis of the second shaft and the axis of the drive member are co-extensive so that rotational movement of the second shaft rotates the drive member relative to the carrier member so that the carrier member is not moved relative to the support.

3,822,822

## BOTTLE CARRIER

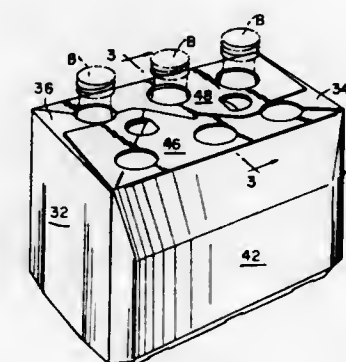
Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Aug. 16, 1972, Ser. No. 280,971

Int. Cl. B65d 5/04, 5/36

U.S. Cl. 229—40

13 Claims



A collapsible carrier for beverage bottles or the like which is formed from a blank of foldable sheet material cut and scored



to provide connected side and end wall forming panels and co-operating top and bottom wall forming panels hinged to the top and bottom edges of the side wall forming panels with the top wall forming panels being connected so as to automatically open up into top wall forming relation when the carrier is opened up for assembly with the bottles and having spaced apertures for accommodating top portions of the bottles, together with finger-receiving holes which are disposed in a plural ply area.

### 3,822,823 VACUUM CENTRIFUGE

Max Wutz, Wilhelmsbad Ring 6, Hanau-Hohe Tanne, Germany

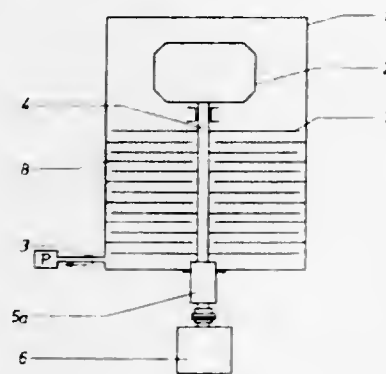
Filed Feb. 25, 1972, Ser. No. 229,489

Claims priority, application Germany, Mar. 19, 1971, 2113460

Int. Cl. B04b 15/08

U.S. Cl. 233-16

10 Claims



To permit centrifuging in a high vacuum, an airtight housing has a centrifuge container located therein, mounted on a shaft to rotate at high speed. Within the airtight housing, a plurality of turbine rotor rings are located, connected to the shaft, the space between the turbine rings having interdigitated turbine stator rings mounted thereon, so that, upon rotation of the centrifuge, the rotor and stator rings will cooperate to provide a high vacuum in the region of the centrifuging container.

### 3,822,824 CONTROL VALVE FOR A CATALYTIC HEATER

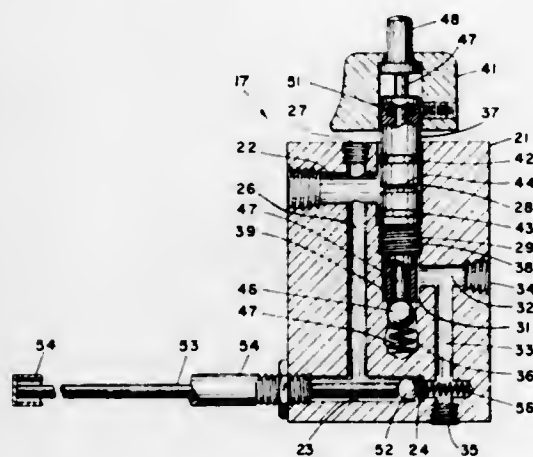
James N. Recktenwald, 10011 Greenfern Cir., Westminster, Calif. 92683

Filed Jan. 8, 1973, Ser. No. 321,871

Int. Cl. F23n 5/04

U.S. Cl. 236-102

1 Claim



A control valve for a catalytic heater, having a gas inlet and a gas outlet that are connected by two parallel passageways. In one passageway is disposed a thermally activated valve that keeps one passageway open as long as the heater is at an

elevated temperature. To start the heater a spring-loaded manual valve is disposed in the other passageway so that when one senses the formation of heat, he releases the manual valve to close the respective passageway, since gas is being supplied to the heater through the first mentioned passageway. In addition means are provided to control the maximum gas flow rate.

### 3,822,825 SNOW MAKING APPARATUS AND SYSTEM

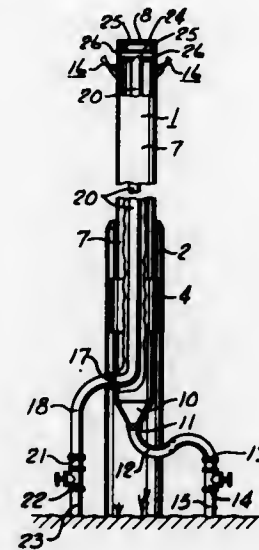
Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622

Filed Aug. 8, 1973, Ser. No. 386,528

Int. Cl. F25c 3/04

U.S. Cl. 239-14

12 Claims



Apparatus and system for making snow in particular for ski slopes in the colder months of the year, wherein there is provided a plurality of vertically extended snow making towers for supplying water and air to a plurality of discharge outlets at the upper or top end of each tower. The main conduit of the tower is for supplying water to the water discharge nozzle outlets adjacent the top of the tower while an air conduit provided for the full length of and within the water conduit provides for the discharge of air above the nozzle outlets, the discharged air being directed into the throat of the discharged water spray.

### 3,822,826 DUAL SHOWER HEAD ATTACHMENT DEVICE

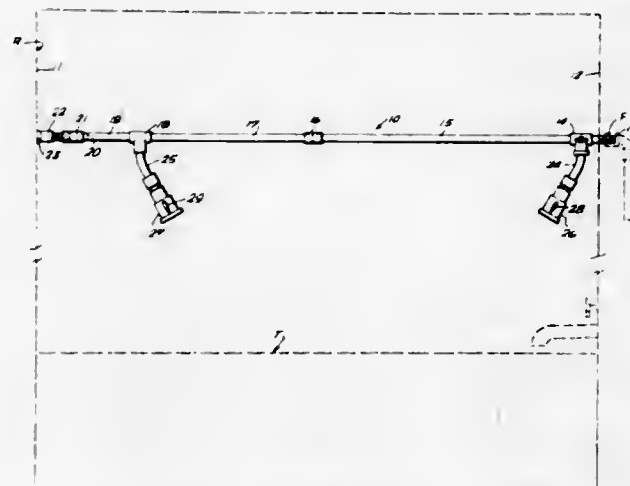
Mark L. Wilson, 88102 N.E. 25th Pl., Miami, Fla. 33160

Filed Sept. 4, 1973, Ser. No. 394,122

Int. Cl. B05b 15/06

U.S. Cl. 239-267

5 Claims



An attachment device for converting a single shower head personal shower installation or to dual, opposed shower head

installation to provide for showering from each side of the shower enclosure or recess, is described. A rigid conduit pipe, threaded at one end for connection with a shower installation shower water outlet fitting at one end of the shower recess or enclosure in substitution for the usual single shower head arm, is provided along its length with a pair of longitudinally-spaced shower heads and, at its outer end, is provided with adjustable thrust abutment means for frictional engagement with the opposite wall of the shower recess or enclosure in securing the attachment device in place. A control valve in the path of flow to the two shower heads provides for selective control of shower water thereto for independent or dual use in showering.

### 3,822,827 METHOD OF MODIFYING CLAY PARTICLES

Norman Owen Clark, Torton, Driving Ln., Par, Cornwall, England

Filed June 20, 1972, Ser. No. 264,433

Claims priority, application Great Britain, June 21, 1971, 29066/71

Int. Cl. B02c 19/00

U.S. Cl. 241-3

9 Claims

A process for modifying the particle size distribution of a fine particulate solid, such as a clay mineral, which process comprises the steps of compacting the fine particulate solid in a substantially dry state under a compressive force of at least 100 atmospheres to form a compacted mass, and thereafter breaking-up the compacted mass to obtain a fine particulate solid having a modified particle size distribution.

### 3,822,828 REFINER NETWORK CONTROLLER

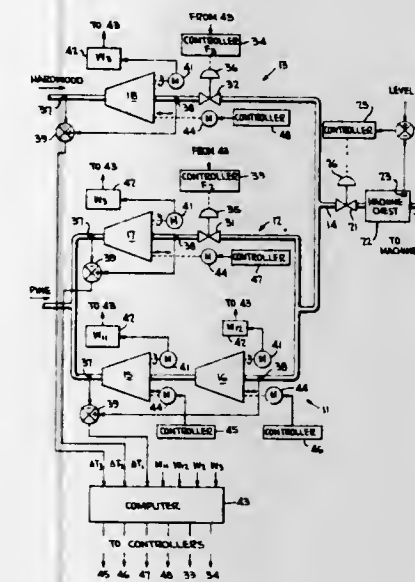
David A. Spitz, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Mar. 13, 1973, Ser. No. 340,664

Int. Cl. B02c 25/00

U.S. Cl. 241-33

7 Claims



The ratio of refining amongst plural fiber stock refining branches is maintained substantially constant by maintaining a substantially constant, predetermined stock flow ratio amongst the branches and by maintaining substantially constant the ratio of work per unit weight of fibers exerted by the refiners of the plural branches on the fibers. The flow ratio is maintained substantially constant by effectively measuring the flow in each of the branches, responding to the measurements to derive an indication of the flow ratio for each branch relative to the total flow, and comparing the indicated flow ratios with flow ratio setpoints to actuate valves in branches auxiliary to a main branch. The ratio of net work per unit weight of

fibers is maintained substantially constant by combining a signal indicative of the flow through each individual branch with a signal indicative of the net power ratio of each branch relative to the main branch to derive an indication of the power to be consumed by the individual branch. The indication of power to be consumed by each branch controls the clearance between cutting members of each refiner of the auxiliary branches.

### 3,822,829 ROLLER MILL OF THE EDGE RUNNER TYPE

Horst Brundiek, Rubensstrasse 26, 4044 Kaarst, and Ludwig Werner, Schaferstrasse 17, 4000 Dusseldorf, both of Germany

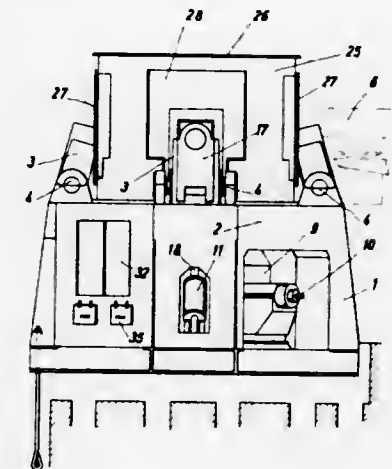
Filed June 5, 1972, Ser. No. 259,823

Claims priority, application Germany, June 6, 1971, 2128929

Int. Cl. B02c 15/14

U.S. Cl. 241-121

8 Claims



A roller mill of the edge runner type comprising a rotary grinding table and pivotally mounted rolls adapted to roll on the material on the grinding table, each roll being individually journaled in a respective box-shaped support which is inherently transportable and the supports are connected by box-shaped intercalated connecting pieces, which with the supports form a ring resistant to torsion.

### 3,822,830 STATOR CORE WINDING MACHINE

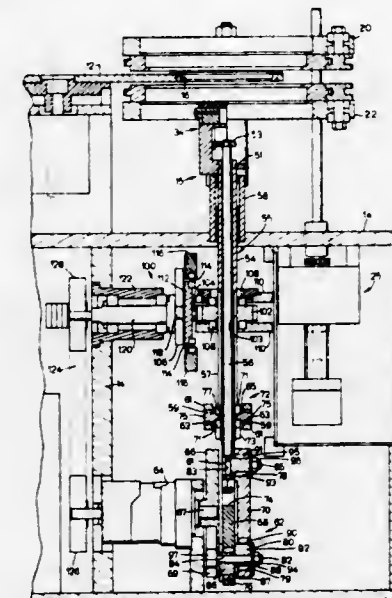
Robert W. Peters, 9036 N. 75th, Milwaukee, Wis. 53223

Filed Mar. 30, 1972, Ser. No. 239,569

Int. Cl. H02k 15/085

U.S. Cl. 242-1.1 R

12 Claims

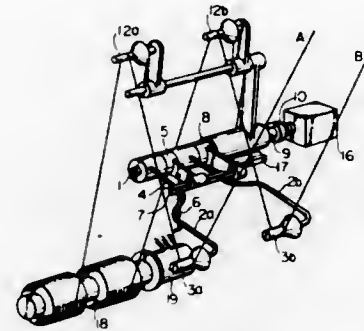


A winding head assembly for a stator core winding machine having a turn table for supporting a number of stator cores and



tooling rings for rotating the stator core relative to the turn table, the tooling rings including pivotably mounted fingers positioned between the slots in the stator core, the winding head assembly including a winding head and a spindle drive mechanism, the winding head being supported by the spindle drive mechanism for reciprocating and oscillating movement through the center of the stator core, the winding head includes a needle positioned to move through the slots of the stator core and a cam mounted for movement with and relative to the winding head a distance different than the distance of movement of the winding head, the cam being operatively connected to the needle to move the needle transversely of the winding head through an arcuate path in its movement through the slots of the stator core, the spindle drive mechanism including a dual coaxially mounted spindle, one of the spindles being connected to the winding head and the other connected to the cam, and an offset cam block for simultaneously moving said spindles through strokes of different lengths.

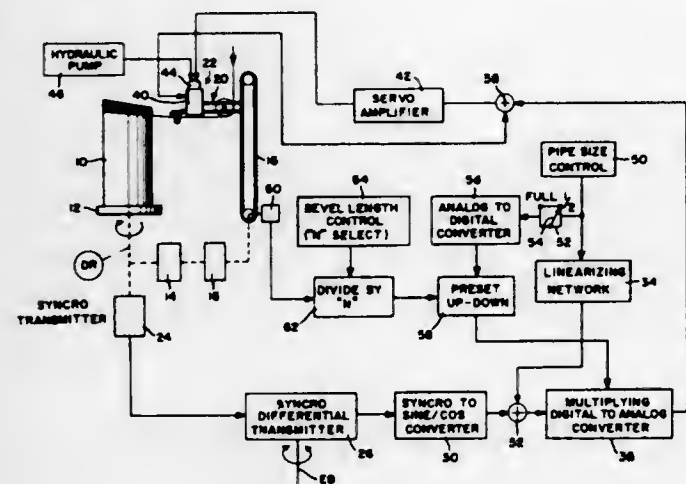
sequence of braking the spindle firstly by said increased yarn tension so as to reduce the rpm of the spindle, accordingly the



dancer arm for the other yarn lowers its position to speed up the electric torque motor and spindle by elevating the voltage via the angular displacement of an operation arm.

**3,822,831**  
**APPARATUS FOR STRAIGHT LINE OSCILLATION OF A**  
**WIRE GUIDE**  
**Alfred L. Marcum, Jr., Centerville, Ohio, assignor to Price**  
**Brothers Company, Dayton, Ohio**  
**Filed Oct. 3, 1972, Ser. No. 294,624**  
**Int. Cl. B21f 17/00; B65h 81/00**  
**U.S. Cl. 242—7.21**  
**8 Claims**

3,822,833  
**THREAD SUPPLY DEVICE FOR TEXTILE MACHINES**  
**Josef Fecker, Bisingen-Steinbofen, Germany, assignor to Firma**  
**Gustav Memminger Verfahrenstechnik für die Maschinenin-**  
**dustrie, Freudenstadt, Germany**  
**Filed Dec. 18, 1972, Ser. No. 316,032**  
**Claims priority, application Germany, Dec. 23, 1971,**  
**2164095**  
**Int. Cl. B65h 51/12, 51/04**  
**U.S. Cl. 242—47.12**  
**9 Claims**



Apparatus for oscillating a wire guide carried by a wire feed carriage which moves axially of a rotating concrete pipe core to apply prestressing wire to the core. The oscillating mechanism includes a four bar pantograph with the wire guide mounted on one end of one link of the pantograph to provide straight line movement of the wire guide parallel to the axis of the core being wrapped as the wire guide is oscillated.

3,822,832

**PROCESS AND APPARATUS FOR COMPENSATING THE  
YARN TENSION DIFFERENCE BETWEEN TWO YARNS  
ON A SPINDLE DRIVE TYPE WINDING MACHINE**

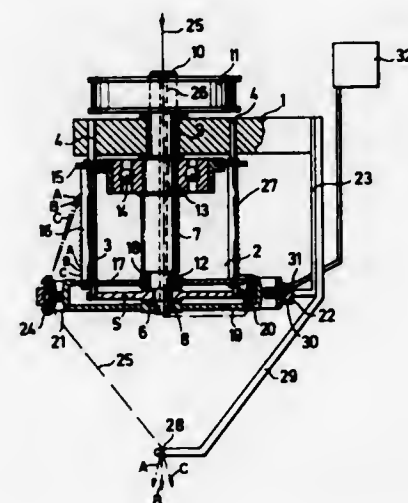
Soichi Torii, 28, Shichiku Kamiyumenokicho, Kita-ku, Kyoto-  
shi, Kyoto, and Hideo Yamamoto, 19, Fukakusa Nishiracho  
7-chome, Fushimi-ku, Kyoto-shi, Kyoto, both of Japan

Filed Aug. 10, 1972, Ser. No. 279,454

Claims priority, application Japan, Nov. 27, 1971, 46-  
111580

**U.S. Cl. 242—45** **Int. Cl. B65h 59/38** **16 Claims**  
In the spindle drive type winding machine, when yarn tension of one of two side yarns is increased, the compensating of said increased yarn tension can be accomplished by the

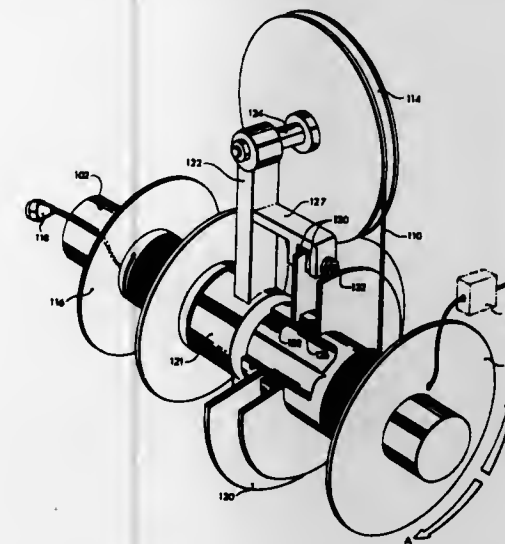
A circular track with a freely running thread guide is provided outside the free end of a stationary winding core. The running guide is pulled around the track by the pull of the unwinding thread and prevents the tension of the thread from being affected by the intermittent operation of the winding eye mechanism mounted inside the track on the free end of the winding core. The latter supplies additional turns as needed to the winding, which provides a certain thread storage between a primary supply and a textile machine.



3,822,834  
CABLE TRANSFER APPARATUS  
Robin Lent Ibsen Fjarlie, Maxville, Ontario, Canada, assignor  
to Fathom Oceanology Limited, Port Credit, Ontario,  
Canada  
Filed May 17, 1973, Ser. No. 361,319  
Claims priority, application Canada, June 5, 1972, 143836  
Int. Cl. B65H 75/00

**U.S. Cl. 242—54 R** **10 Claims**  
A cable transfer apparatus for transferring cable from a driven rotatable drum to a static drum, includes a rotatable

arm mounted on the same shaft with the rotatable and static drums, and with a transfer sheave at the outer end of the arm. The transfer sheave is mounted so as to accommodate cable being transferred between the rotatable and static drums. The arm is arranged with driving means therefor so that when the rotatable drum is driven in a first direction, the arm tends to not rotate; and when the rotatable drum is driven in the second direction, the arm tends also to rotate in that second direction at the same rotational speed. Friction means co-act between the arm and the rotatable drum so that when the drum is driven in the first direction and cable is being transferred between the driven and static drums, the friction means acts to maintain tension in the cable and to drive the arm and sheave to rotate about the shaft in the first direction; and when the rotatable drum is driven in the second direction, the friction means acts together with the tension in the cable being



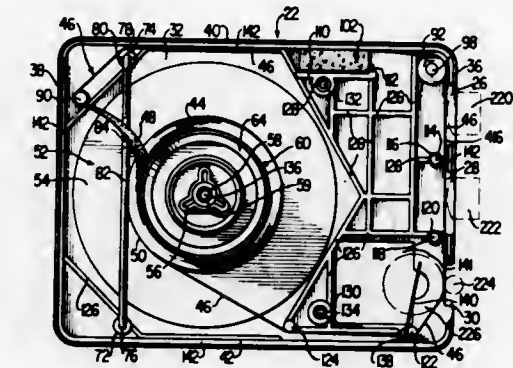
transferred between the drums to retard the speed of rotation of the arm and sheave about the shaft.

Three embodiments are shown. In the first embodiment, a plate is provided with clutches between the plate and the rotatable drum and between the plate and the shaft; and the rotatable arm is frictionally coupled to the plate by friction pads. In the second embodiment a bearing sleeve is provided, together with ratchet and pawl means between the bearing sleeve and each of the rotatable and static drums. The rotatable arm is frictionally coupled to the bearing sleeve. In the third embodiment, a pair of opposed clutch assemblies is provided, each having a friction clutch and an overrunning clutch; and having a toothed belt extending from one of the rotatable or static drums to one of the clutch assemblies so that it overruns in one direction and drives against the friction clutch in the other direction of rotation of the rotatable drum, and vice versa.

**3,822,835**  
**TAPE CARTRIDGE**  
**Paul L. Shore, Potomac, Md., assignor to Tapecaster TCM,**  
**Inc., Rockville, Md.**  
**Filed Mar. 23, 1973, Ser. No. 344,384**  
**Int. Cl. B65h 17/48**

**U.S. Cl. 242—55.19 A** **4 Claims**

An endless tape cartridge is designed to reduce azimuth and phase errors. The tape is guided from the innermost convolution of the coil to a point on one side wall of the cartridge housing near a rear corner and is moved along this wall and around a machined metal guide post at the corner of the side wall and the front wall of the housing. A frictional drag is imparted to the tape by a foam pad which engages the tape at a point along the side wall, thus adjusting the tension in the tape before it is guided by the machined guide post. In order to rigidify the cartridge housing, the top and bottom walls thereof are provided with deep ribs, and tongue and groove



mating is used between the cover and base of the housing. The cartridge also includes foam backing pads adjacent the transducer openings. These pads include a relatively rigid plastic

base and a foam body. The rigid base is received between spaced posts on opposite sides of the pad, the front post of each pair of gripping and deforming the foam body to retain the pressure pad in position.

3,822,836

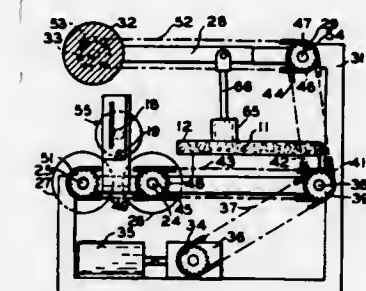
**APPARATUS FOR AND METHOD OF WINDING STRIP  
PRODUCTS**

**Richard Lloyd Troyer, Toledo; Theodore Richard Rohweder,  
and Ronald Buxton Raab, both of Perrysburg, all of Ohio,  
assignors to Johns-Manville Corporation, New York, N.Y.**

**Filed June 27, 1972, Ser. No. 266,623**

Int. Cl. B65h 17/08

**U.S. Cl. 242—66** **17 Claims**



Strip products such as mineral wool blankets are wound on a mandrel having two elongate elements extending generally across the width of the strip and generally paralleling the winding axis of the strip. The strip is inserted between the elongate elements to develop an initial securing tuck of material when they are rotated around the winding axis and the projecting free end of the strip is carried and secured against one of the elements by the succeeding wrap of the strip. Wheels positioned normal to the winding axis support the elongate elements of the mandrel. Peripheral drive for winding is provided by a drive cradle which engages the wheels as the coil of strip is started and engages the outer periphery of the coil when its diameter exceeds that of the wheels. Mandrel indexing means position the elongate elements to receive the leading edge of strip to start the wind. The method and apparatus are of particular value in winding operations requiring an end tuck to be carried upward and against gravitational forces as where an upper surface of a horizontally fed strip is to be wound outermost although the positive control of the end tuck is advantageous in many winding orientations.



3,822,837

**METHOD OF FIXING A CYLINDRICAL OBJECT HAVING A CENTRAL HOLE, AND SUPPORT THEREFOR**

Stevan Celebonovic, Geneva, Switzerland, assignor to ROLPA S.a.r.l., Carouge-Geneva, Switzerland

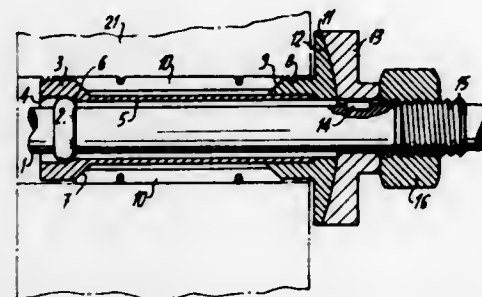
Filed Mar. 3, 1972, Ser. No. 231,604

Claims priority, application Switzerland, Mar. 12, 1971, 3668/71

Int. Cl. B65h 75/24

U.S. Cl. 242-72.1

5 Claims



The object, e.g. a roll of paper, is fixed on a central tubular support provided with a shaft. The orientation of the axis of the object can be modified with respect to that of the shaft and the object locked on the support in the position corresponding to the desired orientation. The object rests by one of its flat surfaces on a guide perpendicular to the axis of the support, and the object is locked on the support, so that the axis of the shaft and that of the object are parallel.

3,822,838

**WEB HANDLING APPARATUS**

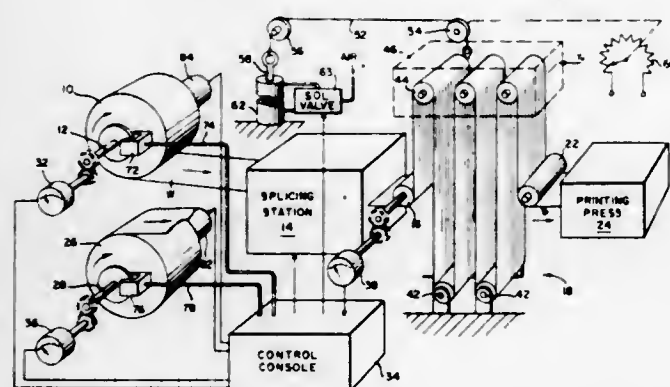
Richard A. Butler, Jr., Chestnut Hill; Jack T. Hansen, Needham, both of Mass.; August R. Rump, Chicago, Ill., and Rudy R. Arendt, South Wales, N.Y., assignors to Butler Automatic Inc., Canton, Mass.

Filed Mar. 20, 1972, Ser. No. 236,122

Int. Cl. B65h 25/28

U.S. Cl. 242-75.44

19 Claims



Web handling apparatus pulls web from a supported roll at a selected speed. A brake is provided for controlling the roll speed and a sensor senses changes in the tension of the web caused by changes in the pulling force of the web. The brake is controlled in accordance with the output of the tension sensor so that the web is maintained substantially under constant tension. Also, the apparatus responds to the instantaneous size of the roll by modulating the braking means so that the drag force imparted by the brake to the web is substantially independent of roll size.

3,822,839

**POWER DRIVEN KITE STRING REEL**

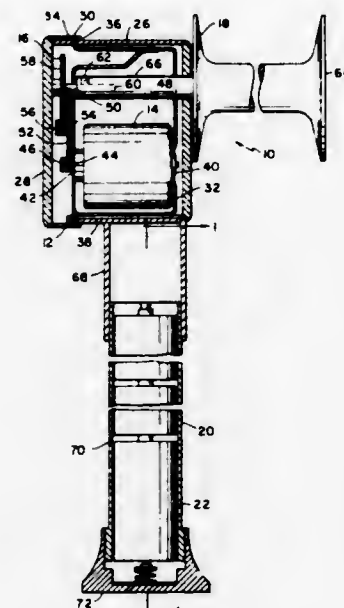
Dominic J. Persichini, 6621 Arcolo Ave., Garden City, Mich. 48135

Filed Nov. 13, 1972, Ser. No. 306,301

Int. Cl. B65h 75/40

U.S. Cl. 242-96

8 Claims



A power driven kite string reel comprising a motor and speed reduction gear mounting box for mounting a connected reversible motor and speed reduction gears, a reel assembly having an axis of rotation supported for rotation on the box and engaged with the speed reduction gears to be driven thereby in opposite directions, a single handle assembly secured to the box having a longitudinal axis substantially perpendicular to the axis of rotation of the reel assembly including a source of electrical energy and switch means for connecting the source of electrical energy to the motor for reversibly driving the motor to wind up or unwind string connected to the reel assembly.

3,822,840

**BELT RETRACTOR WITH SPRING BIASED AUXILIARY RATCHET WHEEL**

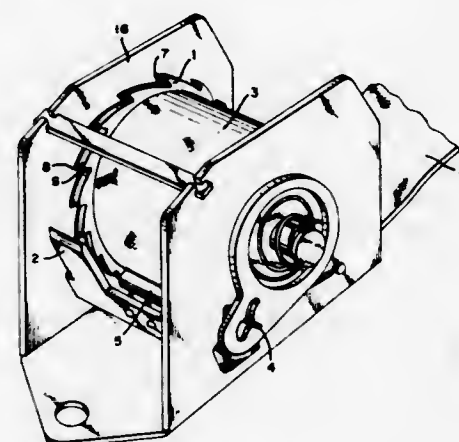
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,899

Int. Cl. A62b 35/00; B65h 63/00

U.S. Cl. 242-99

6 Claims



A reel-type retractor for a vehicle safety belt having the feature that a spring-biased light-weight ratchet wheel, rotatable within limits with respect to a ratchet wheel serving as a flange for the reel, is biased with its teeth maintained slightly in advance of those of the flange. This light-weight rotatable aux-

3,822,843

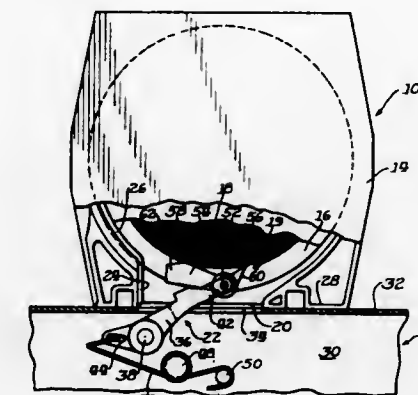
**APPARATUS FOR STRIPPING FILM FROM A REEL**  
Joerg Fischer, Wilmette, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 1, 1972, Ser. No. 302,683

Int. Cl. G03b 1/56, 1/04; G11b 15/32

U.S. Cl. 242-192

10 Claims



An apparatus for stripping the leader from a roll of film. A stripper arm is pivotally supported at one end and biased toward the film. The free end of the arm carries a pivotally supported crescent shaped stripper tip defining a leading edge, a trailing edge and a stripping surface. As a result of the shape of the tip, both the leading and trailing edges rest upon the outer surface of the coiled film assuring a constant angle between the stripping surface and the film regardless of the shape of the outer film convolution.

3,822,844

**PARACHUTE**

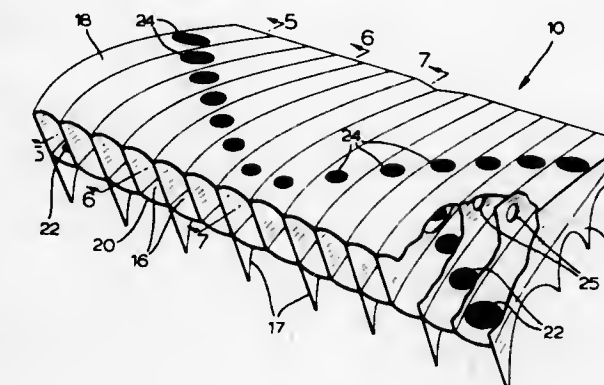
Stephen John Sutton, Islington, Ontario, Canada, assignor to Jack Sutton, Islington, Ontario, Canada

Filed June 25, 1973, Ser. No. 373,434

Int. Cl. B64d 17/02

U.S. Cl. 244-145

2 Claims



This invention relates to a parachute of the ram air canopy type wherein a canopy is made from a skin formed into a series of elongated, inflatable parallel cells disposed in side-by-side relation to constitute an airfoil when inflated. The inventive concept of the application is the formation of openings in the top and in the bottom wall of each of the cells to form an air passage. These air passages in the bottom and in the top walls of the cells are of greatest capacity in the two outside cells and become of progressively smaller capacity towards the centre of the airfoil. Adjacent cells in the airfoil are in communication with each other through a port in their common wall. The combination of passages in the top and the bottom wall of each cell as aforesaid and the port between adjacent cells greatly improves the stability of the parachute, especially under conditions of vertical descent.

3,822,841

**KNOCKDOWN REEL**

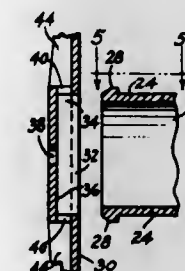
Kenneth E. Campbell, 4063 Old Orchard Rd., York, Pa. 17402

Filed Nov. 24, 1972, Ser. No. 309,143

Int. Cl. B65h 75/22, 75/14

U.S. Cl. 242-115

8 Claims



A knockdown reel comprising a tubular hub and having a pair of similar end flanges disconnectably attached to opposite ends of the hub by latching means capable of being released in order to separate the end flanges from the hub and thereby minimize the space consumed by said components in packaging, shipping and storing reels of this type. Actuation of the latching means is possible either manually or by relatively simple tools. The hub also may be made of a plurality of separable parts to further facilitate compactly arranging the components for the purposes described.

3,822,842

**REELING DEVICE**

Jean-Claude Perc, 74 rue de Archives, Paris 3e, France

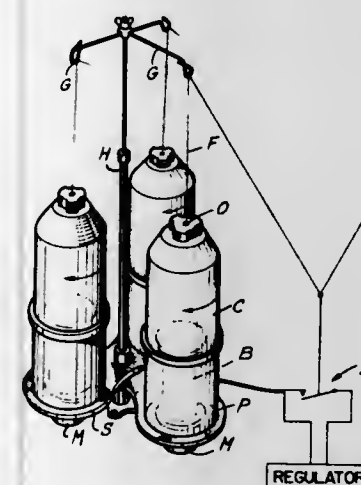
Filed July 29, 1971, Ser. No. 167,163

Claims priority, application France, June 15, 1971, 71.21633; July 21, 1971, 71.26663

Int. Cl. B65h 49/00

U.S. Cl. 242-129.72

4 Claims



A device for unwinding a yarn reeled on a bobbin, in a textile machine, which comprises a main support, a yarn guide supporting stem, an eyelet coincident with the axis of rotation of the bobbin, and at least one bobbin carrier, characterized in that said bobbin carrier is driven for continuous or discontinuous rotation in a direction consistent with the yarn unwinding direction, the yarn speed depending on the subsequent use of the yarn.



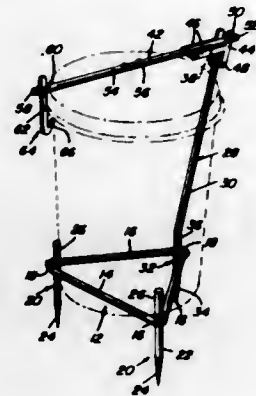
### 3,822,845 GARBAGE CAN HOLDER

Robert J. Kennedy, and Rose M. Kennedy, both of 2343 Newton Street, Sidney, Nebr.

Filed June 28, 1973, Ser. No. 374,780  
Int. Cl. A47g 29/00

U.S. Cl. 248—147

1 Claim



A stand embodying a base frame which is stationed wherever necessary or desired on the ground or other foundation and atop which a conventional garbage can is adapted to be removably seated for accessible use. The frame is provided with circumferentially spaced corner portions. Each corner portion is provided with a securely fastened vertical frame holddown stake. The several stakes have depending ground penetrating points and upper end portions projecting above the top side and functioning to engage and prevent displacement of that portion of the can surrounded thereby. A single upright has a lower end complementary to and joined with one corner portion of the frame and an upper free end portion. A normally horizontal arm is adapted to reside atop the usual cover provided on the can. The arm has a median portion provided with means which is securely operatively connectible to the cover. A rearward end portion of the arm is pivotally connected to the upper end of the upright. The freely liftable and lowerable forward end portion of the arm is provided with the can engaging means which is readily accessible and capable of being conveniently manipulated. When the can engaging means is released the lid or cover of the can is swung to an open position to render the body portion of the can readily accessible for such use as is desired.

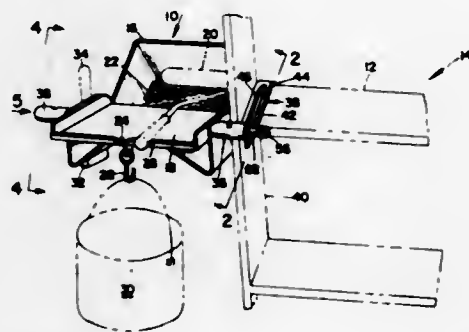
### 3,822,846 COMBINED LADDER AND PAINT ROLLER PAN AND TRAY ATTACHMENT

Henry R. Jesionowski, 1437 Chrissler Ave., Schenectady, N.Y. 12303

Filed Jan. 19, 1973, Ser. No. 325,208  
Int. Cl. B44d 3/12; E06c 7/14

U.S. Cl. 248—210

4 Claims



A combination platform roller pan and tray for a paint roller has a pair of aligned bosses which extend outwardly from each side thereof, the bosses being releasably engageable with locking means which is releasably associated with the ladder.

the locking means in one form comprising a locking hook engageable with the step or rung of the ladder and, in another form, comprising a locking cam engageable in the rung of the ladder.

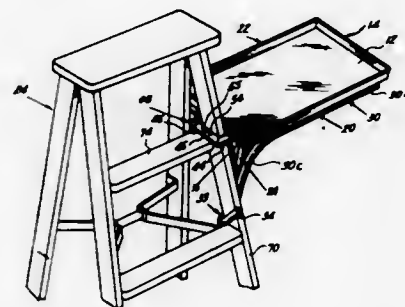
### 3,822,847 DETACHABLE SUPPORT TRAY FOR LADDERS

George Harvey Emmons, 11 S. 12th St., Marshalltown, Iowa 50158

Continuation-in-part of Ser. No. 358,584, May 9, 1973. This application May 22, 1973, Ser. No. 362,781  
Int. Cl. E06c 7/14

U.S. Cl. 248—210

13 Claims



A tray for supporting paint cans, buckets, tools and the like is quickly and easily removably attachable to or removable from the side rail of a ladder. This tray includes tray supporting and ladder engaging braces in cooperation with which there is provided a simple but effective latch and when this tray attachment is mounted, the tray portion extends laterally outwardly from the ladder so as to not interfere with the normal use of the ladder. An adjustment is provided for effective use with ladder side rails of different thicknesses and widths.

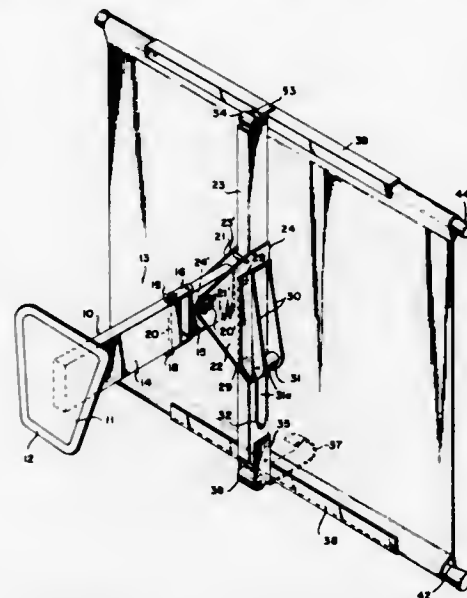
### 3,822,848 PROJECTION SCREEN HOLDER

Paul A. Hopkins, 2164 Sunset River Dr., Jacksonville, Fla. 32210

Continuation-in-part of Ser. No. 782,518, Dec. 10, 1968. This application May 18, 1971, Ser. No. 144,442  
Int. Cl. F16m 13/00

U.S. Cl. 248—279

7 Claims



This invention relates to a picture screen holder of the wall mounted bracket type and provides for manual adjustment of the screen in a vertical angular as well as horizontal position by the operator or instructor standing in one position relative thereto and thus facilitates the unobstructed viewing of the picture screen by an audience and prevents any keystone or distortion effects of the picture produced by a projector.

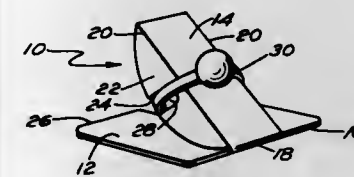
### 3,822,849 FINGER RING HOLDER AND DISPLAY DEVICE

Robert D. Joyce, Gloucester, R.I., assignor to Vargas Manufacturing Company, Cranston, R.I.

Filed Jan. 2, 1973, Ser. No. 320,608  
Int. Cl. F16m 13/00

U.S. Cl. 248—450

5 Claims



A finger ring holder and display device constructed from a unitary, one-piece blank of material of cardboard or the like comprising a substantially flat base portion, an arm member folded upwardly and rearwardly from one edge of said base portion, a pair of side walls folded along the longitudinal edges of said arm member and extending rearwardly therefrom, a pair of aligned notches extending inwardly from the edges of said side walls, and an upwardly extending tab member located rearwardly of and in alignment with said arm member, whereby when a finger ring is slid downwardly over said arm member, the opposite side portions of the shank extend through said aligned notches, and the rear portion of the shank is engaged beneath said tab member to maintain the ring in an upward disposition for ready viewing.

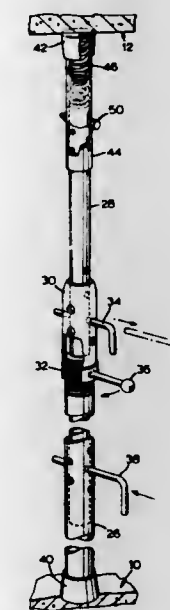
### 3,822,850 SUPPORT FOR CONSTRUCTION FENCE

Murray A. Elias, Toronto, Ontario, Canada, assignor to Dell Holdings Limited, Rexdale, Ontario, Canada

Filed Jan. 29, 1973, Ser. No. 327,820  
Int. Cl. E04h 17/00

U.S. Cl. 248—354 S

3 Claims



This invention relates to a tamper-proof jack post for a construction fence comprising two posts with a portion of their extent in telescoped relation, a sleeve in telescoped relation with the said two posts and in threaded relation with the first one of said two posts, said sleeve and said second post being formed to receive a first removable coupling device for said sleeve and said second telescoped post, said first post and said second post being formed to receive a second removable coupling device for said first post and said second post.

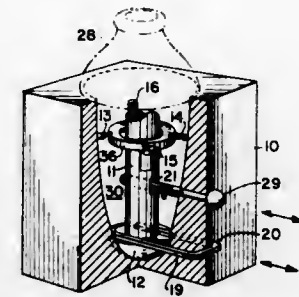
### 3,822,851 CHAIR BASE DEVICE

Rolfe S. Ollerhead, 188 Centre St., Somerset, Mass. 01609

Filed Mar. 11, 1971, Ser. No. 123,285  
Int. Cl. F16m 13/00

U.S. Cl. 248—372

10 Claims



A supporting structure for tiltable mounting a chair seat or the like in which a frame secured to the seat bottom has a vertically disposed shaft means thereon of which the opposite end is secured to a half spherical ball. The half spherical ball is inserted into a block having an upwardly open cavity of which the bottom of the said cavity is of semi-spherical configuration thereby providing means for a chair seat or the like for tilting or rocking motion, or a combination thereof. Spring means are utilized for biasing this structure to a predetermined position. Restriction means are selectively engageable for prevention of a swivel or tiltable movement of the assembly.

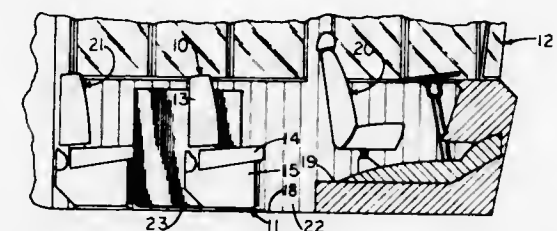
### 3,822,852 COMPOUND SWIVEL STRUCTURE FOR VEHICLE SEAT SUPPORT

Howard M. Quakenbush, Monona Village, Wis., assignor to Flexsteel Industries, Dubuque, Iowa

Filed Feb. 23, 1972, Ser. No. 176,987  
Int. Cl. F16m 11/08; A47c 1/02

U.S. Cl. 248—418

7 Claims



Compound swivel structure for supporting seat structures in a vehicle to allow selective positioning of a seat against a side wall, or in a forwardly facing direction or in a rearwardly facing direction, to permit utilization of space for maximum convenience and advantage. An arm is supported on a base for movement about a first vertical axis, a seat support being carried by the arm for movement about a second vertical axis, and locking means including a lock bar pivotal on the arm on a horizontal axis, lock the seat support relative to the arm and the arm relative to the base.

### 3,822,853 APPARATUS FOR PRODUCING MODULAR BOXLIKE UNITS

Shelley W. Shelley, c/o Shelley Enterprises, San Marcos Ave., Ext. El Comandante, San Juan, P.R. 00924

Division of Ser. No. 889,045, Dec. 30, 1969, abandoned, which is a continuation-in-part of Ser. No. 790,305, Jan. 10, 1969, Pat. No. 3,676,536. This application Feb. 22, 1972, Ser. No. 228,114  
Int. Cl. E04g 11/02

U.S. Cl. 249—27

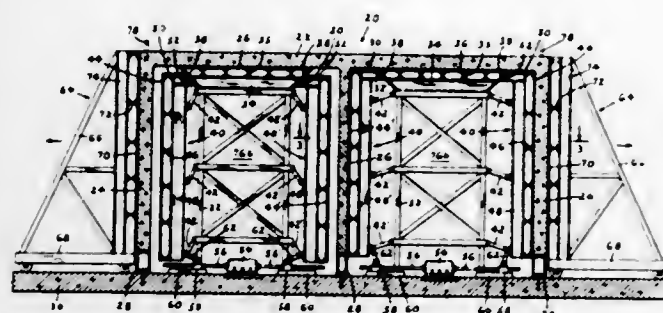
10 Claims

Apparatus for producing modular boxlike units in which a ceiling slab, side walls and in some cases interior partitions are



cast together to comprise a first portion of a monolithic structure. The casting mold is characterized by having form portions pivotally mounted on a stationary structure and which are movable relative to the stationary structure between a closed position for casting in which all form portions are in a

aligned so that fastener bolts may be readily inserted therethrough. The resultant abutment assembly transmits the lateral, outward directed forces created by the hydrostatic pressure of the poured concrete downward into the lowermost base section which is firmly mounted to the supporting floor.



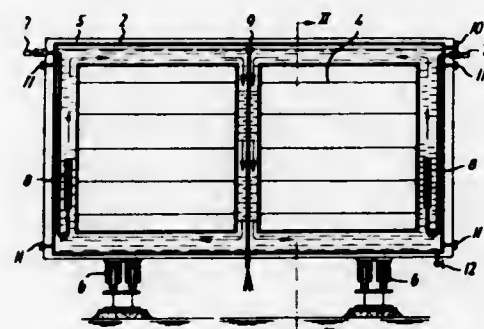
### 3,822,855 CASTING MOLD WITH STEAM-HEATED WATER JACKET

Gustav Erik Hummelshøj, Bagsvaerd, Denmark, assignor to Thomas Schmidt A/S, Bagsvaerd, Denmark  
Filed Mar. 3, 1972, Ser. No. 231,473  
Claims priority, application Denmark, Mar. 15, 1971, 1222/71

Int. Cl. B22d 27/04

U.S. Cl. 249—79

5 Claims



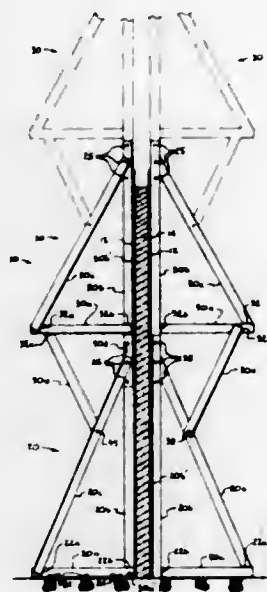
predetermined aligned relationship and an open position for removing the cast first portion of the monolithic structure from the mold. After the mold is opened, the first portion of the monolithic structure is removed to a floor slab mold, and a floor slab is cast in contact with the side walls and interior partitions to form the completed monolithic structure.

### 3,822,854 PREFABRICATED MODULAR ABUTMENT ASSEMBLY FOR SUPPORTING CONCRETE FORMS OF VARYING HEIGHTS

Herman H. Bondi, 1224 S.E. Henry, Portland, Oreg. 97202  
Filed June 29, 1972, Ser. No. 268,184  
Int. Cl. E04g 11/08

U.S. Cl. 249—33

5 Claims



A prefabricated, reusable modular abutment assembly for supporting concrete wall forms comprising a base section and one or more upper sections which are stacked together in vertical arrangement to obtain bracing of the wall form to any desired height. The base section is in the configuration of an upright right triangle, the horizontal leg of which is secured by fasteners to the floor or ground support. The upper sections are also of right triangular configuration but are provided with both a projecting extension of the vertical leg, which connects with the corresponding vertical leg of the next lower section, and a bracing member which is secured to the juncture of the horizontal leg and the hypotenuse of the section and connects to a point on the hypotenuse of the next lower triangular section. Each of the modular sections are fabricated from angle iron elements and are provided with pre-formed bolt holes which are located so that, upon mounting of two or more sections in vertical stacking arrangement, the respective holes are

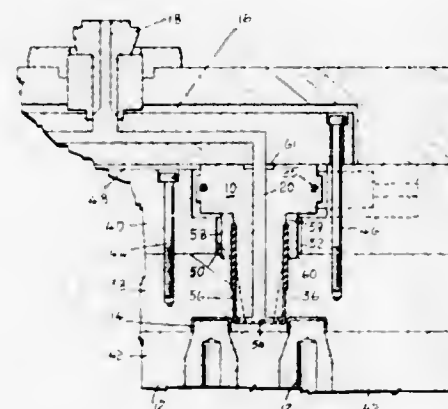
A process and moulds are described for moulding large slablike building elements from pre-heated concrete in which the moulds are heated by controlled injection of steam into voluminous water-filled cavities in the moulds regulated to keep the mould temperature at or near the desired concrete hardening temperature.

### 3,822,856 HOT RUNNER HEATER

Jobst Ulrich Gellert, 227 Viewmount Ave., Toronto 19, Ontario, Canada  
Filed Jan. 2, 1973, Ser. No. 320,505  
Claims priority, application Canada, Nov. 21, 1972, 157346  
Int. Cl. B29f 1/02

U.S. Cl. 247—105

5 Claims



This invention relates to a heater forming part of a hot runner manifold system used in hot edge gate injection molding of plastics. The heater has a main body portion with a heating element and a nozzle having several nozzle openings through which molten plastic may be injected into several different mold cavities at the same time. The heater is located and mounted in such a way as to disperse effective even heat in two directions, downwards towards the edge gate and upward to the manifold. The nozzle member is generally conical shaped and has a number of equally radially spaced longitudinally

dinally extending convex portions containing the nozzle openings. The convex portions are shaped to transfer sufficient heat from the heating element in the main body portion to maintain the plastic in the nozzle openings in the molten state, while not excessively heating the plastic in the nearby mold cavities.

### 3,822,857 SYNTHETIC RESIN PLUG FOR VENT HOLE OF MOULD

Hiroshi Tanie, Osaka, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

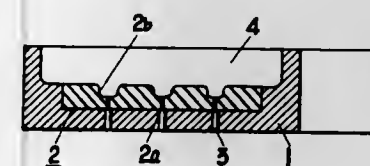
Filed Feb. 14, 1972, Ser. No. 225,717

Claims priority, application Japan, Feb. 16, 1971, 46-7281

Int. Cl. B29c 1/00

U.S. Cl. 249—141

2 Claims



In a mould for moulding an elastic polymer material and having a plurality of vent holes, a synthetic resin plug for said vent hole which comprises one or plural micro-holes perforated therethrough of round cross-section having a diameter in a range of 0.05 to 0.5 mm and inlaid on the inner side of the mould, whereby air is readily exhausted through the said micro-holes of the resin plug with no choking phenomenon by the said polymer material. The said plug is provided over substantially whole the inner side of the mould or is provided only in the portion of each vent hole on the inner side of the mould. The synthetic resin is a heat-resistant and non-adherent material such as a fluorine resin.

### 3,822,858 SPACER ELEMENTS FOR CORNER FORMING SYSTEM

James W. Franklin, P.O. Box 3646, Albuquerque, N. Mex.

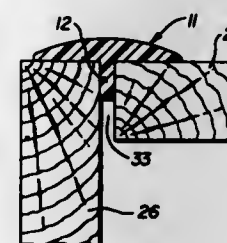
Continuation of Ser. No. 841,630, July 14, 1969, abandoned.

This application Dec. 30, 1971, Ser. No. 214,390

Int. Cl. E04g 9/00

U.S. Cl. 249—194

6 Claims



A forming system and accessories therefor in which sheet components are held together in operative relationship to provide mold elements for the formation of inside corners in concrete structures and in which at least a portion of the molded shape is derived from the placement of a spacer element having a lip member or extension engaged between adjacent sheet components for holding said sheet components slightly spaced apart to facilitate the stripping of the forms after use. The mold shape body of said spacer further serves to prevent the escape of poured concrete and/or provides decorative or functional indentations in the final concrete surface. The spacer elements may be used with support brackets that incorporate similar spacer tabs or in substitution therefor.

### 3,822,859 LOCK FOR FORM-TIES

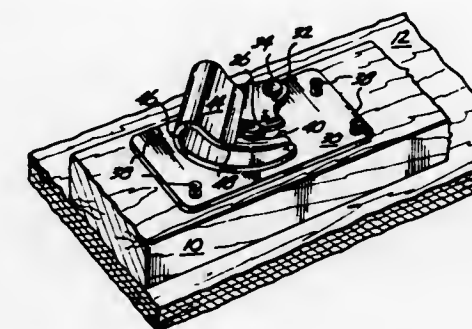
Frank E. Buyken, 8620 Island Dr., Seattle, Wash. 98118, and Robert C. Foster, 225 N. Arlington Heights Rd., Elk Grove Village, Ill. 60007

Filed June 26, 1972, Ser. No. 266,225

Int. Cl. E04g 17/04

U.S. Cl. 249—219 W

3 Claims



A lock primarily useful in producing gang forms, employs a slotted-cam in a pivoted lock plate to engage the head of a form-tie. The lock plate carries an integral rugged, bent over extension or strike arm which serves to cover the head of a form-tie and to receive heavy blows during either the closing or opening of the lock.

### 3,822,860 REUSABLE TIE ASSEMBLY FOR CONCRETE FORMS

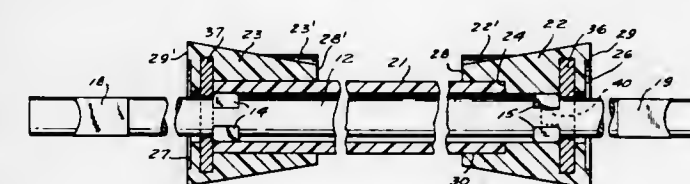
Peter R. Lovisa, 1040 Pelhamdale Ave., Pelham, N.Y. 10803, and Dusan Tausanovitch, 24 Crestwood Dr., Northport, N.Y. 11768

Filed Mar. 7, 1972, Ser. No. 232,450

Int. Cl. E04g 17/06

U.S. Cl. 249—217

16 Claims



A retractable, removable and reusable tie assembly for concrete forms which includes a single tie rod, and an internal spreader and spacing system which includes a sleeve means, the spreader system having built-in provisions for internal spreading and spacing of forms in such a manner as to permit the tie rod to be partially withdrawn on one side of the form facilitating the installation of the closing form, on the opposite side, and then to be inserted to engage and lock with the internal spreader system, thus keeping the two adjacent sides of the forms in a definite predetermined position apart during the concrete pour, then to be removed undamaged from the hardened concrete prior to dismantling of the forms, leaving the internal spreader in the concrete to be removed after stripping of the forms without damaging the internal spreader.

### 3,822,861 INFLATABLE FORM BREAKER FOR MOLDED CONSTRUCTION

Sam C. Scott, 2519 Walnut St., Denver, Colo. 80205

Filed May 21, 1973, Ser. No. 362,275

Int. Cl. B66f 3/24; B23p 19/04; F161 3/08

U.S. Cl. 254—93 HP

12 Claims

An inflatable device for removing the forms from molded concrete or the like construction including a soft, inflatable bladder having two flat, opposite sides which are distensible. An elongated handle is provided from one edge of the bladder



for manipulating the bag, and a pressurizing conduit communicates with the interior of the bladder for inflating and deflating it. The sides of the bladder may be covered with flexible sheet material for protecting the bladder against punctures during usage. The conduit is connected to a pressurizing



source and a control is provided for inflating and deflating the bladder. After the construction has hardened a wedge or spacer device, in cooperation with the inflatable bladder, may be inserted between the form and the surface of the construction whereby the spacer and bladder are progressively stepped across or down the surface of the molded construction.

### 3,822,862 CONVENTIONAL CONDUCTOR STRINGING ASSEMBLY FOR POWER LINE USE

L. E. Lindsey, Pasadena, and Herbert F. Sammons, Glendale, both of Calif., assignors to Lindsey Manufacturing Company, Pasadena, Calif.

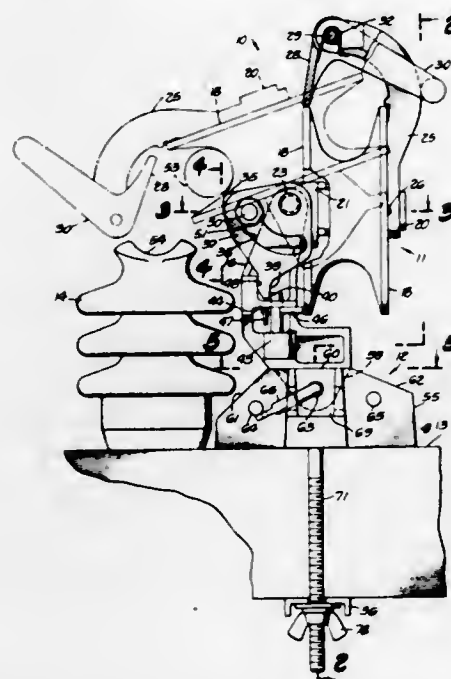
Continuation of Ser. No. 55,056, July 15, 1970, abandoned.

This application June 2, 1972, Ser. No. 259,315

Int. Cl. B66d 1/36

U.S. Cl. 254-196

32 Claims



Convertible conductor stringing assembly for use when installing a power conductor along a power line and usable in a variety of modes to accommodate different conditions. The conductor handling sheave is usable selectively while supported either on the insulator itself or on an insulator support cross arm and, in either mounting mode, the sheave itself is pivotable from one of its several normal stringing positions to a position for transfer of the conductor directly into clamping position on the insulator. The assembly readily accommodates

a range of both insulator cross arm sizes on either of which the pivoting sheave subassembly is securable in a number of positions.

### 3,822,863 ALUMINUM BARRIER SUPPORT POST

Arthur W. Bidwell, Middletown, Ohio, assignor to Magno de Products, Inc., Trenton, Ohio

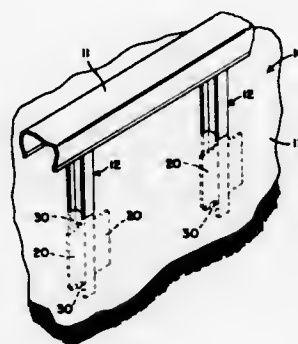
Continuation of Ser. No. 153,643, June 16, 1971. This

application Jan. 22, 1973, Ser. No. 325,408

Int. Cl. E01f 15/00

U.S. Cl. 256-13.1

6 Claims



A new post is comprised of an elongated body of extruded aluminum having linear, uninterrupted surfaces and having an integral post portion of one cross-section and an integral drive-blade portion of a different cross-section. The drive-blade portion includes a pair of integrally extruded drive blades extending outwardly in opposite directions from the body, and the integral connections of the drive blades to the body facilitate straight driving into the ground with a minimum of soil disturbance. The invention provides a one-piece barrier support post with integral drive blades which requires less maintenance than steel posts and has improved performance properties over two-piece aluminum or steel barrier post constructions.

### 3,822,864 WEED BARRIER FOR FENCING

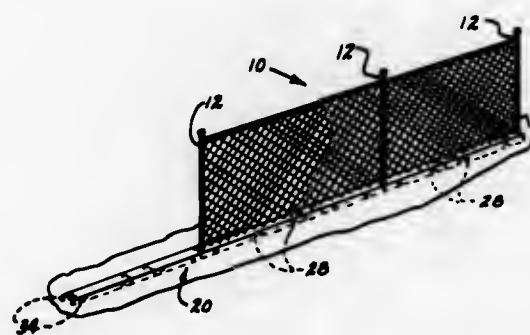
Gary L. Keys, 16683 Walter, Southgate, Mich. 48195

Filed Sept. 13, 1972, Ser. No. 288,711

Int. Cl. E04h 17/14

U.S. Cl. 256-32

5 Claims



A weed barrier for use in combination with fencing, wherein nestable and telescopic channel shaped members are disposed and secured along the ground and beneath intermediate each of the fence posts and beneath the fence wire, so as to inhibit weeds, vegetation, etc., from growing therebeneath. The proposed weed barrier lends an esthetic and ornamental appearance, as well as serving to facilitate the mowing of the lawn etc, adjacent to the fence.

### 3,822,865 APPARATUS FOR MOVING SUBSTANCES

Jochen Koblo, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft

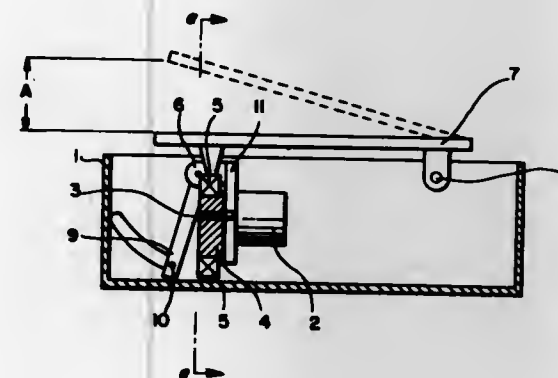
Filed Dec. 5, 1972, Ser. No. 312,270

Claims priority, application Germany, Dec. 8, 1971, 2160815

Int. Cl. B01f 11/00

U.S. Cl. 259-72

8 Claims



This invention relates to an apparatus comprising a housing, a table pivotally secured at one end thereof to said housing, a rotatable eccentrically mounted disc pivotally secured to said housing, bearing means surrounding said disc and supporting the free end of said table, means for pivoting said disc and means for rotating said disc.

### 3,822,866 FEEDING, WEIGHING AND MIXING APPARATUS

Henri H. Daester, Bottmingen near Basle, and Alfred Jungling, Muttens near Basle, both of Switzerland, assignors to Daester-Fairtec AG, Basle, Switzerland

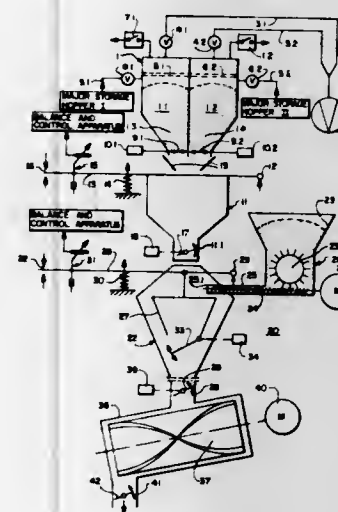
Filed Sept. 12, 1972, Ser. No. 288,342

Claims priority, application Switzerland, Sept. 15, 1971, 13518/71

Int. Cl. B28c 7/04

U.S. Cl. 259-149

10 Claims



An apparatus for feeding, weigh proportioning and mixing a first flowable material with other likewise flowable or liquid or paste-like material, characterised by hopper equipment containing one or more separate chambers for separately storing said first flowable material, a stabilizing zone for said first

flowable material in each of said hopper chambers, a first gating means at the bottom of each of said stabilizing zones, at least one first weighing means comprising a first weigh hopper, a first discharging device and a motion transmitting means, one or more storage hoppers for said other flowable or liquid or paste-like material, each associated with a second gating means, a second weighing device comprising a second weigh hopper, a closure fitted to said second weigh hopper and a second motion transmitting means, a second discharging device and a mixer, the arrangement being such that at least part of the charging opening of said first weigh hopper is in the direction of fall below its associated first gating means, that at least part of the charging opening of said second weigh hopper is in the direction of fall below the discharging means of the associated first weigh hopper and that the second discharging means is in the direction of fall below said closure of the second weigh hopper and provides communication in said direction of fall with said mixer. A method of operating the apparatus is also described.

### 3,822,867 CONTROL APPARATUS AND METHODS FOR MOLDING MACHINERY

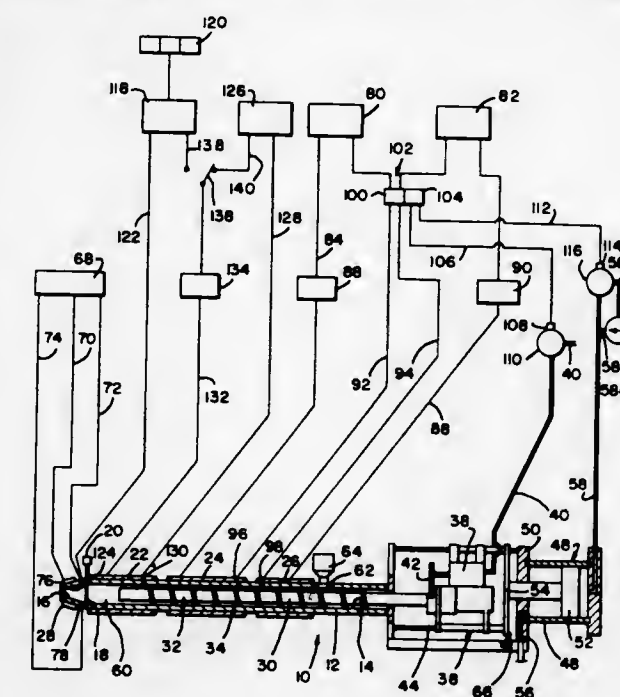
William B. Evans, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Oct. 17, 1972, Ser. No. 298,238

Int. Cl. B29f 3/08; B29b 3/00

U.S. Cl. 259-191

23 Claims



Apparatus and methods wherein the directly sensed temperature of plasticized material discharged from a barrel is employed for controlling the temperature of the portion of the barrel adjacent to the discharge of the plasticized material therefrom and, alternatively, as during machine warm-up, the temperature of such barrel portion is controlled independently of said sensed temperature. Also, the temperature of a plurality of other portions of the barrel is controlled by a single control device; and back pressure on the screw during movement away from the barrel discharge and the screw driven rotation are controlled by a single control device.

### 3,822,868 CARBURETOR

Clifford T. Carnes, 731 McCray, Hollister, Calif. 95023

Filed Nov. 19, 1970, Ser. No. 91,080

Int. Cl. F02m 29/02

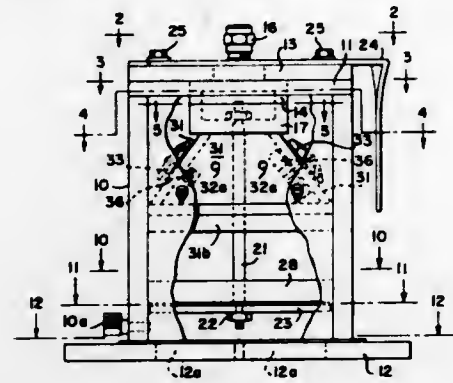
U.S. Cl. 261-50 R

3 Claims

A carburetor provided with an air fuel mixing compartment into which the flow of fuel and air are controlled simultane-



ously. The air flow drives an impeller arrangement in the compartment which agitates the mixture. The air fuel mixture is



then drawn out of this compartment by suction into the engine intake manifold through a flow control baffle.

3,822,869

#### LIQUID DISCHARGE MEMBER FOR LIQUID-VAPOR CONTACTING TRAY

Alfred L. Van Kleef, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

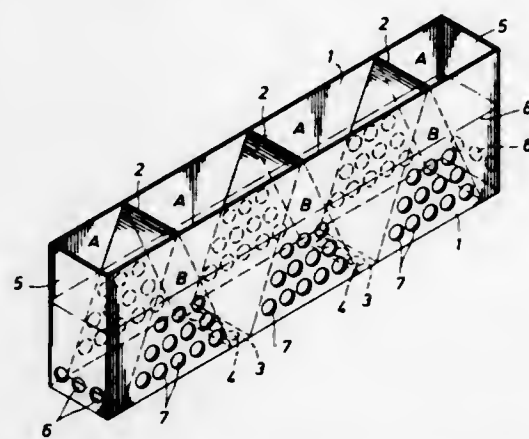
Filed Feb. 5, 1973, Ser. No. 329,773

Claims priority, application Great Britain, Feb. 7, 1972, 5620/72

Int. Cl. B01f 3/04

U.S. Cl. 261-114 R

18 Claims



Liquid discharge members for liquid-vapor contacting trays having vertical side walls laterally confining a narrow oblong space, which accommodates the whole or a substantial part of a baffle fitting against the long side walls and running up and down, which creates compartments A that are open at the top and compartments B that are open at the bottom, lying next to one another in the sequence A-B-A-, of which the compartments A are provided with one or more discharge openings.

3,822,870

#### REINFORCING MEMBERS FOR RUBBER ARTICLES

Jacques Champeboux, 36 rue de Tremoneix, and Robert De-laux, 1442 rue Auguste, both of 63 Clermont-Ferrand, France

Filed May 25, 1972, Ser. No. 256,759

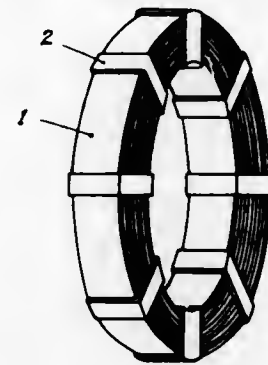
Claims priority, application France, May 26, 1971, 71.19179; May 27, 1971, 71.19409; Nov. 12, 1971, 71.40703

Int. Cl. F16f 3/10

U.S. Cl. 267-152

15 Claims

A reinforcing member for a rubber article in the form of a ring or hollow sleeve comprises a flexible hoop made from a thin and elastic strip of sheet metal wound into a spiral of several convolutions which latter are superimposed and held solidly together to form an annular member capable of being elastically deformed under flexion when stressed by a load ap-



plied perpendicularly to the axis of the coil. The invention also relates to articles such as shock-absorbers, particularly marine

3,822,871

#### APPARATUS FOR CONTINUOUS PROCESSING OF SULFIDE ORES AND APPARATUS THEREFOR

Toshikazu Morisaki, 12-23-chome Sakuragaoka Tama-Machi, and Kazuo Tachimoto, 12-47-chome Takanawa Minato-ku, both of Tokyo, Japan

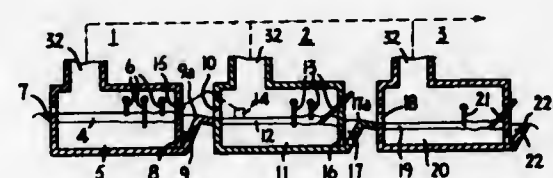
Division of Ser. No. 881,226, Dec. 1, 1969. This application Jan. 18, 1972, Ser. No. 218,685

Claims priority, application Japan, Dec. 7, 1968, 43-89818

Int. Cl. C22b 9/12

U.S. Cl. 266-11

16 Claims



An apparatus for continuous processing of sulfide ores which comprises a combination of smelting, slagging, and blister furnaces, or of smelting and blister furnaces.

3,822,872

#### APPARATUS FOR COLLECTING AND EXTRACTING FURNACE FUMES

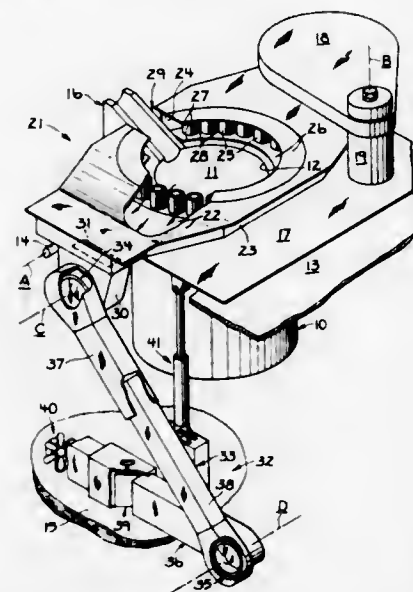
Donald C. F. Nell, 207 Schramm Dr., Pekin, Ill. 61554

Filed Apr. 16, 1973, Ser. No. 351,194

Int. Cl. C21c 5/38

U.S. Cl. 266-19

20 Claims



A furnace, adapted to produce molten metal in a melting chamber thereof, is pivotally mounted on a stationary support.

A fume collector, having an opening formed therethrough to facilitate charging of the chamber, is fixedly mounted on the furnace. A generally annular collecting chamber is defined in the collector to circumvent such opening. The upper end of a first conduit is pivotally mounted on the collector and communicates with the collecting chamber whereas the lower end of the first conduit is mounted on the end of a stationary second conduit and communicates therewith to extract the fumes.

3,822,873

#### FURNACE FOR MELTING OR HEATING METALS

Oskar Pletscher, Marthalen, Switzerland, assignor to Gebrüder Pletscher, Marthalen, Switzerland

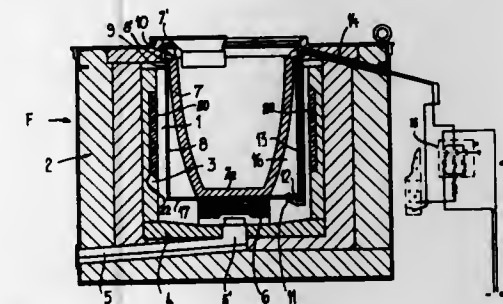
Filed July 12, 1973, Ser. No. 378,414

Claims priority, application Austria, July 17, 1972, 6142/72

Int. Cl. F27b 14/08

U.S. Cl. 266-33 R

8 Claims



A furnace for melting or heating metals comprising a furnace compartment enclosed by a refractory lining and a crucible for the melt arranged in the furnace compartment. Contacts are provided at the lower region of the furnace compartment, these contacts being arranged in the current circuit of a monitoring device and such contacts are electrically connected with one another by metal which may possibly flow out of the crucible into the furnace compartment. A baffle or guide plate, preferably a sheet-metal deflector or guide, engages beneath the contacts and extends at least over the region of the furnace compartment spanned by the crucible. The baffle plate is exposed to the thermal radiation emanating from heating elements.

3,822,874

#### RESTRAINT SYSTEM FOR TUBULAR SELF-ERECTING DEVICES

Kenneth J. Snyder, Perkaskie, and Howard C. Valle, Doylestown, both of Pa., assignors to Ametek, Inc., New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,155

Int. Cl. F16f 1/10

U.S. Cl. 267-156

6 Claims



A restraint system for a tubular self-erecting device has a self-coiling spiral spring extending inside the tubular device

and secured to the outer end thereof. The spring is mounted for winding and unwinding below the tubular device and has means to limit the extension of the spring.

3,822,875

#### TILTABLE X-RAY EXAMINATION TABLE

Walter Schmedemann, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

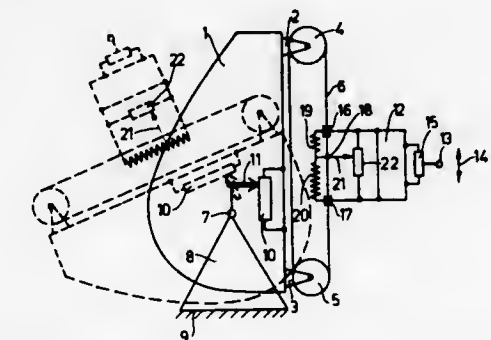
Filed Dec. 21, 1972, Ser. No. 317,410

Claims priority, application Germany, Jan. 8, 1972, 2200848

Int. Cl. A61g 13/00

U.S. Cl. 269-323

6 Claims



A tiltable patient table having a carriage that is displaced by means of a drive system; the table has a safety device whereby the carriage is connected to a drawing means such that a measurable force occurs whenever the carriage collides with another object, such as the patient, and automatic controls are affected.

3,822,876

#### PROCESS OF MAKING TICKET PACKETS WITH THE TICKETS OF EACH PACKET HAVING CONSECUTIVE AND CONSTANT NUMBERING THEREON

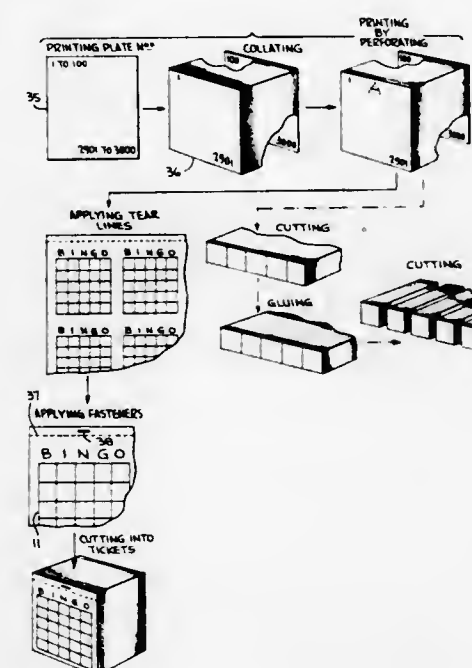
John J. Frain, P.O. Box 94, Rockaway Beach, N.Y. 11694

Filed May 4, 1973, Ser. No. 357,377

Int. Cl. B41f 13/54

U.S. Cl. 270-1

4 Claims



Process of making ticket packets wherein the tickets of each packet have consecutive plate numbers and a constant serial number thereon, and wherein the tickets of other packets each respectively have a different serial number with the same progression of plate numbers for the tickets of each packet. A



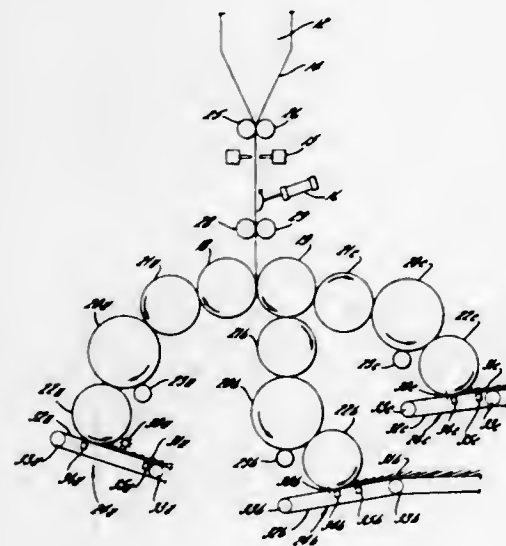
plurality of sheets are printed, each with a number of tickets thereon identified by a different plate number printed successively in series after which sheets of one series are collated with sheets of successive series to form stacks. The tickets on the sheets of each stack are printed with a serial number by perforating said number through the stack. The sheets of each stack are then fastened together along rows of the tickets, after which the stacks are cut into ticket packets. Tear lines may also be provided for the tickets of each packet.

**3,822,877**  
**WEB FOLDER PROTECTION APPARATUS AND METHOD**

F. John Littleton, Effingham, Ill., assignor to World Color Press, Inc., Maryland Heights, Mo.  
Filed July 31, 1972, Ser. No. 276,371  
Int. Cl. B65h 43/02

U.S. Cl. 270—56

7 Claims



An apparatus and method for detecting jam-ups in a web folder used with high speed press printing presses. The apparatus includes a pair of fluidic sensing devices located in close proximity to a final run out conveyor for the folder. The sensing devices are adapted to sense the presence or absence of folded signatures at the location where signatures are deposited onto the run out conveyor and at a location a short distance downstream thereof and to individually activate an emergency stop circuit for the press and other protective or alarm means when an absence of signatures is sensed at one of the locations.

**3,822,878**  
**SHEET FOLDING MACHINE WITH TWO MAGAZINES**

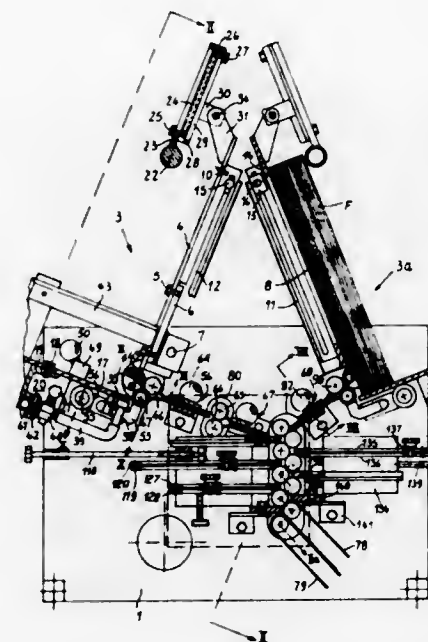
Dante Mantovani, 7 Via Sigonio, Bologna, Italy (48100)  
Filed Feb. 16, 1972, Ser. No. 232,322  
Claims priority, application Italy, Feb. 23, 1971, 3350/71  
Int. Cl. B65h 45/14

U.S. Cl. 270—68 A

2 Claims

Folding machine for sheets comprising two magazines containing a package of sheets, a device withdrawing the sheets one at a time from the magazines, transferring members and

folding devices proper. The transfer members consist of two series of cooperating rollers lying in two vertical parallel planes. The folding devices comprise superimposed rollers,

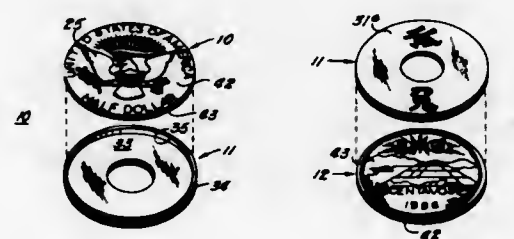


plates and frames. The sheets are forced from rollers to enter the gaps defined by said frames, and to be doubled while arrested by adjustable stops located in the frames at accurate distances.

**3,822,879**  
**COIN MAGIC DEVICE**  
Pressley H. Guitar, P.O. Box 22, 79 Abilene, Tex. 79604  
Filed Dec. 1, 1972, Ser. No. 311,365  
Int. Cl. A63j 5/00

U.S. Cl. 272—8 R

8 Claims



A device for performing close-up coin magic including a gimmicked Oriental type annular coin and a nesting coin-like insert disc. The Oriental coin has one conventional face and an opposite face having a circular insert pocket which receives the nesting insert disc. The insert disc has a first face formed by the major portion of one face of a first coin and a second opposite face formed by one face of a second coin of contrasting color. When the members of the device are nested together with the first coin face displayed, the illusion of a complete first solid coin is presented to the viewer. When the device is turned over, the insert separated from the Oriental coin, and both members displayed, the illusion is presented of an Oriental coin and a separate solid coin of the second type. In the hands of a skilled performer, the device permits the performance of magic tricks giving the appearance of the manipulation of an annular Oriental coin and two solid coins. The use of the Oriental coin with the central opening is a psychological deterrent to a belief that the coins nest together.

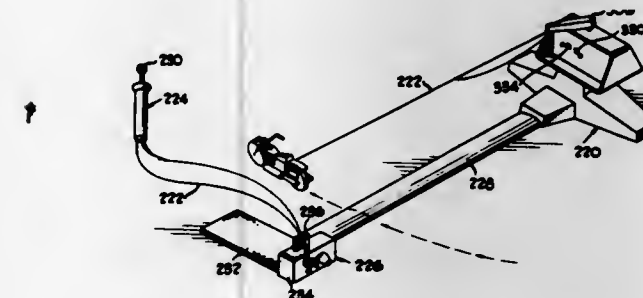
**3,822,880**  
**TOY MOTORCYCLE ADJUSTABLY TETHERED TO A PYLON**

Reuben Terzian, 1344 N. Dearborn, Chicago, Ill. 60605; Robert S. McKay, 7420 Bechwith Rd., Morton Grove, Ill. 60053, and Marvin I. Glass, 815 Lasalle St., Chicago, Ill. 61607

Division of Ser. No. 113,300, Feb. 8, 1971, Pat. No. 3,708,913.  
This application July 3, 1972, Ser. No. 268,591.  
Int. Cl. A63h 17/38, 30/00

U.S. Cl. 272—31 R

3 Claims



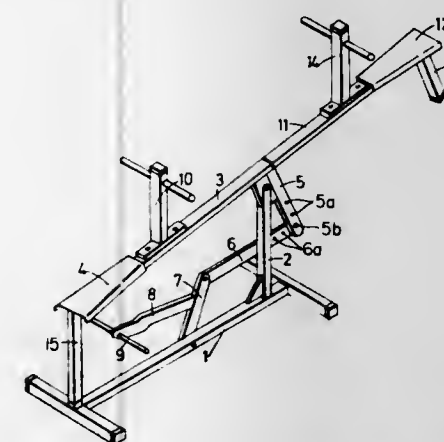
A two-wheeled toy vehicle including a wheel drive motor and capable of maintaining an upright position during operation without the assistance of a third wheel or the like. The exemplary embodiment is configured in the form of a motorcycle and includes an electric drive motor and batteries therefor located below the axis of rotation of the wheels to provide the vehicle with an extremely low center of gravity thereby enhancing its stability during operation. The vehicle can be operated as a free running vehicle or, in the alternative, can be provided with a tether of variable length and with a variable speed control, both of which can be controlled by a user during operation of the vehicle.

**3,822,881**  
**SEE-SAW WITH FOOT OPERATED LINKAGE**  
Walter Douglass, 30 Groovewood Close, Chorleywood, and Paul John Murgatroyd, Gullbrook, Boxmore, Hemel Hempstead, both of England

Filed Oct. 3, 1972, Ser. No. 294,592  
Claims priority, application Great Britain, Oct. 7, 1971, 46620/71  
Int. Cl. A63g 11/00

U.S. Cl. 272—54

5 Claims



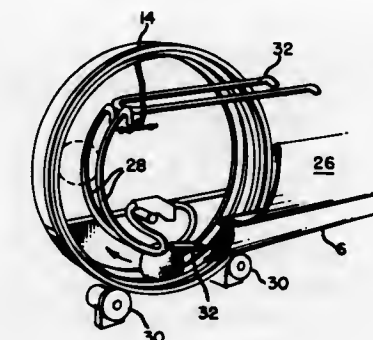
A child's see-saw has a rocking bar with a single seat near one of its ends and its pivot point near the other end. The rocking bar is connected by a linkage to a rocking lever provided with a foot-rest beneath the seat so that a child can rock itself on the see-saw by pushing down on the foot rest to raise the seat and relaxing foot pressure to lower the seat. An extension may be provided carrying a second seat so that two children may operate the see-saw in the normal way.

**3,822,882**  
**BALL RETURN MECHANISM FOR AUTOMATIC BOWLING ALLEYS**

James D. Easterly, 11027-35th, N.E., Seattle, Wash. 98125  
Filed May 3, 1973, Ser. No. 356,737  
Int. Cl. A63d 5/02

U.S. Cl. 273—49

2 Claims

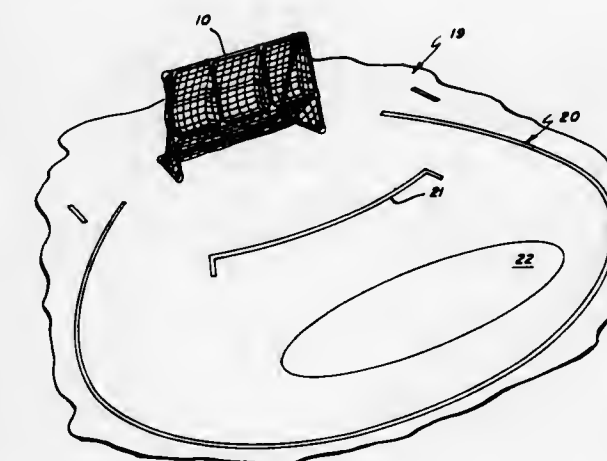


A flexible arm provided with an exterior surface having a high coefficient of friction is attached to the rear side of a pit cushion such that it extends into the ball return mechanism when the cushion is lowered. When a bowled ball strikes the cushion, the cushion is raised to allow the ball to pass thereunder and is then lowered bringing the arm into contact with the ball. Should the ball be spinning, engagement of the arm therewith causes the spinning to cease and assures a more positive engagement of the ball by the ball return mechanism.

**3,822,883**  
**COMPARTMENTED NET TARGET AND PLAY FIELD**  
John B. De Vos, 625 Downing Rd., Libertyville, Ill. 60048  
Continuation of Ser. No. 105,408, Jan. 11, 1971, abandoned.  
This application Jan. 22, 1973, Ser. No. 325,320  
Int. Cl. A63b 71/02

U.S. Cl. 237—95 H

7 Claims



A net ball game employs a target comprising a partitioned net which provides three upper compartments for receiving an aerial projectile, e.g., a ball, and a lower compartment for receiving surface and/or aerial projectiles. The game is played on a flat arcuate playing surface having an enclosed area thereon for defensive play while the remainder of the field is used for offensive play.



3,822,884

## SHOT PROPELLING ARROW

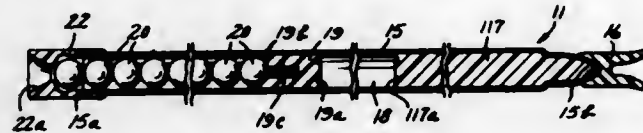
Roger J. Curran, Stratford, and Kenneth W. Misovich, Fairfield, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Nov. 8, 1972, Ser. No. 304,665

Int. Cl. F41b 5/02

U.S. Cl. 273—106.5 R

15 Claims



A tubular arrow shaft is sealed at its nocked end portion. The seal and a slidable piston in the shaft retain a compressible fluid therebetween. Forwardly of the piston, a plurality of projectiles are aligned axially in the shaft. The forward acceleration of the arrow by a bow and the inertia of the projectiles compresses the retained fluid while accelerating the projectiles up to the arrow velocity. Thereafter, the fluid expansion causes substantially all the energy of the arrow to be transferred to the projectiles which are propelled toward a target while the arrow falls to the ground within a few feet of the bow.

3,822,885

## BALL GAME DEVICE HAVING A FLEXIBLE HANDLE

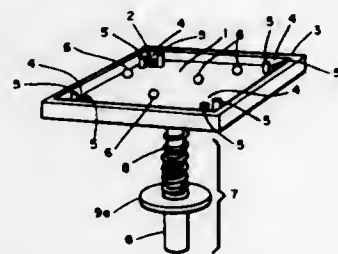
Frank S. Domka, 1738 W. Forest, Inkster, Mich. 48208, and Barry Jackson, 26814 Kean, Detroit, Mich. 48141

Filed June 2, 1972, Ser. No. 259,283

Int. Cl. A63f 7/16

U.S. Cl. 273—110

10 Claims



A hand-held game device having a platform with cavities to receive spherical objects is described. The device features a single flexible handle by which the platform is manipulated.

3,822,886

## GAME BOARD WITH RETRACTABLE BALL RETURN

Claudio Cecchetti, Milan, Italy, assignor to Arco Fak Srl., Milan, Italy

Filed June 22, 1873, Ser. No. 372,859

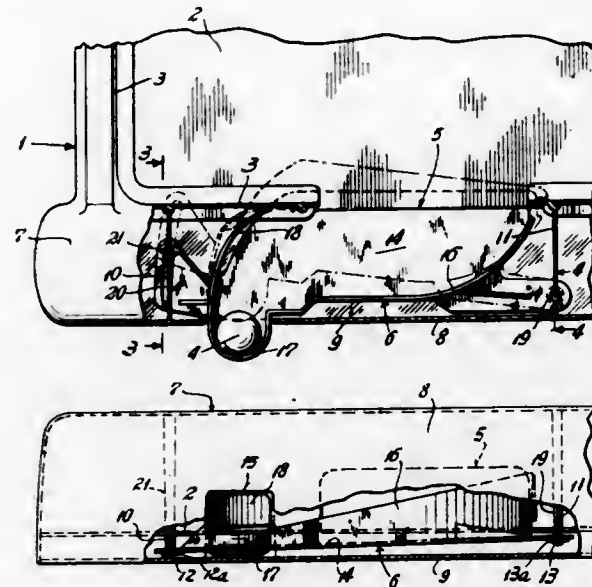
Int. Cl. A63f 7/00

U.S. Cl. 273—125 R

7 Claims

A game board adapted for use with a free movement game piece such as a ball, comprising a playing surface, an inner wall at an angle to the plane of the playing surface and an opening in the wall to receive the game piece from the playing surface. An outer wall is spaced from the inner wall and provided with an opening, and a game piece-return element is pivotally mounted in the space between the walls. The game piece-return element is biased in normal playing position such that it communicates with the opening in the inner wall to receive the game piece, and is inclined towards a cup section thereof which extends beyond and projects through the open-

ing in the outer wall to permit the game piece to be retrieved therefrom. The game piece-return element is pivotally



mounted so that it can be depressed within the space between the walls whereby the exterior surface of the cup section does not project beyond the exterior surface of the exterior wall.

3,822,887

## SURFACE PROJECTILE TARGET WITH BALL DISPENSING MEANS

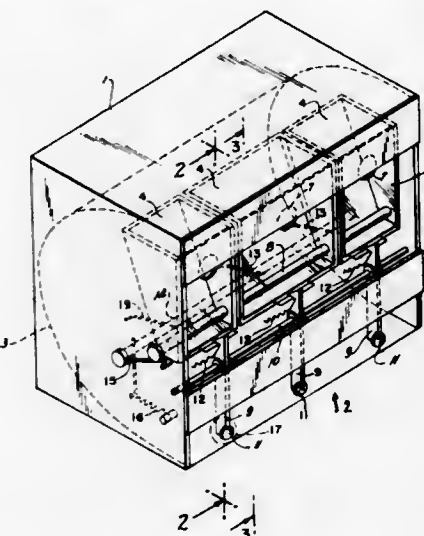
Sol Friedman, 10 Ronald Dr., Monsey, N.Y. 10952

Filed Dec. 27, 1971, Ser. No. 212,020

Int. Cl. A63f 7/00

U.S. Cl. 273—127 D

5 Claims



A housing has an open side and a wall is concavely curved inwardly of the open side extending from the top to the bottom of the latter. Receptacles are mounted in the open side for turning movement about a horizontal axis and each have an opening which normally faces upwardly under the influence of a spring-biased detent a portion of which extends beneath the respective receptacle in the region of the bottom of the open side. When a marble is rolled into the open side at the bottom thereof and misses the aforementioned portion, it rolls up on the curved wall and drops into the upwardly directed opening of one of the receptacles. When the marble hits the aforementioned portion of the detent means, it thereby releases the receptacle associated therewith so that the receptacle can tilt under the influence of gravity until its opening is downwardly directed and any marbles accumulated in the receptacle can fall out onto the curved wall and are rolled back to the player.

3,822,888

## TRIP ACTUATION DEVICE FOR AN AUTOMATIC RECORD PLAYER

Tatsuo Kondo, Yokohama City, and Masae Murata, Yamato City, both of Japan, assignors to Victor Company of Japan Limited, Yokohama City, Japan

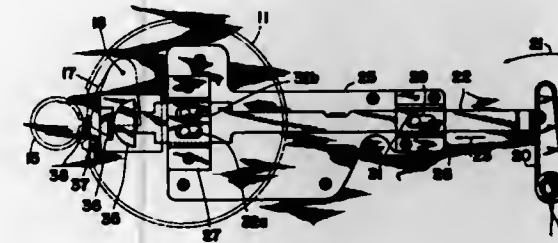
Filed Dec. 7, 1971, Ser. No. 205,623

Claims priority, application Japan, Dec. 8, 1970, 45-109138

Int. Cl. G11b 17/06

U.S. Cl. 274—1 L

3 Claims



A device wherein balls are interposed between a trip slide for transmitting the movement of a pickup arm to a trip for controlling the automatic record player and brackets for supporting the trip slide so that the trip slide may smoothly move in sliding motion.

3,822,889

## AUTOMATIC RECORD PLAYER

Takamichi Nakagawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

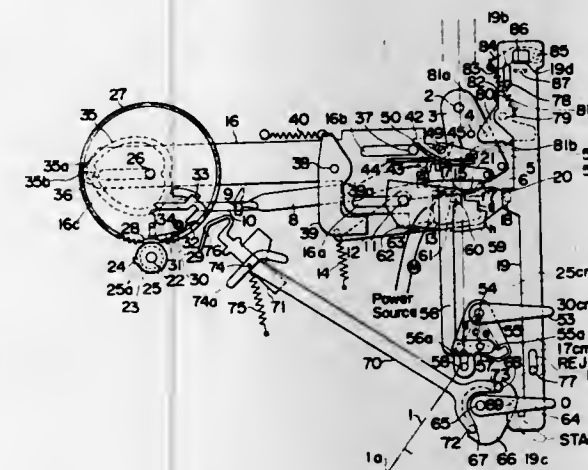
Filed Sept. 5, 1972, Ser. No. 286,052

Claims priority, application Japan, Sept. 6, 1971, 46-69109; Sept. 6, 1971, 46-81505; Sept. 6, 1971, 46-81506; Sept. 6, 1971, 46-81507; Sept. 6, 1971, 46-81508; Sept. 6, 1971, 46-81509; Sept. 6, 1971, 46-81510; Sept. 6, 1971, 46-84168

Int. Cl. G11b 17/08

U.S. Cl. 274—10 R

12 Claims



An automatic record player of simplified construction which comprises a tone arm, a turntable, a turntable drive system, a switching knob for causing the tone arm to be brought in position to perform a record to be played and for intermitting the operation of the tone arm, a record size setting unit including a record size selector knob for positioning the tone arm at a predetermined position immediately above the lead-in groove of the record to be played, and a switch mounting plate rigidly mounted with a switch. The automatic record player with the above construction can be also used as a semi-automatic one and can be operated not only by operating the switching knob, but also by manually moving the tone arm to the predetermined position.

3,822,890

## BEARING SEALS

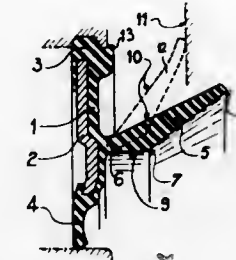
Claude Raymond Bourgeois, Annecy, France, assignor to Societe Nouvelle De Roulements, Annecy, France

Filed Jan. 15, 1973, Ser. No. 323,724

Int. Cl. F16j 15/34

U.S. Cl. 277—65

8 Claims



Seal for rolling-contact bearing, of the type adapted to be fitted in the outer race thereof or in a cavity intended for said bearing, which comprises two sealing lips directed the one radially towards the inner race and the other axially outwards of the seal and bearing assembly. The outer axial lip has a flattened triangular configuration and the edge having the smallest acute angle of this lip acts as a frictional contact element, the edge having the largest acute angle constituting a kind of circular hinge interconnecting the seal body and said lip, the circular edge of obtuse angle creating a reinforcing area between the edges of said lip, its width corresponding to about five times its thickness and its inclination corresponding to about 10° to about 60° in relation to the bearing axis. This seal is also applicable to other rotating members.

3,822,891

## SKI BINDING WITH REGULATED RELEASE

Marcel Vouthier, Cluses, France, assignor to Etablissements Carpano & Pons S.A., Cluses, France

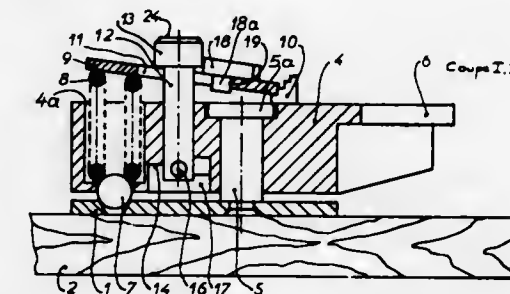
Filed Oct. 18, 1972, Ser. No. 298,571

Claims priority, application France, Oct. 19, 1971, 71.37785

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 T

10 Claims



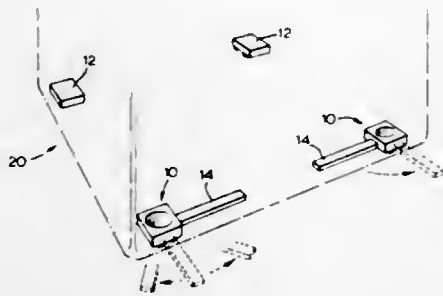
The force required to release a ski binding is regulated by a spring the compression of which is controlled by a lever, one end of which bears on the spring and the other rests on a fixed support of selected height providing a fulcrum for the lever. A rotatable shaft extends through an elongated slot in an intermediate portion of the lever and has a head bearing on the upper face of the lever while at the opposite end there is a radially projecting pin engageable with a fixed helical ramp. Adjustment of spring tension within a selected range is provided by a single turn of the shaft which is provided with indexing means to indicate the rotational position of the shaft and hence the corresponding spring pressure. Different ranges of spring pressure are provided by positioning the fulcrum end of the lever on one or another steps of a stationary stepped support or in one or another position on a stationary inclined plane. The lever is positioned longitudinally by means of a key member to assure that it is retained in the selected position of the support.



### 3,822,892 APPLIANCE SUPPORT

Stanley Albert Charles Browning, R.R. No. 1, Glen Williams, Ontario, Canada  
Filed Aug. 1, 1973, Ser. No. 384,454  
Claims priority, application Canada, June 18, 1973, 174321  
Int. Cl. B60b 33/04  
U.S. Cl. 280—47.11

5 Claims

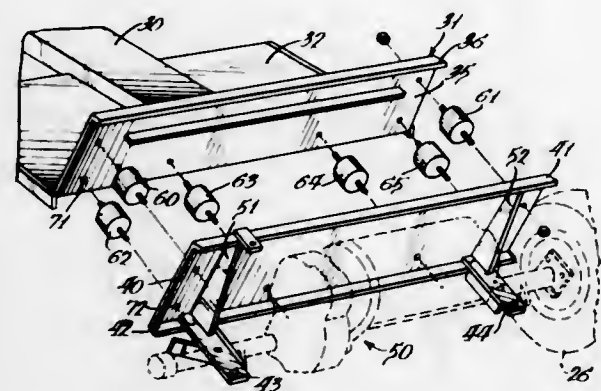


Roll-out apparatus for major appliances such as domestic refrigerators in the form of a plurality of low, multi-wheel bogeys for insertion in supporting relation beneath the appliance includes the provision of steering arms extending from the accessible front bogeys to permit pivoting of the respective bogeys in steering relation relative to the appliance. The steering bogey upper surfaces are recessed to receive foot portions of the appliance therein. The less accessible bogeys may be provided with a contact cement upper surface, for affixing to the appliance. Also the bogeys may be provided with a resilient layer to serve as a spring load transfer relation, transverse loads being transferred by shear pins where appropriate.

### 3,822,893 VEHICLE AND VERTICAL SHOCK CONVERTER THEREFOR

Keith L. Huber, P.O. Box 3565, Springfield, Ill. 62708  
Filed Nov. 15, 1972, Ser. No. 306,852  
Int. Cl. B60g 11/24  
U.S. Cl. 280—124 R

3 Claims

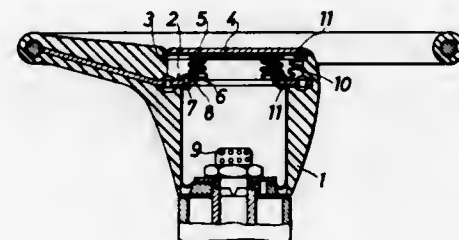


A vehicle, such as a golf car or the like and having a vertical shock converter construction wherein the vehicle has a main frame and front and rear wheels and resilient structure connecting the rear suspension mount to the main frame of the vehicle for pivotal movement of the rear suspension mount about an axis offset from and parallel to the axis of the rear axle whereby vertical shocks transmitted to the rear wheels are substantially converted to forces acting longitudinally of the vehicle to minimize the transmission of bumps to the passengers.

### 3,822,894 STEERING WHEEL WITH BUILT-IN AIR CUSHION

Reinhold Muller, Mainflingen, and Konrad Ranzelzhofer, Glattbach, both of Germany, assignors to Petri Aktiengesellschaft, Aschaffenburg, Germany  
Filed Sept. 23, 1971, Ser. No. 182,949  
Claims priority, application Germany, Oct. 24, 1970, 2052357  
Int. Cl. B60r 21/10  
U.S. Cl. 280—150 AB

1 Claim

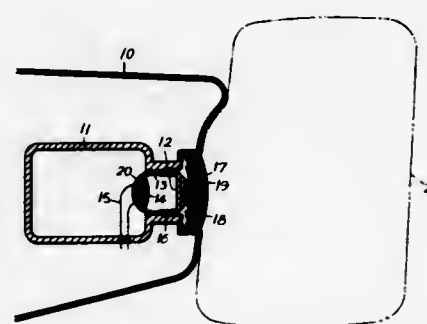


It is known to provide a motor vehicle steering wheel with a central dish or cup containing a collapsed cushion which in the case of an accident is suddenly inflated. The cushion is normally enclosed by a cover, which on inflation of the cushion flies freely off. The present invention provides a strong hinge between the cover and the dish so that on inflation of the cushion the cover is pushed away from the driver, but not liberated.

### 3,822,895 INFLATABLE RESTRAINT DEVICE FOR OCCUPANTS OF VEHICLES AND THE LIKE

Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Aichi-ken, Japan  
Filed Dec. 13, 1971, Ser. No. 207,385  
Claims priority, application Japan, Dec. 25, 1970, 45-128772  
Int. Cl. B60n 21/08  
U.S. Cl. 280—150 AB

5 Claims

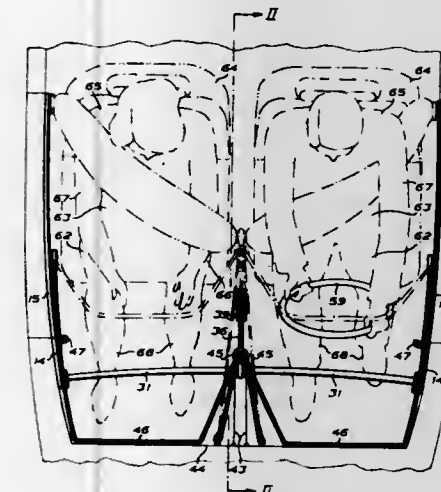


An inflatable restraint device for occupants of motor vehicles and the like comprising a gas cylinder having a valve adapted to be opened by a signal from collision detection means which may be collision prediction means or collision sensing means for ejecting gas therefrom, and a gas bag adapted to be inflated by the gas ejected from said gas cylinder. Said device further comprises gas cylinder valve opening means comprising a seal for the gas cylinder made of a material which tends to undergo brittle rupture, and a rupture inducing member for inducing the brittle rupture of said seal upon receipt of a signal from the collision detection means.

### 3,822,896 AUTOMATICALLY RELEASABLE SAFETY DEVICE FOR VEHICLES

Gert Benny Hallberg, Estlandsgatan 3A, S-214 31 Malmö, Sweden  
Filed Jan. 12, 1973, Ser. No. 323,097  
Claims priority, application Sweden, Sept. 19, 1972, 12075/72; Oct. 2, 1972, 12696/72  
Int. Cl. B60r 21/10  
U.S. Cl. 280—150 AB

25 Claims

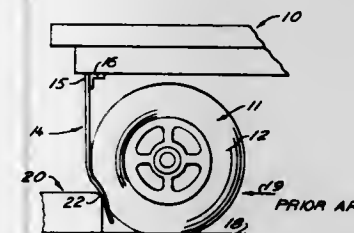


At violent retardation, acceleration, compressing or twisting of a vehicle a transversely extending, gastight envelope by means of a first pressurized gas source is thrown backwards from a front position towards the body of the passenger so as to roll upwards over the body into a rear position, said hose during said backwards movement by means of a second pressurized gas source being inflated into a pad-like envelope of substantially larger volume catching the body and firmly securing the passenger to the seat.

### 3,822,897 MUD FLAP

Gerald Heath, 8775 Hudson St., Vancouver, British Columbia, Canada  
Filed Mar. 7, 1972, Ser. No. 232,418  
Int. Cl. B62d 25/16  
U.S. Cl. 280—154.5 R

1 Claim

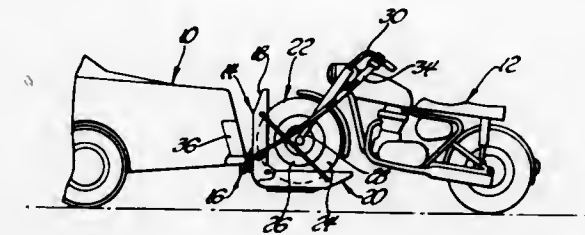


Mud flap for use by wheeled vehicles, flap having an upper portion secured to the vehicle rearward of wheel and a lower portion secured to upper portion by weakened portion. Weakened portion has lower tensile strength than remaining portion of flap so that, when vehicle reverses against curb and flap is trapped between curb and wheel, tensile stress in flap causes it to tear along weakened portion. Weakened portion has a cross-sectional area reduced from that of remaining portion of flap by providing a groove, a row of perforations, or by joining the upper portion to the lower portion by a plurality of threads.

### 3,822,898 TOWING APPARATUS FOR A CYCLE AND THE LIKE

William M. Brownlie, 1201 Falcon, Dearborn, Mich. 48128  
Filed July 18, 1973, Ser. No. 380,132  
Int. Cl. B60p 3/06  
U.S. Cl. 280—402

10 Claims

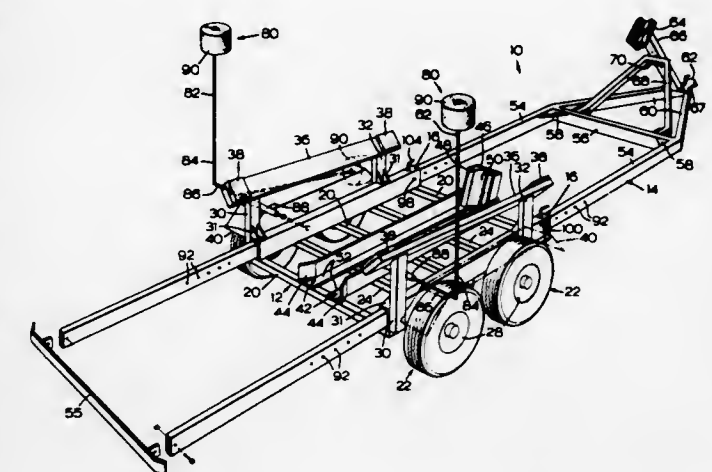


A towing apparatus for towing a vehicle such as a motorcycle behind another vehicle such as an automobile has a pair of channel-like members, adapted for the reception therein of a wheel of the towed vehicle, pivotally connected to each other so as to be swingable toward each other to a closed position when not towing a vehicle, and swingable away from each other to a position for the reception therebetween of a wheel of a vehicle being towed.

### 3,822,899 BOAT TRAILER

Ramon Allan Slack, 10 Breadalbane St., Toronto 5, Ontario, Canada  
Filed June 26, 1972, Ser. No. 266,419  
Int. Cl. B60p 3/10  
U.S. Cl. 280—414 R

16 Claims



A boat trailer which is adjustable in length to facilitate launching when extended and trailing when contracted. The trailer consists of a boat supporting carriage member which is slidably mounted on a towing frame. The boat carriage preferably has a pair of longitudinally extending tubular sleeve members and the towing frame includes at least two longitudinally extending beam members which are slidably mounted in the sleeve members of the carriage.

### 3,822,900 ANTI-THEFT TRAILER HITCH

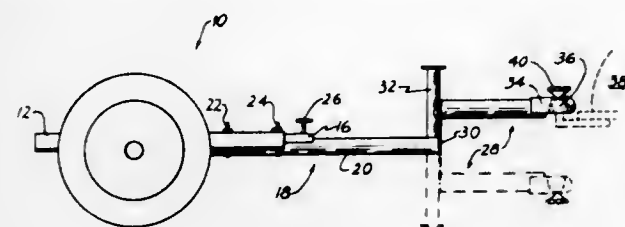
Fred M. Peterson, 3233 Caddo Trail, Fort Worth, Tex. 76135  
Filed Dec. 11, 1972, Ser. No. 313,627  
Int. Cl. B60d 7/00  
U.S. Cl. 280—507

10 Claims

An anti-theft hitch for trailers and other towable vehicles which employ a ball and socket or equivalent hitch, wherein a ball or like member normally attached to the prime mover at



its bumper or rear frame fits into a socket or other receptacle attached to the frame of the towed vehicle and is secured



thereto for towing, the socket member on the towed vehicle being rotatively reversible and lockable in the reversed position so that it cannot mate with the prime mover ball.

3,822,901

## HIDDEN MESSAGE APPARATUS

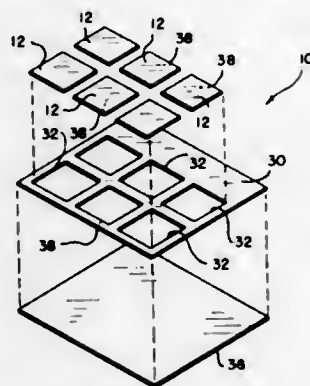
Jack Seidman, Philadelphia, Pa., assignor to Spot-O-Gold Corporation, Philadelphia, Pa.

Filed Nov. 13, 1972, Ser. No. 306,236

Int. Cl. B42d 15/00

U.S. Cl. 283—6

11 Claims



A hidden message apparatus comprising at least one element having a first message zone with a first message disposed therein and removable opaque means covering said message. A second element having a second message zone and a second message disposed therein. The second message is the same as the first message. Means are provided for releasably coupling the first element to the second element so the content of the first message will be known until the first element is separated from the second element.

3,822,902

## CONNECTION FOR PIPE JOINTS

William C. Maurer; Joe K. Heilhecker, and Everett H. Lock, all of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

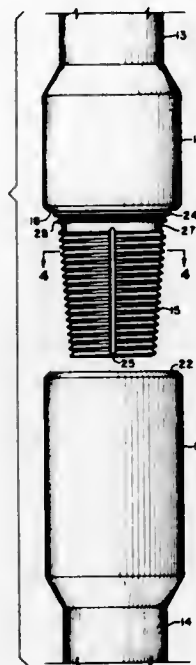
Filed Dec. 13, 1972, Ser. No. 314,871

Int. Cl. F16I 21/02

U.S. Cl. 285—94

8 Claims

A threaded connection for tubular goods includes an externally threaded pin member, an internally threaded box member, a resilient seal ring positioned between said pin and



thread lubricant or other liquid away from the seal ring as the pin and box members are screwed together.

3,822,903

## MULTI-CORE UNDERGROUND CONDUIT-MANHOLE SYSTEM

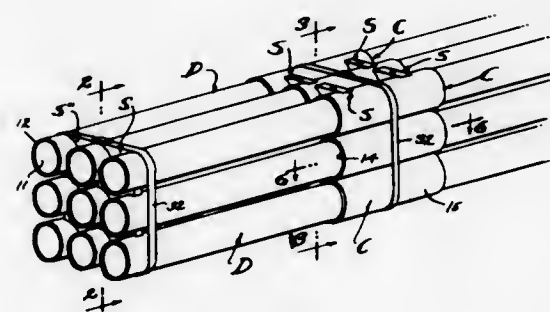
Arthur O. McNeely, Redondo Beach; Wiley T. Kennedy, Santa Ana, and Paul Huska, Los Angeles, all of Calif., assignors to MacKenhus Corporation, Santa Ana, Calif.

Filed Mar. 31, 1972, Ser. No. 239,904

Int. Cl. F16I 39/00

U.S. Cl. 285—137 R

20 Claims



The joinder of ducting such as underground systems of multi-tube form, comprised of a coupler assembly receiving the complementary ends of one or more continuing duct sections and bonded thereto and the sections thereby connected together by means of liquid material hydraulically applied under pressure to enter an annulus around each duct to be coupled, and wherein the application of and solidification of said material purges each said annulus while adhering to bond the coupler and ducts and thereby hermetically sealing each joinder; and the system being characterized by its adaptability to an array consisting of a multiplicity of ducts cooperatively arranged by means of a saddle having a manifold simultaneously distributing said liquid material to the coupler connections; there being process support means and a kit involved in the method of coupling by which the bonding material is hydraulically injected with heat applied as required.

3,822,904

## CONCEALED LATCH ASSEMBLY

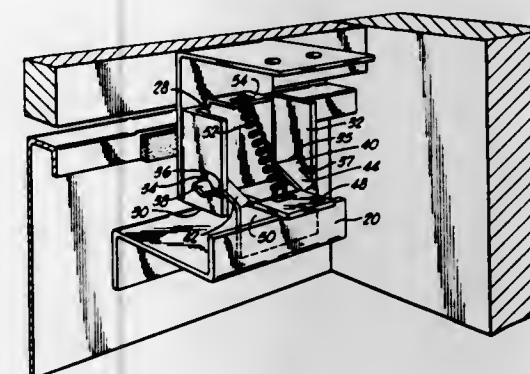
John Allan Peterson, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 26, 1973, Ser. No. 344,783

Int. Cl. E05c 19/02

U.S. Cl. 292—78

6 Claims U.S. Cl. 292—251.5



A low cost latch assembly, which cannot be seen from the exterior of a cabinet in which it is used, consisting of an over-center latch attached to the cabinet and an actuating member attached to the inside of a cabinet door. The over-center latch includes a rotatable latch plate with two perpendicular arms and a spring for biasing the latch plate to extremes of an arc. The actuating member pushes on one perpendicular arm to force the latch plate over center as the door is closed. The second perpendicular arm is rotated into a latching position behind the actuating member. The actuating member also forces the latch plate back over center to an unlatched position as the door is pulled open.

3,822,905

## PLASTIC LATCH

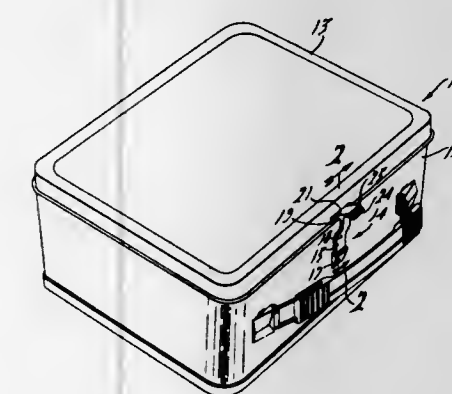
Vernon D. Bell, Westerley, R.I., assignor to King-Seeley Thermos Co., Norwich, Conn.

Filed Oct. 16, 1972, Ser. No. 297,626

Int. Cl. E05c 19/06

U.S. Cl. 292—87

2 Claims



A lunch kit or the like embodying an improved and simplified molded plastic latch for retaining the cover in a closed position. The plastic latch is formed from a single element having a base portion and a latch portion that is integrally connected to the base portion by a shank portion. A handle portion is also carried by the shank portion contiguous to the latch portion for deflecting the shank portion as a cantilever beam to move the latch portion to a released position.

3,822,906

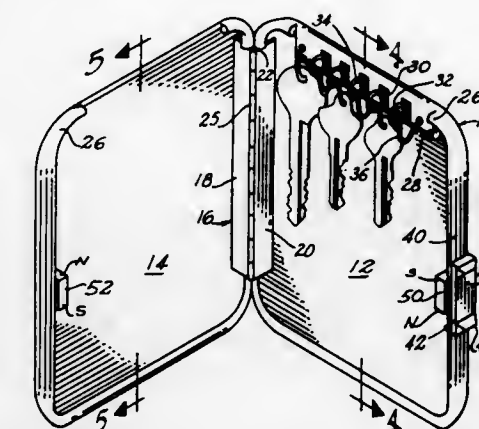
## MAGNETIC CLOSURE

Alvin M. Gaines, 219B Shadow Park, Norcross, Ga. 30071

Continuation of Ser. No. 71,696, Sept. 14, 1970, Pat. No. 3,716,091. This application Nov. 27, 1972, Ser. No. 309,893

Int. Cl. E05c 19/16; B65d 45/00

3 Claims



A magnetic closure for keycases, pocketbooks, wallets, and other containers which provides positive opening as well as a closing by means of magnets with respective North and South poles so positioned as to bring opposite poles into proximity for positive closing and like poles into proximity for opening. One panel of the keycase or other container is provided with the sliding magnet and another panel of the keycase has the fixed magnet whereby manually sliding one with respect to the other causes the magnet to assume the position of similar or dissimilar polarity.

The keys are held by fixed loops and a flexible wire.

3,822,907

## BUMPER ARRANGEMENT

Hermann Appel, Berlin; Horst-Rudiger Majer, Wolfsburg, and Conrad Oehlerking, Braunschweig, all of Germany, assignors to Volkswagen werk Aktiengesellschaft, Wolfsburg, Germany

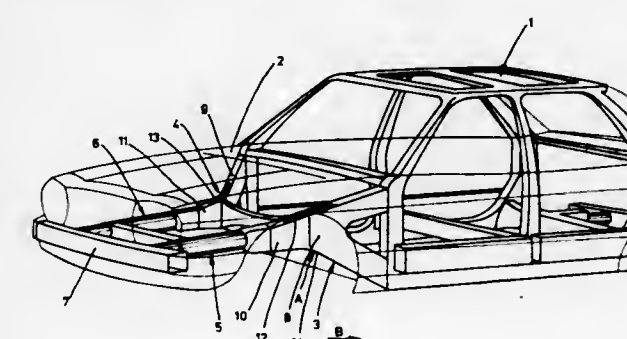
Filed July 9, 1973, Ser. No. 377,450

Claims priority, application Germany, July 11, 1972, 2233972

Int. Cl. B60r 19/04; F16I 7/12

U.S. Cl. 293—63

10 Claims



A bumper system has at least one element for absorbing impact energy by deflection in a direction generally parallel to the direction of the impact. The element has a terminal energy-absorption value beyond which additional energy is not absorbed and further deflection does not occur. The bumper system also includes a mounting support that is used to join the element to the object to be protected and that is capable of asymmetrical energy-absorbing deformation so that, upon receipt by the bumper system of an impact having an energy value greater than the terminal energy-absorption value of the element and after full deflection of the element, the fully-deflected element is rotated through an angle of at least 90°.



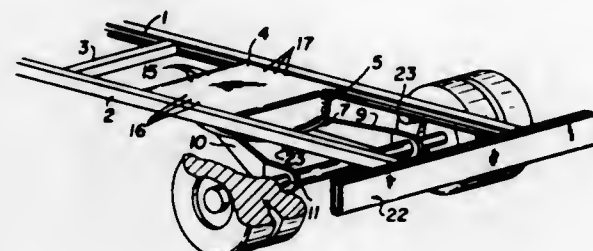
3,822,908

**AIR SUSPENSION WITH TAPERED AIR BAG**  
Rene Goulland, New York, N.Y., assignor to Joseph Mercadante, Greenwich, Conn.

Division of Ser. No. 110,704, Jan. 28, 1971. This application  
Nov. 6, 1972, Ser. No. 304,219  
Int. Cl. B60r 19/00

U.S. Cl. 293—68

3 Claims



An air bag having a tapered cross-section in the direction of the length of the vehicle has one surface mounted to the vehicle frame. The other surface of the air bag contacts a suspension member which extends outward (as a lever member) from the greater cross-sectional portion of the air bag and the vehicle axle is attached thereto. In one embodiment the suspension member is flexibly coupled to the chassis by flexible cables, or the like, including side cables which prevent side-sway of the vehicle.

3,822,909  
**BUMPER STRIP**

Seabourn S. Livingstone, Grosse Pointe Farms, and Herbert H. Hillman, Marysville, both of Mich., assignors to St. Clair Rubber Company, Marysville, Mich.

Filed Aug. 28, 1973, Ser. No. 392,193  
Int. Cl. B60r 19/06, 19/08

U.S. Cl. 293—71 R

10 Claims



An impact-absorbing bumper comprised of a strip composed of a resilient material and a plurality of fasteners embedded at spaced intervals therealong which project outwardly of the rear mounting face of the strip. Each fastener is comprised of a plurality of outwardly projecting engaging legs which are biased in a mutually separating direction and into interlocking engagement with the edges of an aperture provided in a mounting plate on which the bumper strip is to be installed. The separating bias on the engaging legs of each fastener is primarily achieved by an integrally formed rearwardly projecting portion of the resilient material which extends between the inner surfaces of the engaging legs, thereby preventing inadvertent disengagement of the fasteners from the mounting plate as a result of shocks and vibrations.

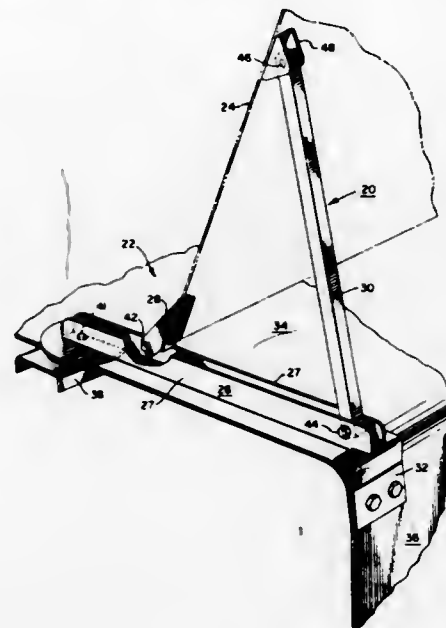
3,822,910

**UNIVERSAL WIND DEFLECTOR SUPPORT SYSTEM**  
Nathaniel C. Wiley, Jr., Weston, Conn., assignor to Rudkin-Wiley Corporation, Stratford, Conn.

Filed June 28, 1973, Ser. No. 374,776  
Int. Cl. B60j 1/04

U.S. Cl. 296—1 S

7 Claims



A wind deflector support system universally applicable for mounting to the roof of all different types of tractors and cabs is provided by employing a support system comprising a deflector bracket, a support column, a cab bracket, and an arcuately adjustable channel iron member. By providing a channel iron member having one end that incorporates a pivotable hemispherically articulating joint with the other end attachable to a rotatable bracket, a universal wind deflector support system is provided which is capable of being mounted to any type of cab configuration presently on the market, along with any type of cab configuration in the foreseeable future.

3,822,911

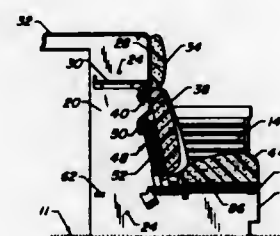
**CONVERTIBLE SEAT, SUPPORT PLATFORM AND STORAGE COMPARTMENT FOR MOTOR VEHICLE**

Arthur O. Radke, Milwaukee, and Shawn H. Eimen, Cudahy, both of Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 24, 1972, Ser. No. 309,570  
Int. Cl. B60n 1/10

U.S. Cl. 296—66

5 Claims



Convertible seats for a van-type motor vehicle is attached to the vehicle in such a way that it may be easily removed when desired. The unit includes a base portion for supporting a seat cushion and rearwardly extending upright side portions. The side portions are connected at their upper edges by top and front wall portions which cooperate with a rear seat cushion attached to the front of the uprights below the front wall portion to define a storage compartment behind the seat. The front seat cushion is pivotally mounted to the base so that it may be flipped forwardly to define a flat support platform. A two sectioned rear flat support platform is also pivotally

mounted behind the rear seat cushion in such a way that the rear support sections can be held in a generally vertical position when not being used, thus permitting the storage compartment to accommodate tall articles. Alternatively, the rear sections can be placed in a horizontal position with the rear section either being folded under the front section or extended outwardly therefrom to provide a shallow or deep lower shelf in the storage compartment. All of the support surfaces are on the same level so that when the seat back is removed the front and rear support platforms can be used together to support long items or to form a flat base suitable for supporting a mattress and bedding. The various front and rear support surfaces are usable independently, irrespective of whether or not the rear seat cushion is in position separating the front and rear portions of the unit.

frames coupled by links for relative scissor-like rocking movement and folding, a flexible web seat, with means for easily removing and changing the length thereof and an adjustable frame-positioning strap interconnecting the frame legs, the frames and links being spaced by laterally offset members to prevent pinching of the user's hands during relative movement of the frames and links.

## ERRATUM

For Class 297—195 see:  
Patent No. 3,822,917

3,822,914

**RECLINING SEAT**

Teiji Iida, and Noboru Yoshimura, both of Tokyo, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Oct. 3, 1972, Ser. No. 294,504

Claims priority, application Japan, Oct. 8, 1971, 46-79218  
Int. Cl. A47c 1/24

U.S. Cl. 297—355

2 Claims

3,822,912  
**CABLE DRIVE AND GUIDE FOR AUTOMOBILE SLIDING ROOFS**

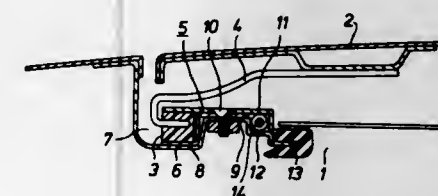
Horst Bienert, Max-Klingerstr. 15, 8035 Gauting, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf, Germany

Filed Apr. 3, 1973, Ser. No. 347,369

Claims priority, application Austria, Apr. 4, 1972, 2886/72  
Int. Cl. B60j 7/00

U.S. Cl. 296—137 G

12 Claims



A cable drive and guide system for rigid automobile sliding roofs where the roof opening frame includes on each side a rain channel, a longitudinal ridge profile, and a guide profile for the push-pull-type drive cable, a removable upper guide profile forming part of the sliding roof guide on one side of the ridge profile and part of the drive cable guide on the other side of the ridge profile.

3,822,913

**ADJUSTABLE FOLDING CHAIR**

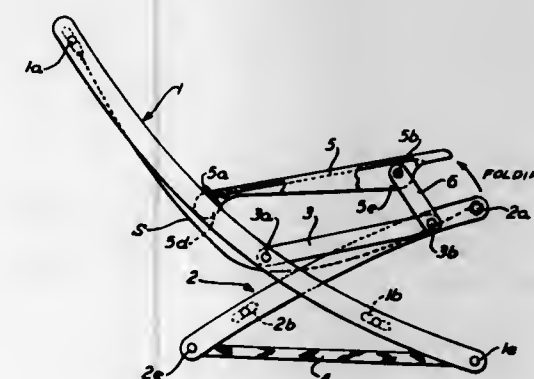
Jack Raver, 2400 Sedgwick Ave., New York, N.Y. 10468

Filed June 14, 1972, Ser. No. 262,795

Int. Cl. A47c 4/00

U.S. Cl. 297—18

3 Claims



Folding chair adjustable for different sitting-rocking and reclining positions comprising two generally rectangular

The present invention relates to a reclining seat wherein a latch plate is pivotally mounted on an outer side of seat-back frame, and a releasable means is provided for fixing and unfixing the latch plate with respect to the seat-back frame, and an oil cylinder with a variable effective length is provided between a shaft mounted on said latch plate and a pin formed at the bottom of a seat cushion frame.

The present reclining seat allows the adjustment and set of the angle of inclination of a seat-back continuously over a wide range of angles, and permits the release of said set in a simple way when the seat back is to be inclined either forwardly or backwardly. When the seat back is to be returned back to the previous position from such forwardly or backwardly inclined position, it is only required to return the seat-back as it will automatically lock in the previously set position.

3,822,915

**SAFETY SEAT BELT HAVING FOUR FASTENING POINTS, FOR A MOTOR CAR SEAT**

Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed May 4, 1972, Ser. No. 250,170

Claims priority, application Italy, May 6, 1971, 24189/71

Int. Cl. A47c 31/00; A47d 1/00; B60r 21/10

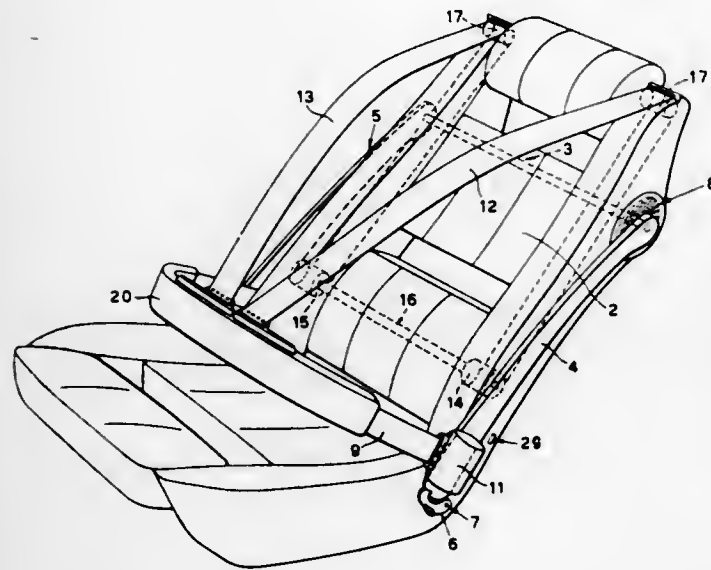
U.S. Cl. 297—389

12 Claims

A safety belt having four anchoring points in which there is provided an abdominal strap connected to a swinging frame



pivoted on the seat's sidewalls, and two paired shoulder straps which are connected to sliding members placed on the ab-



dominal strap and are connected at the other end, to the top corners of the seat back.

3,822,916

# IN-SITU EXTRACTION OF MINERAL VALUES FROM ORE DEPOSITS

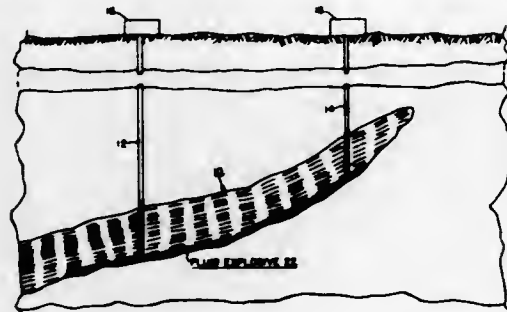
Charles H. Jacoby, Dalton, Pa., assignor to Akzona Incorporated, Asheville, N.C.

Filed Nov. 16, 1972, Ser. No. 307,144

Int. Cl. E21b 43/28

U.S. Cl. 299-4

8 Claims



There is disclosed a method for the in-situ extraction of metal/mineral values from metalliferous and/or nonmetallic ores occurring in substantially impermeable ore deposits of the laminar gneiss or schist or conglomerate types, or the like. The invention is particularly adaptable for example to the mining of copper and nickel and manganese carbonate or sulphide type ores. In accordance with this invention, the geologic formation containing the ore is first penetrated by two or more, suitably spaced-apart openings, such for example bore holes extending from the earth's surface to the bottom level of the deposit. There is then established a liquid-permeable "base" fractured zone interconnecting the lower ends of the bore holes within the ore body by means of a hydraulic-fracturing technique such as described in my U.S. Pat. No. 3,064,957; the base fracture being propped open by means of any suitable agent such as described for example in U.S. Pat. No. 2,645,291. An explosive material of liquid or slurry form

is then flowed into the cavitated U-tube system comprising the bore holes and the "base" fractured zone, thereby replacing the hydraulic fracturing fluid by an explosive material of fluidized powder or liquid or slurry form. This operation is conducted under only substantially the earth's-surface-ambient atmospheric pressure conditions, thereby eliminating serious prior art hazards. The explosive is then detonated so as to fracture the overlying ore body according to the petro-fabrics of the ore deposit and/or the stress patterns of the mineral constituents thereof. The ore body is thereby rendered permeable, and a suitable solvent/reactive material (such as sulphuric acid in the case of the metal carbonates) for recovery of the desired value-containing salt solution is then caused to percolate through the permeabilized ore deposit. The invention also contemplates a specific geometry for the solvent/reactive flow pattern through the ore body, featuring a vertical migration and "floating" of the solvent/reactant on top of the more metal concentrated fraction of the product flow stream; thereby maintaining an optimum reactant-to-ore status progressively upwardly within the lateral confines of the ore body. If sulphide type ores are involved oxygen or air and water may be employed as an in-situ solvent/reactant.

3,822,917

# ADJUSTABLE BACKREST FOR A SEAT FOR CYCLES

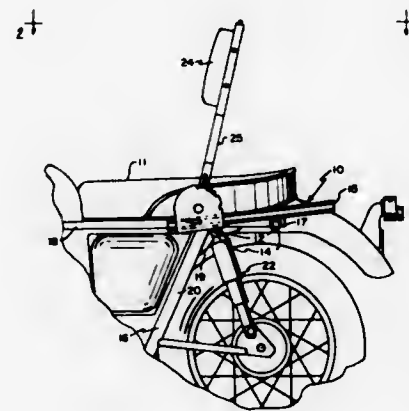
Samuel H. George, 44 Schivera Ave., Freehold, N.J. 07728

Filed May 22, 1972, Ser. No. 255,257

Int. Cl. B62j 1/00

U.S. Cl. 297-195

4 Claims









3,822,930

**MULTICHANNEL LIGHT EFFECT GENERATOR**

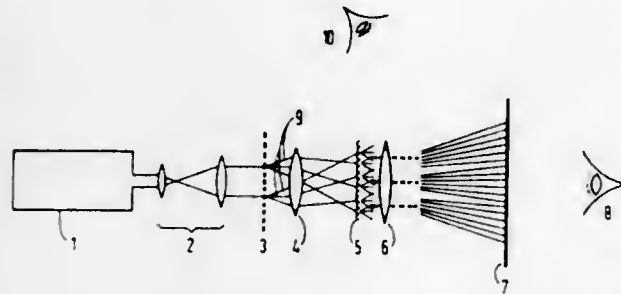
Nikolaos Douklias, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany  
Filed Sept. 14, 1972, Ser. No. 289,058

Claims priority, application Germany, Sept. 15, 1971, 2146154

Int. Cl. G02b 5/18

U.S. Cl. 350-162 R

10 Claims



A multichannel light effect generator for creating lighting effects and light figures having one or more coherent light sources for producing one or more beams of coherent light and directing the beams onto a light effect member to produce light patterns and figures visible to an observer characterized by one or more diffraction gratings disposed between the sources and the light effect member to dissect the beams into a plurality of diffraction orders. The diffraction gratings may be either stationary or moving and the light effect members may be either stationary or moving. In one embodiment, all of the diffraction orders are projected onto one or more light effect members and in another embodiment, one or more light effect members is provided for each of the diffraction orders.

3,822,931

**MICROSCOPE OBJECTIVE**

Masaki Matsubara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

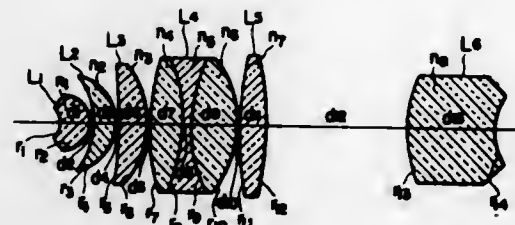
Filed May 23, 1973, Ser. No. 363,277

Claims priority, application Japan, May 27, 1972, 47-52799

Int. Cl. G02b 9/62, 21/02

U.S. Cl. 350-215

1 Claim



The present invention relates to microscope objectives and more particularly, to a high-magnification microscope objective with a magnification 100 and numerical aperture 0.9. Besides, for the microscope objective according to the present invention, aberrations, especially spherical and chromatic aberrations are favourably corrected by selecting the sum of powers at all lens surfaces in the lens system, i.e.,  $\sum(n_{i+1} - n_i)/r$ , as a positive value with a small absolute value.

3,822,932

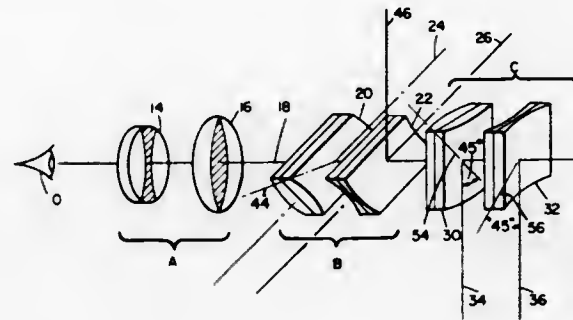
**OPTOMETRIC APPARATUS AND PROCESS HAVING INDEPENDENT ASTIGMATIC AND SPHERICAL INPUTS**

William E. Humphrey, Oakland, Calif., assignor to Humphrey Research Associates, Oakland, Calif.  
Filed June 15, 1972, Ser. No. 263,329

Int. Cl. A61b 3/02; G02b 13/08

U.S. Cl. 351-17

14 Claims



An apparatus and process for measuring optometric spherical and cylindrical optic correction to the eye is disclosed. Typically, two pairs of counter-rotating positive and negative cylindrical lenses are actually used or optically emulated. As actually used, each positive cylindrical lens is counter-rotated relative to its paired negative cylindrical lens. These counter-rotating positive and negative cylindrical lenses produce variable positive and negative cylinder power relative to two axes substantially orthogonal to the optical axis of the lens instrument. Each pair of cylinders is aligned and counter-rotated relative to the remaining pair of cylinders to generate its positive cylinder and negative cylinder along the optical axes at a non-coincident angle (preferably precisely 45° removed) from the corresponding axes of the remaining counter-rotating lens pair. By choosing preselected positions of counter-relative rotation between the paired lens elements of each pair, virtually all optically practical angles and powers of cylindrical lens astigmatism correction can be generated independent of the spherical optical properties of any ocular lens train. Provision is made for the emulation of counter-rotating lens pairs by the insertion of the lens elements having variable astigmatic and spherical powers with the aforementioned optical properties. The process includes a Cartesian coordinate plot for describing astigmatic correction with reduced error, especially at low cylinder power.

3,822,933

**LEVEL CONTROL**

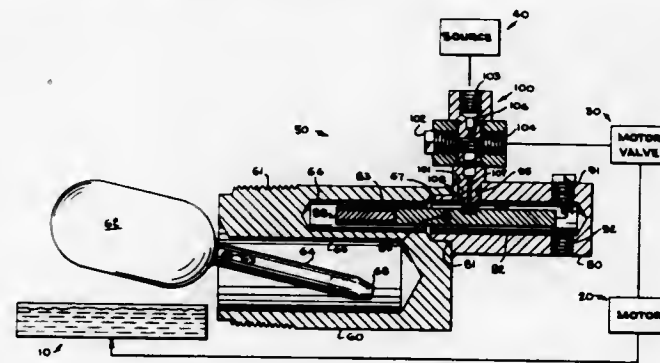
J. Wallace Johnson, New Caney, Tex., assignor to Liquid Level Electronics, Inc., Houston, Tex.

Filed Oct. 10, 1972, Ser. No. 295,924

Int. Cl. F16k 31/08

U.S. Cl. 251-65

7 Claims



A liquid-level control, utilizing a magnet-containing float lever arm to control the fluid input to or output from a vessel.

3,822,934

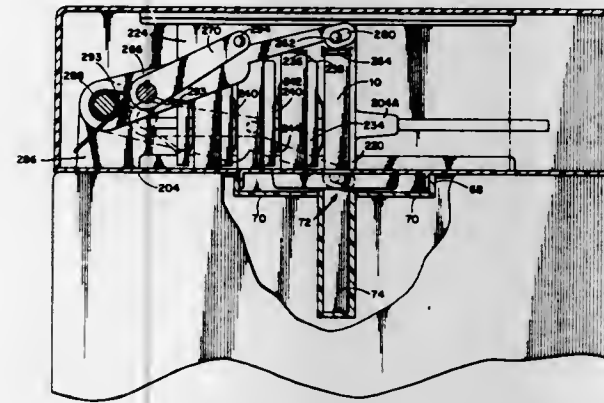
**CASSETTE CHANGER FOR USE WITH A PHOTOGRAPHIC PROJECTOR ADAPTED TO RECEIVE A MULTI-PURPOSE FILM HANDLING CASSETTE**

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Filed Dec. 26, 1972, Ser. No. 318,513

Int. Cl. G03b 21/04

U.S. Cl. 352-123

24 Claims



A cassette changer is provided in the form of an accessory which may be attached to a projector/processor that is configured to receive multi-purpose (self-developing) film handling cassettes. The changer includes a magazine for holding a plurality of cassettes and mechanisms for automatically moving the cassettes, one at a time, between the magazine and an operative position within the projector/processor.

3,822,935

**FILM FEED MECHANISM FOR REEL PROJECTORS AND THE LIKE**

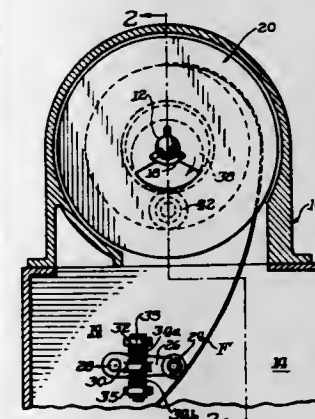
George F. Krtous, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,570

Int. Cl. G03b 1/00

U.S. Cl. 352-166

20 Claims



A film projection apparatus which has a film supply reel and a projection station located at a film gate where the film is moved intermittently past the projection station. A film feed mechanism is operatively associated with the film supply reel to positively feed film from the reel toward the projection station in pulsations to provide sufficient slack in the film so that the film is not required to be pulled directly off of the supply reel by the film moving mechanism at the film gate. In one form of the invention the film supply reel is intermittently rotated in response to tension in the film as it leaves the reel whereby the film feed pulsations are at a frequency which is a function of such tension. In another form of the invention eccentric cam means intermittently rotate the film supply reel whereby the film feed pulsations are at a frequency which is a function of the speed of the film feed itself.

3,822,936

**OPTICAL SYSTEM FOR PANORAMIC PROJECTION**

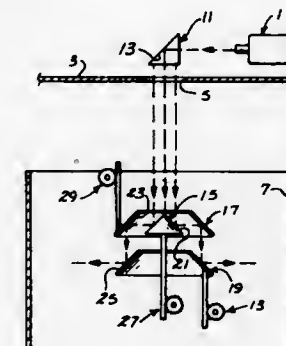
Gerald J. Troje, 1719 Centre St., Ridgewood, N.Y. 11227; Edward L. Schiavone, 10502 Insley St., Silver Spring, Md. 20902, and Joseph A. Pinzone, 3829 Bushwick Ave., Brooklyn, N.Y. 11221

Filed Feb. 23, 1973, Ser. No. 335,166

Int. Cl. G03b 21/28

U.S. Cl. 353-99

3 Claims



An overhead projector is combined with a reflecting prism and an assembly of frusto-conical reflecting surfaces, each of which is individually adjustable with respect to the others, to produce panoramic motion picture images on a circular screen disposed peripherally about an audience.

3,822,937

**SLIDE PROJECTOR WITH MEANS TO ELIMINATE JAMS**

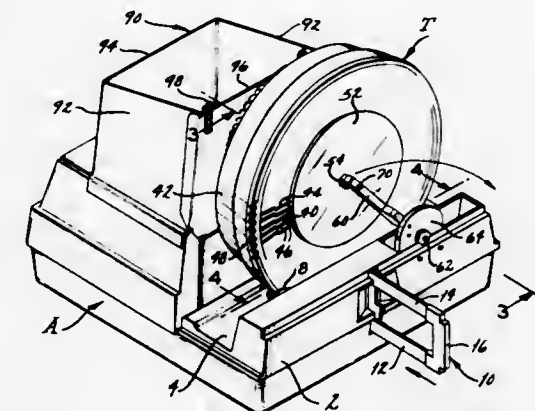
Everett C. Kroeger, Mattoon, Ill., assignor to VueTech Corporation, Maryland Heights, Mo.

Filed July 24, 1972, Ser. No. 274,230

Int. Cl. G03b 23/02, 23/06

U.S. Cl. 353-114

10 Claims



A projector capable of holding a circular slide tray and having a pinion gear which engages a rack at the periphery of the tray for indexing the tray is provided with a retaining arm which is engageable with the back face of the slide tray to prevent the rack at the periphery of the tray from backing away from the pinion gear. This insures that the rack remains fully engaged with the pinion gear and that the tray indexes completely, so that the changer arm of the projector will not jam as it moves into and out of the tray. The pinion gear rotates about a spindle, and this spindle serves as a mount for a guide shoe which receives the changer arm and confines it in the direction transverse to the direction of movement for the changer arm. Thus, the changer arm has little free motion in that transverse direction and will precisely align with the slides in the tray.



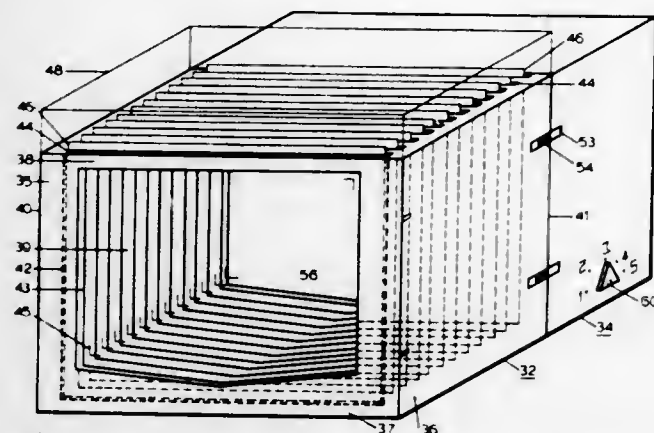
3,822,938

## THREE DIMENSIONAL DISPLAY

Max Hirsch, 4810 N. 11th St., Philadelphia, Pa. 19141  
Division of Ser. No. 823,392, May 9, 1969. This application  
Jan. 4, 1971, Ser. No. 103,510  
Int. Cl. G03b 21/00

U.S. Cl. 353-121

11 Claims



A process generates and displays representations of various entities—solid objects, scenes, graphs, lines, and points—in true three dimensional space (3D) space. A series of segments of thin transparent film are marked with respect to reference elements of the film segments to correspond to a series of sections of an entity. The segments are assembled spaced apart in corresponding sequence in an apparatus for display, aligned therein by their reference elements; and illuminated by a diffuse substantially uniform light source at one end of the sequence. The assembly of marks on the film segments can be seen from the other end of the sequence by transmitted light as a three dimensional representation of said entity. Apparatus and film segments have unique features accommodating the process of this invention.

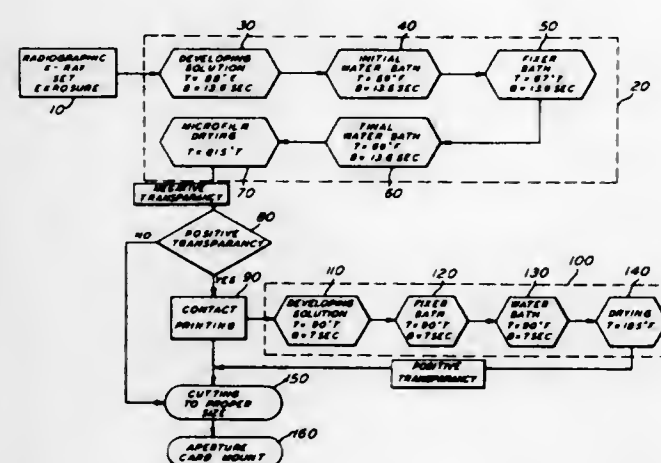
3,822,939

## METHOD FOR PHOTOGRAPHING A SET OF VARYING CONTRAST RADIOGRAPHIC X-RAYS

Stanley A. Hoffman, 4 Langdon Ln., Narberth, Pa. 19072, and  
David J. Paxton, 168 S. Highland, Springfield, Pa. 19064  
Filed Mar. 30, 1971, Ser. No. 129,453  
Int. Cl. G03b 27/02

U.S. Cl. 355-132

15 Claims



A method for photographing a set of varying contrast radiographic X-rays for mounting within openings of an aperture card or within a transparent jacket. A set of radiographic X-rays are photographed with a microfilm camera. The film is processed through a succession of developing, fixation and water baths to provide a film negative transparency. The negative may be cut and mounted on the aperture card or inserted

in the jacket or a positive transparency may be formed for mounting purposes. The positive transparency is formed by passing the negative through a contact printer and then processing the resulting positive film through a series of developing, fixation, and water baths. The positive transparency is then cut to proper size and mounted on the aperture card.

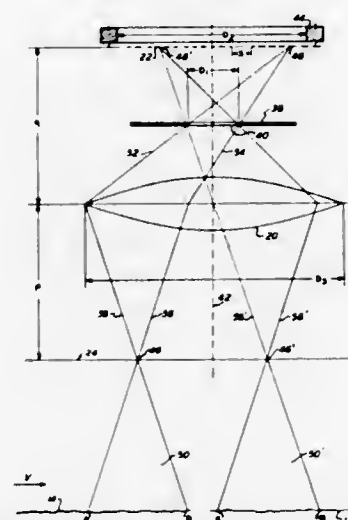
3,822,940

## VELOCIMETER

Lester I. Goldfisher, New Rochelle, N.Y., assignor to The Singer Company, Little Falls, N.J.  
Filed Oct. 20, 1972, Ser. No. 299,316  
Int. Cl. G01p 3/36

U.S. Cl. 356-28

6 Claims



The present invention relates to velocity measuring devices wherein the center frequency of a pattern of backscattered energy, proportional to the relative velocity between two objects, is detected. In particular it improves the accuracy of prior art systems by desensitizing the device to variations in distance between the device and the reflecting surface. This is achieved by interposing in the receiving section of the device a limiting aperture which restricts the backscattered energy contributing to the detected pattern to that energy which remains identical as the reflected surface passes through the field of illumination of the device.

3,822,941

## SCANNING MONOCHROMATORS

John M. Roche, West Cedding, and Rene C. Sawyer, Jr., Shelton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 878,102, Nov. 19, 1969, Pat. No. 3,659,945. This application Sept. 23, 1971, Ser. No. 183,150  
Int. Cl. G01j 3/06, 3/18

U.S. Cl. 356-100

9 Claims

A scanning monochromator includes a plurality of diffraction gratings mounted on a rotatable turret, so that each grating may be moved and precisely indexed into operative position. Each grating so positioned is angularly rotated about its axis by the same scanning arm, driven by a cam having two similar (but different) contours for producing one of two similar scanning functions for the various gratings. Preferably more interchangeable order-separating filters than gratings are included to insure complete and efficient filtering (e.g., 14 filters for 7 gratings). Both the stepping of the grating turret and of the filters (e.g., on a filter wheel) are controlled by (digital) signals, derived from the actual wavenumber being separated, as precisely read by (coarse and fine) digital encoder discs on the wavenumber scanning driving shafts (before and after a large-ratio reduction system). The digital con-

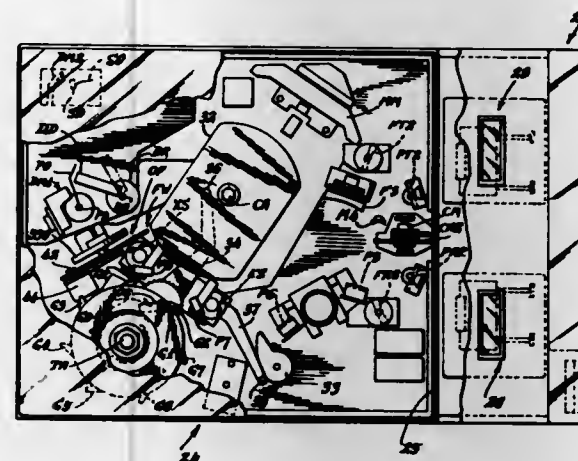
3,822,943

## APPARATUS FOR ESTABLISHING A VISIBLE PLANE OR FAN OF LIGHT

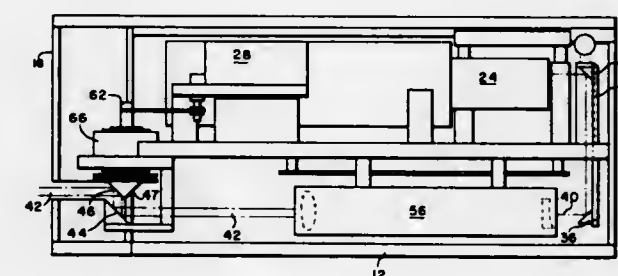
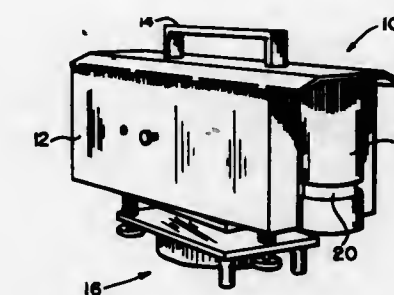
Mark T. Mason, Peterborough, N.H., assignor to New Hampshire Ball Bearings, Inc., Peterborough, N.H.  
Filed Feb. 28, 1973, Ser. No. 336,697  
Int. Cl. G01b 11/26

U.S. Cl. 356-138

4 Claims



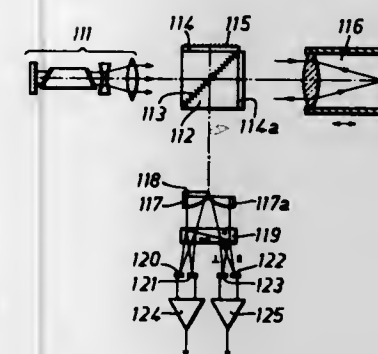
control signals are free of any non-systematic errors, and allow the instrument to be "indexed" to any desired wavenumber (and then "instructed" to scan to any other wavenumber automatically).



3,822,942  
METHOD OF TESTING A LENGTH, ANGLE, PATH DIFFERENCE OR SPEED BY DETECTING INTERFERENCE AND APPARATUS THEREFOR  
Fromund Hock, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany  
Filed May 31, 1972, Ser. No. 258,297  
Claims priority, application Germany, June 3, 1971, 2127483  
Int. Cl. G01b 9/02

U.S. Cl. 356-106 R

10 Claims



A testing method utilizing detecting interference in a two-beam interferometer includes in addition to the already known steps the step of splitting the combined beam into a plurality of signal beams after the partial beams have been combined in a combining step. Means are provided for additionally influencing the relative phase angle of complementary states of polarization in the signal beams to generate quadrature signals. By the use of polarization analyzers with two output pairs, push-pull signals in quadrature are obtained. In addition it is possible to introduce corrections common to all signals by shifting the phase relation in the combined beam prior to the splitting in the signal beams.

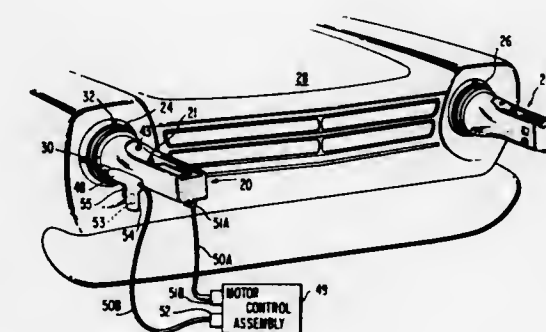
3,822,944  
ORIENTATION DETECTION AND ALIGNMENT METHOD AND APPARATUS

Evan Leon Hopkins; Evan Lloyd Hopkins, and Jerry L. Wedel, all of Emporia, Kans., assignors to Hopkins Manufacturing Corp., Emporia, Kans.

Filed Dec. 14, 1971, Ser. No. 207,829  
Int. Cl. G01b 11/26

U.S. Cl. 356-152

10 Claims



A method and apparatus for detecting orientation with respect to predetermined frames of reference particularly for



use in aligning vehicle headlamps relative to frames of reference such as the true horizontal and the longitudinal axis of the vehicle. Orientation relative to the true horizontal is detected by comparing the electrical responses of two photocells which have a peak spectral response at a predetermined wavelength and which bracket a gas bubble provided in an upwardly curved transparent housing containing both the bubble and a fluid. The photocells are illuminated through the housing by associated light emitting diodes which have peak emissivities at wavelengths matched to the peak spectral response of the corresponding photocells. Orientation relative to a predetermined axis such as the axis of the vehicle is detected by detecting the orientation of a planar surface defining two brightness zones relative to a light beam originating at a light source as a concentrated light spot and diverging along the length of the beam. When aiming headlamps, the two orientation detecting means are mounted on a pair of headlamp aiming tools which are retained on the headlamps in a predetermined orientation relative thereto. Signals related to the detected orientation are generated by the orientation detectors and are selectively applied to a headlamp position adjusting means to modify the position of the headlamps in response to the detected orientations. The appropriate orientation signal may be selected automatically in response to the position of the adjusting means.

3,822,945

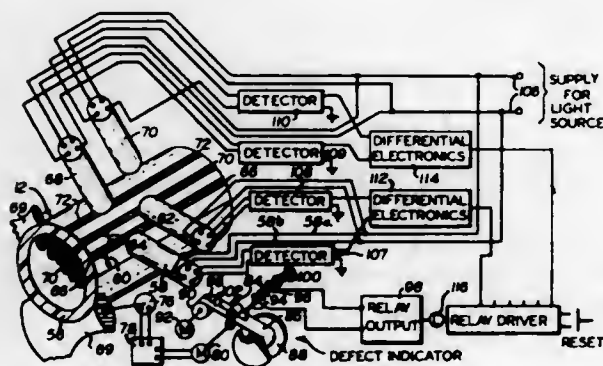
**OPTICAL SCANNING OF ELECTRICAL CABLE SHIELDS**  
Daniel E. Robinson, Metuchen, and Robert A. Schmidt, Jr., Denville, N.J., assignors to General Cable Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,640

Int. Cl. G01b 11/04

U.S. Cl. 356—159

20 Claims

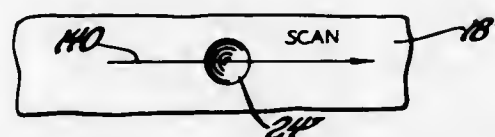
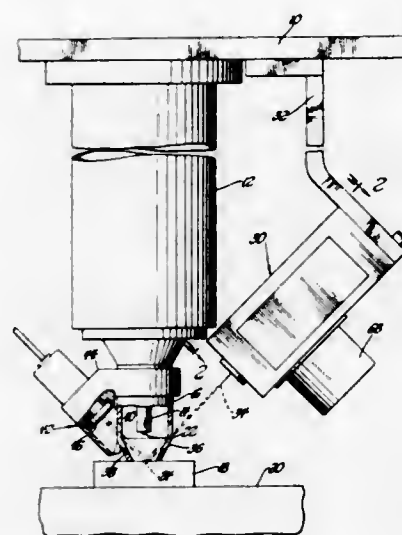


This apparatus, for detecting abnormalities in an electrical cable, has probes located at angularly spaced locations around the circumference of the cable. The probes are means for directing light beams against the surface of the cable and are light sensitive elements that pick up the light reflected from the cable surface. As the cable advances with continuous motion through a testing station, changes in the amount of light reflected operate detectors. Adjacent probes are connected with bridge circuits to make the operation independent of changes in the ambient light conditions. This feature utilizes axial as well as angular spacing of adjacent probes. A hinge sleeve for holding the probes facilitates application and removal of the test apparatus to and from the cable; and the sleeve opens automatically to pass protruberances of the cable which would strike the probes.

3,822,946  
**DIMENSIONAL MEASURING APPARATUS USING OPTICAL SCAN ESPECIALLY FOR HARDNESS TESTING**  
Gerald Alexander Rynkowski, Mount Clemens, Mich., assignor to Schiller Industries, Inc., Warren, Mich.  
Filed Dec. 7, 1972, Ser. No. 313,087  
Int. Cl. G01b 11/02

U.S. Cl. 356—160

25 Claims



A noncontacting dimension measuring instrument is disclosed which utilizes an optical scanner and a pulse width measuring circuit. It is adapted to measure a dimension of a surface feature of a workpiece, especially for use as an automatic readout for a hardness testing machine. The measuring instrument utilizes a video detector, a level detector and a gating circuit which gates out or excludes unwanted video pulses. In hardness testing where the video signal may be produced by multiple reflections from a single indentation, logic means are provided to exclude the effect of reflections from the bottom of the indentation. The gate signal is produced by a gate generator in response to a start of scan detector signal which is adjusted in position and width to coincide with and slightly overlap the desired video pulse. The gate output is applied to a constant amplitude pulse generator and the time average value of the constant amplitude pulses is proportional to the dimension of the surface feature being measured.

3,822,947

**FLUID SAMPLE FLOW CELL**

Roy W. Aday, Jr., 331 Holgate St., La Habra, Calif. 90631  
Filed Feb. 28, 1973, Ser. No. 336,401

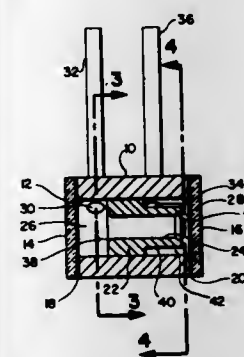
Int. Cl. G01n 1/10

U.S. Cl. 356—246

9 Claims

A fluid sample flow cell having a body member with a cylindrical opening therethrough, the cylindrical opening being sealed at opposite ends with transparent windows. An insert having an axially extending aperture therethrough is snugly fitted within the cylindrical opening, the end surfaces being displaced from the transparent windows to define an entrance chamber and an exit chamber respectively. The entrance chamber is provided with an inlet port within the body member, the inlet port being disposed parallel to and displaced from the diameter of the cylindrical opening. The exit chamber is provided with an exit port within the body

member, the exit port being displaced from and parallel to the diameter of the cylindrical opening. The insert is provided



with an annular portion extending into the exit chamber, the exit port communicating with the exit chamber in proximity to the outer surface of the annular portion.

3,822,948

**VISCOUS MATERIAL APPLICATOR, ESPECIALLY PAINT APPLICATOR**

Alfons Handl, Friedrichshafen, Germany, assignor to Fa. Rugel & Lutz Maschinenfabrik

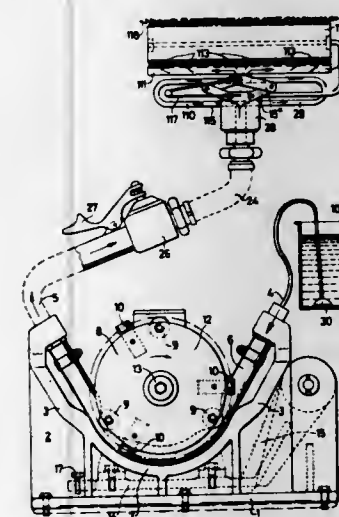
Filed May 22, 1972, Ser. No. 255,759

Claims priority, application Germany, Dec. 16, 1971, 2162455; Mar. 7, 1972, 2210834; Feb. 2, 1972, 2209261

Int. Cl. B43k 5/02; F04b 3/08; F24b 45/06

U.S. Cl. 401—146

20 Claims



A so-called hose or peristaltic pump is designed so that the pump itself limits the maximum pressure of the viscous liquids or the like delivered therefrom. In one embodiment, the peristaltic pump and its accessories, such as the driving motor, are mounted on a rocker arm pivotally supported adjacent one end by a base carrying a circularly curved support member engageable with the hose, so that pinching rollers on a roller carrier forming part of the pump compress the hose against this circularly curved member. The weight of the pump and its accessories constitutes a pressure regulating means. In other embodiments of the invention, the pinching rollers are spring biased radially outwardly so that, responsive to excessive pressure, they will move inwardly against the spring bias. The spring bias may be applied directly to the axles for the pinching rollers or to pivoted levers on which the pinching rollers are mounted.

3,822,949

**BALL POINT PEN BACK END CLOSURE**

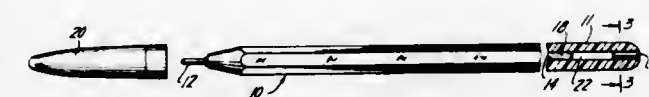
Franklin Dick, New York, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 3, 1970, Ser. No. 60,318

Int. Cl. B43k 7/02

U.S. Cl. 401—217

8 Claims



A pen plug particularly useful in ballpoint pens as a stopper to prevent back leakage of ink from the ink reservoir of such pens and yet function to allow passage of air into the pen interior. Such plugs include a plurality of substantially continuous synthetic filaments such as cellulose acetate, natural fibrous threads and synthetic filaments or mixtures of differing synthetic filaments encased in a plastic sheath.

3,822,950

**FILE FOLDER PAPER FASTENER**

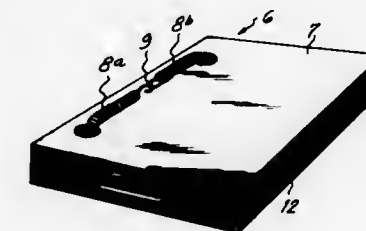
Coleman R. Chamberlin, P.O. Box 84, Windsor, N.Y. 12550  
Filed Mar. 26, 1973, Ser. No. 344,849

The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.

Int. Cl. B42f 3/06

U.S. Cl. 402—15

3 Claims



In a preferred embodiment of the invention, a paper sheet holder composed of a rigid strip having a hole in each of opposite ends of a small diameter and each hole having spirally twisted thereinto a base end of a spiral coil spring, the opposite end of each spring having at least the last coil thereof twisted to serve as a hook coil for engaging the hook coil of the other spring, each of the two coil springs having a diameter greater than its respective hole into which it is twisted, and each spring being threaded through aligned hole of stacked sheets of paper having two holes spaced one from the other at opposite ends of the paper sheets, with the under side of the springs-mounted strip having a masking surface adhered thereto with a sheet rigid backing leaf mounted to the masking materials exposed surface.

3,822,951

**DRIVE SHAFT COUPLER**

James H. Bornzin, La Grange, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed May 26, 1972, Ser. No. 257,403

Int. Cl. F16d 1/00

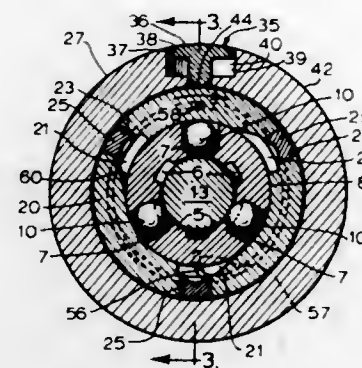
U.S. Cl. 403—316

6 Claims

A drive shaft knuckle coupler having a hub with a splined shaft-admitting bore and a series of locking detents pocketed in radial openings in the hub. The detents project into the bore to lock into an annular groove in the shaft. A cam ring is



rotatable about the hub and has relieved areas alignable with the detents to permit exit of the detents from the bore to



release the shaft. An outer ring with a latch is provided to releasably lock with the cam ring and locate it in release and set positions.

### 3,822,952 DRILL ROD COUPLING

Ernst Lennar Johansson, and Karl Lennart Gosta Lumen, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Continuation-in-part of Ser. No. 104,560, Jan. 7, 1971, abandoned. This application July 18, 1972, Ser. No. 272,873 Int. Cl. E21b 17/02

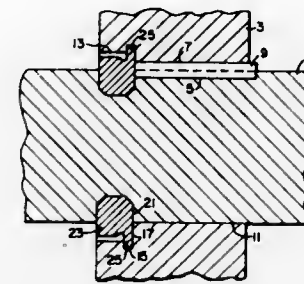
U.S. Cl. 403—343

2 Claims



A drill rod coupling assembly in which each of two rods has at least two spaced sets of threads, the outer of which are coupled by a sleeve so that percussive force is transmitted through the abutting ends of the rods. The threads at the end of each rod are designed for surface to surface contact with matching surfaces on a stop in the sleeve. Whenever the outer set of threads is worn or broken they may be cut off and a new end similar to the original end is provided and may be coupled by the sleeve.

3,822,953  
DISC RETAINER DEVICE  
Richard S. Adelizzi, Newtown Square, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Nov. 7, 1972, Ser. No. 304,453  
Int. Cl. B60b 27/06; F16d 1/06  
U.S. Cl. 403—356 4 Claims



A turbine disc is keyed to a shaft and retained from axial movement by a circumferentially extending projection which is fixed relative to the shaft and extends into a circumferential groove in the disc, the projection being short so that the disc may be expanded by heating to slide over the projection.

3,822,954  
SECTIONAL CONCRETE ROAD CURBS FOR USE AS BORDERS FOR INSTANCE BETWEEN ROADWAYS AND SIDEWALKS

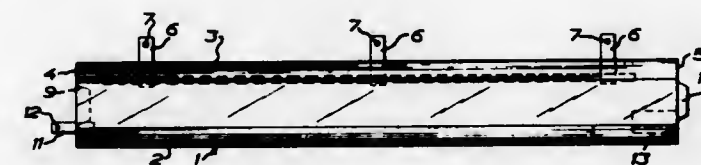
Rolf Ansgariusson, Sommarvagen 1, 54100 Skovde, Sweden  
Filed Nov. 27, 1972, Ser. No. 309,659

Claims priority, application Germany, June 28, 1972, 7224056

Int. Cl. E01c 11/22

U.S. Cl. 404—7

2 Claims



An elongated sectional concrete road curb for positioning, together with other curbs of identical configuration, in a row in interconnected end-to-end relationship on an asphalt layer to serve as a border between a roadway and a sidewalk lying at a higher level than the roadway. Fastening means are embedded in the curb at the molding thereof so as to protrude from one side face and one end face of the curb to engage keys driven into the asphalt layer. One end face of the curb has a protruding tongue while the other end face of the curb is formed with a recess of a shape complementary to that of the tongue.

3,822,955  
GROUND SURFACES  
Heinz Haferkamp, Wolfenbittel, and Gunter Peterson, Lingen/Ems, both of Germany, assignors to Deutsche Schachtbau- und Tiefbohrergesellschaft m.b.H., Lingen/Ems, Germany  
Filed Feb. 1, 1972, Ser. No. 222,492  
Claims priority, application Germany, Feb. 12, 1971, 2106723

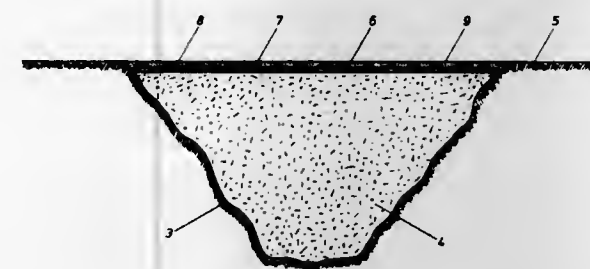
Int. Cl. E01c 7/00

U.S. Cl. 404—72

7 Claims

The invention relates to a method of filling craters or depressions in the ground or for constructing roadways on

ground which is not initially capable of supporting loads. A hard synthetic plastic foam is formed in the crater or on the



ground, the foam being formed so as to have a bulk weight sufficient to give the foam the necessary strength.

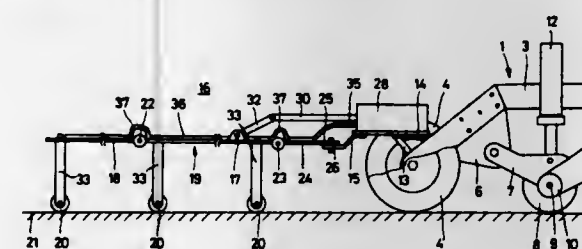
3,822,956  
MACHINE FOR CUTTING OR STRIPPING PAVEMENT  
Reinhard Wirtgen, Hohnerstrasse 5461, Windhagen uber Linz, Rhine, Germany  
Filed Mar. 5, 1973, Ser. No. 338,049

Claims priority, application Germany, Apr. 15, 1972, 2218350; Dec. 27, 1972, 2263611

Int. Cl. E01c 23/14

U.S. Cl. 404—95

40 Claims



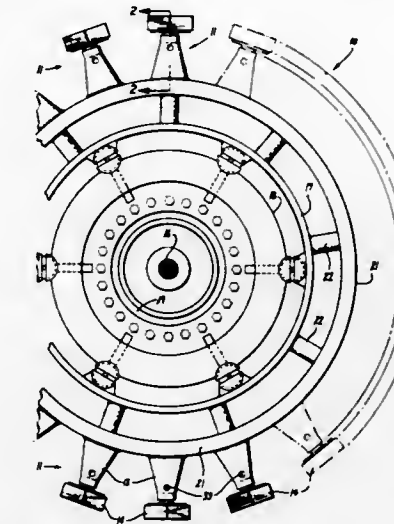
A machine for removing pavement by cutting or stripping away the pavement on a highway in connection with highway-repair operations. The apparatus includes a vehicle which has a suitable tool driven to cut or strip away the pavement from the surface of the highway. Since in many cases it is necessary to initially heat the pavement to prepare it for removal, the vehicle has operatively connected to its front end a frame which carries sources of radiant heat from which heat is directed down to the pavement to heat the latter in preparation for removal thereof. This frame is made up of sections connected to each other in such a way that the frame can be collapsed to a location carried by the front end of the vehicle so that the latter can travel without being hampered by riding of the frame and heating structure on the highway. The sections can be expanded from their inoperative position carried by the vehicle to an operative position extending forwardly from the vehicle so as to render the heating structure operative. The heating structure provides the radiant heat energy from a combustible gas which if it is derived from a tank carried by the vehicle in which the gas is in liquified form is first converted into dry gaseous form by a suitable vaporizer situated between the tank of liquified gas and the heating structure.

3,822,957  
EARTH COMPACTION PADS  
Fred Joseph Caron, Citrus Heights, and James Oliver Caron, Sacramento, both of Calif., assignors to Caron Compactor Co., West Sacramento, Calif.  
Continuation-in-part of Ser. No. 179,097, Sept. 9, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 300,136

U.S. Cl. 404—121

20 Claims

Compaction wheels are convertible from sheepfoot configuration to other configurations such as rectangular pads

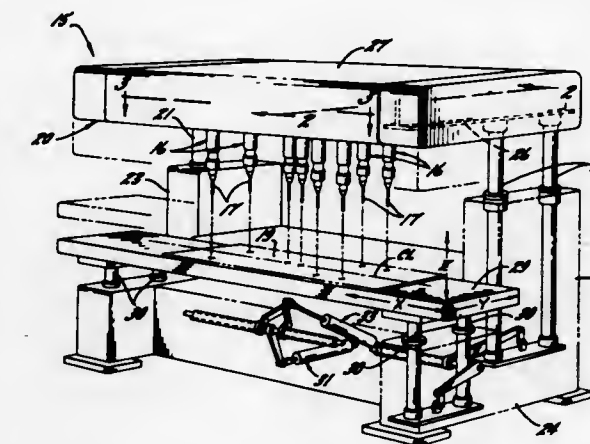


and have rigidly attached peripheral shanks for mounting removable, wear-cap holders equipped with replaceable, abrasion-resistant metal wear-caps. In certain embodiments the wear-cap holders are secured rigidly to the wheel periphery.

3,822,958  
MULTISPINDLE DRILLING MACHINE  
John M. Lewis, Rockford, Ill., assignor to Ekstrom, Carlson & Co., Rockford, Ill.  
Filed June 4, 1973, Ser. No. 366,543  
Int. Cl. B23b 39/18

U.S. Cl. 408—46

16 Claims



Each drilling unit is mounted on a Y-carriage which is supported for adjustment along the Y-axis by an X-carriage. The X-carriages are arranged in two rows and are individually adjustable along the X-axis. The X-carriages are adapted to interleave with one another along the X-axis while the Y-carriages are adapted to interleave with one another along the Y-axis to enable positioning of the drilling units as closely together as possible and in various selected patterns.

3,822,959  
DIVIDING OR INDEXING APPARATUS  
Jean-Louis Tabard, Geneva, Switzerland, assignor to Societe Genevoise D'Instruments de Physique, Geneva, Switzerland  
Filed July 25, 1972, Ser. No. 274,911  
Claims priority, application Switzerland, Aug. 4, 1971, 11508/71

Int. Cl. B23b 41/00

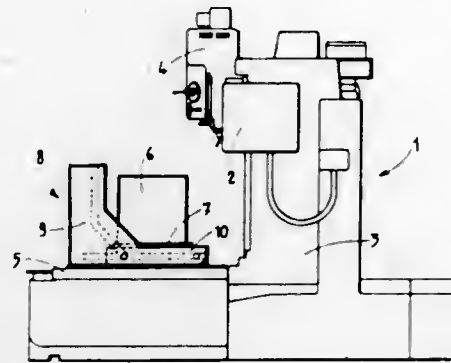
U.S. Cl. 408—89

1 Claim

Dividing or indexing apparatus for a machine tool, the apparatus including an inclinable rotatable plate and a frame comprising two portions, namely, a stationary portion,



secured to the machine, and a portion movable with respect to the stationary portion, the movable portion carrying the rotatable plate, the frame being so arranged that its movable



portion can effect a double movement, on the one hand of translation and on the other hand of rotation around a geometrical axis which is itself movable, permitting rocking movement of the plate.

3,822,960

# SET OF ELEMENTS COMBINABLE IN DIFFERENT ARRANGEMENTS AS WORKING TOOLS FOR MACHINE TOOLS

Jean Degen, Geneva, Switzerland, assignor to Societe Genevoise D'Instruments de Physique, Geneva, Switzerland  
Continuation-in-part of Ser. No. 91,690, Nov. 23, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 328,014  
Int. Cl. B23b 51/00

U.S. Cl. 408—226

1 Claim

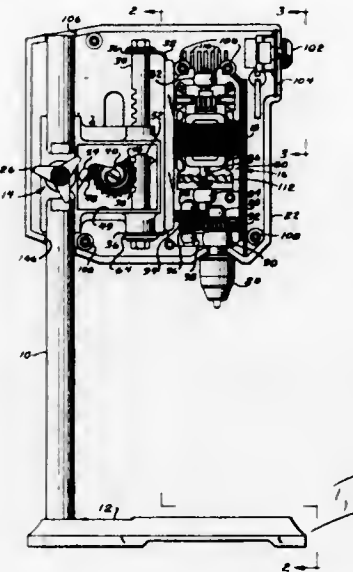


A tooling system allowing interchangeable use of different cutting tools for machine tools and comprehending a plurality of adapters, a plurality of intermediary members of different lengths and diameters, and a plurality of tool-holding heads, with each adapter being provided at one of its ends with means permitting mounting on the spindle of a machine tool and at its other end with a threaded boring for receiving a selected one of the intermediary members, and with a threaded portion of the intermediary member being threaded in the threaded portion of the adapter, and with intermediary members being provided each with a shoulder having an annular plane perpendicular to the axis of the tool and being in contact, when the intermediary member is threaded on the adapter, with a terminal axial face of the latter and with perfect coaxiality between adapter and intermediary member.

3,822,961  
VARIABLE SPEED DRILL PRESS  
Michael T. Lay, West Chicago, Ill., assignor to McGraw-Edison Company, Elgin, Ill.  
Filed Nov. 21, 1972, Ser. No. 308,416  
Int. Cl. B23b 39/00

U.S. Cl. 408—236

3 Claims

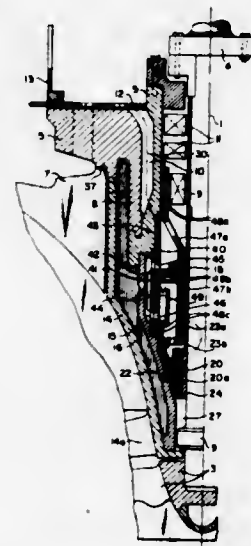


A variable speed drill press having a base with a column upstanding therefrom and a head secured to and adjustable heightwise on the column, a power head mounted from the column head and having a motor and a powered output shaft with a tool bit chuck thereon, an operating handle and pinion thereon mounted in the column head and engaged with a rack shaft on the power head for moving the power head in a cutting stroke relative to the column head and base, a post on the power head held by guide abutments or faces on the column head and having guide stops for adjustably limiting the cutting stroke, and a housing secured over the power head and also over the column head.

3,822,962  
HOT WATER PUMP WITH REMOVABLE SHAFT BEARING  
Rudolf Wieser, Voltsberg, Germany, assignor to Maschinenfabrik Andritz Actiengesellschaft  
Filed May 23, 1972, Ser. No. 255,977  
Claims priority, application Austria, June 29, 1971, 5635/71  
Int. Cl. F01d 1/02

U.S. Cl. 415—201

9 Claims



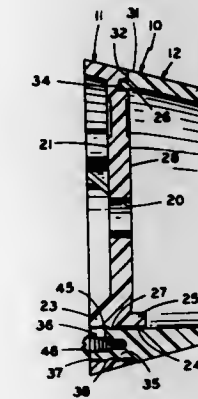
This invention relates to an improvement in a hot water pump having a removable shaft bearing in the upper pump

part and including a shaft, a pump cover, a sealing housing, an outer and an inner supporting tube, and a lower shaft bearing. The improvement comprises lower shaft bearing means having an outside diameter smaller than the inside diameter of the sealing housing and the inner supporting tube, whereby the lower shaft bearing may be pulled out through said inner supporting tube and sealing housing.

3,822,963  
MODEL AIRPLANE PROPELLER SPINNER  
Carl Goldberg, 9849 S. Claremont, Chicago, Ill. 60643  
Filed Jan. 24, 1973, Ser. No. 326,414  
Int. Cl. B64c 11/14

U.S. Cl. 416—245

11 Claims

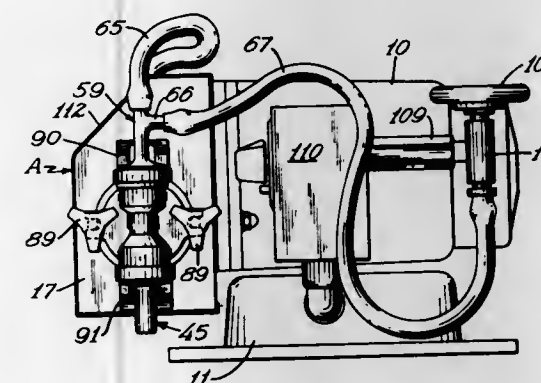


A model airplane spinner to be mounted with a propeller on the propeller shaft and thrust plate of an engine by a propeller retainer and providing a base plate mountable on the propeller to receive the propeller, retained on the propeller shaft, with a hollow dome adapted to be positioned on the front of the base plate to enclose the center of the propeller therein with releasable means for securing the dome in position.

3,822,964  
ICE CREAM PUMP  
Harold A. Berglund, Afton, and David F. Thomas, West St. Paul, both of Minn., assignors to Waterous Company, St. Paul, Minn.  
Division of Ser. No. 61,658, Aug. 6, 1970, Pat. No. 3,697,197.  
This application May 1, 1972, Ser. No. 248,855  
Int. Cl. F04b 49/02

U.S. Cl. 417—44

1 Claim

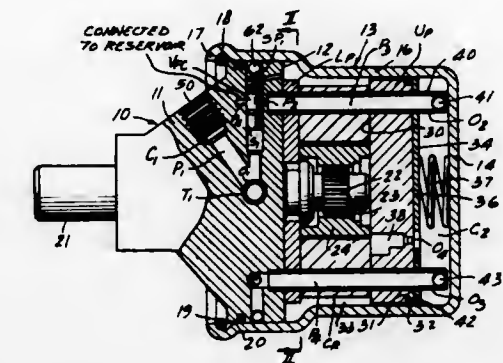


A double acting pump is provided for pumping air in one cylinder and liquid mix into another. The cylinders and valve housings, together with the inlet and outlet fittings, are readily separable for cleaning. The entire pump unit may be disassembled for cleaning by the removal of four knobs or nuts.

3,822,965  
PUMPS WITH SERVO-TYPE ACTUATION FOR CHEEK PLATE UNLOADING  
Gilbert H. Drutchas, Birmingham, and George A. Berman, Huntington Woods, both of Mich., assignors to TRW Inc., Cleveland, Ohio  
Filed Nov. 2, 1972, Ser. No. 303,115  
Int. Cl. F04b 49/02

U.S. Cl. 417—53

21 Claims

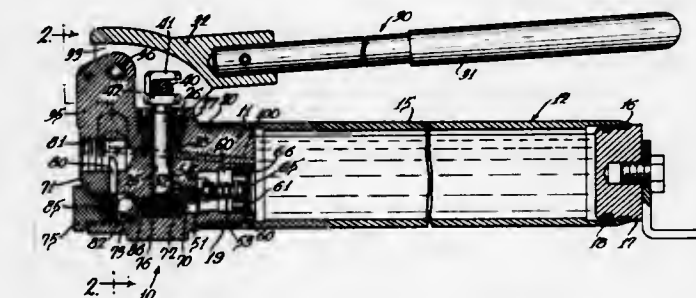


The pressure acting on a pressure loaded cheek plate in a pump is selectively vented by a servo valve actuated by the buildup of pressure in the pump outlet caused by normal parasitic losses in a downstream hydraulic flow circuit. Since it may be desirable to actuate the servo valve by the pressure drop across an orifice in the outlet line or by a suitable orifice in the pump return to pump, both embodiments are disclosed as exemplary means for achieving the premises of this design.

3,822,966  
HYDRAULIC PUMP  
Samuel B. McClocklin, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.  
Filed Oct. 26, 1972, Ser. No. 294,818  
Int. Cl. F04b 49/08; B66f 5/04

U.S. Cl. 417—311

3 Claims



A hydraulic hand pump having an integral reservoir associated with a body having a handle assembly for operating the piston member of the pump. The pump has relief valve structure mounted in the body and communicating with the reservoir with use of a part of the same flow path for supplying fluid to the pump piston and with a passage mounting both an intake valve and an outlet check valve. An outlet sure port and a release valve associated therewith has a return passage leading to reservoir.

3,822,967  
SUMP PUMP  
George I. Cade; Burt L. Beach; Milo E. Friesen, all of Prophetstown, Ill., and Samuel R. Phillips, San Francisco, Calif., assignors to Houdaille Industries, Inc., Buffalo, N.Y.  
Filed July 21, 1972, Ser. No. 273,949  
Int. Cl. F04b 39/06

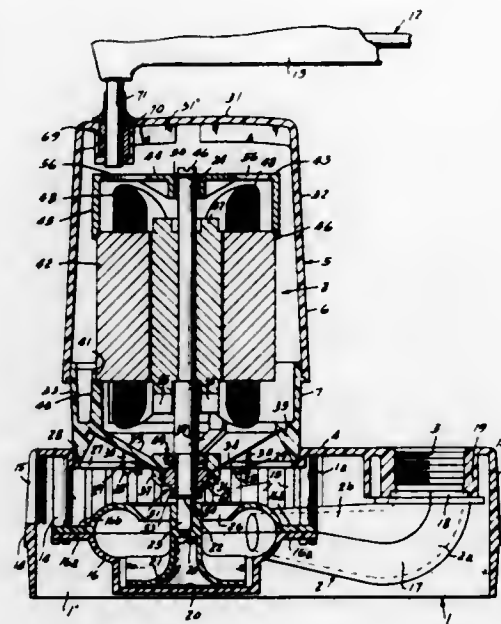
U.S. Cl. 417—368

2 Claims

A sump pump of especially simple, inexpensive construction employing primarily molded plastic components, other



than the electrical drive motor and associated components, comprising a novel assembly of molded plastic components in which adequate motor heat dissipation is provided by a metallic heat sink arrangement, and in which novel structural fea-



tures are provided including a floating drive shaft bearing arrangement and a novel carrying handle utilizing the electrical power conductors for the drive motor as a part of the handle structure.

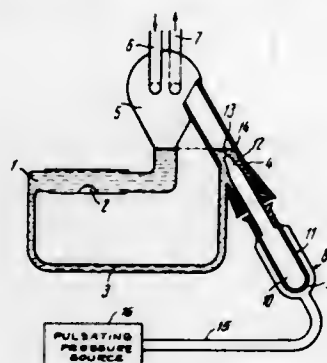
3,822,968

## PULSATING FLUID PUMPING SYSTEM

Nikolai Alexandrovich Makarov, mikroraiion "V", 31, kv. 42; Mikhail Grigorievich Maximov, mikroraiion "G", 1, kv. 31, and Anatoly Matveevich Khokhlov, mikroraiion "V", 24, kv. 24, all of Puschino Moskovskoi oblasti, U.S.S.R.  
Filed Mar. 10, 1972, Ser. No. 233,457  
Int. Cl. F04b 43/10, 45/00

U.S. Cl. 417-394

1 Claim



The pumping system can be utilized wherever pulsatory fluid pumping is expedient or possible.

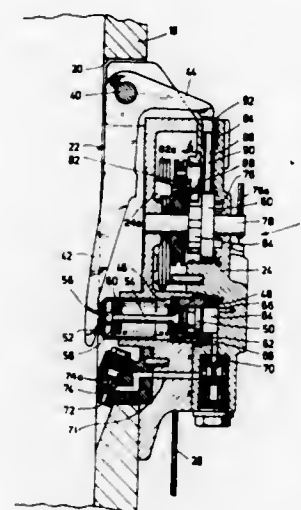
The system is distinguished by the fact that the positive-displacement pump employed therein is submerged into the fluid being pumped so, that the hole for fluid ejection is located below the level of this fluid, and the inner space of the pump working chamber permanently communicates with the fluid to be pumped.

3,822,969  
FUEL INJECTION PUMP FOR A DIESEL ASSISTED RAM  
Fritz Kummel, Esslingen, Germany, assignor to Delmay-Maschinenfabrik Reinhold dormfeld, Esslingen, Germany  
Filed Nov. 3, 1972, Ser. No. 303,397  
Claims priority, application Germany, Nov. 6, 1971, 2155310

Int. Cl. F04b 21/00

U.S. Cl. 417-437

8 Claims



A fuel injection pump for a diesel-assisted ram, pile driver or the like having a cylinder in which a ram piston is adapted to strike a percussion head. The pump comprises a compression chamber, a pump piston movable therein, an inlet from a reservoir of fuel and an outlet to the ram cylinder. A lever pivoted within the plane of the wall of the ram cylinder to extend into the path of the ram piston. The lever is displaced by the ram piston to move the pump piston to force fuel from the chamber to ram cylinder. Means are provided for adjusting the path of movement of the lever to vary the stroke of the pump piston and the volume of discharged fuel.

3,822,970

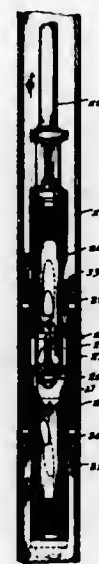
## SINGLE OR MULTIPLE STAGE BOTTOM HOLE WELL PUMP

E. D. Smith, and Robert C. Knight, Denver, Colo., assignors to Soper-Macey Enterprises, Inc., Colorado Springs, Colo.  
Filed Feb. 19, 1970, Ser. No. 12,719

Int. Cl. F04b 21/02

U.S. Cl. 417-552

2 Claims



A simplified bottom hole pump having a tubular plunger forming a valve cage and having means for connecting the

plunger to the pump rod string which also serves as end members for the valve cage, and communication is provided between the interior of the plunger and the annular space around the pump rod string by means of inclined apertures in the sides of the end extension connecting means. A reciprocable valve is disposed within the valve cage and is provided with radially spaced apart guide fins.

3,822,971

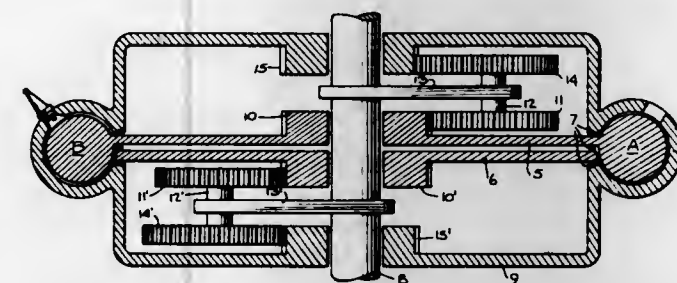
## ROTARY PISTON ENGINE

Kamal Najib Chahrouri, P.O. Box 869, Beirut, Lebanon  
Filed Nov. 1, 1972, Ser. No. 302,663

Int. Cl. F01c 1/00

U.S. Cl. 418-36

6 Claims



A rotary piston engine having a toroidal cylinder in which pistons accelerate and decelerate has the pistons connected to a rotary shaft by gear trains which need comprise only four gears.

3,822,972

## MULTISTART HELICAL ROTOR MECHANISM

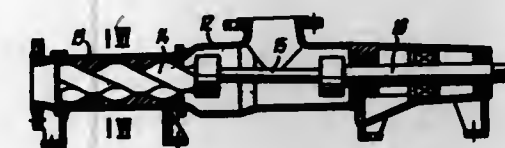
Asan-Nuri Abdulla Ogly, Naberezhnaya Tarasa Shevchenko 1/2, kv. 168; Dmitry Fedorovich Baldenko, Staro-Kashirskoe shosse 2, korpus 12, kv. 23; Molai Timofeevich Gusman, Vorobievskoe shosse, 11, kv. 69, all of Moscow; Anatoly Mikhailovich Kochnev, ulitsa Stakhanova, 40, kv. 53, and Samuil Solomonovich Nikomarov, ulitsa Stakhanova 42, kv. 10, both of Perm, all of U.S.S.R.  
Filed Nov. 20, 1972, Ser. No. 308,047

Claims priority, application U.S.S.R., Nov. 29, 1971, 1721434

Int. Cl. F01c 1/10

U.S. Cl. 418-48

2 Claims



Proposed geometrical parameters of a multi-start helical rotor mechanism, which can be used both as the working member of hydraulic or pneumatic machines and as a reducing device, permit the obtaining of a minimum contact pressure and provide enhanced smoothness of the engagement between the helical surfaces of the rotor and stator of the rotor mechanism.

3,822,973

## CARTRIDGE OIL SEAL FOR ROTATING COMBUSTION ENGINES

Harold F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Oct. 1, 1971, Ser. No. 185,581

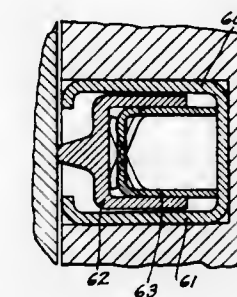
Int. Cl. F01c 19/00; F04c 15/00, 27/00

U.S. Cl. 418-142

18 Claims

An oil seal for the rotor of a rotary piston engine wherein the seal assembly includes a cartridge having a housing

member with an open axial end containing a sealing member axially movable in the housing and a spring member to urge



the sealing member out of the open end, the housing being configured to retain the sealing member at the other end.

3,822,974

## TOOL SET FOR POWDER COMPACTING PRESS

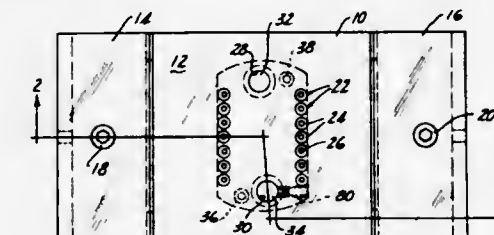
Raymond P. DeSantis, Roy Oak, and Georges D. DeTroyer, Grosse Ile, both of Mich., assignors to Wolverine-Pentronic, Inc., Lincoln Park, Mich.

Filed Aug. 23, 1972, Ser. No. 282,965

Int. Cl. B30f 11/00; B22f 3/02

U.S. Cl. 425-78

5 Claims



A tool set for use in conjunction with a die plate having at least one die cavity in it and at least one lower punch mounted for movement into the die cavity to compact a powder material and produce a finished article. The tool set includes both punch and core rod, with the punch movable into the die cavity during the press operation. The core rod is fixed with reference to the die cavity and extends into the cavity to provide an aperture in the finished article. The core rod and its special resilient type mounting facilitate sliding movement of the punch relative to the core rod.

3,822,975

## INJECTION UNIT FOR AN INJECTION MOLDING MACHINE

Karl Hehl, Seidling 187, D-7291, Lonsburg, Wurttemberg, 48195

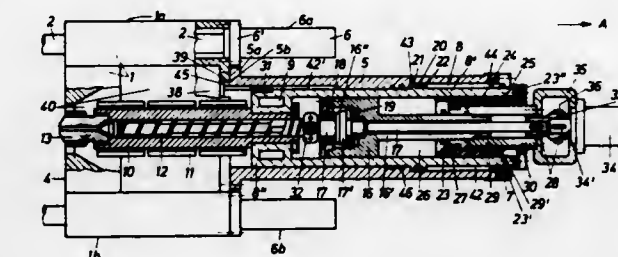
Filed Feb. 29, 1972, Ser. No. 230,350

Claims priority, application Germany, Mar. 12, 1971, 2111978

Int. Cl. B29f 1/03

U.S. Cl. 425-107

12 Claims



An injection unit for an injection molding machine including a cylindrical carrier member within which a hollow piston



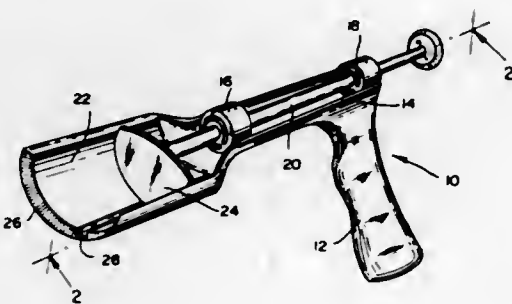
is mounted. The hollow piston has mounted therein a second piston which is connected to a conveying worm of the injection unit plasticizing cylinder. The cylindrical carrier and the hollow piston are operatively associated to form a first hydraulic system for the axial movement of the injection unit. The hollow piston and the second piston are operatively associated to form a second hydraulic system for injecting the synthetic material into the mold.

### 3,822,976 ICE CREAM SCOOP

Edward R. Moonan, Boonville, N.Y. 13309  
Filed Aug. 27, 1973, Ser. No. 391,943  
Int. Cl. A23g 5/02

U.S. Cl. 425-286

2 Claims



An ice cream scoop having a trowel-like cylindrical end portion and a plunger moveable in said portion for ejecting the food product inserted therein. The plunger is semicircular in configuration and is held from rotation by a special expedient in order to assure the operability and efficiency of the plunger in causing such ejection.

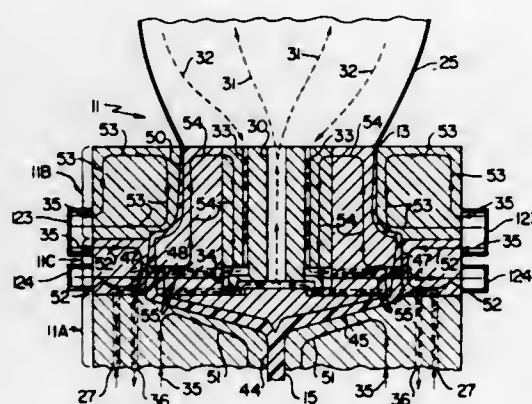
### 3,822,977

#### APPARATUS FOR MAKING PLASTIC FILM

Donald R. Hiarichs, Waynesboro, Va., assignor to Reynolds Metals Company, Richmond, Va.  
Division of Ser. No. 126,831, March 14, 1971, Pat. No. 3,752,635. This application Apr. 2, 1973, Ser. No. 347,066  
Int. Cl. B29f 3/04

U.S. Cl. 425-326 R

11 Claims



Plastic film is made using a heat transfer liquid circulated through the film extrusion die to control (by either heating or cooling, as required) the temperature of the plastic melt flowing through such die. A plastic bubble emerging at the outlet of the die is inflated and ventilated by continuously circulated gas which is controlled in temperature as it enters and leaves the bubble so that it does not adversely affect the temperature of the melt in the die.

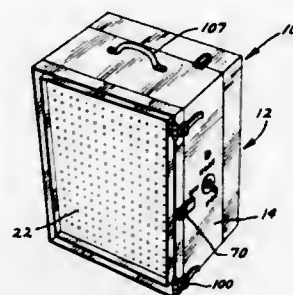
### 3,822,978 PORTABLE VACUUM FORMING APPARATUS

William R. Nichols, 7313 Garfield Ave. S., Minneapolis, Minn. 55423

Filed Dec. 15, 1972, Ser. No. 315,618  
Int. Cl. B29c 17/04

U.S. Cl. 425-388

1 Claim



A portable vacuum forming apparatus consisting of a housing parallelepiped in form including hinged portions comprising a heating member, a vacuum member and a material holding member hinged to said housing swingable between said heating member and said vacuum member, said material holding member comprising an outer frame and an inner frame seating therein, and hinge means connecting said frames, said means resiliently yielding to accommodate various thicknesses of sheet material disposed between said frames and means locking said frames in operating position.

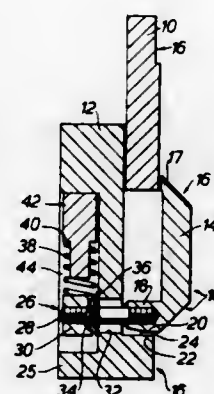
### 3,822,979

#### APPARATUS FOR PRODUCING PRESSED CONCRETE ARTICLES

Eugene Francis O'Sullivan; Kay John Seymour-Walker; David John Tudor Webb, all of Building Research Station, Garston, Watford; Christopher Graham Bevan, 6 Amersham House, Craven Rd., London, and Keith Ross, c/o Davy and United Engineering Company Limited, Darnall Works, Sheffield 9, all of England  
Continuation of Ser. No. 737,780, June 17, 1968, abandoned.  
This application Mar. 9, 1971, Ser. No. 122,519  
Int. Cl. B29c 3/00

U.S. Cl. 425-410

21 Claims



There is described a number of compressible mould dividers and edge forms for use in a concrete pressing process, and a compressible mould framework for use in the process.

### 3,822,980

#### ROTATIONAL MOLDING APPARATUS

Michael R. Graeper, Lake Oswego, Ore., assignor to Plastico, Inc., Portland, Ore.

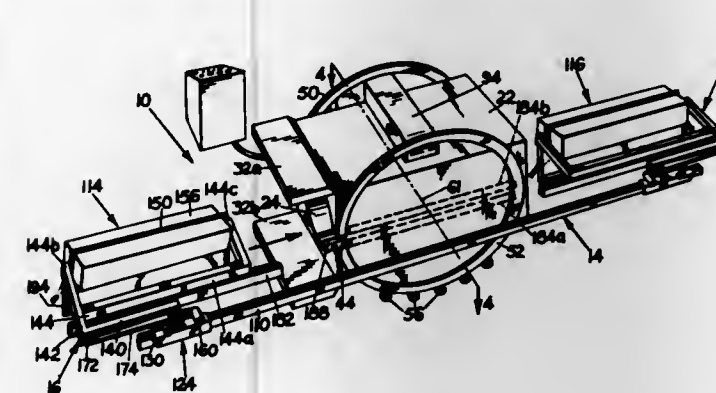
Filed Mar. 30, 1972, Ser. No. 239,428  
Int. Cl. B29c 5/04

U.S. Cl. 425-429

28 Claims

Rotational molding apparatus including a mold-carrying frame which is mounted on a track for movement between a

mold-working station and an oven. The oven is rotatable under power about a substantially horizontal axis and has a door on one of its sides. With the oven in one position, the door faces toward the mold-working station. The mold-carrying frame may be moved along the track and directly into or out of the oven through the doorway. With the door closed a substantially totally enclosed chamber is provided in the oven. Ducts in the oven are operable to circulate heated air about a



mold rotated in the oven. The oven and mold frame may be rotated about the oven axis in either of reverse directions. The mold frame also is adapted to be rotated within the oven in either of reverse directions about an axis disposed at a substantial angle to the oven axis. The mold-working station includes an enclosure having a movable top which may be moved between a position overlying the mold in the station and a position where it is spaced laterally of the mold.

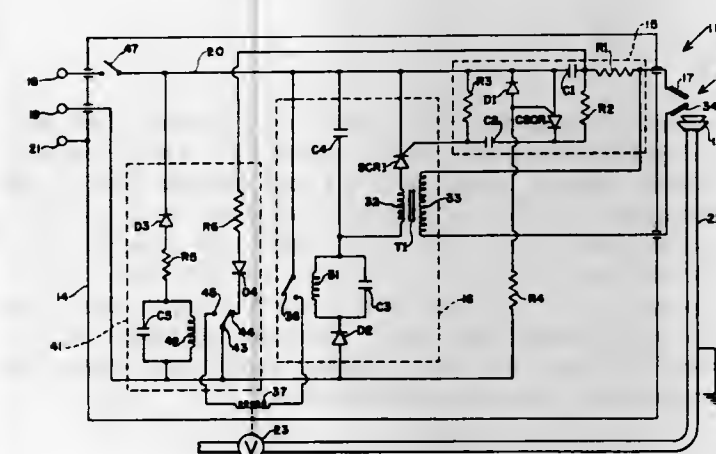
### 3,822,981

#### FLAME MONITORING SYSTEM

Lyman H. Walbridge, Ashland, Mass., assignor to Walter Kidde & Company, Inc., Clifton, N.J.  
Division of Ser. No. 220,788, Jan. 26, 1972. This application June 23, 1972, Ser. No. 265,598  
Int. Cl. F23n 5/12

U.S. Cl. 431-78

13 Claims



Disclosed is a burner control system in which fuel flow is maintained by an operator in response to a flame signal produced by a capacitor charged by flame rectified current. System operation is initiated by precharging the capacitor from an auxiliary direct current source while preventing the operator from supplying fuel. Subsequently, the operator is activated simultaneously with disconnection of the auxiliary direct current source from the capacitor.

### 3,822,982

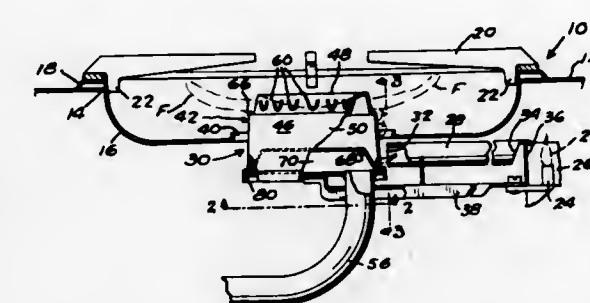
#### GAS BURNER STRUCTURE

Donald E. Du Perow, Bloomfield Hills, Mich., assignor to Lincoln Brass Works, Detroit, Mich.

Filed June 6, 1973, Ser. No. 367,520  
Int. Cl. F24c 3/10

U.S. Cl. 431-193

21 Claims



In a gas burner having a top and a ring of burner ports adjacent thereto, the gas inlet through the burner base is located adjacent a side of the burner body instead of centrally. An inverted dish-shaped baffle having a central opening distributes gas evenly to the burner ports but delays gas en route from the inlet to the burner ports. An opening in the baffle issues gas directly to flash-tube-charge-and ignition porting for quick ignition. Result: diminished "roll out" of flames from the burner ports upon ignition.

### 3,822,983

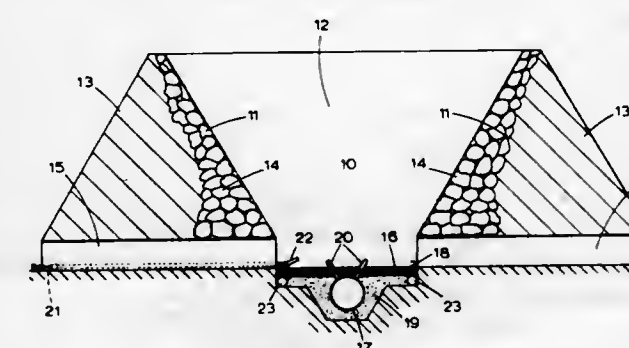
#### GROUND FLARES

Albert Edward Proctor, New Denham, England, and Giovanni Castorani, Milan, Italy, assignors to A. E. Proctor & Montecatini Edison S.p.A., Milan, Italy

Filed Apr. 23, 1973, Ser. No. 353,686  
Int. Cl. F23d 13/20

U.S. Cl. 431-202

16 Claims



A ground flare with a combustion zone defined by a floor and walls constructed from earthen banks, stone, rock, bricks or the like. Tubes leading through the walls into the interior of the flare to convey primary combustion air to the combustion zone. A manifold disposed beneath the floor of the flare leads to a series of nozzles projecting upwardly from the flare which serve to discharge a waste gas into the combustion zone. Pilot burners are provided to ignite the waste gas. Some of the nozzles are each surmounted by an air moving device which is fed with steam. The steam flows over a Coanda annulus and serves to induce ambient air into the waste gas discharged by the nozzle.



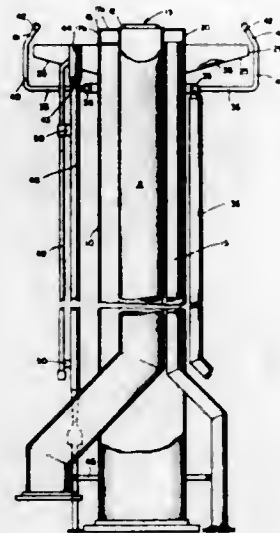
3,822,984

## FLARE GAS BURNER

John F. Straltz, III, Jenkintown, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.  
Filed Sept. 10, 1973, Ser. No. 395,522  
Int. Cl. F23q 9/00

U.S. Cl. 431-283

7 Claims



A flare gas burner for waste combustible gases from oil refineries and the like is disclosed which includes an outer stack pipe for high pressure gases having at the top thereof a plurality of outwardly extending tilted vanes with gas delivery slots, the tops of the vanes being angularly disposed in a plane with respect to radial lines through the center of the stack pipe for a swirling action of the burning gas. An optional supply of high pressure assist gas can be provided for low flow rates of high pressure gas. A supply pipe is provided within the stack pipe for delivery of low pressure gas to an annular ring at the top of the stack which ring has elongated slots in the top and side for delivery of low pressure gas for burning. A relief or emergency dump gas supply pipe is also carried within the stack pipe for delivery of gas to the top of the stack pipe for burning. A steam ring is provided carried at the top of the stack with steam delivery pipes along the high pressure vanes and with angularly disposed tips delivering steam to enhance the swirling action of the burning gas and to suppress smoke. Ignitors and pilots are shown for initiating combustion of the gases.

3,822,985

## FLARE STACK GAS BURNER

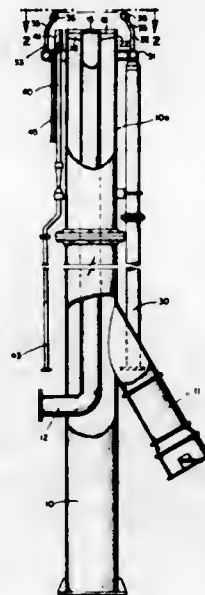
John F. Straltz, III, Jenkintown, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.  
Filed Aug. 13, 1973, Ser. No. 387,710  
Int. Cl. F23q 9/00

U.S. Cl. 431-284

7 Claims

A flare stack gas burner for waste combustible gases at both low and high pressure and under all flow conditions including low pressure gas without any high pressure gas stream from oil refineries and the like is disclosed with separate delivery systems for the combustion gases which includes a stack with a central low pressure gas delivery tube which has at its top outwardly extending vanes with gas delivery slots, the vanes being disposed for imparting a swirling action to the burning gas. The delivery pipe is closed at the top by a closure plate with flame retention openings. Air at variable low pressure is delivered into the stack at the bottom and flows upwardly between the vanes for smokeless burning. A pipe is provided for high pressure gas mounted exteriorly of the stack for

delivery to a manifold ring and thence to delivery pipes with angularly disposed tips for enhancement of the burning of the



gases. An optional fluidic seal can be provided in the low pressure gas supply. Ignitors and pilots are provided exteriorly of said stack.

3,822,986

## GAS DISTRIBUTION GRID

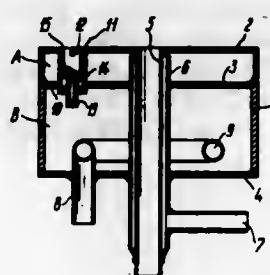
Avugst Rafaelevich Brum Tsakhovoi, ulitsa Garibaldi 21, korpus 3, kv. 32; Anatoly Naumovich Evreinov, pereulok Malo-Afanasievsky, 1/33, kv. 8, both of Moscow; Vladimir Fedorovich Stadnik, ulitsa Dobrokhotova, 7, kv. 92, and Boris Kuzmich Ilenko, ulitsa M. Krivonosa, 10, kv. 7, both of Kiev, all of U.S.S.R.

Filed June 7, 1973, Ser. No. 367,877

Int. Cl. F23d 13/12

U.S. Cl. 431-328

2 Claims



A gas distribution grid for supplying a mixture of gas fuel and gaseous oxidizer into a bed of granular material disposed thereon without inflammation of said mixture prior to its getting into the bed, which grid comprises three partitions confining two chambers. The first chamber abutting the partition on which the granular material bed is disposed is used for supplying one of the components and is communicated with the other chamber into which the other component is supplied. The other chamber is communicated with the granular material bed by means of pipe branches.

3,822,987

## THERMAL STERILIZER FOR CONTAMINATED AIR

Asram R. Zanft, New York, N.Y., assignor to Morse Boulger, Inc., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,637

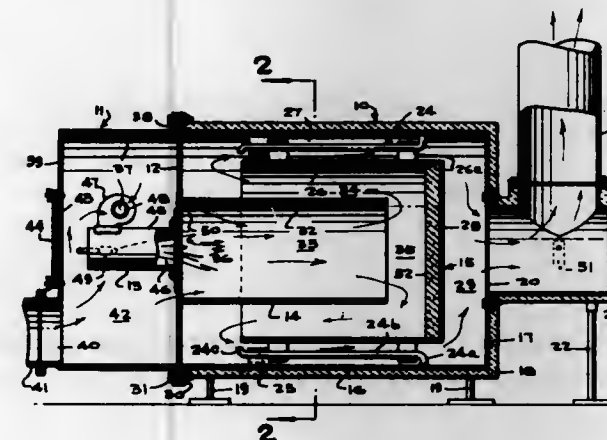
Int. Cl. F23d 15/02

U.S. Cl. 431-353

14 Claims

A thermal sterilizer for contaminated air generally including a housing having means defining a plenum chamber, inlet means for admitting contaminated air into the plenum

chamber, means defining a combustion chamber, an outlet for discharging gaseous products of combustion therefrom and means defining an elongated, tortuous passageway intercommunicating the combustion chamber and the outlet means, and a burner mounted on the housing, the burner having a mixing chamber communicating with the combustion



chamber, a blower having an inlet communicating with the plenum chamber and an outlet communicating with the mixing chamber for injecting contaminated air from the plenum chamber into the mixing chamber of the burner, means for injecting fuel into the mixing chamber, and means for igniting the fuel-contaminated air mixture.

3,822,988

## MANUFACTURE OF HOLLOW CLAYWARE ARTICLES

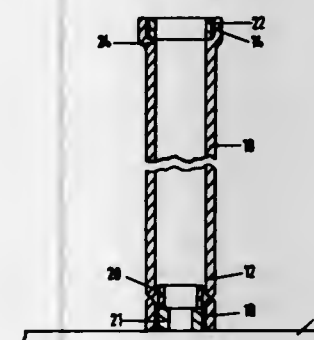
John Frederick Booth, Sheffield, England, assignor to The Hepworth Iron Company Limited, Stocksbridge, England  
Filed June 14, 1973, Ser. No. 369,881

Claims priority, application Great Britain, June 15, 1972, 28091/72

U.S. Cl. 432-5

Int. Cl. F27b 19/04

10 Claims



A method of sizing a clayware article comprising internally fitting the article before firing with a mandrel having a coefficient of expansion greater than the coefficient of expansion of the clay when fired, firing the article to a temperature at which the clay becomes plastic and conforms to the mandrel, allowing the fired article to cool whereby the mandrel becomes separated from the article by virtue of the differential shrinkage of the fired clay and the material of the mandrel, and removing the mandrel from the article.

3,822,989

## SHAFT FURNACE

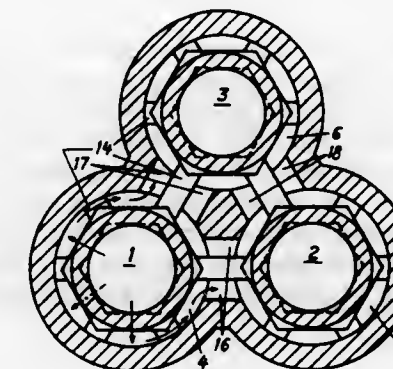
Friedrich Tschinkel, Thalwil, Switzerland, assignor to Maerz Ofenbau AG, Zurich, Switzerland

Filed Apr. 18, 1973, Ser. No. 352,221

Claims priority, application Austria, Apr. 24, 1972, 3583/72  
Int. Cl. F27b 1/02

U.S. Cl. 432-95

4 Claims



In a shaft furnace for burning granular material, three vertically extending similarly constructed shafts are arranged with their axes forming the corners of an equiangular triangle, each shaft has an annular channel and each annular channel is interconnected to the annular channels in the other two shafts by separate crossover canals. The crossover canals are connected to each annular channel at angularly spaced positions. Further, the crossover canals extend between the annular channels at the location where the shafts are closest together.

3,822,990

## ENERGY CONVERSION MODULE

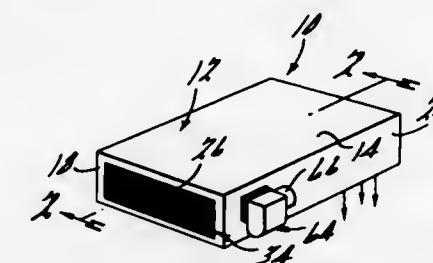
Artel R. Henson, Pontiac, Mich., and Myron T. Cooperider, North Royalton, Ohio, assignors to Disco Engineering, Inc., Detroit, Mich.

Filed Nov. 10, 1972, Ser. No. 305,460

Int. Cl. F23i 9/04

U.S. Cl. 432-222

31 Claims



A direct fired oil burner module comprising a housing having means defining air inlet and outlet passages; means for inducing air into the housing through the air inlet passage and for causing the air to travel along a flow path interiorly of the housing and for thereafter discharging the air through the discharge passage, and a direct fired oil burning assembly including a fuel burner unit and an energy conversion section



disposed in heat transfer relationship to air traveling along the flow path and adapted to heat the air preparatory to the air being discharged from the module.

### 3,822,991 GAS-FIRED FURNACE

Paul A. Matchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

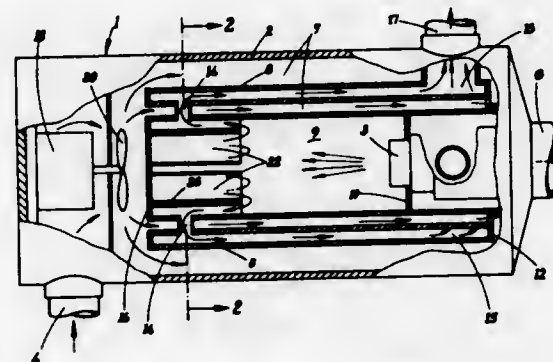
Filed Oct. 9, 1973, Ser. No. 404,396  
Int. Cl. F24h 3/06

U.S. Cl. 432-223

4 Claims

A fuel-fired furnace including a heat exchanger mounted in a housing in heat transfer relation with flowing air passing over the heat transfer surface of the heat exchanger, and, a fuel burner assembly; the heat exchanger having a centrally disposed combustion chamber communicating with a flue gas return means at one end and a fuel burner assembly at the opposite end; the combustion chamber having an outlet disposed in the side thereof whereby the flow of products of combustion leaving the chamber is in a radially outward direction;

and, the combustion chamber includes a baffle therein spaced from and covering the outlet, the baffle having an opening therein whereby the flow of flue gas leaving the combustion chamber passes through the opening in the baffle.



therein whereby the flow of flue gas leaving the combustion chamber passes through the opening in the baffle.

## CHEMICAL

3,822,992

### EXHAUSTION DYEING PROCESS WITH ANTHRAQUINONE DYESTUFFS IN WATER IMMISCIBLE ORGANIC SOLVENT

Volker Hederich and Günter Gehrke, Cologne, and Hans-Samuel Bien, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

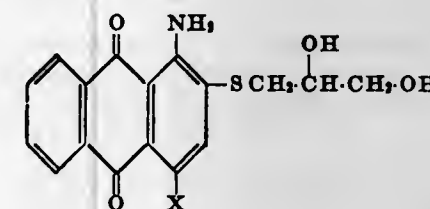
No Drawing. Original application Oct. 12, 1970, Ser. No. 80,208, now abandoned. Divided and this application Feb. 28, 1973, Ser. No. 336,530

Int. Cl. D06p 1/20, 3/54

U.S. Cl. 8-39

12 Claims

New anthraquinone dyestuffs of the formula



in which X denotes a hydroxyl,  $C_1-C_6$ -alkyl-carbonylamino,  $C_1-C_6$ -alkyl-sulphonylamino,  $C_1-C_6$ -alkoxy-carbonylamino, optionally substituted aryl-carbonylamino, aryl-sulphonylamino, aryloxy-carbonylamino or heteroaryl-amino group and their preparation from corresponding 2-halogen-anthraquinones. They are used for dyeing synthetic fibre materials from organic solvents, especially from those which are immiscible with water, according to the exhaustion process.

3,822,993

### PRODUCTION OF CHROME TANNING COMPOSITION FROM WASTE CHROMIUM-COPPER PICKLING LIQUOR

John W. Robinson, Glen Mills, Pa., and John W. Howard, Skaneateles, Robert E. Hahn, Utica, and Donald C. Hemming, Whitesboro, N.Y., assignors to Revere Copper and Brass Incorporated, New York, N.Y.

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,208

Int. Cl. C14c 3/04, 3/06

U.S. Cl. 8-94.27

10 Claims

A chrome tanning composition is obtained from the waste liquor resulting from the pickling of cupreous material with an aqueous sulfuric acid-sodium dichromate solution by reducing at least most of the hexavalent chromium content of the concentrated waste liquor to the trivalent state, and by then lowering the copper content of the waste liquor to a maximum of about 8 grams per liter by electrolysis or by adding to the liquor a metal which will displace copper from the liquor. The method further includes the steps of neutralizing the aqueous solution to obtain therein a ratio of hydroxyl to trivalent chromium ions in the chromic salt solution within the range of about 1:3 to 2:1 and the step of concentrating the waste liquor to at least a total chromium content of about 0.4 pound per gallon (expressed as  $Cr_2O_3$ ), both of which steps can be carried out at any stage of the method. The resulting product liquor can be used directly for tanning or can be dehydrated to a tanning salt composition.

3,822,994

### PREPARING COTTON MATERIAL WITH IMPROVED TENSILE STRENGTH RETENTION PROPERTIES

Jan J. de Boer, Pijnacker, and Herman Borsten, Voor-schoten, Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, The Hague, Netherlands

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,762

Claims priority, application Great Britain, Feb. 19, 1971, 4,982/71

Int. Cl. D06m 1/10

U.S. Cl. 8-125

4 Claims

Cotton fibres or rovings or slivers are subjected to the action of a swelling agent without tension being exerted on them. The swelling agent should be capable of transforming the material into cellulose II. The fibres shrink while still in the presence of the swelling agent and subsequently the fibres are restretched to 95-110% of their original length before swelling. Then while maintaining these dimensions the fibres or rovings or slivers are rinsed or neutralised and rinsed and while still maintaining these dimensions are dried at temperatures exceeding 70° C. The fibres or slivers or rovings can be given a resin finish and they will not show the usual degradation of properties.

3,822,995

### PROCESS FOR MODIFYING KERATIN FIBERS TO REDUCE RELAXATION AND FELTING SHRINKAGE AND PRODUCT PRODUCED THEREBY

Emile E. Habib, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Continuation of application Ser. No. 292,769, July 3, 1963, which is a continuation-in-part of application Ser. No. 230,731, Oct. 15, 1962, now abandoned. This application Sept. 25, 1972, Ser. No. 292,048

Int. Cl. A61k 7/10; D06m 3/02, 13/00

U.S. Cl. 8-127.5

23 Claims

Shrinkage is reduced in textile fabric containing keratin fibers by impregnating the fabric with an organic solvent which is nonreactive with isocyanates. The process reduces relaxation and felting shrinkage and may set the fibers in a given configuration.

3,822,996

### WATER-SOLUBLE THIOUREAS TO INHIBIT OZONE FADING OF DYED POLYAMIDES

Robert Alden Lofquist and Peter Reginald Saunders, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 22, 1972, Ser. No. 255,628

Int. Cl. D06p 5/02

U.S. Cl. 8-165

6 Claims

When from about 0.2 percent to about 5 percent of water-soluble thioureas are coated on nylon fiber, improved dyefastness is achieved compared to an untreated dyed nylon fiber when this fiber is exposed to ozone.



**3,822,997**  
**CYANO-, HYDROXY-, METHOXY-, OR ACETOXY-METHYL BIPHENYL OR DIPHENYL OXIDE ASSISTED DISPERSE DYEING**

Hans Wegmüller, Riehen, Switzerland, Alain Louton, St. Louis, France, and Karl Heinz Keller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed July 11, 1972, Ser. No. 270,752  
 Claims priority, application Switzerland, July 23, 1971, 10,886/71

Int. Cl. D06p 5/06

**U.S. Cl. 8-172 9 Claims**  
 A process for dyeing and printing synthetic fibre material, preferably polyester fibre material, with disperse dyes is provided. The process is carried out utilising a substituted biphenyl or biphenyl ether dyeing accelerator. The biphenyl compounds are mono-, di- or trisubstituted with radicals of the formula  $\text{—CH}_2\text{—R}$ , wherein R represents CN, cycloalkyl, aralkoxy,  $\text{—O—A}$  or



wherein A is hydrogen or alkyl.

**3,822,998**  
**METHOD OF PROTECTING TIN-PACKINGS AGAINST CORROSION AND MAKING THEM GLOSSY**

Ryszard Juchniewicz, Gdansk, Poland, assignor to Politechnika Gdanska Majakowskiego, Gdansk, Poland  
 No Drawing. Continuation of abandoned application Ser. No. 872,748, Oct. 30, 1969. This application June 30, 1972, Ser. No. 267,983

Claims priority, application Poland, Oct. 10, 1968, 129,973/68

Int. Cl. C23f 11/02, 11/16, 11/18

**U.S. Cl. 21-2.7 A 8 Claims**  
 Tin-packings, i.e. tin-cans for food are protected against corrosion and made glossy at the same time by a method in which a tin-packing is treated with a mixture of inorganic and organic corrosion inhibitors having a common anion and having a synergistic effect together with washing and brightening agents.

**3,822,999**  
**LIQUID-LIQUID EXTRACTION AND PLUG-FLOW REACTOR APPARATUS**

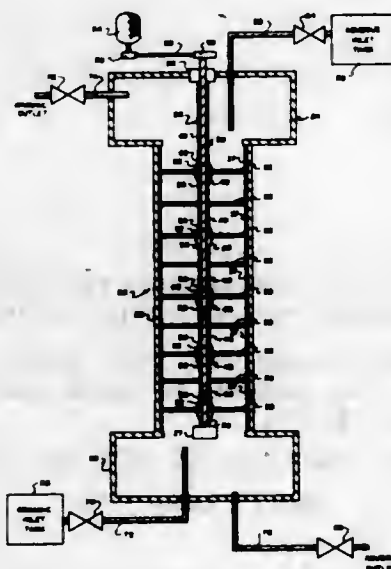
Bill J. Pope, Provo, Utah, assignor to Brigham

Young University, Provo, Utah

Filed Mar. 30, 1972, Ser. No. 239,576

Int. Cl. B01d 11/04

**U.S. Cl. 23-270.5 1 Claim**



Liquid-liquid extraction and plug-flow reactor apparatus comprising a vertical column having a plurality of al-

ternately stationary and rotatable perforated plates or disks in spaced relation. A comparatively heavy liquid phase is passed from the top to the bottom of the vertical column and a comparatively light liquid phase is passed from the bottom to the top of the column in counter-current flow. Droplets are formed as the liquid phases pass through the perforations. The rotating perforated plates advantageously shear the droplets to form many new interfacial surfaces. The stationary and rotatable perforated plates both extend across essentially the entire diameter of the vertical column so that liquid is forced to pass through apertures in the plates. Accordingly, back-mixing has been found to be substantially reduced and separation efficiency increased. The combination of good radial mixing and limited axial or backmixing makes the apparatus especially well-suited for use as a plug-flow reactor.

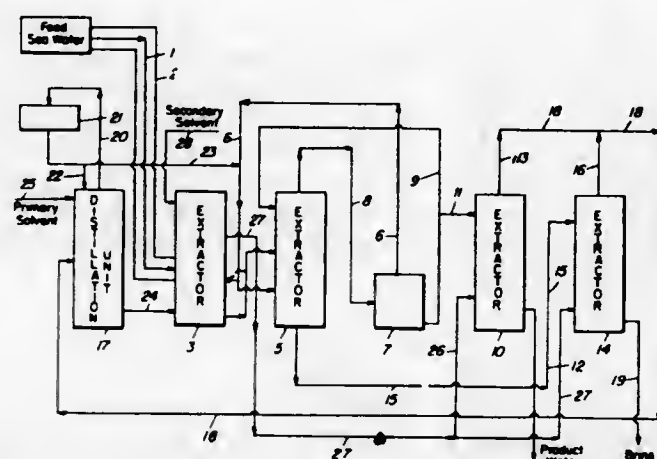
**3,823,000**  
**RECOVERY OF POTABLE WATER FROM SEA AND BRACKISH WATER BY SELECTIVE SOLVENT EXTRACTION**

George C. Johnson, Hopewell Township, Mercer County, N.J., assignor to Mobil Oil Corporation

Continuation of abandoned application Ser. No. 882,068, Dec. 4, 1969. This application May 31, 1972, Ser. No. 258,172

Int. Cl. B01d 11/04; C01b 5/00

**U.S. Cl. 210-22 5 Claims**



Potable water is recovered from sea water with removal of salt by contacting sea water with a particularly characterized primary solvent which results in two separate fractions. One fraction contains water, a major proportion of primary solvent and a minor proportion of said salt. The other fraction contains water, a major proportion of said salt and a minor proportion of the primary solvent. The primary solvent is recovered from each fraction by the use of a secondary solvent. Potable water and brine are the major products from this process.

**3,823,001**  
**DETERMINATION OF THYROID HORMONE UPTAKE**

Burton A. Zabin, Berkeley, Calif., assignor to Bio-Rad Laboratories, Richmond, Calif.

No Drawing. Filed May 6, 1971, Ser. No. 126,316

Int. Cl. G01n 33/10

**U.S. Cl. 23-230 B 14 Claims**

Determination of thyroid hormone uptake from blood serum by a secondary binding substance or absorbent is executed by flowing a serum sample through a column containing the absorbent in a very brief period. A residence time of three minutes or less is typical when using a cross-linked strong base anion exchange resin as the absorbent.

**3,823,002**  
**PRECISION MOLDED REFRACTORY ARTICLES**  
 Russell B. Kirby, Jr., Baytown, and Stephen C. Wing, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 5, 1972, Ser. No. 250,620

Int. Cl. B22f 3/00

**U.S. Cl. 29-182.1 19 Claims**

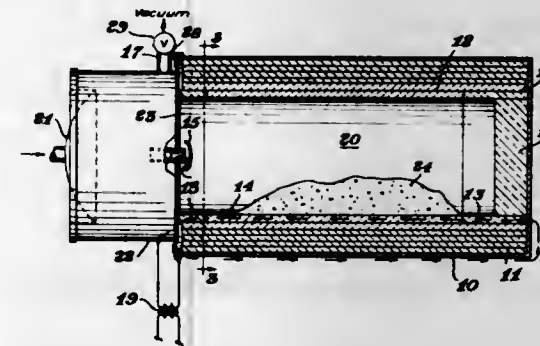
A precision molded refractory article, which can have an intricate geometry with fine surface detail, such as an electrical discharge machining electrode, is made by molding in a flexible mold a plastic mixture of multimodal refractory powders and a thermoplastic binder to form a green article of predetermined shape and dimensions, heating the green article to remove said binder and consolidate the refractory powders with very minimum shrinkage of the article, infiltrating the resulting porous article or skeleton with a molten infiltrant of a low melting point metal or alloy, and cooling the infiltrated skeleton, thereby forming a precision refractory article having a uniform high density, a useful working surface free of machined or otherwise disturbed metal, and a shape and dimensions precisely conforming to said green article.

**3,823,003**  
**PREPARATION OF METALS**  
 Thomas W. Muldhy, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of abandoned application Ser. No. 28,373, Apr. 14, 1970. This application Feb. 16, 1972, Ser. No. 226,807

Int. Cl. C22b 45/00; C22d 7/02; H05b 3/66

**U.S. Cl. 75-10 V 11 Claims**



An improved reactor and process for the non-electrolytic production of metals from their ores in large batches. The process operates at elevated temperatures in an improved internal resistance-heated electric vacuum furnace.

**3,823,004**  
**HERBICIDES**  
 Gerhard Schrader, Wuppertal-Cronenberg, and Ludwig Eue and Helmuth Hack, Cologne, Germany, and Seichi Hirane, Kokubunji, Masahiro Aya, Kodaira, Shigeo Kishino, Machida, and Nobuo Fukazawa, Hachioji, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 7, 1969, Ser. No. 874,954, now Patent No. 3,636,143. Divided and this application Nov. 5, 1971, Ser. No. 196,185

Claims priority, application Japan, May 14, 1968, 43/32,501

Int. Cl. A01n 9/20

**U.S. Cl. 71-87 7 Claims**

Herbicide compositions containing O-(2-nitro-4-alkylphenyl) - O - alkyl - N - isopropyl-amido-phosphorothioates, and herbicide uses thereof.

**3,823,005**  
**N-(5-CHLORO-TERT-BUTYL - 2 - THIADIAZOLYL) CARBOXAMIDES AND USE TO COMBAT UNWANTED VEGETATION**

William C. Doyle, Jr., Leawood, and Joel L. Kirkpatrick, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,419

Int. Cl. A01n 9/12

**U.S. Cl. 71-90 2 Claims**

New N-(chloro-tert-butylthiadiazolyl) amides are employed to combat undesired vegetation both pre-emergently and post-emergently. Cyclopropanecarboxamides are preferred.

**3,823,006**  
**METHOD FOR SELECTIVE WEED CONTROL IN BEETS**

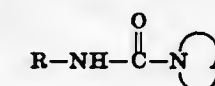
Walter Lorenz, Wuppertal-Cronenberg, and Ludwig Eue and Helmuth Hack, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 15, 1971, Ser. No. 189,742  
 Claims priority, application Germany, Oct. 30, 1970, P 20 53 333.9

Int. Cl. A01n 9/22

**U.S. Cl. 71-94 1 Claim**

Herbicide compositions containing, as an active ingredient a N-substituted N',N'-alkylene urea of the formula



in which

A is alkylene of from 2 to 6 carbon atoms, and R is unbranched or branched alkyl of from 1 to 6 carbon atoms, alkenyl of from 2 to 6 carbon atoms, cycloalkyl of from 4 to 12 carbon atoms, or unsubstituted and substituted aryl wherein the substituents are one or more of halogen, alkyl, alkoxy, and alkyl mercapto; are singularly effective, and particularly are suitable for selective weed control in beet cultivations.

**3,823,007**  
**HERBICIDAL METHOD USING SALTS OF BENZENESULFONYL UREAS**

John A. Stephens, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 210,220, July 16, 1962. This application Jan. 14, 1969, Ser. No. 791,183

Int. Cl. A01n 9/14

**U.S. Cl. 71-103 1 Claim**

The use of salts of substituted benzenesulfonyl ureas as herbicides.

**3,823,008**  
**HERBICIDAL COMPOSITIONS AND THEIR USE**  
 Keith Carpenter, Beauchamp Roding, near Ongar, Basil Jason Heywood, Horsham, and Edgar William Parnell, Romford, England, and Jean Metivier, Paris, and Roger Boesch, Vitry-sur-Seine, France, assignors to May & Baker Limited, Essex, England

No Drawing. Continuation-in-part of application Ser. No. 548,020, May 5, 1966, which is a continuation-in-part of applications Ser. No. 223,286 and Ser. No. 223,288, both Sept. 4, 1962, all now abandoned. This application Nov. 13, 1970, Ser. No. 89,434

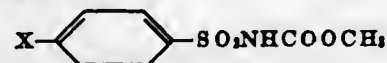
Int. Cl. A01n 9/14

**U.S. Cl. 71-103 34 Claims**

The invention provides a method for controlling weeds in certain valuable crops e.g. of flax, linseed, lucerne, peas or beans, potatoes, or sugar cane, and in non-crop



areas, by applying to said weeds a sulphonylcarbamic ester of the formula:



wherein X is nitro, primary amino, methylamino, N-methylformylamino, or methoxycarbonylamino, or a salt thereof.

3,823,009

### AGGLOMERATION OF TITANIUM ORES CONTAINING IRON

Gunter Lailach and Gerhard Winter, Krefeld, Germany, assigns to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,677  
Claims priority, application Germany, Feb. 9, 1971, P 21 05 932.5

Int. Cl. C21b 1/00, 1/08; C22b 1/00

U.S. Cl. 75—3

11 Claims

In the production of agglomerated iron-containing titanium ores suitable for reduction of the iron contained therein, wherein finely divided ore particles are wetted, shaped into larger molded agglomerates, dried and hardened, the improvement which comprises admixing with said ore particles prior to hardening about 0.04 to 30% by weight of the ore of a compound of iron, titanium or mixtures thereof. The admixed compounds are preferably oxides or materials which yield oxides under the ambient conditions. Desirably about 0.005 to 10% by weight of a water-soluble organic polymer is also added to form a better bond. The molded agglomerates of about 1 to 30 mm. are preferably hardened in an oxidizing atmosphere at about 700 to 1300° C. and thereafter optionally without cooling reduced with carbon, methane or hydrogen at about 700 to 1300° C. to convert the iron therein to metallic state.

### ERRATUM

For Class 75—10 see:  
Patent No. 3,823,003

3,823,010

### ELIMINATION OF H<sub>2</sub>S FROM SLAG QUENCHING

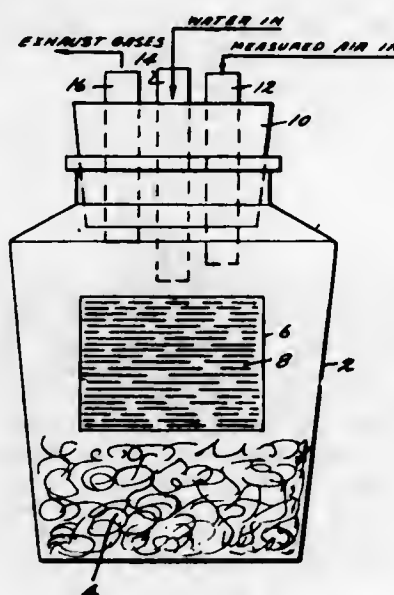
George S. Tobias, Sewickley, Pa., assignor to Envirotrol, Inc., Sewickley, Pa.

Filed Aug. 20, 1971, Ser. No. 173,588

Int. Cl. C21b 3/08

U.S. Cl. 75—24

10 Claims



H<sub>2</sub>S is eliminated from slag quenching by contacting the hot slag and/or quench gases with carbon contain-

ing materials such as activated carbon or coke in the presence of air. There can also be added various inorganic chemicals which react with hydrogen sulfide.

3,823,011

### PROMOTED IRON ORE REDUCTION PROCESS

Roger F. Sebenik and Martin O. Germand, Baton Rouge, La., assigns to Esso Research and Engineering Company

No Drawing. Continuation of abandoned application Ser. No. 860,411, Sept. 23, 1969, which is a continuation-in-part of application Ser. No. 789,589, Jan. 7, 1969, now Patent No. 3,637,369. This application Sept. 3, 1971, Ser. No. 177,776

Int. Cl. C21b 1/02

U.S. Cl. 75—26

8 Claims

A process is provided for the direct solid phase reduction of iron ore whereby at least a first and a second compound are added to the reduction process, the first compound being a promoter for the reduction process and being chosen from certain compounds from Groups IA, IIA, and IIIA, e.g., halides, and the second compound being either a promoter which in an ionic state will react with the first compound to produce a nonpromoter or the second compound is a nonpromoter.

3,823,012

### METHOD AND APPARATUS FOR FEEDING PARTICULATE MATERIALS TO FURNACES AND THE LIKE

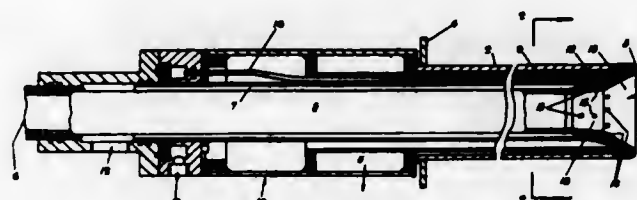
Edward Townshend Carruthers Johnstone, East St. Ives, and Robert Sidney Brunton, Kirrawee, New South Wales, Australia, assigns to The Commonwealth Industrial Gases Limited, New South Wales, Australia

Filed Nov. 16, 1970, Ser. No. 89,997  
Claims priority, application Great Britain, June 25, 1969, 16,614/69

Int. Cl. C21c 7/00

U.S. Cl. 75—51

7 Claims



A method and apparatus for feeding particulate material to a furnace using a conduit or "lance" having a nozzle for delivery of the material into the furnace. The conduit has a fuel supply duct and an oxygen supply duct designed so that the fuel, oxygen and particulates are uniformly mixed and heated before they reach the melt to increase the efficiency of combustion.

3,823,013

### FLUX COMPOSITION FOR ZINC BASE ALLOYS

Garth D. Lawrence, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Sept. 22, 1967, Ser. No. 669,680, now abandoned. Divided and this application May 14, 1970, Ser. No. 48,723

Int. Cl. C22b 9/10

U.S. Cl. 75—65 R

10 Claims

The present invention comprises an improved non-fuming, low melting flux composition for use in melting zinc and zinc base alloys consisting essentially of from about 48 to about 60 weight percent potassium chloride, the balance being essentially lithium chloride.

3,823,014

### SODIUM RECOVERY PROCESS

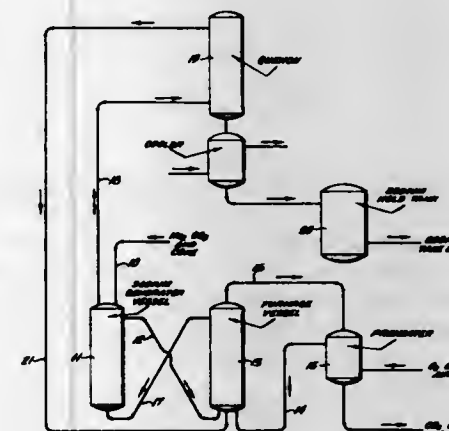
Victor Manuel Chong, Media, Pa., assignor to Sun Research and Development Co., St. Davids, Pa.

Continuation-in-part of abandoned application Ser. No. 177,270, Sept. 2, 1971. This application Feb. 9, 1973, Ser. No. 330,929

Int. Cl. C22b 27/00

U.S. Cl. 75—66

3 Claims



A thermal process for the generation of sodium metal from sodium carbonate and coke by feeding particulate coke and sodium carbonate to a sodium generator, conducting molten sodium carbonate containing unreacted coke by gravity flow from the upper portion of the generator to the bottom of a furnace, said furnace being fed with a source of oxygen to obtain essentially complete combustion of the coke, recirculating the molten sodium carbonate by gravity flow from an upper portion of the furnace to the bottom of the generator, conducting vapors of carbon monoxide and sodium from the generator to a quench system, recovering condensed liquid sodium from the bottom of the quench system, the carbon monoxide exiting from the quench system being returned to the furnace for combustion to carbon dioxide.

3,823,015

### PHOTO-MASKING PROCESS

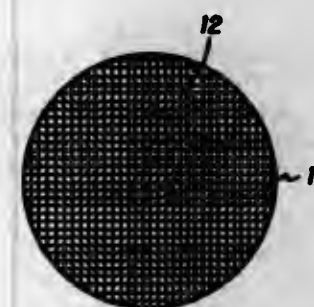
John R. Fassett, Irvine, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,363

Int. Cl. G03c 5/00

U.S. Cl. 96—36

10 Claims



A method of pattern definition employing photoresist masking techniques useful in photoengraving generally

3,823,016

### PHOTOMASK REPAIR PROCESS

James Joseph Di Fazio and George Joseph Giuffre, Wappingers Falls, and James Rodney Zingerman, Pine Bush, N.Y., assigns to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1973, Ser. No. 356,862

Int. Cl. G03c 5/00

U.S. Cl. 96—38.3

5 Claims

Defects in exposure masks used in integrated circuit manufacture are corrected during the development process. A silver halide emulsion is exposed to form a latent image of a circuit pattern. The emulsion is partially developed and is then observed under a microscope using red safe-light illumination. The areas which should have been exposed but were not; due, for example, to the presence of dirt particles, are visually located as showing red against a black or gray background. These areas are then selectively exposed, and the development of the emulsion is completed.

3,823,017

### COLOR PHOTOGRAPHIC DEVELOPER COMPOSITIONS

Harvey A. Hodes, Eatontown, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Apr. 5, 1973, Ser. No. 348,346

Int. Cl. G03c 5/30

U.S. Cl. 96—66.4

3 Claims

A color photographic developer composition of improved stability to aerial oxidation is obtained by including 2-anilinoethanol in the developer composition.

3,823,018

### FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING A THALLIUM SALT AND A DYE CONTAINING A CYCLO-HEPTATRIENE RING

Hirotsugu Kato, Tatsuya Tajima, and Akira Sato, Minami-ashigara, Kanagawa, Japan, assigns to Fuji Photo Film Co., Ltd., Minami-ashigara, Kanagawa, Japan

No Drawing. Filed July 24, 1972, Ser. No. 274,371

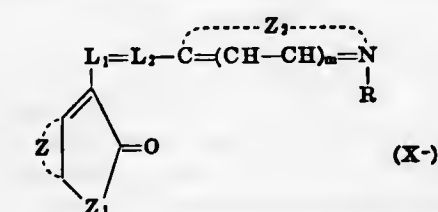
Claims priority, application Japan, July 28, 1971, 46/56,562

Int. Cl. G03c 1/28, 1/36

U.S. Cl. 96—101

13 Claims

A direct reversal photographic sensitive material which comprises a photographic emulsion containing silver halide particles therein, at least one dye represented by the formula (1)





wherein Z, Z<sub>1</sub>, Z<sub>2</sub>, R, L<sub>1</sub>, L<sub>2</sub>, X, m and n are as defined hereinafter and a thallium salt, said thallium salt being added to said emulsion during formation of said silver halide particles, during physical ripening of said emulsion, or during formation of said silver halide particles and during physical ripening of said emulsion, is disclosed.

3,823,019

**MINE WALL COATING**

John M. Dale and Allen C. Ludwig, San Antonio, Tex., assignors to the United States of America as represented by the Secretary of the Interior  
No Drawing. Filed Sept. 6, 1972, Ser. No. 286,627  
Int. Cl. C09d 5/18

U.S. Cl. 106—15 FP

3 Claims

A mine wall coating composition is compounded from elemental sulfur, dicyclopentadiene, glass fiber and talc. This composition is applied to mine walls by spraying a molten mixture of the composition at elevated temperature. Preferably, the composition is allowed to age at elevated temperature prior to spraying to permit reaction between the sulfur and the dicyclopentadiene.

3,823,020

**WATER EMULSION PASTE STENCIL INK**

John L. Gilsen, Morton Grove, and Gail L. Strachan, Skokie, Ill., assignors to A. B. Dick Company, Niles, Ill.  
No Drawing. Continuation of abandoned application Ser. No. 43,222, June 3, 1970. This application Nov. 9, 1971, Ser. No. 197,186

Int. Cl. C09d 11/08

U.S. Cl. 106—30

10 Claims

A water emulsion paste ink for stencil duplication formulated of petroleum sulfonate, tinctorial agent, surface active agent and a rosinous binder with mineral oil subdivided into one component having an API number below 26 and another component having an API number above 32.

3,823,021

**CEMENT COMPOSITIONS CONTAINING SODA LIME GLASS**

Alex G. Jansen, 3812 N. Odell, Chicago, Ill. 60634  
No Drawing. Filed June 19, 1972, Ser. No. 264,052  
Int. Cl. C04b 7/02; C08h 17/04

U.S. Cl. 106—97

3 Claims

A cementitious composition for use for example, as overlay layers for concrete bases of improved adhesion property which comprises from about 20 to 66 parts by weight of cement, from about 80 to 34 parts by weight of silica sand and from about 0.1% to 1.5% by weight, based upon the weight of said cement, or glass particles having a particle size in the range of 2.6 to 233 mesh and being a soda lime type glass.

3,823,022

**METHOD FOR MAKING COPY SHEETS WITH A CONCEALED IMAGE AND VISUAL DEVELOPMENT OF SAME**

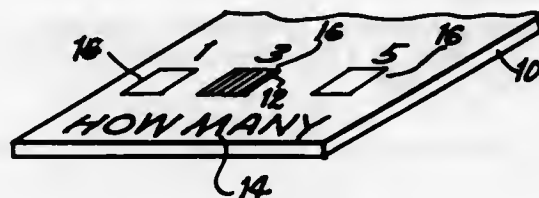
Richard E. Thomas, Chicago, Ill., assignor to A. B. Dick Company, Chicago, Ill.  
Continuation of abandoned application Ser. No. 19,955, Mar. 16, 1970. This application Apr. 17, 1972, Ser. No. 245,001  
Int. Cl. B41m 5/12

U.S. Cl. 117—1.7

14 Claims

A method for imaging a copy sheet with a concealed image and for the subsequent visual development of the concealed image, wherein a copy sheet is first imaged with a Lewis acid to provide a concealed image and the resulting concealed image is subsequently marked with a mark-

ing composition containing a mixture of a wax and a leuco dye intermediate which is capable of reaction with the



Lewis acid forming the concealed image to produce color of high intensity.

3,823,023

**SURFACE CONDITIONING SYSTEM FOR POLYMER STRUCTURES**

Ray B. Duggins, Chadds Ford, Pa., and Eustathios Vassilion, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed May 30, 1972, Ser. No. 257,665  
Int. Cl. B29c 1/04

U.S. Cl. 117—5.1

10 Claims

An improved surface conditioning and release system is provided for all casting processes in which a polymerizable material is deposited on a casting surface by a surface conditioning layer applied to the casting surface. The surface conditioning layer comprises a water soluble film forming material such as gelatin or carboxymethyl cellulose which is essentially insoluble in the polymerizable material and which will remain water soluble under the conditions used to polymerize the polymerizable material. The layer also contains a water-soluble film-extending agent which is polyvinyl alcohol or a mixture of polyvinyl alcohol and a polyether glycol.

3,823,024

**PROCESS FOR FORMING A STRIPPABLE COATING**

Joseph A. Cogilano, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.  
No Drawing. Filed May 10, 1972, Ser. No. 251,880  
Int. Cl. B44d 1/34

U.S. Cl. 117—6

2 Claims

This invention relates to a strippable coating process and a coating composition therefor comprising (1) a latex, (2) a coagulant for said latex and (3) a debonding agent consisting essentially of a substantially non-volatile additive which is adhesive to at least one of either the coated substrate or coagulated coating, more soluble in water than in the coagulated latex polymer component and having a solubility parameter at least 2 (calories/cc.)  $\frac{1}{2}$  higher than the coagulated latex polymer component.

3,823,025

**ARTICLE COMPRISING AN ADHESIVE COATING AND CONTROLLED RELEASE COATING**

Thomas S. Mestetzky, Easton, Pa., assignor to GAF Corporation, New York, N.Y.  
No Drawing. Filed July 27, 1971, Ser. No. 166,569  
Int. Cl. C09j 7/04

U.S. Cl. 117—68.5

9 Claims

A base sheet material one surface of which carries an outer adhesive layer, the other surface of said sheet material carrying an outer layer of an aqueous controlled release coating composition comprising a cured mixture of an aqueous organopolysiloxane emulsion and a water soluble homopolymer or copolymer of an aliphatic unsaturated dibasic acid or derivative thereof. As the amount

of said water soluble polymer increases, the required release force decreases below that of pure organopolysiloxane to a minimum, and then gradually increases to a level above that of the organopolysiloxane. Typical compositions comprise an aqueous emulsion of a polymethylsiloxane and a polyvinyl methyl ether/maleic anhydride copolymer in a 10:1 to 1:10 ratio on a weight basis.

3,823,026

**METHOD FOR THE FABRICATION OF COMPOSITE INSULATIONS**

Gerhart Brunar, Vienna, Austria, assignor to Meynadier & Cie Aktiengesellschaft, Zurich, Switzerland

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,894  
Claims priority, application Switzerland, Feb. 1, 1971, 1,428/71

Int. Cl. B44d 1/12, 1/16

U.S. Cl. 117—72

23 Claims

A method for the fabrication of a composite insulation for structures composed of at least two layers of different composition and different mechanical properties, comprising the steps of initially providing the surface to be insulated with a plastic insulation layer formed of bitumen, tar, bitumen-latex or tar-latex in that there is simultaneously and separately applied the material which is present in the form of a dispersion i.e. an emulsion or suspension and a precipitating agent, and thereafter applying to the plastic insulation layer an elastic rubber layer by simultaneously or separately applying a latex i.e. emulsion or suspension and a precipitating agent.

3,823,027

**METHOD OF FORMING OPAQUE FILMS**

Marco Wismer, Gibsonia, Charles Pohan, Philadelphia, Kenneth E. Miller, Natrona Heights, and Charles M. Hansen, Glenshaw, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,588

Int. Cl. B44d 1/50; C08f 3/42, 11/02

U.S. Cl. 117—93.31

12 Claims

A method of forming cured opaque films, with or without the use of pigments, comprises subjecting a composition comprising an actinic light sensitive material and a solvent having a specified solubility with the material and which is present in an amount of from about 10 percent to about 70 percent by weight of the composition and which has a boiling point of at least about 115° F. or higher, to actinic light to cure said materials. The resulting film contains microvoids which causes the film to be opaque.

3,823,028

**IMPREGNATION OF CORRUGATED BOARD**

Charles Mourad Arian, Montreal, Quebec, and Hans Hermann Mahler, Ville d'Anjou, Quebec, Canada, Claude Cecil Hayes, Jr., Suffield, Conn., and Hal W. Tanner, Jr., Georgetown, S.C., assignors to International Paper Company, New York, N.Y.

Original application July 13, 1970, Ser. No. 54,201, now Patent No. 3,695,219. Divided and this application May 18, 1972, Ser. No. 254,804

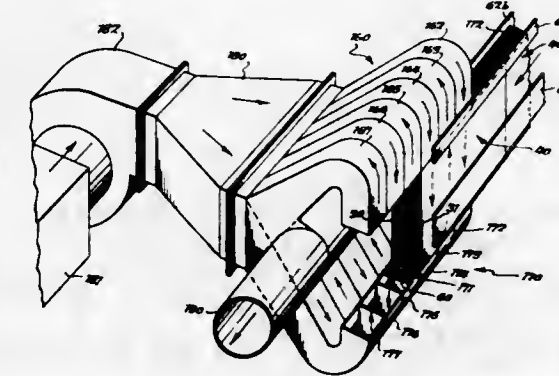
Int. Cl. B05c 7/00; B05b 13/06

U.S. Cl. 117—95

13 Claims

A bundle of corrugated boards, having the fluted channels of the boards in substantially unidirectional alignment throughout the bundle is continuously advanced through an apparatus which comprises means for supporting the bundle, means for applying a compressive force against the outer surfaces of the bundle to maintain surfaces of adjoining boards in the bundle in tight abut-

ment as the bundle advances, with at least a portion of the compression means forming the walls of a trough in the zone of impregnation with the bottom of the trough being defined by the upper surface of the bundle; the trough walls tightly abut against at least the upper portions of the outer surfaces of the bundle. Means are provided for delivering a liquid impregnating composition into the trough as the bundle advances through the trough. The trough communicates with the aligned fluted channels of the bundle. Since the individual members of the bundle are tightly compressed together, the impregnating liquid flows downwardly through the fluted channels of the boards without contacting the outer surfaces of



the individual members of the bundle. When impregnation is completed, sequential means are provided for: first, circulating a gas through the fluted channels of the board bundle as it continuously advances to flush out excess impregnant; second, means for circulating a hot gas through the fluted channels of the bundle to drive off volatiles contained in the impregnating composition; third, circulating a second stream of the hot gas through the fluted channels of the dried bundle as it continuously advances to effectuate curing of the impregnant contained in the boards; and fourthly, delivering water into the fluted channels of the bundle as it continuously advances in order to humidify the boards.

3,823,029

**METHOD FOR COATING GRAPHITE FILAMENTS WITH REFRACTORY METAL CARBIDES**

Molnuddin S. Rashid, Ames, Iowa, assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Aug. 1, 1972, Ser. No. 276,989

Int. Cl. B44d 5/12

U.S. Cl. 117—118

6 Claims

Fine graphite filaments for use as reinforcements in metals and alloys are coated with a thin layer of a refractory metal carbide by heating the filaments in a low-melting metal containing a small amount of a refractory metal.

3,823,030

**METHOD OF MAKING A BEARING SYSTEM HAVING ENTRAINED WEAR-RESISTANT PARTICLES**

Lester S. Hudson, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 18, 1972, Ser. No. 298,684

Int. Cl. C23c 17/00

U.S. Cl. 117—131

4 Claims

A rock bit bearing system is provided by filling a groove in the bearing pin of the bit with a deposit including a multiplicity of tungsten carbide particles in a



high temperature resistant metal matrix. The tungsten carbide particles are introduced into the deposit using a



welding rod that combines the tungsten carbide particles with hard metal welding rod materials.

3,823,031

### THREAD BONDED WITH SEGMENTED COPOLYESTER ELASTOMERS

Akira Tsukamoto, 4308 Miller Road, Apt. 207, Wilmington, Del. 19802, and Robert K. Tubbs, 589 Morgan Drive, Lewiston, N.Y. 14092

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,287

Int. Cl. B32b 27/02

U.S. Cl. 117—138.8 F

8 Claims

Multi-filament thread bonded with a thermoplastic segmented copolyester elastomer consisting essentially of a multiplicity of recurring short chain ester units and long chain ester units joined through ester linkages, said short chain ester units amounting to about 15 to 65 percent by weight of said copolyester and being derived from dicarboxylic acid such as terephthalic acid, or a mixture of terephthalic and isophthalic acids, and an organic diol such as butanediol, and said long chain ester units amounting to about 35 to 85 percent by weight of said copolyester and being derived from dicarboxylic acid such as terephthalic acid, or a mixture of terephthalic and isophthalic acids, and a long chain glycol such as polytetramethylene ether glycol, said copolyester having a melt index of less than about 150 and a melting point of at least about 125° C. The bonding agent may be modified with one or more thermoplastic resins or modifiers.

3,823,032

### GLASS BOTTLES COATED WITH MULTI-PROTECTIVE FILM LAYERS

Nobuo Ukai, Yanagawa, Japan, assignor to Tsukihoshi Kasei Kabushiki Kaisha (also known as Moon-Star Chemical Corporation), Kurume-shi, Fukuoka-ken, Japan

Filed July 27, 1972, Ser. No. 275,741

Int. Cl. B44d 1/14; C03c 17/32

U.S. Cl. 117—172

10 Claims

A coated glass bottle designed to prevent scattering of the broken glass upon breakage is provided herein, said coated glass bottle containing a multilayer protective film on its surface, the first or inner film being a high polymer having a moderate adhesive strength of e.g. 0.1 kg./cm. to 3.0 kg./cm. with respect to the glass surface and capable of being stretched to an extent greater than 150% of the original length of the film and exemplified by such materials as natural rubber, and an outer protective coating of a synthetic resin covering the entire surface of the inner film, said outer film being such materials as epoxy resins, polyurethane, etc., having a mechanical strength greater than about 200 kg./cm.<sup>2</sup>, and having such properties as water-resistance, oil-resistance, etc., and wherein the adhesive strength between the inner and outer film is equal to the adhesive

strength between the glass bottle and the inner film. A method of preparing said coated bottles is also provided herein. The coated bottles are especially suited



for bottling such beverages as beer and carbonated beverages wherein internal gas pressure is exerted on the inner surface of the glass bottles.

3,823,033

### METHOD OF FORMING A HIGH DENSITY PLANAR CORE MEMORY

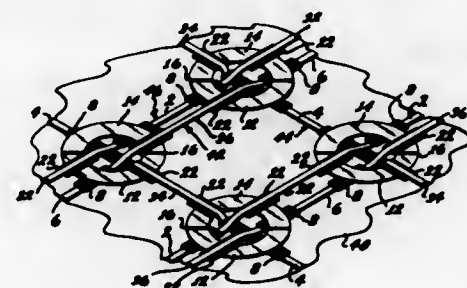
Clive Gene Leonard, Lawndale, and Elliot Stone, Los Angeles, Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed Mar. 9, 1972, Ser. No. 233,061

Int. Cl. C23c 13/02, 13/04

U.S. Cl. 117—212

4 Claims



A method of depositing magnetic cores and their associated conductors and an improved thin-film core system, in which segments of conductors passing under a core are first laid down, then insulated, then the core is deposited and insulated, and finally the remainders of the conductors, i.e., segments passing above the core, are deposited. The first-deposited segments of each conductor are left uninsulated in sufficient areas to assure full electrical contact with the last-deposited segments of the same conductor.

3,823,034

### ELECTRO-SENSITIVE RECORDING BLANK

Taiji Higaki, Nishinomiya, Japan, assignor to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 26, 1972, Ser. No. 292,465

Claims priority, application Japan, Oct. 1, 1971, 46/77,326

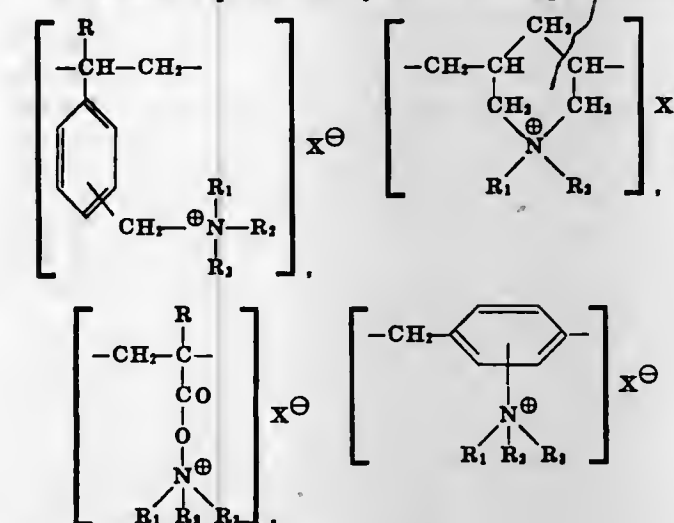
Int. Cl. B41c 3/08; B44d 1/18

U.S. Cl. 117—218

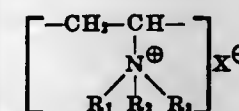
7 Claims

The electro-sensitive recording blank comprises a backing layer of paper, an electro-conductive dark-colored coating on said backing layer and a white surface coating on said dark-colored coating, said white surface coating

including a white pigment, a binder and at least one polymer, said polymer comprising at least one kind of monomer unit which is selected from the group consisting of monomers represented by the following formulas:



and



wherein R is hydrogen or alkyl having 1-4 carbon atoms, each of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> is alkyl, at least one of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> is alkyl having at least 10 carbon atoms, and X<sup>-</sup> is anionic radical.

3,823,035

### ELECTRICALLY-CONDUCTIVE TEXTILE FIBER

John H. Sanders, Denbigh, Va., assignor to Dow Badische Company, Williamsburg, Va.

No Drawing. Filed July 14, 1972, Ser. No. 271,837

Int. Cl. C09c 1/44; D02g 3/00

U.S. Cl. 117—226

6 Claims

Finely-divided, electrically-conductive particles are uniformly suffused in a filamentary polymer substrate as an independent phase in an annular region located at the periphery of the filament and extending the entire length thereof. The electrically-conductive particles are employed in an amount sufficient to render the electrical resistance of the filament not more than about 10<sup>9</sup> ohms/cm. The filament finds special utility in the fabrication of antistatic fabrics and floor coverings.

3,823,036

### SECONDARY BATTERY COMPRISING MEANS FOR FORMING HALOGEN HYDRATE SOLID BUBBLE SHELLS

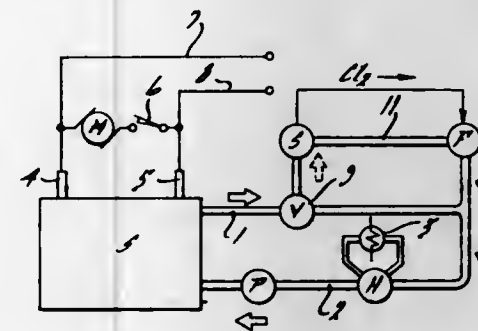
Harry K. Bjorkman, Jr., Birmingham, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Filed May 26, 1972, Ser. No. 257,262

Int. Cl. H01m 35/00, 31/00

U.S. Cl. 136—6 F

6 Claims



An apparatus and process for making halogen hydrate whereby a halogen gas is introduced in the form of a

plurality of upwardly rising bubbles into the lower portion of a body of an aqueous solution whereby a reaction takes place during the ascent of the gaseous bubbles to produce a solid halogen hydrate shell or layer enveloping each of the bubbles which float as a stable foam layer on the surface of the solution. The resultant foam of halogen hydrate is separated from the aqueous solution, whereafter it is drained and transferred by suitable conveying means to a location remote from the apparatus.

3,823,037

### IMPLANTABLE BATTERY

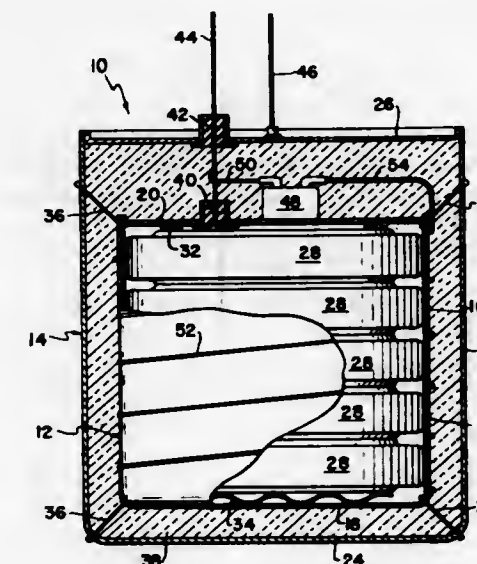
Elton J. Cairns, Downers Grove, Albert A. Chlenskas, Western Springs, and Hiroshi Shimotake, Hinsdale, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed July 20, 1972, Ser. No. 273,669

Int. Cl. H01m 43/00

U.S. Cl. 136—6 F

9 Claims



This invention consists of an implantable secondary electrochemical battery capable of use as a power source for an artificial heart. The battery includes an enclosed, evacuated cylindrical inner housing securely supported within an enclosed, evacuated cylindrical outer housing with a plurality of sealed, high-temperature secondary electrochemical cells immobilized within the inner housing and electrically connected in series. The battery further includes thermal insulation material located between the two housings, insulated electrical leads, feedthroughs located in the housings to enable the passage of one of the leads into the battery, and a thermal switch and heater wire located between the two housings to enable initial heating of the electrochemical cells to operating temperature and for maintaining this temperature throughout battery operation.

3,823,038

### CONTINUOUS BLEED FUEL CELLS

Dimitri Gidaspow, Robert W. Lyczkowski, and Bernard S. Baker, Chicago, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation of application Ser. No. 844,406, July 24, 1969. This application Mar. 6, 1972, Ser. No. 232,214

Int. Cl. H01m 27/00

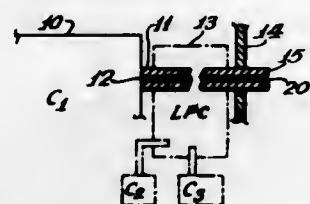
U.S. Cl. 136—86 R

1 Claim

Apparatus and method of operation of fuel cells by means of a controlled bleed at the "dead-end" of electrode gas compartments to continuously remove impurities, inevitably present in even ultra-pure fuels, which accumulate and cause a drop in voltage and current during the lifetime of the cells. The bleed at such locations establishes a steady state fuel-impurity concentration distribu-



tion in the cell resulting in improved electrical characteristics. The preferred rate of bleed may be only slightly greater than the percentage of input of impurities or inerts coming in with the reactant or fuel gas. The complicated and heavy valving apparatus, undesirable voltage tran-



sients, power interruption, and permanent loss of electrolyte of prior art periodic or recycle purge systems are avoided by the present construction and method. Apparatus and method of providing supplemental thrust for spacecraft propulsion, navigation and altitude control are also disclosed.

3,823,039

**SEALING CLOSURE FOR ELECTRIC BATTERIES**  
Demetrio Lopez Sanchez, Madrid, Spain, assignor to Pilas Secas Jupiter, S.A., Tolosa, Guipuzcoa, Spain

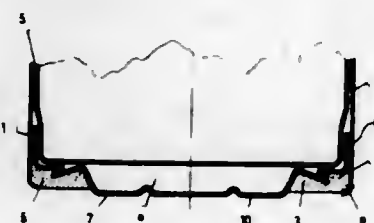
Filed July 5, 1972, Ser. No. 269,088

Claims priority, application Spain, Dec. 24, 1971, 175,654

Int. Cl. H01m 1/02

U.S. Cl. 136—133

4 Claims



Sealing closure for electric batteries includes, in the bottom of the anode, a metal tray provided on the periphery of its base with a zig-zag cross-sectional profile and in its central zone with a projection to the outside, which is covered internally by a film of anti-corrosive product.

The outer zone of the tray surrounding the central projection is provided with a thermoplastic material, leaving free the aforesaid outer central projection of the base of the tray.

3,823,040

**BATTERY SEALING METHOD RECEPTIVE TO INJECTION FILLING**

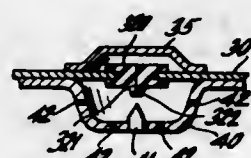
Bruce E. Jagid, Whitestone, N.Y., assignor to Power Conversion, Inc., Mount Vernon, N.Y.

Filed Aug. 29, 1972, Ser. No. 284,580

Int. Cl. H01m 1/02

U.S. Cl. 136—162

6 Claims



A non-aqueous hermetically sealed battery cell including an electrode assembly in an anhydrous liquid electrolyte under pressure is formed by necking a metal casing,

closed at one end, a predetermined distance from the other end and seating upon said neck an assembly including a thrust ring, an insulating member, and a hermetic sealing member. The hermetic sealing member comprises an apertured seal support member, and an elastomeric septum, in compression, within the aperture. The open end is then uniformly upset or crimped to bear upon the insulating member and hermetic sealing member. A feature of the invention calls for a three part seal support member in the form of a sandwich surrounding the septum. The sandwiching elements contiguous the septum comprise a metal inert to the electrolyte; clad bonded to the external element is a conventional cold rolled steel battery end cap for providing a terminal of the conventional easily solderable type.

3,823,041

**TREATMENT OF ALUMINUM ALLOYS**

Kazuo Tazaki and Toshiro Kobayashi, Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

No Drawing. Original application Jan. 27, 1971, Ser. No. 110,331, now abandoned. Divided and this application Apr. 26, 1972, Ser. No. 247,870

Claims priority, application Japan, Feb. 10, 1970, 45/11,726; July 24, 1970, 45/64,880

Int. Cl. C22f 1/04

U.S. Cl. 148—2

5 Claims

A new aluminum alloy composed of from 0.01 to 0.8 percent each of magnesium and iron, from 0.001 to 0.3 percent of beryllium, and a remainder of aluminum and impurities. This alloy can be caused to exhibit effectively its excellent properties by treating it as the beryllium therein is maintained in a solid-solution state and prevented from precipitation.

3,823,042

**PROCESS FOR THE DECARBONIZATION OF STEEL**

Fritz Bölling, Homburg, Armin Mayer and Mavendra Parikh, Dinslaken, and Friedrich Toussaint, Wulfrath-Rutzhausen, Germany, assignors to Stahlwerke Bochum Aktiengesellschaft, Bochum, Germany

Filed Feb. 22, 1972, Ser. No. 227,921

Claims priority, application Germany, Feb. 20, 1971, P 21 08 242.8

Int. Cl. H01f 1/04

U.S. Cl. 148—112

2 Claims

A process for the decarbonization of electrical sheet steel which comprises combining the decarbonization with the development of magnetic characteristics of the steel into one single step by contacting a steel strip or sheet at 1,000° C. to 1,300° C. with a mixture of water vapor and hydrogen wherein the ratio of the partial pressure of water vapor to the partial pressure of hydrogen is controlled between  $2 \times 10^{-4}$  to  $3 \times 10^{-3}$ , at a temperature of 1,000° C. and  $2 \times 10^{-4}$  to  $10^{-1}$  at a temperature of 1,300° C.

3,823,043

**METHOD OF MANUFACTURING SEMICONDUCTOR BODY**

Elie Andre, Herouville, St.-Clair, and Marc Mahieu, Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,763

Claims priority, application France, Dec. 23, 1970, 7046399, 7046400

Int. Cl. H01l 7/00

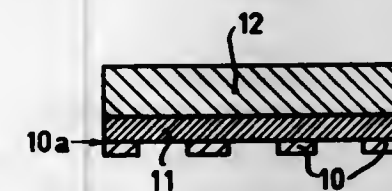
U.S. Cl. 148—171

6 Claims

A semiconductor body comprising a monocrystalline substrate which is covered with a monocrystalline ternary

layer which consists of a metalloid of the fifth group of the Periodic system of Mendeleev and two metals of the third group of the same Periodic system.

The body is characterized in that the concentration in



the ternary layer of the most reactive material of the two metals present is minimum near the interface with the substrate and increases in the direction of the surface of the ternary layer.

3,823,044

**INCREASING THE DETONATION PRESSURE OF AMMONIUM NITRATE/FUEL OIL COMPOSITIONS**

George R. Cowan, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,915

Int. Cl. C06b 1/04

U.S. Cl. 149—21

7 Claims

The detonation pressure of a bulk ammonium nitrate/fuel oil (ANFO) composition is increased substantially independently of its detonation velocity by the addition of iron oxide, calcium carbonate, and/or calcium sulfate as a densifying agent to produce a mixture containing about 8–30% densifying agent. A detonating composition containing a blend of coarse and fine AN, fuel oil, and iron oxide, calcium carbonate, and/or calcium sulfate, and a process for shock-synthesizing diamond by use of the detonating composition.

3,823,045

**PIPE COATING METHOD**

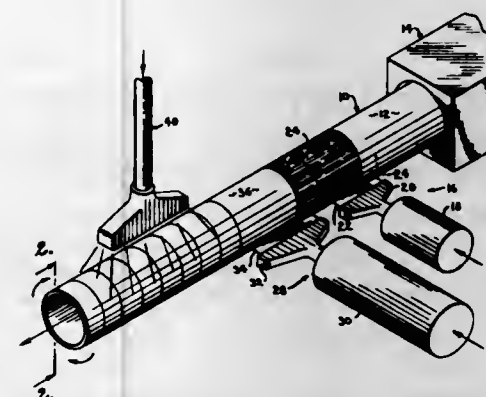
Ralph Hielema, Calgary, Alberta, Canada, assignor to Hielema-Emmons Pipe Coating Ltd., Calgary, Alberta, Canada

Continuation-in-part of abandoned application Ser. No. 130,293, Apr. 1, 1971. This application July 31, 1972, Ser. No. 276,832

Int. Cl. B29c 27/28; B31c 9/00; B65h 81/00

U.S. Cl. 156—188

11 Claims



A method of enveloping an elongated joint of pipe with a protective coating. The pipe is maintained at approximately the temperature of the ambient air prior to extrusion of an adhesive layer to the pipe surface. Since the pipe is not preheated prior to application of the adhesive the quantity of heat to be removed during the cooling process is substantially reduced. The pipe is simultaneously rotated about its axis and advanced longitudinally

to effectively wrap a sheet of extruded adhesive around the pipe in a spiral manner. The protective outer layer of the coating, which is a thermoplastic resin, is extruded onto the adhesive immediately after the latter has been applied to assure bonding between the hot extrudates of adhesive and resin. The sheet of thermoplastic resin extrudate is carefully controlled to assure it does not become elongated. This minimizes any cooling which would cause stresses in the final coating. The rate of advancement of the pipe surface away from the extruded resinous sheet is also controlled to not exceed 5% greater than the linear rate of advancement of the extrudate. This further prevents stresses from being built into the coating. The longitudinal rate of advancement of the pipe is controlled to assure that it will always be a fractional multiple of the width of the sheets of adhesive and resin, thus resulting in the placement of multiple plies of both resin and adhesive.

3,823,046

**METHOD OF FORMING DECORATIVE SHEET**

Iwao Yamagishi, Osaka, Japan, assignor to Eldai Sangyo Kabushiki Kaisha, Osaka, Japan

Continuation of abandoned application Ser. No. 65,082, Aug. 19, 1970. This application July 17, 1972, Ser. No. 272,207

Int. Cl. B32b 31/26

U.S. Cl. 156—220

4 Claims



A decorative sheet and a process for forming the same. The sheet includes a polymerized translucent or transparent resin layer that has a concave or convex second pattern defined on the exterior surface thereof that is accurately oriented and in precise registry relative to a first pattern that is visible through said layer.

3,823,047

**MANUFACTURING LAMINATES OF EXPANDED THERMOPLASTIC RESINS**

Roberto Colombo, Turin, Italy, assignor to S.p.A. Lavorazione Materie Plastiche L.M.P. Turin, Italy

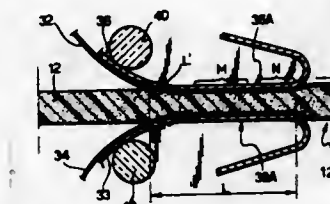
Filed July 26, 1972, Ser. No. 275,401

Claims priority, application Italy, Aug. 10, 1971, 6,987/71

Int. Cl. C09j 5/00

U.S. Cl. 156—322

2 Claims



A thermoplastic resin foam web and a backing sheet are laminated by previously accumulating in the sheet an amount of heat at a temperature sufficient for heat-bonding by continuously passing the two through a lamination zone. The latter comprises a melting region for the web and sheet and a region in which the laminating pressure is continued under controlled temperature conditions preventing both dispersion of heat from the exposed face of



the backing sheet and delivery of external heat capable of softening the cellular structure of the foam web.

3,823,048

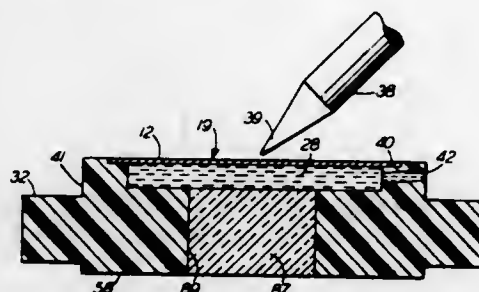
**FLUIDIC MASKING**

Harold Arthur Hetrich, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.  
Original application June 7, 1971, Ser. No. 150,345, now Patent No. 3,701,705. Divided and this application Aug. 15, 1972, Ser. No. 280,905

Int. Cl. H01L 7/50

U.S. Cl. 156—345

7 Claims



In making a target for a television camera tube, it is necessary to thin the backside of a semiconductive substrate, which is opposite a face having a diode array thereon. To thin the substrate, it is positioned face down on a fluid nondeleterious to the substrate and diode array. The fluid is contained in a cavity of a holding device. The positioning is such that there is no space between the fluid and the substrate. An apertured top member is then mounted on the substrate and the holding device to retain the substrate on the fluid. The assembly of the holding device and top member with the substrate therebetween is immersed and rotated in an etchant to thin the backside of the substrate through the aperture of the top member. The fluid provides a tight seal on the face of the substrate to prevent the etchant from damaging such face and the diode array thereon. A vent extending from the cavity of the holding device to its outer edge assists in the subsequent removal of the substrate from the cavity.

3,823,049

**REINFORCED WEB MAKING MACHINE**

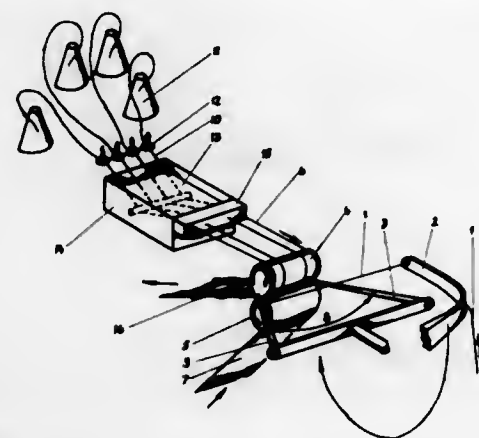
Jan Vetrovec, Glendale, Calif. (% Oriental Trading Center, 5212 N. Yvonne Ave., San Gabriel, Calif. 91776)

Filed Aug. 3, 1972, Ser. No. 277,777

Int. Cl. D04h 3/12

U.S. Cl. 156—441

6 Claims



The technique described is a new method that will substitute usual knitting or weaving in manufacturing of long cloth strips having warp and woof threads.

The foundation of this method is a rotary way of forming reinforced web by using of pressing and pulling rollers in a roll stand. Web is reinforced by glued warp and also can be bonded to a dry base strip. There are three machines designed for various jobs depending on material of the yarn, desired quality of the web, speed of production etc.

3,823,050

**LABEL APPLICATOR HEAD**

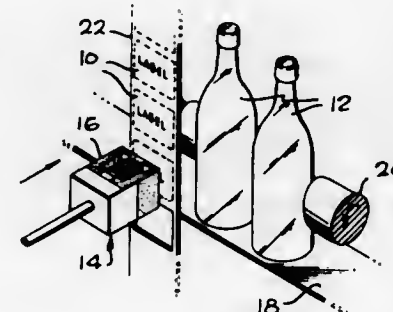
Herbert La Merz, Marina Del Rey, Calif., assignor to R. A. Jones & Company, Inc., Covington, Ky.

Filed Oct. 4, 1971, Ser. No. 186,138

Int. Cl. B65c 9/18, 9/26, 9/34

U.S. Cl. 156—493

17 Claims



A head for pressing a label against a rounded or other convexly shaped object so that even the extreme side portions of the label are firmly pressed down, including a flexible blanket whose forward face supports the label and a pair of resilient columns extending rearwardly from opposite sides of the blanket. As the head with a label thereon is thrust forward against a convex object and the blanket begins wrapping onto the object, the sides of the blanket begin moving towards one another and cause the forward ends of the columns to bend inwardly towards each other, so they can press the sides of the blanket hard towards the object to firmly press the label sides against the object. As the head is withdrawn from the object, the bent columns tend to unwrap the blanket to thereby minimize sliding contact of the blanket with the label that could result in frictional removal of the label.

3,823,051

**B-STAGE POLYURETHANE COMPOSITIONS**

Wen-Hsuan Chang, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Application May 6, 1970, Ser. No. 35,286, which is a continuation-in-part of abandoned application Ser. No. 746,739, July 23, 1968. Divided and this application June 20, 1972, Ser. No. 264,656

Int. Cl. B32b 17/10, 27/40

U.S. Cl. 156—99

5 Claims

Curable B-stage polyurethanes suitable for use as interlayers for glass laminates comprise the reaction product of at least one hydroxy-containing ester having a terminal acrylyl or substituted-acrylyl group, an organic diisocyanate and a polyol. The compositions are stable at room temperature even when containing a free radical-producing initiator but cure in the presence of free radicals to a hard, thermoset state. The preferred diisocyanates include isocyanato-terminated polyether adducts of poly(oxypolymethylene) glycols.

3,823,052

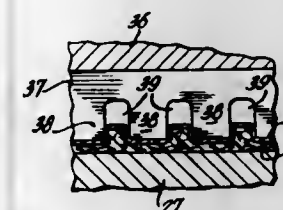
**QUILTED FABRIC AND METHOD OF PRODUCING THE SAME**

Lawrence Hargett, Englewood, N.J., assignor to Phillmont Manufacturing Company, Englewood, N.J.  
Application Oct. 1, 1969, Ser. No. 868,959, which is a continuation-in-part of application Ser. No. 798,674, Feb. 12, 1969, both now abandoned. Divided and this application May 18, 1972, Ser. No. 254,801

Int. Cl. B31f 7/00

U.S. Cl. 156—220

9 Claims



A quilted fabric is produced by laminating a web of nylon or other fiber having a thermoplastic polymeric face with active polar groups along the polymer chain and a lofty non-woven resilient mat of fibers having a highly polar thermoplastic binding resin and compressing and dielectrically heating the laminate along puff delineating lines to a temperature sufficient to bond the web and mat materials. Examples of polar groups are hydroxyl, nitrile, amide, mono-carboxy and isocyanate.

3,823,053

**PACKAGING MACHINE**

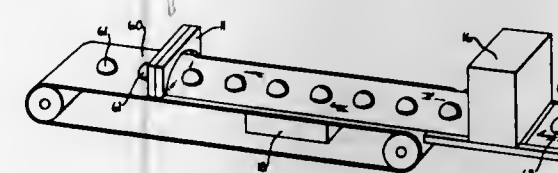
Melvin J. Straub, Minnetonka, and Thomas L. Schnette, Osseo, Minn., assignors to Possis Corporation, Minneapolis, Minn.

Application Mar. 1, 1971, Ser. No. 119,568, now Patent No. 3,755,523, which is a division of application Ser. No. 842,991, July 18, 1969, now Patent No. 3,596,432. Divided and this application Nov. 10, 1972, Ser. No. 306,028

Int. Cl. B29c 17/04

U.S. Cl. 156—500

2 Claims



A packaging machine wherein a web of paperboard is continuously drawn along a defined path, under a loading device by which articles or products to be packaged are successively deposited upon the web to be carried thereby through a curtain or sheet of molten thermoplastic resin which debouches from a downwardly opening nozzle, to lay itself onto and form a covering film on the web and over any articles or products thereon. The mouth of the nozzle is a slit which extends transversely across a vacuum chamber by which any space between the close to the web while its mid-portion is spaced much farther from the web. The film covered web then travels across a vacuum chamber by which any space between the covering film and the web is evacuated and the film drawn tightly over the articles or products and against the web. A series of closely spaced parallel rollers across the top of the vacuum chamber with their axes transverse to the web supports the web, and certain of the rollers are driven to draw the web through the machine. Beyond the vacuum chamber, the web with the covered articles or products thereon enters a guillotine type cutoff station where it is cut into discrete units each of which is a complete package.

3,823,054

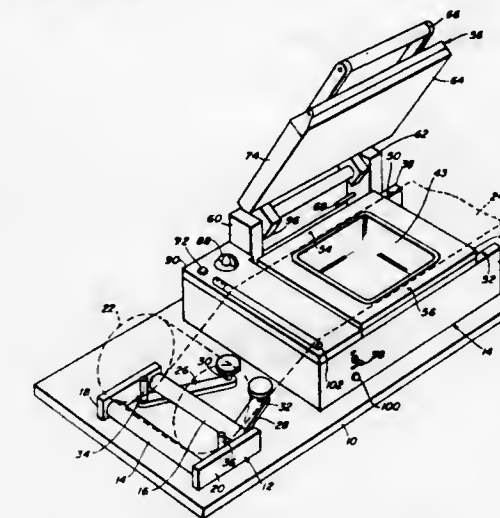
Winton E. Balzer, 963 Central Ave., Needham, Mass. 02192, and Kenneth M. Knobel, 37 Percy Road, Lexington, Mass. 02173

Filed Feb. 9, 1972, Ser. No. 224,689

Int. Cl. B32b 31/00; B65b 7/06

U.S. Cl. 156—530

7 Claims



An apparatus is provided for heat-sealing a thermoplastic film onto the top of a tray containing food or the like. A hinged cover is provided with an oversized heating pad and is adapted to be lowered onto the film which has been drawn over a tray held in a cooperating die to heat-seal the film marginally to the tray. The dies are changeable to accommodate different sizes and shapes of trays while the same pad may be used throughout. A heated wire enclosed by a retractable shield cuts the film simultaneously with the heat-sealing operation to separate the film from the roll. A roll of film is mounted adjacent the sealing station in a cradle comprised of rollers with adjustable guides for positioning rolls of different sizes with respect to the die. Controls are provided for adjusting the temperature and the timing cycles according to the materials used.

3,823,055

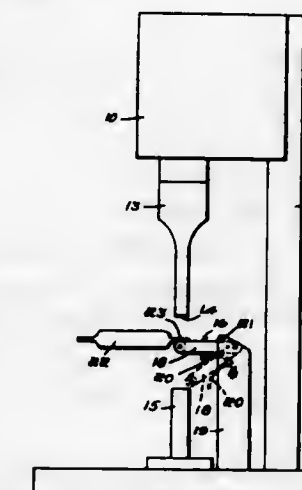
**ULTRASONIC CLEANING AND WELDING APPARATUS**

Gerald L. Schulz, Holliston, and Raymond T. Mansur, Framingham, Mass., assignors to the United States of America as represented by the Secretary of the Army  
Continuation of abandoned application Ser. No. 51,462, July 1, 1970. This application July 18, 1972, Ser. No. 272,914

Int. Cl. B23k 1/06; B32b 31/16

U.S. Cl. 156—580

4 Claims



Dry contaminants on seal interface surfaces of flexible packages are removed by causing the interface surfaces



to be vibrated by ultrasonic energy for a brief period of time prior to sealing.

3,823,056

# ANTISTATIC FLOOR COVERING AND TEXTILE STRUCTURE

William J. Cooney, Hixson, Tenn., assignor to GAF Corporation, New York, N.Y.

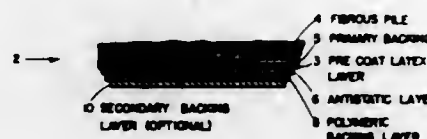
Filed Jan. 15, 1973, Ser. No. 323,807

Int. Cl. B32b 3/16

U.S. Cl. 161—67

17 Claims

Antistatic floor covering and textile products of enhanced durability to cleaning and reduced migration tendency are produced by applying between two polymeric



covering layers disposed beneath the textile or floor covering wear layer an antistatic composition consisting essentially of a mixture of

- (a) an organic antistatic agent,
- (b) a humectant which may be either a nonionic humectant, such as glycerin, or an ionic humectant such as calcium chloride, and
- (c) when said humectant is a nonionic humectant, an electrolyte such as calcium chloride or sodium chloride and applying a polymeric backing coating over the antistatic layer, whereby the antistatic layer is disposed between the two polymeric covering layers.

3,823,057

# POWDERED TOILET PAPER

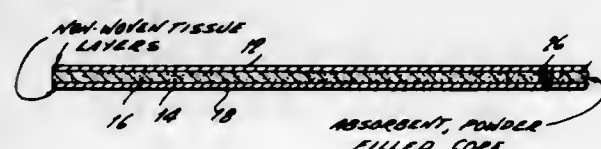
Karl H. Roberts, Flemington, N.J., and Sanford A. Haver, Rye, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,372

Int. Cl. B32b 3/10

U.S. Cl. 161—112

2 Claims



Toilet paper comprising a core impregnated with talc between two facing sheets of non-woven material. At least one of the sheets is an absorbent tissue while the other sheet is of polyethylene film.

3,823,058

# FOLD-OVER FACE-TYPE FLOOR MAT

Mitsui Yamaguchi, Toyoyama-mura, Japan, assignor to Universal Climb Co., Ltd., Nagoya, Japan

Filed Nov. 6, 1972, Ser. No. 303,818

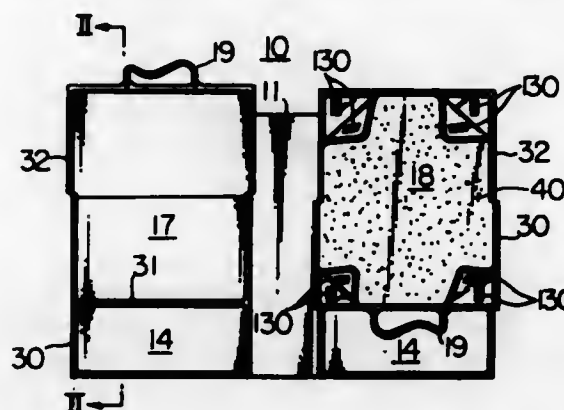
Int. Cl. B32b 3/00; B62d 25/20

U.S. Cl. 161—119

15 Claims

A fold-over face-type floor mat which comprises a flexible base sheet member and a flexible reversible face member integrally formed with or detachably secured to the base sheet member in the center in the longitudinal direc-

tion of the latter to divide the upper surface of the sheet member into two half surface portions. The reversible face member normally lies on either one of the two half surface portions of the base sheet member and is manually reversed. One face of the reversible face member provides a foot-in-footgear support face in cooperation with one of the two half surface portions of the base sheet member and the other face provides a bare foot support face in cooperation with the other half surface portion of the base sheet member. The bare foot support face may be



covered with a cloth cover sheet or carpet which is detachably secured to the face or has short fiber pile embedded therein. The reversible face member may be alternatively formed by gluing portions of two identical flexible base sheet members together back to back.

3,823,059

# FIBROUS STRUCTURES

Guy J. Jacquelin, Grenoble, France, assignor to Novipro, Grenoble, France

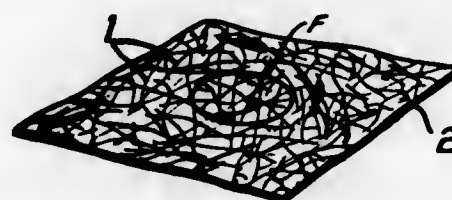
Filed July 13, 1972, Ser. No. 271,227

Claims priority, application France, July 15, 1971, 7125960

Int. Cl. B28b 23/04; B32b 13/02, 13/14

U.S. Cl. 161—150

3 Claims



This invention relates to a fibrous structure constituted at least in part by so-called annular fibres in the form of a closed loop and said annular fibres are mixed with so-called linear fibres having free ends.

3,823,060

# POLYURETHANE INTERLAYER FOR LAMINATED SAFETY GLASS

Charles E. McClung, Kettering, and David G. Glasgow, Dayton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 219,175, Jan. 19, 1972, which is a continuation-in-part of application Ser. No. 58,731, July 27, 1970, both now abandoned. This application Dec. 8, 1972, Ser. No. 313,492

Int. Cl. B32b 17/10

U.S. Cl. 161—190

9 Claims

Disclosed herein are polyurethane interlayers and laminated glazing units prepared therefrom. The interlayers

are prepared from (1) an isomeric mixture of 4,4'-methylene-bis-(cyclohexylisocyanate); (2) a polyester having a melting point above 42° C. which is the condensation product of a dicarboxylic acid and a dihydric compound; and (3) an alpha-, omega-diol containing from 2 to 16 carbon atoms. Laminated safety glass prepared from the foregoing polyurethane interlayer exhibits excellent impact strength over a broad range of temperatures and freedom from discoloration as well as excellent clarity and edge stability.

3,823,061

# COMPOSITE BARRIER FILM AND METHOD OF MAKING THE SAME

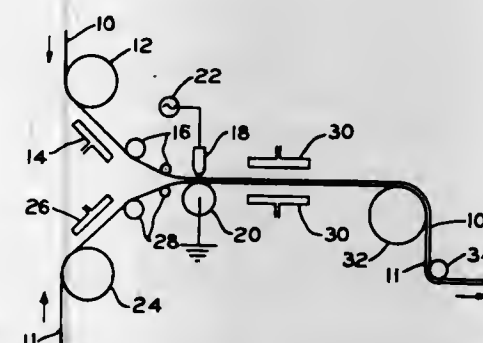
Paul D. Frayer and H. Harald Lutzmann, Cleveland Heights, Ohio, assignors to Molecular Design Incorporated, Cleveland, Ohio

Continuation-in-part of abandoned application Ser. No. 152,436, June 11, 1971. This application June 2, 1972, Ser. No. 259,112

Int. Cl. B32b 27/08

U.S. Cl. 161—254

8 Claims



Two or more plastic films may be bonded together to form a composite sheet by subjecting them to a surface treatment comprising high voltage electric discharge of selected intensity, and then bringing the films together under pressure.

A preferred film suitable for use as a wrapping material comprises at least one layer of a polyolefin film and at least one layer of a film containing acrylonitrile polymer. Preferably the acrylonitrile polymer-containing film is a co-polymer of acrylonitrile and a rubber. Similarly, polyolefin films may be bonded to, respectively, nylon and polyester films. Two, three or more plies of film may be bonded together. All such composite films are formed by bonding together the polyolefin and other film layer or layers by means of the aforesaid corona discharge treatment.

A specified intensity of treatment is required; insufficient or excessive electrical treatment will cause poor adhesion between film layers. The two or more films may be corona-discharge treated at ambient temperature or at an elevated temperature. Generally, more intensive electric discharge treatment is required for films treated at a lower temperature as compared to treatment at a higher temperature. The films may be corona-discharge treated either immediately after manufacture of the films while they are still at an elevated temperature and have not yet cooled to ambient or room temperature, or earlier-made film may be heated prior to treatment. The two or more films may be treated separately, or treated simultaneously by a single electrode pair, and then formed into a single, multi-layered composite sheet.

3,823,062

# TWIN-WIRE PAPERMAKING EMPLOYING STABILIZED STOCK FLOW AND WATER FILLED SEAL (DRAINAGE) BOXES

George T. Ward, Greenwich, and John A. Means, Norwalk, Conn., and Charles A. Lee and Warren R. Furbeck, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

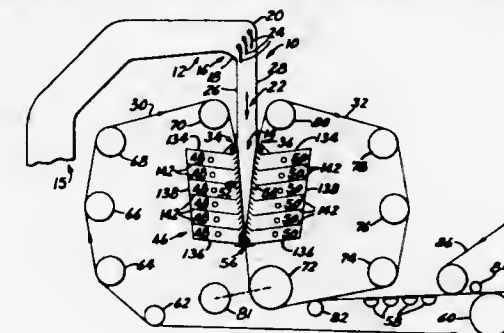
Filed Feb. 28, 1972, Ser. No. 230,007

Int. Cl. D21f 1/00, 11/04

U.S. Cl. 162—123

21 Claims

In the inlet section of a papermaking machine, stock is accelerated and passed through a relatively long and straight passageway, thereby stabilizing substantially the entire flow of the suspension to move uniformly in the same direction at the same speed. The stabilized suspension flows between a pair of forming carriers, preferably within the inlet section. Water is drained from the suspension by forcing it through the forming carriers into



seal boxes supporting the carriers, thereby forming a web, later dried to form paper. The seal boxes are disposed successively, and the flow therethrough may be separately controlled to control web formation. The seal boxes are kept flooded to assure that both sides of each of the carriers are covered with water.

3,823,063

# METHOD AND SYSTEM FOR PULP STOCK SUPPLY

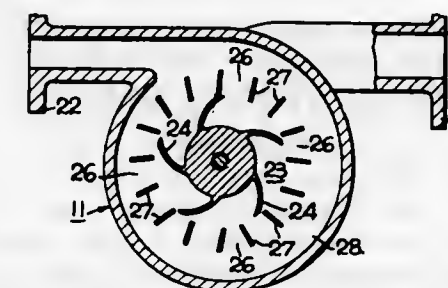
Thomas R. Callahan, Milford, Herbert K. Kingsbury, Sr., Cincinnati, and Thomas E. Sutton, Springdale, Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 11, 1972, Ser. No. 279,978

Int. Cl. D21f 1/00

U.S. Cl. 162—212

3 Claims



A method and system for supplying pulp stock to a sheet forming device which utilizes a rotary pump to assist in mixing and moving the pulp stock. Means are provided for dividing the pulp stock into a plurality of individual streams as the stock leaves the pump impeller to thereby decrease the magnitude of the pressure pulses while increasing the frequency of pulses and then recombining the stock into a single stream for delivery to the sheet forming device.



## ERRATUM

For Class 162—263 see:  
Patent No. 3,823,371

3,823,064

# TWIN-WIRE PAPERMAKING APPARATUS WITH STOCK INLET PASSAGEWAY HAVING STRAIGHT AND PARALLEL WALLS

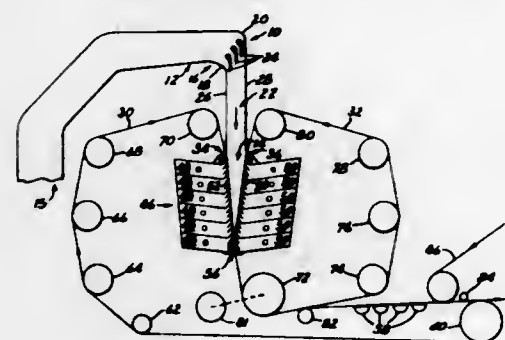
George T. Ward, Greenwich, Conn., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of application Ser. No. 796,131, Feb. 3, 1969, now Patent No. 3,645,842. This application Feb. 28, 1972, Ser. No. 230,006

Int. Cl. D21f 1/00

U.S. Cl. 162—301

3 Claims



In the inlet section of a papermaking machine, stock is accelerated and passed through a relatively long and straight passageway, defined by substantially impervious walls which are substantially parallel to each other, thereby stabilizing substantially the entire flow of the suspension to move uniformly in the same direction at the same speed. A pair of forming carriers enter the inlet section, and run along the terminal sections of the walls of the passageway, capturing the stabilized suspension therebetween and carrying it out the outlet of the passageway prior to any substantial web formation and into a forming section. Water is removed from the suspension in the forming section to form a paper web.

3,823,065

# APPARATUS FOR SELECTIVELY TRANSPORTING FUEL ELEMENTS

Cecil R. Jones, New Haven, Conn., assignor to Transfer Systems Incorporated, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,175

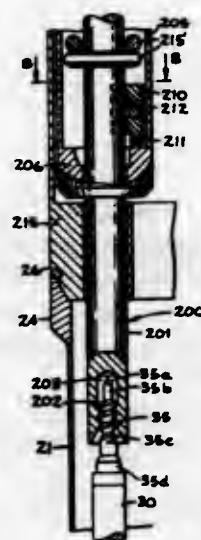
Int. Cl. G21c

U.S. Cl. 176—39

7 Claims

A nuclear fuel assembly in which vertically disposed fuel elements are spaced within a housing generally of a rectangular configuration. Each fuel element includes an upper end plug and lower end plug. Vertically spaced support plates are disposed in the housing with suitable openings to receive the upper and lower end plugs of the fuel elements for supporting the fuel elements with the housing. The upper plate is removable from the housing and the lower plug is detachably connected to the lower plate. A grapple having lifting plates with pins enter recesses formed in the housing for enabling the housing to be raised. After the fuel assembly is raised by the grapple, leaf spring retainers of the upper plate are dislodged for

removing the upper plate from the housing. Now, the fuel elements can be removed selectively and individually from the fuel assembly by a removal tool. Aligned with and dis-



posed above the removal tool is a transfer casing for housing the selectively removal fuel element while the selectively removed fuel element is transported to and from a fuel reprocessor.

3,823,066

# JACKETING FOR AN ASSEMBLY OF NUCLEAR REACTOR FUEL ELEMENTS

Paul Thomé, St. Cloud, France, assignor to Babcock-Atlantique, S.A., Paris, France

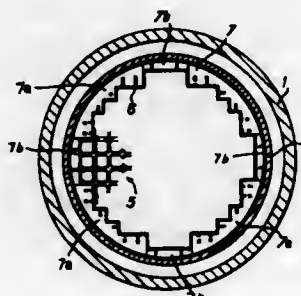
Filed Apr. 27, 1972, Ser. No. 248,074

Claims priority, application France, Apr. 29, 1971, 7115325

Int. Cl. G21c 3/20

U.S. Cl. 176—66

5 Claims



Electron beam welding is used to join the lateral plates that surround the fuel elements in a nuclear reactor core without deformation through a proper welding sequence. Baffle-plates or partitions, moreover, also are stud-welded to the lateral plates without deformation through the electron beam process. The upper circumferential part of the completely assembled structure ultimately is welded to the reactor core barrel. Screwjacks also are provided to quickly position the structure over a lower grid. This technique eliminates the usual threaded fasteners and the need for accurate lower core barrel machining operations.

3,823,067

# SHAPED NUCLEAR FISSIONABLE BODIES

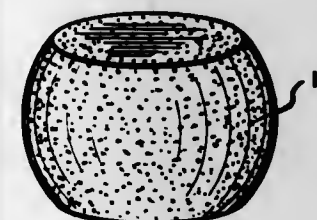
George Stern, Mamaroneck, N.Y., and William F. Roche, Stamford, Conn., assignors to United Nuclear Corporation, Elmsford, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,107

Int. Cl. G21c 3/04

U.S. Cl. 176—66

5 Claims



Shaped nuclear fuel pellets for use in rod-type fuel elements and particularly shaped fuel pellets formed by sintering fissionable powdered materials.

3,823,068

# FUEL ELEMENT END CAP FOR LEAK DETECTION

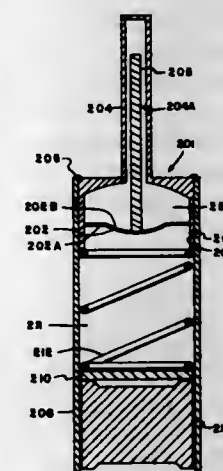
Dan C. Woriton and Joseph Ryden, Jr., Richland, Wash., assignors to Jersey Nuclear Company, Bellevue, Wash.

Filed Nov. 22, 1971, Ser. No. 200,698

Int. Cl. G21c 3/03, 3/10, 17/00

U.S. Cl. 176—80

13 Claims



Nuclear reactor fuel element leakage can now be determined without removing the fuel elements from the reactor core by employing an upper fuel element end cap having a flexible means which is sensitive to pressure changes within the fuel element and which activates an eddy current effecting means, and by placing an eddy current near the end cap.

3,823,069

# PREPARATION OF L(—)-γ-AMINO-α-HYDROXY-BUTYRIC ACID

Takeo Miyaki, Yokohama, and Kiyoshi Matsumoto, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,427

Int. Cl. C12b 1/00

U.S. Cl. 195—2

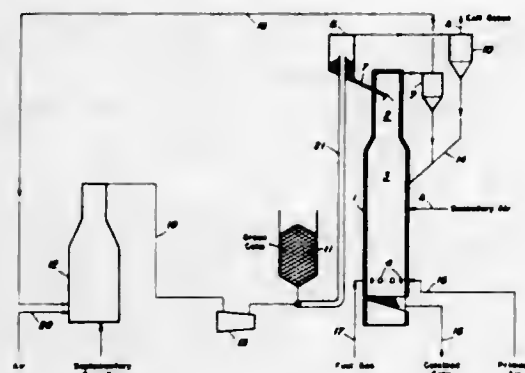
2 Claims

The specification discloses a microbiological process for the preparation of L(—)-γ-amino-α-hydroxybutyric acid from a racemic mixture of isomers.

3,823



a vertical kiln for calcining in suspension with counter-current flow of ascending flue gas; then further calcined in a free fall zone of the kiln by contact with ascending



combustion gas. Coke is retained in a radiant-heat-soaking zone before removal for cooling. Fines are recovered for calcining and heat in the flue gas is recovered and utilized.

3,823,074

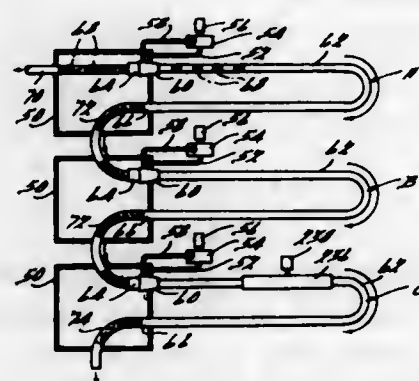
**METHOD FOR ELECTROPLATING WORKPIECES**  
Louis J. Minbiolo, Jr., Detroit, Chester G. Clark, Grosse Pointe Woods, and John W. Neumann, Birmingham, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Original application Nov. 12, 1968, Ser. No. 774,923, now Patent No. 3,664,354. Divided and this application Mar. 6, 1972, Ser. No. 231,951

Int. Cl. C23b 5/08

U.S. Cl. 204—23

4 Claims



A method for simultaneously treating and conveying workpieces and an apparatus for practicing the method by which a rapidly moving confined stream of a treating fluid is formed into which workpieces are introduced for entrainment and conveyance thereby and are subsequently extracted from the stream and thereafter successively introduced, if desired, into separate succeeding streams in an ordered sequence, thereby performing a multiple-stage treatment of the workpieces.

3,823,075

**PREVENTION OF HYDROGEN EMBRITTLEMENT**  
Austin Phillips, Santa Monica, Calif., assignor to McDonnell Douglas Corporation

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,157

Int. Cl. C23f 17/00; B01k 3/00

U.S. Cl. 204—38 B

15 Claims

A method of preventing hydrogen embrittlement of parts which are normally protected from corrosion by sacrificial coatings whose cathodic corrosion protection reaction results in free hydrogen, by including a rare earth metal in the coating process which acts as a hydrogen getter to prevent the hydrogen generated from penetrating and embrittling the corrosion protected part.

3,823,076

**ZINC ELECTROPLATING ADDITIVE**

John Derek Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of application Ser. No. 256,179, May 23, 1972, now Patent No. 3,769,184.  
This application May 2, 1973, Ser. No. 356,432

Int. Cl. C23b 5/12, 5/46

U.S. Cl. 204—55 R

3 Claims

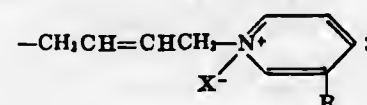
Aqueous addition agents for zinc electroplating baths are provided which have dissolved therein (a) a pyridinium compound of the general formula:



wherein

R is —CONH<sub>2</sub>, —CN, —CHO or —COOR'';

R' is an alkyl group of 1-4 carbon atoms,

—CH<sub>2</sub>CH=CH<sub>2</sub>, —CH<sub>2</sub>C≡CH,—CH<sub>2</sub>CH=CHCH<sub>2</sub>X, —CH<sub>2</sub>COOR'' or

R'' is an alkyl group of 1-4 carbon atoms; and  
X- is a halogen ion; and

(b) a polystyrenesulfonate, a polyvinylpyrrolidone, a polyoxyalkyldiamine, a water-soluble quaternized condensation product of an epihalohydrin and a polyamine, or a water-soluble condensation product of a benzene or a naphthalene sulfonic acid, or a salt thereof, with formaldehyde, said condensation product containing at least 2 benzene or naphthalene sulfonic acid groups connected with each other by methylene bridges.

3,823,077

**ELECTROLYTIC PROCESS FOR PREPARING DIALKYLITIN COMPOSITIONS**

Harris Ellsworth Ulery, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 191,903, Oct. 22, 1971. This application Aug. 3, 1972, Ser. No. 277,603

Int. Cl. C07b 29/06; C07f 7/22

U.S. Cl. 204—59 QM

22 Claims

An electrolytic process for preparing dialkyltin compositions by electrolyzing a C<sub>1-10</sub> alkyl chloride or bromide in contact with a liquid electrolyte and a tin cathode at a current density sufficiently high to effect formation of said dialkyltin compositions.

3,823,078

**PRODUCTION OF FLUIDIZED ALUMINA REDUCTION CELL FEED**

Leland Stanford Beeler, Richmond, Va., assignor to Reynolds International, Inc., Richmond, Va.  
No Drawing. Filed Dec. 14, 1972, Ser. No. 315,275

Int. Cl. C01b 7/22; C22d 3/12

U.S. Cl. 204—67

3 Claims

A fluorinated calcined alumina suitable for use as aluminum reduction cell feed is prepared by calcining alumina hydrate, especially Bayer process alumina hydrate, and introducing a source of fluorine such as HF, which may also be derived from cell waste gases, so as to achieve a fluorine content in the calcined alumina between about 1% and 3.5% by weight.

3,823,079

**ALUMINUM REDUCTION CELL OPERATING SYSTEM**

Leland Stanford Beeler, Richmond, Va., assignor to Reynolds International, Inc., Richmond, Va.  
No Drawing. Filed Dec. 14, 1972, Ser. No. 315,276

Int. Cl. C22d 3/12

U.S. Cl. 204—67

12 Claims

In the operation of an aluminum reduction cell, to recover fluorine values in a dry system, the cell effluent gas containing hydrogen fluoride and other fluorine values is continuously withdrawn from the cell, and contacted with alumina, preferably that type of alumina which has been calcined at between about 975° C. and about 1150° C., whereby the alumina is fluorinated, and recovered for recycling to the reduction cell operation. The alumina may have advantageously incorporated therewith from about 1% to about 10% by weight of dry sodium carbonate for improved fluorine pick-up and retention, in which case even more highly calcined alumina may be utilized.

3,823,080

**PROCESS FOR REMOVING COATING FROM A CATHODE RAY TUBE MASK MEMBER**

Kenneth Speigel, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated

No Drawing. Filed Jan. 11, 1973, Ser. No. 322,624

Int. Cl. C23b 3/02

U.S. Cl. 204—141.5

3 Claims

A process is described for removing the temporary electrophoretically applied aperture-reducing coating from a color cathode ray tube mask member prior to final assembly of the tube mask-screen assembly. The de-coating process includes immersing the coated aperture mask into an electrolyte solution that is non-corrosive to the mask material per se. An electrode is positioned within the electrolyte solution in a manner to be spatially related to the introduced mask. Opposite polarities of a D.C. potential are thence applied to the mask and electrode to effect a gaseous release at substantially the mask, whereupon, the ensuing bubbling physically removes the coating from the mask as aggregations of solid particulate material thereby restoring the mask apertures to their initial dimensioning.

3,823,081

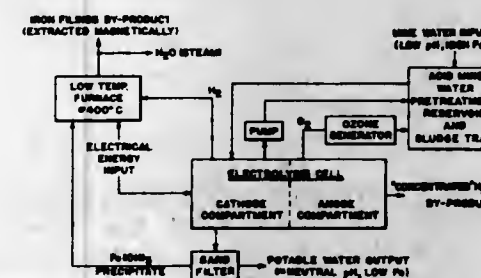
**ACID MINE WATER TREATMENT PROCESS**  
Richard W. Trehan, Xenia, and David E. Wright, Dayton, Ohio, assignors to Kettering Scientific Research, Inc., Yellow Springs, Ohio

Filed Dec. 18, 1972, Ser. No. 316,339

Int. Cl. C02c 5/12

U.S. Cl. 204—151

10 Claims



A process for electrolytically converting acid mine water to potable drinking water having a neutral pH and a negligible iron content is claimed. The electrolytic cell used in the present treatment process has a cathode compartment wherein the pH of the acid mine water is driven basic and an iron hydroxide precipitate is formed. A sand barrier separates the cathode compartment from the anode compartment. In the anode compartment the pH is driven more acidic as sulfuric acid is concentrated. Electrolytic

3,823,082

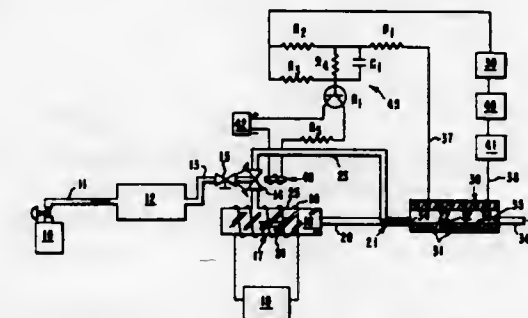
**MOISTURE ANALYSIS APPARATUS**

Michael Czuba, Jr., San Gabriel, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Feb. 23, 1973, Ser. No. 335,116

Int. Cl. G01n 27/46

U.S. Cl. 204—195 W

5 Claims



A moisture detection apparatus, of the electrolytic cell type, in which the moisture released from a moisture source is transported to the cell by a flow of dry gas. The use of a fast acting valving means permits the gas flowing to the cell to be alternated between moisture laden gas and dry gas, and the use of a nozzle by-pass located at the input orifice of the cell permits the change from moisture laden gas to dry gas entering the cell to occur directly at the input to the cell.

3,823,083

**APPARATUS FOR ELECTROPLATING WORKPIECES**

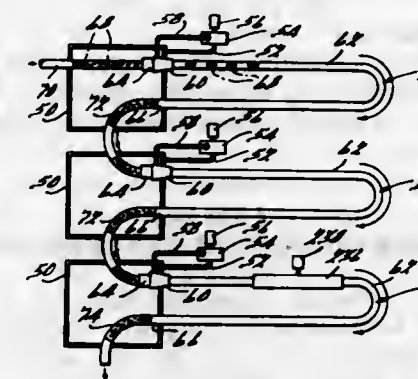
Louis J. Minbiolo, Detroit, Chester G. Clark, Grosse Pointe Woods, and John W. Neumann, Birmingham, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Original application Nov. 12, 1968, Ser. No. 774,923, now Patent No. 3,664,354. Divided and this application Mar. 6, 1972, Ser. No. 232,167

Int. Cl. B01k 3/00; B65g 49/00

U.S. Cl. 204—275

8 Claims



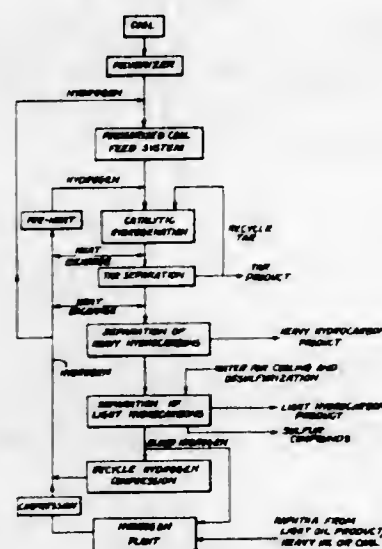
A method for simultaneously treating and conveying workpieces and an apparatus for practicing the method by which a rapidly moving confined stream of a treating fluid is formed into which workpieces are introduced for entrainment and conveyance thereby and are subsequently extracted from the stream and thereafter successively introduced, if desired, into separate succeeding streams in an ordered sequence, thereby performing a multiple-stage treatment of the workpieces.



**3,823,084**  
**HYDROGENATION OF COAL**  
 Wilburn C. Schroeder, 7316 Radcliffe Drive,  
 College Park, Md. 20740  
 Filed June 30, 1972, Ser. No. 268,201  
 Int. Cl. C10g 1/06

U.S. Cl. 208--10

17 Claims



Pulverized coal, in the substantial absence of pasting or slurring medium, is dispersed into a recycle stream of preheated, high-pressure hydrogen and the resultant reaction stream is passed through a hydrogenation zone containing a bed of hydrogenation catalyst at a rate sufficient to sweep unreacted coal, coal ash and hydrocarbon reaction products from the catalyst bed. Liquid and gaseous hydrocarbon products, after sulfur removal, are recovered from the product stream. A high hydrogen recycle ratio through the catalyst bed is employed to prevent catalyst inactivation by product hydrocarbons. A novel method of feeding the pulverized coal into the high pressure system from a hydrogen pressurized hopper without permitting the compressed hydrogen to expand to lower pressure, thereby reducing the energy requirements of the system, is disclosed.

**3,823,085**  
**DESORBING PETROLEUM HYDROGENATION CATALYSTS**  
 Joseph E. Kochle, Carteret, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.  
 No Drawing. Filed Mar. 28, 1973, Ser. No. 345,827  
 Int. Cl. C10g 23/02

U.S. Cl. 208--216 5 Claims  
 Solid catalyst is demasked in situ in the hydrogen of petroleum fluids by drastically decreasing the reactor pressure at a rate of approximately one-eighth of the total per hour.

**3,823,086**  
**PRETREATMENT FOR REVERSE OSMOSIS PROCESS**  
 Kenneth A. Schmidt, Clarendon Hills, Ill., assignor to Culligan International Company, Northbrook, Ill.  
 Filed Jan. 22, 1973, Ser. No. 325,570  
 Int. Cl. B01d 13/00, 31/00  
 U.S. Cl. 210--23 6 Claims



A pretreatment process for increasing the useful life of a reverse osmosis membrane comprising passing at least

a portion of a reverse osmosis module influent through a strong basic type II anion exchange resin until carbonate ions are detected in the exchange resin effluent. A reverse osmosis module influent is thus controlled to continuously have a pH value below 8, which greatly increases the life of a cellulose acetate reverse osmosis membrane. The capacity of the anion exchange resin is extended beyond the conventional end point for such resin.

**3,823,087**  
**THIN LAYER CHROMATOGRAPHIC METHOD AND APPARATUS**  
 Lloyd R. Snyder, Placentia, and Dennis L. Saunders, Anaheim, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.  
 Filed June 14, 1971, Ser. No. 152,565  
 Int. Cl. B01d 15/08  
 U.S. Cl. 210--31 C 29 Claims



Compounds are rapidly and efficiently separated from combinations thereof by a thin layer chromatographic method in which solvent is removed from the adsorbent after a predetermined travel substantially shorter than the total travel of the solvent during separation relative to said adsorbent, and the adsorbent is moved during said separation relative to the points of solvent addition and removal in the direction opposite the direction of solvent flow. In another embodiment the adsorbent can be employed as a continuous endless strand and recycled during separation.

**3,823,088**  
**POLLUTED WATER PURIFICATION**  
 E. O. Box, Jr., and Floyd Farha, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company  
 No Drawing. Continuation-in-part of abandoned application Ser. No. 255,152, May 19, 1972. This application Mar. 2, 1973, Ser. No. 337,406  
 Int. Cl. C02b 1/34

U.S. Cl. 210--63 15 Claims  
 Organically polluted waters are purified by contacting with a catalyst comprising zinc aluminate promoted with at least one metal active for initiating oxidative reactions in the liquid or gaseous phase under oxidizing conditions. In one embodiment, an aqueous stream obtained from the effluent of an oxidative dehydrogenation containing contaminating oxygen-containing organic materials is subjected to oxidizing conditions in the presence of a promoted zinc aluminate catalyst to convert the water to a potable aqueous product.

**3,823,089**  
**HEAT STORAGE COMPOSITION**  
 John W. Ryan, 688 Nimes Road, Los Angeles, Calif. 90024, and Wallace H. Shapero, Torrance, Calif.; said Shapero assignor to said Ryan  
 No Drawing. Continuation-in-part of application Ser. No. 810,957, Mar. 27, 1969, now Patent No. 3,603,106. This application Aug. 2, 1971, Ser. No. 168,372  
 Int. Cl. C09k 3/18

U.S. Cl. 252--70 5 Claims  
 A heat storage composition capable of releasing heat of solidification during cooling so as to give a plateau in the cooling curve, and having excellent physical properties including stability against settling during repeated heating-cooling cycles, good heat-transfer characteristics, and relatively high latent heat; comprising a mixture of aluminum

flake powder and paraffin in the relative proportions of from about 20% to 50% by weight of aluminum flake powder and from about 80% to about 50% by weight of paraffin.

**3,823,090**  
**PRODUCTION OF POWDERED DETERGENT**  
 Masaharu Kame, Ikeda, Hideyuki Koda, Kobe, and Hiromi Igehara, Amagasaki, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan  
 No Drawing. Continuation of abandoned application Ser. No. 738,395, June 20, 1968. This application Aug. 23, 1971, Ser. No. 174,181  
 Int. Cl. C11d 11/00, 7/24  
 U.S. Cl. 252--89 2 Claims  
 Powdered detergent is prepared by mixing an enzyme of hydrazase with a non-ionic surface active agent or a natural or synthetic sizing agent and a detergent base homogeneously.

**3,823,091**  
**STABLE EMULSION OF FLUOROCARBON PARTICLES**  
 Masayoshi Samejima, Minoo, Isao Sugimoto, Nara, Akira Suzuki, Taketsuki, Yoshiyuki Kolda, Kawanishi, Goichi Hirata, Hirakata, and Goro Tsukamoto, Tokyo, Japan, assignors to The Green Cross Corporation and Tanage Seiyaku Co., Ltd.  
 No Drawing. Continuation-in-part of abandoned application Ser. No. 253,855, May 16, 1972. This application June 21, 1972, Ser. No. 264,732  
 Claims priority, application Japan, May 19, 1971, 46/33,911  
 Int. Cl. B01j 13/00

U.S. Cl. 252--312 9 Claims  
 A dispersion containing 5-60 w./v. percent of fluorocarbon, 0.2-5 w./v. percent nonionic surfactant(s) and 2-20 w./v. percent polyalcohol(s) is emulsified under pressure. A stable emulsion of fluorocarbon particles having a particle diameter less than 0.2μ is produced. The emulsion is useful as an artificial blood.

**3,823,092**  
**PROCESS FOR PREPARING CRACKING CATALYSTS HAVING IMPROVED REGENERATION PROPERTIES**  
 Elroy M. Gladrow, Baton Rouge, La., assignor to Esso Research and Engineering Company  
 No Drawing. Filed Jan. 24, 1972, Ser. No. 220,497  
 Int. Cl. B01j 11/40  
 U.S. Cl. 252--455 Z 3 Claims  
 The regeneration properties of cracking catalysts are improved by incorporating into a rare earth exchanged zeolite composite catalyst a small additional amount of cerium cations randomly distributed throughout the composite catalyst.

**3,823,093**  
**SILVER CAPACITOR METALLIZATIONS CONTAINING COPPER POLYNARY OXIDES**  
 Rajnikant Bababhai Amin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
 No Drawing. Filed June 30, 1972, Ser. No. 268,055  
 Int. Cl. H01b 1/02

U.S. Cl. 252--514 15 Claims  
 In silver and palladium/silver metallizations for conductors on dielectric substrates, improved metallizations fireable above the melting point of silver without circuit interruption, comprising certain crystalline inorganic polynary oxides of copper, e.g. Cu<sub>2</sub>Al<sub>2</sub>O<sub>4</sub>, Cu<sub>2</sub>TiO<sub>6</sub>, etc. Multilayer capacitors of alternating layers of such metallizations and dielectric material, and capacitors having such metallizations as end terminations.

**3,823,094**  
**TWO PART LIQUID CAR WASH SYSTEM**  
 Albert Jay Lancz, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.  
 No Drawing. Continuation-in-part of abandoned application Ser. No. 789,940, Jan. 8, 1969. This application Oct. 11, 1972, Ser. No. 296,509  
 Int. Cl. C11d 3/075, 3/30, 11/00  
 U.S. Cl. 252--527 2 Claims

A liquid concentrate for automatic car wash machines designed to be stored in two parts, one of said parts containing K<sub>2</sub>P<sub>2</sub>O<sub>7</sub> and nitrilotriacetic acid trisodium salt, these constituting 30-60 weight percent of said part and the other part containing an ethoxylated nonionic surfactant, a hydrotrope, a viscosity controlling agent and monoethanolamine as a pH stabilizer. The two parts are mixed in a volume ratio from 1:2 to about 2:1 with a quantity of water to produce a stock solution.

**3,823,095**  
**HIGH TEMPERATURE BIS(EPOXYALKYL) CARBORANE ADHESIVES**  
 Robert L. Barnes, Clifton, and Daniel Grafstein, Morris-town, N.J., assignors to The Singer Company, New York, N.Y.  
 No Drawing. Application Feb. 2, 1971, Ser. No. 112,821, now Patent No. 3,780,021, which is a division of application Ser. No. 762,614, Sept. 25, 1968, now Patent No. 3,669,993. Divided and this application Jan. 4, 1973, Ser. No. 320,989  
 Int. Cl. C08g 30/10, 30/16

U.S. Cl. 260--2 N 2 Claims  
 The process of providing an adhesive junction between two workpieces having opposing smooth surfaces comprising the steps of mixing material selected from the group consisting of bis(epoxybutyl)carborane, bis(epoxypentyl)carborane, and bis(epoxyhexyl)carborane, with a curing agent selected from the group consisting of boron trifluoride ethylamine and 4,4'-diaminodiphenylsulfone, applying said mixture to the opposing surfaces, joining the surfaces and allowing the workpieces with the mixture therebetween to harden under heat and pressure.

**3,823,096**  
**MODIFIED FLEXIBLE POLYETHERURETHANE FOAMS**  
 Hubert Jakob Fabris, Akron, and Edwin Morgan Maxey, Kent, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio  
 No Drawing. Filed Sept. 29, 1972, Ser. No. 293,361  
 Int. Cl. C08g 22/44

U.S. Cl. 260--2.5 AP 6 Claims  
 Polyether polyols capped with or containing strongly hydrogen-bonding urethane and/or urea end groups, prepared by reaction of a polyether polyol with an organic monoisocyanate or by sequential reaction first with a polyisocyanate and then with an organic primary monoamine, employed alone or in combination with more primary amine in a flexible polyol-modified polyurethane foam significantly improves the load factor of the polyurethane foam.

**3,823,097**  
**ANTIMONY TRIHALIDE CATALYSTS OF URETHANE FOAMS PREPARED FROM CARBOXY-CONTAINING ADDUCT POLYOLS**  
 John K. Allen, Batavia, Ill., assignor to Standard Oil Company, Chicago, Ill.  
 No Drawing. Filed Aug. 21, 1972, Ser. No. 282,598  
 Int. Cl. C08g 22/40, 22/44  
 U.S. Cl. 260--2.5 AB 6 Claims  
 The catalysis of rigid urethane type foams prepared from polyarylpolyisocyanates and free carboxy-containing



adduct polyols is improved by the use of antimony trihalides as catalysts. These catalysts are also extremely effective in foams containing aromatic carboxylic acid derivatives as a third principal component. These foams are particularly useful in applications requiring good flame resistance and self-extinguishing characteristics.

3,823,098

**FOAMING UNSATURATED POLYESTER RESINS**  
Wallace G. Joslyn, 1409 Wyllis, Midland, Mich. 48640

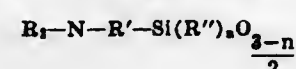
No Drawing. Original application July 12, 1971, Ser. No. 162,017. Divided and this application Apr. 9, 1973, Ser. No. 349,607

Int. Cl. C08g 53/08

U.S. Cl. 260—2.5 N

16 Claims

Unsaturated polyester resin are prepared with the aid of a profoamer which is a copolymer consisting essentially of (a)  $\text{SiO}_2$  units, (b)  $(\text{CH}_3)_2\text{SiO}_{1/2}$  units and (c)



units wherein  $n$  has a value from 0 to 2,  $\text{R}'$  is an alkyl radical containing from 1 to 18 carbon atoms,  $\text{R}'$  is an alkylene radical containing from 1 to 18 carbon atoms and each  $\text{R}$  is selected from the group consisting of the hydrogen atom, alkyl radicals containing from 1 to 18 carbon atoms and aminoalkyl radicals containing from 2 to 18 carbon atoms, the ratio of the (b) units to the sum of the (a) and (c) units in the copolymer being in the range of 0.4:1 to 1.2:1.

3,823,099

**THERMOSETTING UNSATURATED POLYESTER FOAM PRODUCTS**

Earl N. Doyle, 1737 Campbell Road,  
Houston, Tex. 77055

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,622

Int. Cl. C08g 41/04, 22/44

U.S. Cl. 260—2.5 BE

35 Claims

Thermosetting unsaturated polyester foams are prepared by initiating a blowing reaction and a curing reaction in a thermosetting, unsaturated polyester resin mix. The blowing reaction comprises reacting *in situ* a small amount of a polyisocyanate compound and a hydrogen donor compound exothermically reactive therewith so as to form a gaseous blowing agent prior to gelation of the thermosetting resin. The blowing reaction also accelerates the curing reaction such that the polyester resin attains a gel state during expansion of the resin by the gaseous blowing agent and cures in an expanded condition.

3,823,100

**POLYSACCHARIDE BASED FLOCCULANTS**

Eric Rothwell, Bradford, and Graham Smalley, Huddersfield, England, assigns to Allied Colloids Limited, Bradford, Yorkshire, England

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,987

Claims priority, application Great Britain, Mar. 13, 1972, 11,618/72

Int. Cl. C08h 7/00

U.S. Cl. 260—6

8 Claims

A substituted polysaccharide is described which is water soluble and which is of use as, for example, a flocculant. The substituent groups are N(amino methyl)propionamide groups and may be monomeric or polymeric.

3,823,101

**OPAQUE WHITE COATING COMPOSITION COMPRISING ESSENTIALLY CELLULOSE ESTER/CROSS-LINKING AGENT/CATALYST/SOLVENT AND ORGANIC LIQUID**

Ehrlich M. Elland, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Original application Dec. 6, 1968, Ser. No. 781,977, now abandoned. Divided and this application Aug. 9, 1971, Ser. No. 170,369

Int. Cl. C08b 21/14; C08g 37/32; C08j 1/26  
U.S. Cl. 260—14

3 Claims

A coating composition and method of obtaining same by mixing an organic solvent which contains at least 85% by volume paraffinic hydrocarbons and has a boiling point of at least about 300° F. with a cross-linkable resin lacquer. An opaque white coating is obtained by applying the composition to a substrate and curing same thereon.

3,823,102

**MIXTURES OF POLYURETHANE OR POLYUREAS, NITROCELLULOSE AND UREA DERIVATIVES FOR DRESSING NATURAL AND ARTIFICIAL LEATHER**

Johannes Eimer, Leverkusen, Walter Schroer, Cologne, and Erwin Windemuth and Peter Coppee, Leverkusen, Germany, assigns to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 31, 1972, Ser. No. 302,628

Claims priority, application Germany, Nov. 9, 1971, P 21 55 491.6

Int. Cl. C08b 21/14

U.S. Cl. 260—16

2 Claims

Textile coatings and leather dressing composition are provided which compositions comprise mixtures of polyurethanes or polyureas with nitrocellulose and a urea derivative which contains at least one saturated or unsaturated aliphatic radical containing from 8 to 20 carbon atoms and at least one urea group.

3,823,103

**AQUEOUS DISPERSIONS BASED ON HEAT-HARDENABLE PHENOLIC RESINS CONTAINING A GUM MIXTURE STABILIZING AGENT**

James Harding, Green Brook, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 164,819, July 21, 1971. This application Mar. 29, 1972, Ser. No. 239,316

Int. Cl. C08g 37/18

U.S. Cl. 260—17.2

13 Claims

The disclosure of this application is directed to aqueous dispersions of heat-hardenable phenolic resins, which are characterized by excellent stability, by a low Pollution Index, are capable of being infinitely diluted with water and are especially desirable for use in applications wherein mineral fibers are sprayed with the aqueous dispersions and subsequently formed into mineral fiber batts.

3,823,104

**SOLID FOAMS AND THEIR PREPARATION**

Clemens Bondy, Harlow, and Ian Christopher Tallock, Southampton, England, assigns to Doverstrand Ltd., Temple Fields, Harlow, Essex, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 34,864, May 5, 1970. This application Aug. 30, 1972, Ser. No. 284,796

Claims priority, application Great Britain, May 5, 1969, 22,865/69

Int. Cl. C08j 1/16

U.S. Cl. 260—2.56

11 Claims

In the preparation latex rubber foams utilizing non-ionic surfactants, foam stability is enhanced by the use of a fatty

3,823,107

**EPOXY RESIN CURING AGENT COMPOSITIONS, THEIR PREPARATION AND USE**

Malcolm Cotton, Wokingham, England, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,303

Claims priority, application Great Britain, Mar. 11, 1971, 6,569/71; Sept. 8, 1971, 41,916/71

Int. Cl. C08f 27/08

U.S. Cl. 260—23.7 N

8 Claims

Epoxy curing agent compositions which are especially suitable to cure solid, solution or liquid solventless polyepoxide systems comprises (1) a polyamine and (2) a reaction product of (a) the same or different polyamine, (b) a polymer having per molecule more than one reactive group capable of reacting with amine and/or epoxide groups, and optionally, (c) a polyepoxide.

3,823,108

**AQUEOUS ETHYLENE TERPOLYMER HYDROSOL DISPERSIONS**

Thomas Charles Bissot, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,851

Int. Cl. C09j 3/26

U.S. Cl. 260—27 R

17 Claims

Aqueous ethylene terpolymer hydrosol dispersions are described which are useful as heat-seal coatings, laminating adhesives and as primers. These dispersions comprise (1) an ethylene terpolymer consisting essentially of about 55 to 80 weight percent ethylene, about 10 to 42 weight percent ester monomer, and about 3 to 10 weight percent alpha, beta-ethylenically unsaturated carboxylic acid in which at least about 50 percent of the acid groups are neutralized, (2) about 5 to 50 weight percent, based on the ethylene terpolymer, of a high molecular weight acid selected from the group consisting of rosins and fatty acids and having an acid number of at least about 50, (3) an alkali metal hydroxide in an amount sufficient to neutralize about 10 to 100 percent of the acid groups in both the ethylene terpolymer and the high molecular weight acid, and (4) an amine base having a dissociation constant of at least about  $1 \times 10^{-8}$  in an amount sufficient to neutralize 0 to about 300 percent of the acid groups in both the ethylene terpolymer and the high molecular weight acid, the total amount of alkali metal hydroxide and amine base being sufficient to neutralize at least about 50 percent of the acid groups in both the ethylene terpolymer and the high molecular weight acid, said dispersion having a solids content of about 2 to 35 percent by weight.

3,823,109

**POLYMER COMPOSITIONS**

Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 3, 1972, Ser. No. 303,421

Int. Cl. C08c 9/14, 11/72

U.S. Cl. 260—23.7 R

4 Claims

Silico aluminate fillers are effective to reduce blooming of block polymer compositions containing fatty acids.

stabilizer blend which contains both normally liquid and normally solid fatty components, the blend itself being normally liquid. The fatty components of the blend are selected from the group consisting of saturated and unsaturated fatty alcohols, saturated and unsaturated fatty acid amides and mixtures thereof.

3,823,105

**PROCESS FOR THE POLYMERIZATION OF DODECALACTAM IN THE PRESENCE OF BORIC ACID**

Genevieve Morival and Remy Hebert, Serquigny, France, assigns to Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine, Courbevoie, France

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,475

Claims priority, application France, Oct. 26, 1970, 7038556

Int. Cl. C08g 20/10

U.S. Cl. 260—18 N

18 Claims

The present invention concerns a process for the polymerization of dodecalactam in the presence of a boric acid, providing a rapid procedure for obtaining a very high yield of polyamides with high molecular weight and with excellent resistance to degradation when kept in a molten state.

Polymerization takes place preferably at a temperature between 290 and 320° C., in the presence of 0.05 to 2% boric acid.

The polymers obtained are easy to use in the production of moulded articles, sheets, tubes and pipes, by injection, extrusion or blowing.

3,823,106

**METHOD FOR PREPARING WATER-SOLUBLE OR DISPERSIBLE COATING COMPOSITION AND METHOD FOR CONTROLLING COATING BATH CONTAINING THE SAME**

Tadasu Kimura and Takashi Sunamori, Ohtake, and Sadao Kimura, Hiroshima, Japan, assigns to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,711

Claims priority, application Japan, Dec. 25, 1970, 45/129,321

Int. Cl. C08f 15/40

U.S. Cl. 260—29.4 UA

20 Claims

A method which comprises treating with an anion exchanger a paint binder composed mainly of a polycarboxylic acid resin having an average  $\text{pK}_a(\text{r})$  value of 8.0 or more and  $0.8 \leq n \leq 2.5$ , or a salt thereof to make 5% or less the content of impurities in the binder, said impurities being composed mainly of (i) polycarboxylic acid resins having a  $\text{pK}_a(\text{r})$  value at least 5.0 smaller than the  $\text{pK}_a(\text{r})$  value of the main polycarboxylic acid resin constituting the binder, or salts thereof and (ii) low molecular weight acids having a  $\text{pK}_a(\text{e})$  value at least 0.5 smaller than the  $\text{pK}_a(\text{r})$  value of the main polycarboxylic acid resin, or salts thereof, adding to the thus treated paint binder 60% or less of water or neutralizing agent-containing water, treating the resulting mixture with a cation exchanger to obtain a coating composition, diluting the coating composition with deionized water to a solid content of 20% by weight or less to form an aqueous coating bath and effecting electrodeposition coating in said bath while replenishing the bath with said coating composition corresponding to the nonvolatile matter taken out of the bath by coating, without accumulating the neutralizing agent in the bath.



3,823,110

## POLYMERIC FLEXOGRAPHIC INK

Donald G. Eppe, Oak Lawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Original application Oct. 18, 1971, Ser. No. 190,028, now Patent No. 3,776,758. Divided and this application July 30, 1973, Ser. No. 383,681

Int. Cl. C09d 11/10; C08f 15/40

U.S. Cl. 260—29.7 T

7 Claims

A rapid drying flexographic ink consisting of:

- (a) about 40% by weight of an inorganic pigment;
- (b) 40–45% by weight of a polymer solution/emulsion consisting of a styrene/butadiene/acrolein/acrylic acid (SBAA) tetrapolymer (30–40% by weight solids) containing as a predispersant additive 5–15% by weight of a polyacrylate; and
- (c) the balance inert diluent selected from the group consisting of water and lower alkanols.

3,823,111

## POLYURETHANES

Frederic Christian Loew, Ridgewood, and Edward Stone, Morris Plains, N.J., assignors to Inmont Corporation, New York, N.Y.

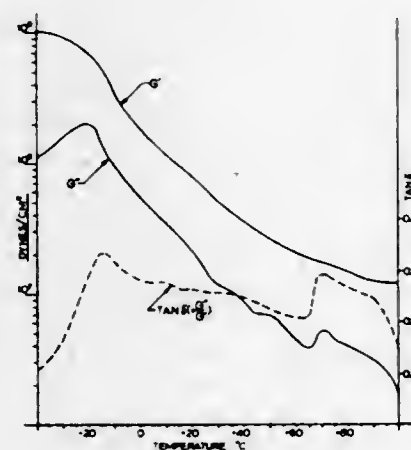
Continuation of abandoned application Ser. No. 819,337, Apr. 25, 1969. This application Jan. 13, 1972, Ser. No. 217,671

The portion of the term of the patent subsequent to Jan. 9, 1990, has been disclaimed

Int. Cl. C08g 22/06, 51/44

U.S. Cl. 260—32.6 NR

8 Claims



Microporous leather substitutes are made from high molecular weight linear thermoplastic elastomeric polyurethanes of I.V. 0.9–1.4 which have been prepared by reaction in solution in dimethylformamide ("DMF") solvent which contains substantially no free tertiary amine. A monofunctional strong mineral acid is added to neutralize free tertiary amine groups. A hydroxy-terminated prepolymer and a diol chain extender are reacted with a small excess of diisocyanate, until the —NCO content becomes constant, then a diol chain extender in amount equivalent to the remaining —NCO and reaction is continued, and then terminated with methanol after the high I.V. is attained. The reactants may include very small amounts of trimethylolpropane and methanol (in equimolar proportions) to give controlled chain branching.

3,823,112

## LIGHT STABILIZED POLYMER COMPOSITIONS AND BENZOTRIAZOLE STABILIZERS

Fernando J. Ponder, Broadview Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

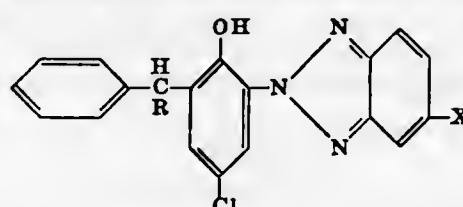
No Drawing. Continuation of application Ser. No. 216,792, Jan. 10, 1972, which is a continuation-in-part of application Ser. No. 846,259, July 30, 1969, both now abandoned. This application Sept. 1, 1972, Ser. No. 285,795

Int. Cl. C08f 45/58

U.S. Cl. 260—45.8 N

5 Claims

Benzotriazoles useful as light stabilizers of the formula:



wherein R is H or methyl and X is Cl or H.

3,823,113

## STABILIZED POLYVINYL ACETAL INTERLAYERS

Abraham J. Reisman, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,462

Int. Cl. C08f 45/58, 45/60

U.S. Cl. 260—45.8 N

6 Claims

Disclosed herein are polyvinyl acetal resins, suitable for use as interlayers for pellucid laminates which contain a synergistic mixture of 2,6-di-n-octadecyl-p-cresol stabilizers and an alkylated hydroxy phenyl benzotriazole.

3,823,114

## ANTIOXIDANT FOR POLYMERIC HYDROCARBONS

Robert Vincent Albarino, Berkeley Heights, and Harold Schonhorn, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Jan. 4, 1973, Ser. No. 320,974

Int. Cl. C08f 45/60

U.S. Cl. 260—45.9 R

4 Claims

The migration of antioxidants from polymeric hydrocarbons is retarded by bonding the antioxidant with silane coupling agents.

3,823,115

## POLYOLEFINS STABILIZED WITH 4,4'-METHYLENEBIS(2,6-DISUBSTITUTED PHENOL) AND PROCESS THEREOF

Gordon D. Brindell, Crystal Lake, and Rudolf F. Macander, Cary, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

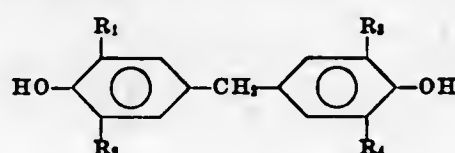
No Drawing. Filed May 15, 1972, Ser. No. 253,148

Int. Cl. C08f 45/58

U.S. Cl. 260—45.95 R

16 Claims

Polyolefin stabilized with a compound of the following formula is disclosed:



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are independently aralkyl or alkyl with the proviso that at least one aralkyl group contains no branching on the carbon alpha to the phenylene group or at least one alkyl group contains no branching on the carbon alpha to the phenylene group but has at least one branch on the carbon beta to the phenylene group.

3,823,116

## PROCESS FOR PRODUCING COPOLYMERS OF VINYL CHLORIDE WITH ACRYLIC ACID ESTERS

Lorenzo Ratti, Chiavenna, and Francesco Visani, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,720

Claims priority, application Italy, Mar. 12, 1971, 21,678/71

Int. Cl. C08g 15/26

U.S. Cl. 260—63 HA

7 Claims

There is disclosed a process for producing copolymers of vinyl chloride with acrylic acid esters which comprises polymerizing a mixture of vinyl chloride, carbon monoxide and a compound containing alcoholic functions in contact with an initiator or catalyst of the radicalic type, such as a peroxide, azo-compound, redox system, or the like.

3,823,117

## TRIBENZYLAMINE MOIETY CONTAINING POLYESTERS

Volker Freudenberger, Diedenbergen, and Franz Jakob, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius &amp; Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,665

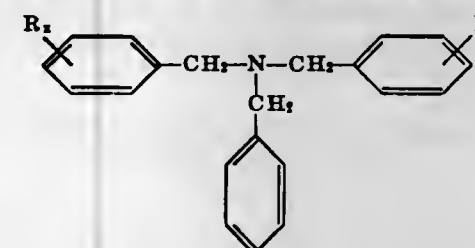
Claims priority, application Germany, Oct. 8, 1971, P 21-50 293.2

Int. Cl. C08g 17/08, 17/14

U.S. Cl. 260—75 N

6 Claims

Modified, synthetic linear fiber and film-forming polyesters with improved colorability for acid dyes are prepared by adding during the manufacture of fiber and film-forming linear polyesters from the usual raw materials tertiary amino compounds of the formula



wherein

R=the free or esterified carboxyl group, x+y=1 or 2 and x as well as y can be 0 or 1 or—in the case of x+y=2—likewise the value 2,

and at least 3 carbon atoms are situated between each R group and the CH<sub>2</sub>-group, which connects the ring carrying R with the tertiary N, as well as between the R groups, if x or y=2.

3,823,118

## PROCESS FOR PREPARING THERMOSETTABLE URETHANE RESIN

Yoshiki Matsunaga, Yokohama, Yoichi Hoshino, Tokyo, and Yoshimichi Kobayashi, Yokohama, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,239

Claims priority, application Japan, Dec. 29, 1970, 46/120,955, 46/120,957; Apr. 20, 1971, 46/25,559

Int. Cl. C08g 22/16

U.S. Cl. 260—77.5 AQ

19 Claims

A novel thermosettable urethane resin is prepared by reacting a product (I) which is obtained by the reaction

of one equivalent of a polyurethane prepolymer (A) having terminal isocyanate groups and at least two equivalents of a tertiary amine (B) having an average of at least three hydroxyl groups, with a product (II) which is obtained by the equimolar addition reaction of an organic diisocyanate (C) and a monofunctional blocking agent (D), in a proportion such that 20–80% of hydroxyl groups of the product (I) is reacted with the isocyanate groups of the product (II).

3,823,119

## POLYISOCYANATE-POLYISOCYANURATE PROCESS

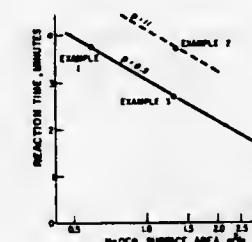
Charles R. Vestal, Denver, and Carle C. Zimmerman, Jr., Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 8, 1972, Ser. No. 260,844

Int. Cl. C08g 22/24, 22/28

U.S. Cl. 260—77.5 NC

8 Claims



Desired distribution of polyisocyanate-polyisocyanurates and rate of reaction is improved by controlling the surface area (i.e., particle size) of the metal cyanate reactant, a mathematical relationship exists between such distribution and the unit surface area of the metal cyanate for a given reaction time.

3,823,120

## PREPARATION AND USES OF N-(ω-AMINOALKYL)-2-AMINOETHANE SULFONIC ACIDS AS CATIONIC DYEABLE ADDITIVES TO POLYAMIDES

Morris Benjamin Berenbaum and Allen Walter Sogn, Williamsville, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,628

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

4 Claims

Preparation and uses of new compounds of N-(ω-aminoalkyl)-2-aminoethane sulfonic acids, especially N-(6-aminoethyl)-2-aminoethane sulfonic acid is disclosed. The compounds can be used in nylon yarn to make it dyeable with cationic dyes.

3,823,121

## POLYMERIZATION PROCESS

Dale C. Perry, Akron, Ohio, assignor to The Goodyear Tire &amp; Rubber Company, Akron, Ohio

No Drawing. Filed Nov. 9, 1972, Ser. No. 305,019

Int. Cl. C08d 1/14, 3/04

U.S. Cl. 260—82.1

8 Claims

The method of polymerization of isoprene-butadiene mixtures to form copolymers having improved processing characteristics and to catalyst systems useful for this purpose.

3,823,122

## SYNTHETIC RUBBERS

Theodore R. Schuh, North Riverside and Frank A. Mauceri, La Grange, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,908

Int. Cl. C08d 5/02, 5/04

U.S. Cl. 260—85.1

6 Claims

The oil or solvent resistance of SBR synthetic rubbers is substantially improved by incorporating in the rubber



mix a substituted acrylic acid or acid salt. The amount of additive incorporated in the elastomer ordinarily varies from about 2.5 to 5.0 phr. of the elastomer. Zinc methacrylate and  $\alpha$ -methyl cinnamic acid are among the preferred additives.

3,823,123

# ANTISTATICALLY FINISHED ACRYLONITRILE POLYMERS

Ferdinand Bodesheim, Eduard Radlmann, Armin Köhler, Ernst Gutschik, and Günther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,603  
Claims priority, application Germany, Sept. 18, 1970, P 20 46 091.7

Int. Cl. C08f 3/76, 15/02, 15/22

U.S. Cl. 260—85.5 R 2 Claims

The invention relates to an acrylonitrile polymer composition which comprises a polymer of acrylonitrile, and from 1 to 20% by weight, based on the total composition, of an antistatic compound of the formula



In addition to their outstanding antistatic properties, the acrylonitrile polymers treated according to the invention are distinguished by a high affinity for basic dyes and considerably improved water absorption.

3,823,124

# POLYMERS OF PHOSPHORUS-CONTAINING MONOMERS

Wen-Hsuan Chang and Rostyslaw Dowbenko, Gibsons, Pa., and Carl C. Anderson, Hartland, Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Application Apr. 27, 1972, Ser. No. 248,294, now Patent No. 3,763,108, which is a continuation-in-part of abandoned application Ser. No. 29,309, Apr. 16, 1970. Divided and this application June 20, 1973, Ser. No. 371,919

Int. Cl. C08f 3/90, 15/02

U.S. Cl. 260—89.7 R 6 Claims

Phosphorous-containing monomers are prepared by reacting unsaturated amides with aldehydes and trialkyl phosphites. The resulting monomers can be polymerized to form a fire-retardant resin which may be used as a pressure-sensitive adhesive.

3,823,125

# N-AMINOACYL-SUBSTITUTED INSULINS

Norman H. Grant, Wynnewood, Harvey E. Alburn, West Chester, and Richard L. Fenichel, Wyncote, Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 866,271, Oct. 14, 1969, which is a continuation-in-part of application Ser. No. 702,245, Feb. 1, 1968, both now abandoned. This application Oct. 12, 1971, Ser. No. 188,504

Int. Cl. C07c 103/52

U.S. Cl. 260—112.7 4 Claims

Novel aminoacyl-substituted insulins, especially 1-aminocyclopentanecarbonyl-, 1-aminocyclohexanecarbonyl-, and 1-aminocyclopent-3-ene-carbonyl-insulins (I) are prepared by treating insulin with an aminoacylating agent, especially the corresponding N-carboxyanhydrides (II) of 1-aminocyclopentanecarboxylic acid, 1-aminocyclohexanecarboxylic acid and 1-aminocyclopent-3-ene-carboxylic acid. The new compounds (I) have hypoglycemic activity and are useful to treat diabetes.

3,823,126

# PROCESS OF SEPARATING HUMAN CANCER ANTIGEN PROTEINS BY GEL FILTRATION

Knut Bertil Björklund, Appellviksvägen 26, S-161-36 Bromma, Sweden

Filed May 23, 1972, Ser. No. 255,975

Int. Cl. C07g 7/00

U.S. Cl. 260—112 R 4 Claims

The invention refers to a process for separating delicate biological substances. Starting from isoelectric precipitates of protein mixtures the process is based on repeated gradient elution and reprecipitation of the individual components of the mixture. The process is carried out in a gel column with properties such as to permit separation of precipitate, solute and ionic gradient.

3,823,127

# NUTRITIONAL IRON-PROTEIN COMPLEXES FROM WASTE EFFLUENTS

Susan B. Jones, Philadelphia, Edwin B. Kalan, Abington, Thomas C. Jones, Philadelphia, and Frederic Hazel, Havertown, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed June 7, 1972, Ser. No. 260,572

Int. Cl. A23c 21/00; A23j 1/00

U.S. Cl. 260—112 R 3 Claims

Proteins are precipitated and recovered from industrial waste effluents such as whey by addition of Ferric polyphosphate to the effluents. The recovered product, a Ferric polyphosphate-protein complex in powder form containing from 8 to 15% iron and from 15 to 50% protein is highly nutritional and highly assimilable and has great potential as an iron-protein enriching additive in food and other products.

3,823,128

# PREPARATION OF EDIBLE PROTEIN FROM LEAFY GREEN CROPS SUCH AS ALFALFA

Emanuel M. Bickoff, Oakland, and George O. Kohler, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

Continuation of abandoned application Ser. No. 147,947, May 28, 1971. This application May 14, 1973, Ser. No. 360,251

Claims priority, application Republic of South Africa, May 16, 1972, 72/3,347

Int. Cl. A23j 1/14

U.S. Cl. 260—112 R 13 Claims

Juice obtained from alfalfa or other leafy green crops is treated to isolate a protein fraction useful for supplementing low-protein foods. A feature of the invention is the application of treatments to first remove a highly-pigmented chloroplast protein fraction, and then to precipitate a protein fraction free from chlorophyll and other pigments.

3,823,129

# GLUTARALDEHYDE INSOLUBILIZED CONCANAVALIN A IN CRYSTALLINE FORM

Aaron Joseph Kalb and Joseph Yariv, Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,559

Claims priority, application Israel, Aug. 26, 1970, 35,169/70

Int. Cl. A23j 1/14

U.S. Cl. 260—123.5 1 Claim

The present invention relates to insolubilized crystalline concanavalin A, to a process for preparing same by reacting crystalline concanavalin A with a cross-linking agent,

and to a process for the selective removal of transition metals from solutions containing also other cations, and to a process for the selective removal and recovery of saccharides from solutions of same.

3,823,130

# LIGHT SENSITIVE ESTERS OF NAPHTHOQUINONE-1,2-DIAZIDE-(2)-5-SULFONICACIDS WITH CYCLOHEXYLMETHANOL OR SECONDARY OR TERTIARY ALKANOLS OF UP TO SIX CARBON ATOMS

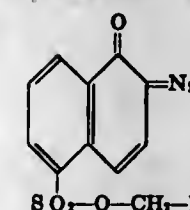
Albert S. Deutsch and Joseph M. Poppo, Yonkers, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,238

Int. Cl. C07c 113/00; G03c 1/54

U.S. Cl. 260—141 4 Claims

Light-sensitive compounds comprising alkyl esters of naphthoquinone diazides of the formula



wherein R is cyclohexyl or an alkyl of 2 to 4 carbon atoms substituted at the alpha-carbon by one or two methyl groups, which resist hydrolysis during prolonged storage and are useful for making sensitized lithographic printing plates.

3,823,131

# DIALKYLAMINO DISAZO SULFONIC ACID DYESTUFFS

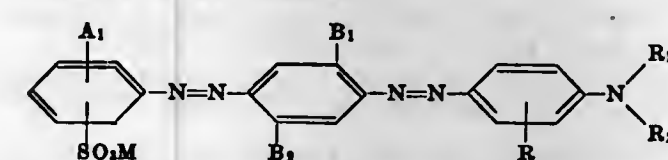
Hans Alfred Stengl, Toms River, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

No Drawing. Filed June 23, 1971, Ser. No. 156,057

Int. Cl. C09b 31/04, 31/08; D06p 1/06

U.S. Cl. 260—186 7 Claims

Dyestuffs of the formula



in which A<sub>1</sub> is hydrogen, alkyl, alkoxy, halo or trifluoromethyl, B<sub>1</sub> and B<sub>2</sub> are each hydrogen, lower alkoxy, lower alkyl, chloro or bromo, M is hydrogen, alkali metal or NH<sub>4</sub><sup>+</sup>, R is hydrogen, alkyl, alkoxy, trifluoromethyl, chloro, bromo or fluoro, and R<sub>1</sub> and R<sub>2</sub> are each alkyl, hydroxyalkyl, cyanoalkyl, lower aralkyl or substituted lower aralkyl. The dyes have a good affinity for natural and synthetic polyamide fibers and show good light fastness, solubility, wash and perspiration fastness as well as good barré coverage.

3,823,132

# FLAME-RETARDANT POLYURETHANE FOAMS

Felix H. Otey, Richard P. Westhoff, and Charles L. Mehltretter, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 9, 1971, Ser. No. 161,312

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R 3 Claims

Highly flame-resistant rigid foams are obtained by the use of novel halogen-containing polyols in the polyurethane synthesis.

3,823,133

# METHOD FOR PREPARING ADSORPTIVE CELLULOSE ETHERS

Louis S. Hurst and Norman E. Lloyd, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 254,513, May 18, 1972. This application May 17, 1973, Ser. No. 361,361

Int. Cl. C08b 11/00

U.S. Cl. 260—231 A 11 Claims

Adsorptive cationic cellulose is prepared by introducing cationic substituents onto cellulose in an alkaline aqueous solution of a salt of a strong acid and a strong base. The derivatized cellulose has a high adsorptive capacity for certain proteinaceous materials, e.g., enzymes.

3,823,134

# DICHLORO- $\alpha,\alpha,\alpha$ -TRIFLUOROTOLUAMIDES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 864,869, Oct. 8, 1969, which is a continuation-in-part of application Ser. No. 835,252, June 20, 1969, both now abandoned. This application Dec. 18, 1972, Ser. No. 316,103

Int. Cl. C07c 103/20

U.S. Cl. 260—239 BA 7 Claims

Dichloro- $\alpha,\alpha,\alpha$ -trifluorotoluamides are prepared by reacting the corresponding acid chloride with the desired amine in an appropriate solvent. The resulting compounds are particularly useful as anticoccidial agents and central nervous system depressants.

3,823,135

# PYRIMIDONE HERBICIDES

Kurt H. G. Pilgram and Richard D. Skiles, Modesto, Calif., assignors to Shell Oil Company

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,317

Int. Cl. C07d 51/38

U.S. Cl. 260—251 R 4 Claims

2,5-dihalo-3-(optionally substituted-phenyl) - 6-alkyl-4(3H)-pyrimidones, and their use as herbicides.

3,823,136

# IMINOMETHYLINDOLINES

Yao Hua Wu and Walter G. Lobeck, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Original application Oct. 1, 1969, Ser. No. 862,915, now Patent No. 3,679,692. Divided and this application May 8, 1972, Ser. No. 253,672

Int. Cl. C07d 27/38

U.S. Cl. 260—240 G 10 Claims

This invention relates to a series of 1-iminomethylindolines which are analeptic agents capable of counteracting central nervous system depressant effects of pentobarbital and chloral hydrate. They also exhibit analgesic effects. This invention also relates to a process for the preparation of 1-iminomethylindolines which comprises reaction of an indoline with carboxamides selected from the group consisting of amides, lactams, symmetrical or unsymmetrical ureas and hydrazides. Typical examples of 1-iminomethylindoline derivatives are 5-acetyl-1-[2-(1-pyrrolinyl)]indoline and 1-[2-(5,5-dimethyl-1-pyrrolinyl)]indoline.



3,823,137

**NOVEL NITROFURAN COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS**

Herbert Berger, Mannheim-Kaferthal, Rudi Gall, Grobsachsen, Max Thiel and Wolfgang Vomel, Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

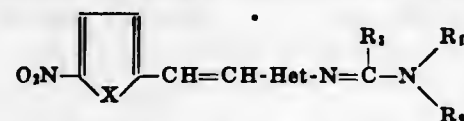
No Drawing. Continuation-in-part of application Ser. No. 151,991, June 10, 1971. This application Sept. 20, 1972, Ser. No. 290,681

Claims priority, application Germany, June 20, 1970, P 20 30 581.1; May 10, 1972, P 22 22 834.8

Int. Cl. C09b 23/00

U.S. Cl. 260—240.1

Certain novel nitrofurans of the formula



wherein Het is a naphthyridine or s-triazolo[4,3-b]pyridazine system and the R's are variously defined, which are outstandingly effective bacteriostats and bactericides.

3,823,138

**LACTONE INTERMEDIATES**

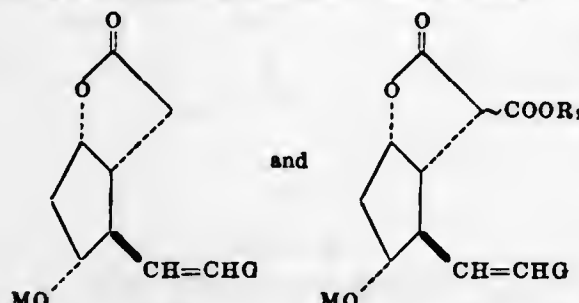
Verian H. Van Rhee, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed July 21, 1972, Ser. No. 273,785

Int. Cl. C07d 7/04

U.S. Cl. 260—240 R

Process for preparing lactones of the formula



wherein G is R<sub>6</sub>, 1-hydroxyhexyl, or 1-hydroxy-cis-3-hexenyl, wherein R<sub>6</sub> is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive; wherein M is hydrogen or a blocking group; wherein R<sub>1</sub> is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; and wherein ~ indicates attachment in alpha or beta configuration. The lactones are useful intermediates in preparing prostaglandins having pharmacological utility.

3,823,139

**CEPHALOSPORINS HAVING A γ-CARBONYL GROUP AT POSITION-3**

William George Elphinstone Underwood, Stoke Poges, England, assignor to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,403

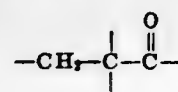
Claims priority, application Great Britain, Mar. 26, 1970, 14,981/70; Apr. 23, 1970, 19,631/70

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

14 Claims

The invention is concerned with Δ<sup>3</sup>-4-carboxy cephalosporin antibiotics possessing a γ-carbonyl group, viz the skeletal group



at the 3-position. The invention also describes processes for the preparation of such compounds.

3,823,140

Δ<sup>3</sup>-4-CARBOXY-3-OXOBUTYL CEPHALOSPORINS  
John Colin Clark, Gerrards Cross, and William George Elphinstone Underwood, Stoke Poges, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,404

Claims priority, application Great Britain, July 3, 1970, 32,476/70; Mar. 5, 1971, 14,981/71, 19,631/71

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

5 Claims

The invention is concerned with Δ<sup>3</sup>-4-carboxy cephalosporin antibiotics possessing a 3-oxobutyl group at the 3-position. The invention also describes processes for the preparation of such compounds.

3,823,141

7-(o-AMINOMETHYL-p-HYDROXY-PHENYLACETAMIDO)-3-(3-HYDROXY-PYRIDAZIN-6-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

Takayuki Nakto, Tokyo, and Jun Okumura, Yokohama, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,792

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

7 Claims

7-(o-Aminomethyl-p-hydroxyphenylacetamido)-3-(3-hydroxy-pyridazin-6-ylthiomethyl)-3-cephem-4-carboxylic acid and its nontoxic, pharmaceutically acceptable salts and especially its dimethanesulfonate derivative are valuable as antibacteria agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7-(o-Aminomethylphenyl-p-hydroxyacetamido)-3-(3-hydroxypyridazin-6-ylthiomethyl)-3-cephem-4-carboxylic acid is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a tert-butoxycarbonyl group.

3,823,142

**1-PHENYL-4-PHOSPHORANYLIDENEAMINO-5-HALO-6(1H)-PYRIDAZONE DERIVATIVES**

Joerg Bader, Ariesheim, and Christian Vogel, Birmingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,172

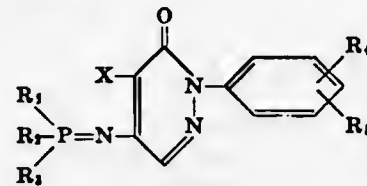
Claims priority, application Switzerland, Dec. 15, 1970, 18,554/70

Int. Cl. C07d 51/04

U.S. Cl. 260—250 A

9 Claims

The invention is concerned with new pyridazone derivatives of formula



wherein R<sub>1</sub> and R<sub>2</sub> independently represent alkoxy, alkenyloxy, alkoxyalkoxy, alkylthio or both together with the phosphorus atom form a five- or six-membered ring containing at least one other hetero atom, R<sub>3</sub> is alkoxy, alkenyloxy, alkoxyalkoxy, alkylthio or dialkylamino, R<sub>4</sub> and R<sub>5</sub> are hydrogen, halogen, lower alkyl, alkoxy or halogenalkyl, X being chlorine or bromine. Preferably the three radicals R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> are identical and represent lower alkoxy and R<sub>4</sub> and R<sub>5</sub> are hydrogen. There is also provided an agent for the control of weeds comprising

the said pyridazone derivatives as active component. The new compounds are especially useful as selective herbicides in cultivated crops.

3,823,143

**PRODUCTION OF 2,4-HEXAHYDRO-PYRIMIDINODIONES**

Franz Merger, Ludwigshafen (Rhine) and Harro Petersen, Frankenthal, Pfalz, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation of abandoned application Ser. No. 730,947, May 21, 1968. This application Feb. 6, 1970, Ser. No. 7,410

Claims priority, application Germany, May 27, 1967, P 16 70 232.2

Int. Cl. C07d 51/18

U.S. Cl. 260—260

9 Claims

The production of 2,4-hexahydropyrimidinodiones by reaction of 2-hexahydropyrimidin-4-ethers or 2-hexahydropyrimidin-4-ols with oxidizing agents. The products of the process are valuable starting materials for the production of herbicides, bleaching agents and detergents.

3,823,144

N-(BENZOYL)-N'-(PIPERAZIN-1-YL)ALKYLUREAS  
Karl Schmitt, Nenenhain, Taunus, and Irmgard Hoffmann, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 21, 1972, Ser. No. 264,747

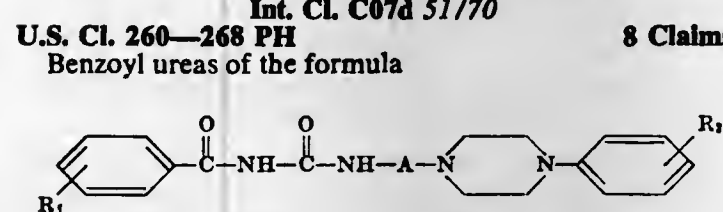
Claims priority, application Germany, June 23, 1971, P 21 31 034.9

Int. Cl. C07d 51/70

U.S. Cl. 260—268 PH

8 Claims

Benzoyl ureas of the formula



and salts thereof with physiologically acceptable acids, useful as psychopharmacological agents, wherein R<sub>1</sub> is one or more of hydrogen, halogen, alkyl having 1 to 6 carbon atoms, alkyl having 3 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 4 to 7 carbon atoms, aralkyl having 1 to 4 alkylene carbon atoms, phenyl, hydroxy, acyloxy, alkoxy having 1 to 6 carbon atoms, alkenyloxy having 3 to 6 carbon atoms, aralkoxy having 1 to 4 alkylene carbon atoms, aryloxy, trifluoro, or nitro, in any position, or represents two vicinal substituents which are members of a condensed 5- to 7-membered carbocyclic ring; R<sub>2</sub> is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms; and A is alkylene having 2 to 6 carbon atoms.

3,823,145

**REMOVAL OF IMPURITIES FROM POLYOLS**

Joseph F. Louvar, Lincoln Park, and Newlin S. Nichols, Dearborn, Mich., assignors to BASF-Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 747,793, July 26, 1968. This application Mar. 19, 1971, Ser. No. 126,343

Int. Cl. C07c 41/02, 41/12; C07d 51/64

U.S. Cl. 260—268 PL

4 Claims

The process for purifying polyoxyalkylene ether polyols containing water-soluble residual catalysts which comprises (1) providing a mixture of water, polyol and a solvent which together with the polyol forms a water-immiscible solution, (2) subjecting the mixture to centrifugal separation whereby the polyol-solvent solution is separated from a water layer and (3) recovering the purified polyol from the polyol-solvent solution by stripping off the solvent.

3,823,146

**PROCESS FOR QUININE, QUINIDINE AND ANALOGS THEREOF**

Guenter Grethe, North Caldwell, N.J., and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 117,131, Feb. 19, 1971, which is a continuation-in-part of application Ser. No. 20,034, Mar. 16, 1970, both now abandoned. This application July 27, 1971, Ser. No. 166,583

Int. Cl. C07d 43/24

U.S. Cl. 260—284

5 Claims

Quinine, quinidine and analogs thereof, are prepared by reacting a 4-quinolyl lithium compound with a 4,5-erythro-5-ethyl-(or vinyl)-quinuclidine-2-ε-carboxaldehyde or the corresponding quinuclidine-2-carboxylic acid alkyl ester. Also described, inter alia, is the preparation of a 4,5-erythro-5-ethyl-(or vinyl)-quinuclidine-2-ε-carboxaldehyde, and a 4,5-erythro-5-ethyl-(or vinyl)-quinuclidine-2-ε-carboxylic acid and esters thereof. The end products are useful as antimalarial and antiarrhythmic agents.

3,823,147

**THIOPHENYL-SUBSTITUTED QUINOPHTHALONE DISPERSION DYE STUFFS**

Ernst Spietschka, Oberauroff, and Friedrich Ische, Kelheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application May 19, 1969, Ser. No. 825,971, now Patent No. 3,655,672, dated Apr. 11, 1972. Divided and this application July 16, 1971, Ser. No. 163,419

Claims priority, application Germany, May 24, 1968, P 17 69 437.0

Int. Cl. C07d 33/46

U.S. Cl. 260—283 S

4 Claims

3-Hydroxy-quinophthalone dyestuffs substituted in the 4-position by an ether or thioether group, and a process for preparing them. Said dyestuffs yield on synthetic fibrous materials, especially those from polyethylene terephthalates, yellow dyeings having good fastness to light, wet processing and solvents and a remarkably good fastness to thermofixation and ironing.

3,823,148

**4-BIPHENYLYL ISOQUINOLINE DERIVATIVES**

Alexander Bertus Arnold Jansen, 6 Linkwood Road, Burnham, England; John Hollowood, Saint Martin's Cottage, Highfield Lane, Newton, England; and Alan Brian Wilson, 12 Chilterns Park, Bourne End, England

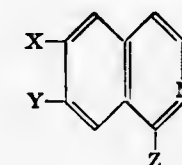
No Drawing. Filed May 25, 1972, Ser. No. 256,955

Int. Cl. C07d 35/28

U.S. Cl. 260—289 R

3 Claims

It has been found that new isoquinolines of the formula



where X and Y are free or etherified hydroxy groups and Z is one of certain selected substituents and their di- and tetra-hydrogenated derivatives, and the acid addition salts thereof are pharmacologically active, for instance, on the cardiovascular system as hypotensives and on the central nervous system as depressants and anti-convulsants.



3,823,149

**3a,4,5,9b-TETRAHYDRO-3,5-ETHANONAPHTH  
[2,1-d]OXAZOL-2(3H)-ONES**

Noel F. Albertson, East Greenbush, N.Y. (S Pheasant Lane, R.D. 1, Castleton-on-Hudson, N.Y. 12033)

No Drawing. Continuation-in-part of abandoned application Ser. No. 43,556, June 4, 1970. This application May 26, 1972, Ser. No. 257,343

Claims priority, application Canada, May 31, 1971, 114,432

Int. Cl. C07d 39/00, 85/28

U.S. Cl. 260—293.55

3 Claims

1,2,3,4,5,6 - Hexahydro-1-oxo-3-(hydrocarbon or substituted hydrocarbon) - 8 - (H or OH)-6-(H or alkyl)-11-(H or alkyl)-2,6-methano-3-benzazocines and 1-hydroxy secondary and tertiary alcohols obtainable therefrom by reduction and by Grignard reactions, and esters of the same, are useful as central nervous system depressants, particularly as analgesics and as analgesic antagonists. The 3-substituent is introduced by alkylation, directly or by N-acylation followed by reduction of the resulting amides, of the corresponding >NH compounds either before or after introduction of the 1-oxo group into the compounds having two hydrogens at the 1-position by chromium(VI) oxidation. Various intermediates and derivatives are also described, including 3a,4,5,9b-tetrahydro - 3,5 - ethanonaphth[2,1-d]oxazol - 2(3H) - ones obtained by interacting 1,2,3,4,5,6-hexahydro - 1 - hydroxy-2,6-methano-3-benzazocines with phosgene or by heating 1,2,3,4,5,6-hexahydro-1-hydroxy - 3 - carbalkoxy - 2,6 - methano-3-benzazocines with alkoxide ion.

3,823,150

**2-(FURFURYL-METHYL)-6,7-BENZOMORPHANS  
AND ACID ADDITION SALTS THEREOF**

Herbert Merz, Rheinstrasse 170; Adolf Langbein, Theodor-Fliedner Str. 45; Helmut Wick, Gehauweg 10; and Klaus Stockhaus, Tannenweg, 11, all of D-6507 Ingelheim am Rhein, Germany

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,669

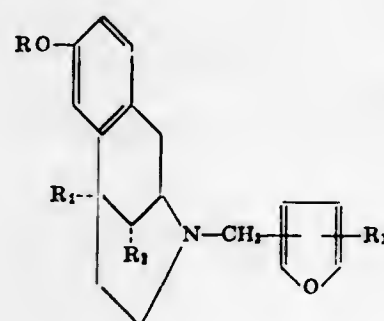
Claims priority, application Germany, Feb. 8, 1971, P 21 05 743.2; Feb. 25, 1971, P 21 08 954.3

Int. Cl. C07d 39/100

U.S. Cl. 260—293.54

11 Claims

Compounds of the formula



wherein

R is hydrogen, methyl or acetyl,  
R<sub>1</sub> is hydrogen, methyl, ethyl, n-propyl, isopropyl or butyl, and  
R<sub>2</sub> and R<sub>3</sub> are each hydrogen, methyl or ethyl,  
and their non-toxic, pharmacologically acceptable acid addition salts; the compounds as well as their salts are useful as opiate antagonists non-narcotic analgesics and antitussives.

3,823,151

**4,5,6,7-TETRAHYDROTHIENO[2,3-d]PYRIDINES**

Kurt Eichenberger and Paul Schmidt, Therwil, and Ernst Schweizer, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Original application July 25, 1969, Ser. No. 845,054, now Patent No. 3,627,766. Divided and this application Sept. 28, 1971, Ser. No. 184,606

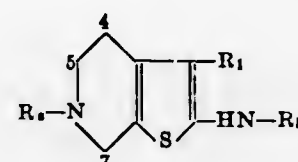
Claims priority, application Switzerland, Aug. 2, 1968, 11,640/68; June 20, 1969, 9,468/69

Int. Cl. C07d 63/18

U.S. Cl. 260—294.8 C

3 Claims

Compounds of the formula



in which R<sub>0</sub> stands for an acyl group or hydrogen, R<sub>1</sub> for a free or functionally converted carboxyl group, and R<sub>2</sub> for an optionally substituted hydrocarbon radical or hydrogen and which may be substituted in positions 4, 5 and/or 7, are useful as antiphlogistics and as starting materials.

3,823,152

**3-SUBSTITUTED-2-PIPERIDINETHIONES AND  
HOMOLOGUES THEREOF**

Akio Morimoto, Matsubara, Hisashi Takasugi, Ikeda, Yoshiharu Nakai, Otsu, and Takao Watanabe, Ikeda, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd.

No Drawing. Filed July 29, 1971, Ser. No. 172,347

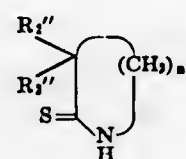
Claims priority, application Japan, July 30, 1970, 45/67,049; Sept. 4, 1970, 45/77,908

Int. Cl. C07d 29/36

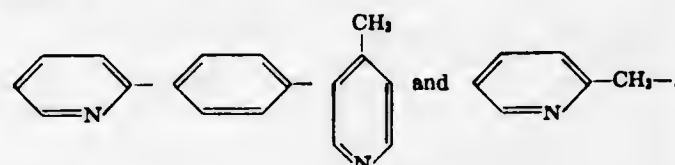
U.S. Cl. 260—293.69

2 Claims

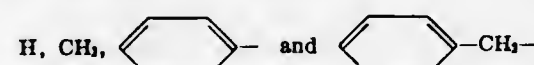
This invention relates to compounds of the formula:



wherein n is 3 or 4, R<sub>2</sub>' is selected from the group consisting of



and R<sub>3</sub>' is selected from the group consisting of



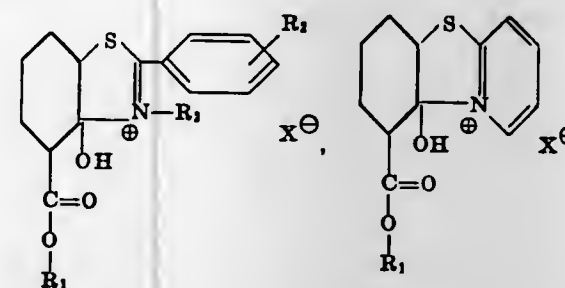
These compounds inhibit gastric secretion and are useful in treatment for a digestive ulcer.

**3,823,153**  
**2-SUBSTITUTED-3a,4,5,6,7,8a-HEXAHYDRO-3a-  
HYDROXYBENZOTHAZOLIUM HALIDES**  
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.  
No Drawing. Original application Mar. 17, 1971, Ser. No. 125,410, now Patent No. 3,694,449. Divided and this application May 15, 1972, Ser. No. 253,376  
Int. Cl. C07d 91/24

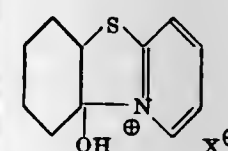
U.S. Cl. 260—306.7

2 Claims

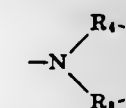
Novel pharmacologically active compounds have been prepared of the formulae



and



wherein R<sub>1</sub> and R<sub>2</sub> are selected from the group consisting of hydrogen and (lower)alkyl; R<sub>3</sub> is selected from the group consisting of hydrogen, (lower)alkyl, nitro, halogen, (lower)alkoxy, hydroxy and



wherein R<sub>4</sub> and R<sub>5</sub> when not concatenated are independently selected from the group consisting of hydrogen and (lower)alkyl and when concatenated form a radical selected from the group consisting of piperazinyl, piperidinyl, pyrrolidinyl and morpholinyl; X is halogen.

3,823,154

**2-TRIFLUOROMETHYLBENZIMIDAZOLES**

John Roger Corbett, Linton, and Albert Percival Haxton, England, assignors to Fisons Limited, London, England

No Drawing. Filed July 23, 1971, Ser. No. 165,696  
Claims priority, application Great Britain, July 29, 1970, 36,673/70; Mar. 16, 1971, 7,044/71

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

14 Claims

2-Trifluoromethylbenzimidazoles having a sulphamoyl or substituted sulphamoyl substituent on the benzene ring combat mammalian parasites, for example liver fluke in mammals e.g. sheep, and cattle tick and sheep blowfly.

3,823,155

**IMIDAZOLINE DERIVATIVES WITH  
DIURETIC PROPERTIES**

Cornelis van der Stelt, Haarlem, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,210

Int. Cl. C07d 49/34

U.S. Cl. 260—309.6

3 Claims

Imidazoline derivatives are disclosed which carry on the 1-position, a substituted or unsubstituted bis(phenyl)

methyl, 5H-dibenzocyclohepten-5-yl or 10,11-dihydro-5H-dibenzocyclohepten-5-yl substituent. The compounds have diuretic activity.

3,823,156

**PROCESS FOR THE PRODUCTION OF  
PYRAZOLONE DERIVATIVES**

Eitaro Oku, Daijiro Nishio, and Hirokatsu Ezawa, Odawara, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,309

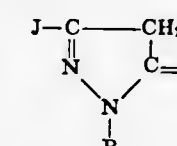
Claims priority, application Japan, Dec. 4, 1970, 45/106,716

Int. Cl. C07d 49/18

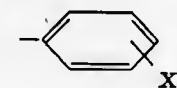
U.S. Cl. 260—310 A

7 Claims

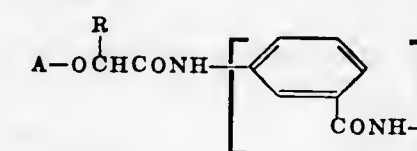
A process for the production of a pyrazolone derivative represented by the general formula



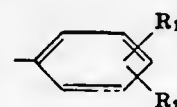
wherein B represents



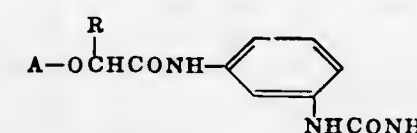
where X, which may be the same or different when m is 2-5, represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, a cyano group, or a halogen atom, and m is 1-5, and J represents



wherein A represents



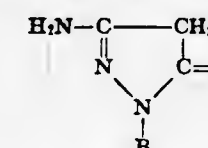
where R<sub>1</sub> is a hydrogen atom or an alkyl group and R<sub>2</sub> is an alkyl group; R represents a hydrogen atom or an alkyl group having 1-6 carbon atoms, and n is 0 or 1 or



wherein A and R have the same meaning as defined above, which comprises condensing a compound represented by the following general formula

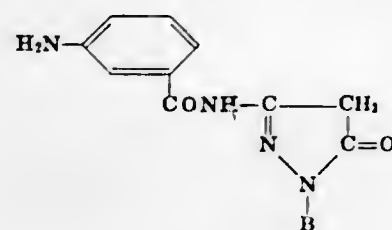


wherein A and R have the same meaning as defined above and one compound represented by one of the following general formulae:

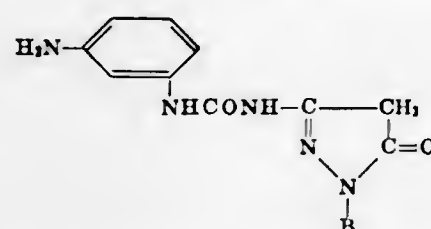




wherein B has the same meaning as defined above,



wherein B has the same meaning as defined above, or



wherein B has the same meaning as defined above in acetonitrile under such conditions which form the hydrochloride or the amine salt of the objective compound, and thereafter recovering said objective compound from the hydrochloride or amine salt form.

3,823,157

# **PYRAZOLIDIAZEPINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION**

Horace A. De Wald, 2704 Colony Road, Ann Arbor, Mich. 48104, and Sandra J. Lobbestael, 777 Washtenaw Ave., Apt. 5, Ypsilanti, Mich. 48197  
No Drawing. Filed Dec. 15, 1972, Ser. No. 315,631  
Int. Cl. C07d 49/18

U.S. Cl. 260—310 R

9 Claims

1,6,7,8-Tetrahydropyrazolo[3,4-e][1,4]diazepine compounds, substituted in the 1- and 3-positions by methyl or ethyl, optionally in the 6-position by methyl, optionally in the 8-position by methyl or ethyl, and in the 4-position by *m*-substituted phenyl, in which the substituent is chloro, bromo, fluoro, methyl, nitro, hydroxy, trifluoromethyl, amino, cyano, or azido, by 3,4-dichlorophenyl, or by 3-chloro-*o*-tolyl; acid-addition salts thereof; and their production by (a) reacting a 4-(substituted benzoyl)-5-halopyrazole or a 4-(substituted benzimidoyl)-5-halopyrazole with an ethylenediamine, (b) brominating a 4-phenylpyrazolodiazepine, (c) nitrating a 4-phenylpyrazolodiazepine, (d) hydrogenating a 4-(*m*-nitrophenyl)pyrazolodiazepine, (e) reacting a diazonium salt derived from a 4-(*m*-aminophenyl)pyrazolodiazepine with an aqueous solution of an inorganic azide or cyanide salt, and (f) oxidizing a hexahydropyrazolodiazepine. The compounds are useful as intermediates and as antidepressant agents.

3,823,158

# **COMPOUNDS CONTAINING AN IMIDE LINKAGE**

John K. Allen, Batavia, Ill., assignor to Standard Oil Company, Chicago, Ill.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 770,383, Oct. 24, 1968. This application Mar. 8, 1971, Ser. No. 122,100  
Int. Cl. C07d 27/52

U.S. Cl. 260—326 N

4 Claims

Reaction products of polyarylpolyisocyanates and an anhydride of an aliphatic dicarboxylic acid, said anhydride having from 3-4 carbon atoms, phthalic anhydride or the completely halogenated derivatives thereof or chloroendic anhydride are disclosed for use in rigid foam compositions, surface coatings and the like.

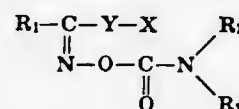
# **3,823,159 O-(SUBSTITUTED CARBAMOYL)-3-PYRROLIDINO-PROPIO AND BUTYROPHENONE OXIMES**

Marvin J. Karten, Ardsley, N.Y., assignor to USV Pharmaceutical Corporation, Tuckahoe, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 877,822, Nov. 18, 1969, now Patent No. 3,636,111, which is a continuation-in-part of application Ser. No. 714,450, Mar. 20, 1968, which in turn is a continuation-in-part of application Ser. No. 680,048, Nov. 2, 1967, both now abandoned. This application May 7, 1971, Ser. No. 141,374  
Int. Cl. C07d 27/04

U.S. Cl. 260—326.3

12 Claims

Compounds of the formula



wherein  $R_1$  and  $R_2$  are lower aliphatic, cycloalkyl, or aromatic (including hetero),  $R_2$  is hydrogen, aromatic, lower aliphatic, or phenyl-lower alkyl, Y is an alkylene group having from 1-5 carbon atoms, and X is a heterocyclic secondary amino group, having potent analgesic activity.

3,823,160

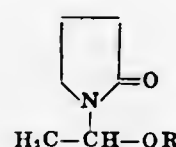
# **PREPARATION OF ETHER ADDUCTS OF N-VINYL-2-PYRROLIDONE**

Richard F. Smith, Morristown, N.J., assignor to GAF Corporation, New York, N.Y.  
No Drawing. Filed Oct. 4, 1971, Ser. No. 186,489  
Int. Cl. C07d 27/08

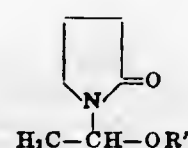
U.S. Cl. 260—326.5 FL

7 Claims

Process for the preparation of ether adducts of N-vinyl-2-pyrrolidone having the general formula:



wherein R is the residuum of an active hydroxyl-containing compound free of functional groups which are additively reactive with a double bond under the reaction conditions, comprising admixing an alcohol and a catalytically effective amount of an alcohol soluble organic acid or salt of aluminum, boron, calcium, iron, gallium, rhodium, palladium, tin or mercury, admixing vinyl pyrrolidone therewith at a rate sufficient to maintain the reaction temperature within the range of from about 0° C. to about 100° C. and thereafter, recovering said ether adduct. Novel ether adducts of N-vinyl-2-pyrrolidone having the general formula:



wherein  $R'$  is a cyclic or acyclic aliphatic hydrocarbon radical containing from 5 to about 20 carbon atoms are also provided.

3,823,161

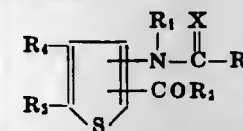
# **AMINOTHIOPHENE DERIVATIVES**

Joseph H. Lesser, Woodside, N.Y., assignor to Esso Research and Engineering Company  
No Drawing. Filed May 7, 1970, Ser. No. 35,587  
Int. Cl. C07d 63/16

U.S. Cl. 260—332.2 C

9 Claims

The compounds of the subject invention are represented by the following formula



wherein  $R_1$  is selected from the group consisting of hydrogen,  $C_1$  through  $C_8$  alkyl;  $R_2$  is one selected from the group consisting of  $C_1$  through  $C_8$  alkyl (optionally substituted by chlorine, bromine, or cyano),  $C_1-C_8$  alkoxy,  $C_1$  to  $C_8$  alkylthio,  $C_1-C_8$  monoalkylamino,  $C_2-C_8$  dialkylamino, phenyl (optionally substituted by chlorine, nitro, or trifluoromethyl),  $C_3-C_8$  alkenyl,  $C_3-C_8$  alkynyl,  $C_3-C_8$  cycloalkyl;  $R_3$  can be  $C_1$  to  $C_{10}$  alkoxy,  $C_1$  to  $C_{10}$  monoalkylamino,  $C_2-C_{10}$  dialkylamino, phenoxy, and anilido;  $R_4$  and  $R_5$  can be the same or different and are selected from the group consisting of hydrogen,  $C_1$  to  $C_6$  alkyl, phenyl, chlorine and bromine; X is either O or S.

These compounds have been found to possess pesticidal activity and, in particular, post- and pre-emergence herbicidal activity as well as fungicidal activity.

3,823,162

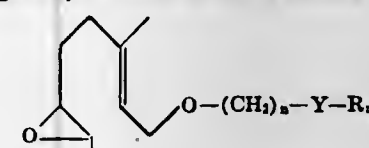
# **6,7-EPOXYGERANYL ETHERS OF OXYGEN HETEROCYCLIC COMPOUNDS**

Edward Koon Wah Wat, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed Mar. 2, 1972, Ser. No. 231,394  
Int. Cl. C07d 13/04, 15/04

U.S. Cl. 260—340.7

4 Claims

6,7-Epoxygeranyl ethers of the formula



wherein

$n=0$  to 3

Y = 5 or 6 membered di- or trivalent heterocyclic group containing up to 2 atoms of oxygen and up to 1 atom of sulfur;

R = hydrogen, alkyl, perchloroalkyl or alkoxy of up to 4 carbons; and

$m=1$  or 2;

are modifiers of insect growth and development.

3,823,163

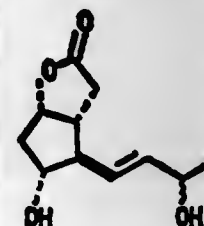
# **PROCESS FOR PREPARING BICYCLIC LACTONE DIOLS**

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Application Sept. 16, 1971, Ser. No. 181,246, now Patent No. 3,711,515, which is a continuation-in-part of abandoned application Ser. No. 93,483, Nov. 27, 1970. Divided and this application Dec. 15, 1972, Ser. No. 315,727  
Int. Cl. C07d 5/32

U.S. Cl. 260—343.3

4 Claims

Process for preparing (1) bicyclic lactone diols of the formula



wherein W is 1-pentyl, cis 1-pent-2-enyl or 1-pent-2-ynyl, and (2) prostaglandins  $E_3$  and  $F_{3a}$  in their racemic and optically active configurations, their enantiomorphs, and their 15-epimers; and the products prepared therein. The diols are useful intermediates in preparing prostaglandins having pharmacological utility.

3,823,164

# **5,6,7,8-TETRAHYDRO-2,5(AND 4,5)-DIOXO-1-BENZOPYRANS**

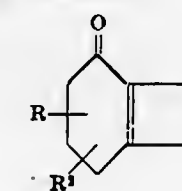
John H. Sellstedt, King of Prussia, Stanley C. Bell, Penn Valley, and Ronald J. McCauly, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Aug. 26, 1971, Ser. No. 175,409, now Patent No. 3,775,435. Divided and this application Dec. 14, 1972, Ser. No. 315,247  
Int. Cl. C07d 7/26

U.S. Cl. 260—343.2 R

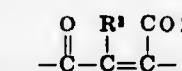
6 Claims

Compounds of the formula:

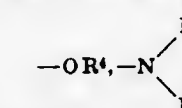


in which

X is the moiety



Z is a member selected from the group consisting of



—Cl, —Br, and —OM;

R,  $R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$  are independently selected from the group consisting of —H, lower alkyl, phenyl and benzyl,

$R^6$  is selected from the group consisting of —H, lower alkyl, phenyl, benzyl, lower dialkylaminoalkyl and cycloalkyl of 3 to 10 carbon atoms, and when taken with  $R^5$  and the nitrogen atom to which they are bonded forms the morpholino, piperidino and piperazino groups, and

M is selected from alkali metal cations and —NH<sub>4</sub>,

are immuno-inflammatory agents possessing antiallergic and antiinflammatory activity. The compounds of this invention are also intermediates for the synthesis of known chromone and coumarin derivatives.

3,823,165

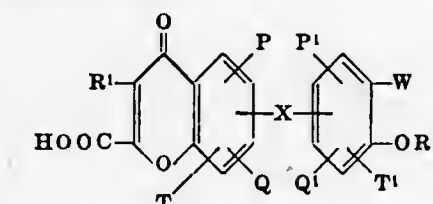
# **PHARMACEUTICALLY ACTIVE COMPOUNDS**

Hugh Cairns and Peter Bennett Johnson, Loughborough, England, assignors to Fisons Limited, Suffolk, England  
No Drawing. Continuation-in-part of application Ser. No. 871,972, Oct. 28, 1969, now Patent No. 3,673,218. This application Apr. 22, 1971, Ser. No. 136,579  
Claims priority, application Great Britain, Apr. 25, 1970, 20,002/70  
Int. Cl. C07d 7/34

U.S. Cl. 260—345.2

16 Claims

Compounds of formula I





R<sup>1</sup> is hydrogen or a substituted or unsubstituted alkyl or alkoxy group containing from 1 to 10 carbon atoms or a substituted or unsubstituted aryl group,  
R<sup>12</sup> is hydrogen, a group —COCH<sub>2</sub>R<sup>1</sup>, an alkyl group, or an alkyl substituted allyl group containing up to 6 carbon atoms.

X is a carbon to carbon bond or a single atom, which single atom may carry substituents which do not form part of the linkage itself between the two benzene nuclei, and

W represents a hydrogen atom or a —COCH<sub>2</sub>R<sup>1</sup> group,

and pharmaceutically acceptable derivatives thereof are provided, the compounds being useful as intermediates and also as antagonists of the slow-reacting substance of anaphylaxis (SRS-A). Pharmaceutical compositions containing the compounds of formula I and processes for making the compounds of formula I are also described.

3,823,166

# 5-LOWER ALKANOYL-2-(2-AZIDOACETAMIDO) BENZOPHENONE

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Apr. 15, 1970, Ser. No. 28,935, now Patent No. 3,686,308. Divided and this application July 13, 1972, Ser. No. 271,306

Int. Cl. C07c 117/00

U.S. Cl. 260—349

3 Claims

The present invention relates to processes for the preparation of 7-lower alkanoyl - 1,4 - benzodiazepin-2-ones. These compounds are known to be useful as muscle relaxants, sedatives and anticonvulsants.

3,823,167

# PIGMENT DYESTUFFS

Karl-Heinz Peters, Cologne-Buchheim, and Rütger Neef, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application June 25, 1969, Ser. No. 836,634, now Patent No. 3,699,126. Divided and this application June 29, 1971, Ser. No. 158,066

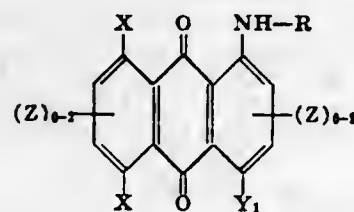
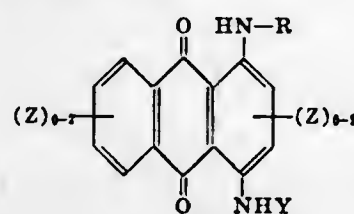
Claims priority, application Germany, June 26, 1968, P 17 68 745.5, P 17 68 755.7, P 17 68 756.8

Int. Cl. C09b 1/42

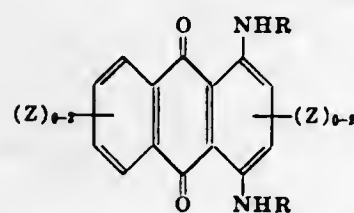
U.S. Cl. 260—372

2 Claims

Dyestuffs of the formulae



or



(III)

wherein Z is a substituent, one X is a member NHR and the other is hydrogen or a substituent Z, Y is an optionally substituted hydrocarbon residue or an acyl

group, Y<sub>1</sub> is hydrogen or a substituent, and R is a moiety CO—B—CO—NH—E where B is a bond, saturated or unsaturated alkylene with or without hetero atoms and substituents, mono or polynuclear arylene with or without substituents, cycloalkylene with or without substituents or heteroarylene with or without substituents and E is a radical B or an aralkyl group; as well as their preparation and use as pigments; the novel dyestuffs are pigment dyestuffs and free of sulfonic acid and carboxylic acid groups.

3,823,168

# ANTHRAQUINONE DYESTUFFS CONTAINING SULPHONIC ACID GROUPS

Walter Hohmann and Klaus Wunderlich, Leverkusen, and Hans-Samuel Bien, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 23, 1970, Ser. No. 49,156

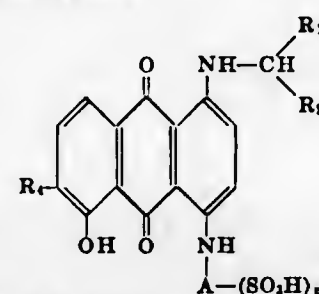
Claims priority, application Germany, June 27, 1969, P 19 32 647.7

Int. Cl. C09b 1/52

U.S. Cl. 260—373

11 Claims

Dyestuffs which contain sulphonic acid groups and correspond to the formula



in which R<sub>1</sub> and R<sub>2</sub> denote lower alkyl radicals with 1-3 carbon atoms, which may be substituted; A means an optionally substituted aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic radical; n stands for 0, 1 or 2; and R<sub>4</sub> denotes a sulphonic acid group when n=0 and denotes hydrogen or a sulphonic acid when n=1 or 2.

The dyestuffs are eminently suitable for the dyeing and printing of natural and synthetic polyamide fibre materials.

3,823,169

# QUATERNARY ANTHRAQUINONE DYESTUFFS

Alfred Staub, Binningen, Switzerland, assignor to Ciba-Gelby AG, Basel, Switzerland

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,379

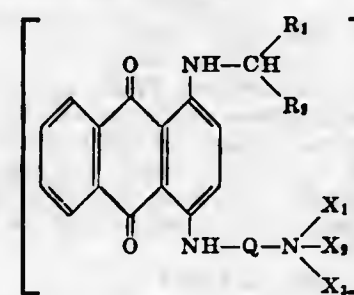
Claims priority, application Switzerland, Apr. 14, 1970, 5,494/70

Int. Cl. C09b 1/28

U.S. Cl. 260—378

6 Claims

A cationic anthraquinone dyestuff, the cationic portion of which is free of groups that dissociate acidly in water and corresponds to the formula



(I)

wherein R<sub>1</sub> and R<sub>2</sub> each represent a lower alkyl group, Q represents a lower alkylene group, X<sub>1</sub> and X<sub>2</sub> each denotes an optionally substituted lower alkyl group, or X<sub>1</sub> and X<sub>2</sub> together with the nitrogen atom that unites them and, optionally with inclusion of a further hetero atom, represent a heterocyclic radical, X<sub>3</sub> represents an optionally substituted alkyl, cycloalkyl or arylalkyl radical, and Y represents the anion equivalent of an inorganic or organic acid.

3,823,170

# PHOSPHATIDES

Paul A. Seaberg and Lester P. Hayes, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Dec. 7, 1972, Ser. No. 313,017

Int. Cl. A23j 7/00; C07f 9/02

U.S. Cl. 260—403

15 Claims

Modified lecithin products exhibiting improved emulsification properties are directly obtained from crude vegetable oils under an integrated and continuous process. The crude oils are initially treated with a small amount of aqueous acid anhydride with the resultant acetylated wet gum being partitioned from the crude oil. The acetylated wet gum is then admixed with a base and subjected to controlled process conditions under elevated drying conditions to provide a dry modified lecithin product having an acid value of about 10 to about 25.

3,823,171

# FLUORINATED ESTERS

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application July 9, 1971, Ser. No. 161,310, which is a division of application Ser. No. 826,655, May 21, 1969, now Patent No. 3,637,791, which is a division of application Ser. No. 704,206, Dec. 28, 1967, now Patent No. 3,465,050, which is a division of application Ser. No. 623,483, Jan. 9, 1967, now Patent No. 3,419,602, which in turn is a division of application Ser. No. 398,129, Sept. 21, 1964, now Patent No. 3,384,628. Divided and this application Aug. 25, 1972, Ser. No. 283,688

Int. Cl. C09f 7/00; C011c 3/00

U.S. Cl. 260—408

2 Claims

Fluorinated alcoholates are prepared by reacting a fluoro-ketone with an alkali metal fluoride. The alcoholates may be reacted with acyl halides to produce esters useful for enhancing the water- and oil-repellency of textiles.

3,823,172

# PROCESS FOR CONTINUOUS AND SELECTIVE CATALYTIC PARTIAL HYDROGENATION OF UNSATURATED FATS AND OILS

Gunther Max Leuteritz, 106 Zehntenstrasse, 4133 Pratteln, Switzerland

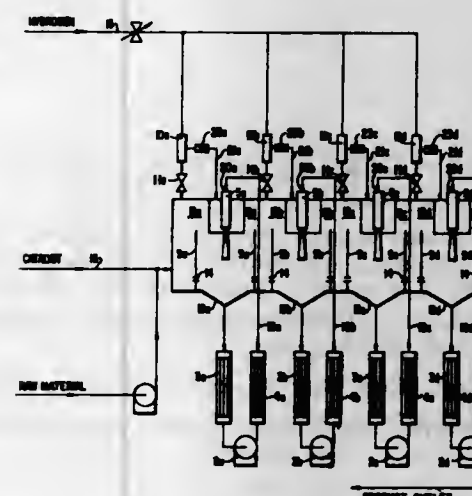
Continuation-in-part of abandoned application Ser. No. 759,543, Sept. 13, 1968. This application June 28, 1971, Ser. No. 157,501

Claims priority, application Austria, Mar. 25, 1968, A 2,937/68

Int. Cl. B01j 9/14; C11c 3/12

U.S. Cl. 260—409

1 Claim



are mixed with a catalyst and successively circulated in a plurality of stages is carried out in an apparatus which comprises a multiple stage reactor, of which each stage includes a reaction chamber through which flows the material to be treated in transverse direction. A circulation conduit is provided for each of the reaction chambers, which contain a suction nozzle connected to the inlet end of the circulation conduit. A suction chamber accommodates the suction nozzle and a conduit opens into the suction chamber to supply predetermined amounts of hydrogen under a predetermined pressure.

3,823,173

# NICKEL COMPLEXES FOR CURING POLYCHLOROPRENES

Rolland Shih-Yuan Ro, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 11, 1972, Ser. No. 296,567

Int. Cl. C07f 15/04

U.S. Cl. 260—439 R

4 Claims

Novel complex compounds of two moles of 2-dimethyl-aminoethanol with one mole of nickel thiocyanate or nickel chloride, which can be prepared by a process comprising mixing at least two moles of the 2-dimethylaminoethanol with one mole of the nickel salt in a solvent in which the nickel salt is soluble and evaporating off the solvent and any 2-dimethylaminoethanol in excess of 2 moles per mole of nickel salt, are useful in improved processes for vulcanizing dialkyl xanthogen disulfide-modified chloroprene polymers by heating said polymer in contact with zinc oxide and with the nickel complex compounds as curing agents.

3,823,174

# PROCESS FOR PREPARATION OF AROMATIC ISOCYANATES

Philip D. Hammond, North Haven, and Nicholas B. Franco, Brookfield, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,937

Int. Cl. C07c 119/04

U.S. Cl. 260—453 PC

11 Claims

Aromatic isocyanates are produced directly from aromatic nitro compounds in a batch or continuous process in which carbon monoxide and aromatic nitro compounds are reacted in the presence of a solvent and catalyst at an elevated temperature and pressure until there is essentially complete conversion of the nitro compound followed by the reaction of successive charges of additional nitro compound.

3,823,175

# HALOGENATED NEOPENTYL CHLOROFORMATES

Jurgen H. Exner and Eric R. Larsen, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,283

Int. Cl. C07c 69/64; C08g 51/58, 51/00

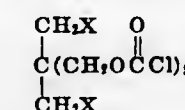
U.S. Cl. 260—463

5 Claims

Halogenated monochloroformates of the formula



and halogenated bischloroformates of the formula



The continuous and selective catalytic partial hydrogenation of organic compounds which in the liquid state

wherein each X is independently Br or Cl have been discovered to be fire retardants for thermo-



plastic polymers, especially unsaturated polyester. These compounds are also useful intermediates to prepare very desirable fire retardants for fibers.

3,823,176

# ESTER-CONTAINING AMINE-BASED LIQUID POLYOLS AND USE IN PREPARATION OF URETHANE COMPOSITIONS

William W. Levis, Jr., Wyandotte, and Louis C. Pizzini, Trenton, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 728,814, May 13, 1968, now Patent No. 3,585,185. This application May 7, 1971, Ser. No. 141,408

Int. Cl. C07c 101/00

U.S. Cl. 260—468 J 8 Claims

Ester-containing amine-based liquid polyols are prepared by the reaction of alkylene oxide condensates of amines with halogen-containing organic acid anhydrides and alkylene oxides. The polyols are particularly useful in the preparation of flame-retardant polyurethane foams.

3,823,177

# INSECTICIDAL ESTERS OF SPIRO CARBOXYLIC ACIDS

Wayne I. Fanta, Colerain Township, Hamilton County, and Joel I. Shulman, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 25, 1971, Ser. No. 157,033

Int. Cl. C07c 69/74

U.S. Cl. 260—468 G 1 Claim

Described are certain spiro carboxylic acids and their allethrolone esters. The esters of these acids possess unique insecticidal properties and are useful as such in home, garden and agricultural applications.

3,823,178

# NOVEL *m*-(3,3-DISUBSTITUTEDUREIDO)PHENYL ( $\alpha$ -CYANOALKYL)CARBAMATES AND METHOD FOR THE CONTROL OF UNDESIRABLE PLANT SPECIES THEREWITH

Karoly Szabo, Stiepengasse 4/16, A-1060, Vienna, Austria, and Venkat Rao Ganti, 21 Caton Drive, Dewitt, N.Y. 13214

No Drawing. Filed May 8, 1972, Ser. No. 251,489

Int. Cl. C07c 121/52

U.S. Cl. 260—465 D 7 Claims

The present invention relates to novel *m*-(3,3-disubstitutedureido)phenyl ( $\alpha$ -cyanoalkyl)carbamates and to a method for the control of undesirable plant species therewith.

The invention further relates to a method for the preparation of the above-said compounds.

3,823,179

# AMIDINOTHIOCARBAMATES

Julius Jakob Fuchs, 1104 Greenway Road, Forwood, Wilmington, Del. 19803

No Drawing. Filed Dec. 7, 1972, Ser. No. 312,904

Int. Cl. C07c 129/12

U.S. Cl. 260—468 E 4 Claims

Certain novel amidinocarbamates and amidinothiocabamates are broad spectrum herbicides, which can be applied to the locus of undesired vegetation either pre-emergence or postemergence. A typical representative of this class of compounds is methyl N-(N-cyclohexylcarbamoyl-N',N'-dimethylamidino)-N-methylcarbamate.

3,823,180

# 5,6-TRANS PGF<sub>2</sub> AND PGF<sub>2</sub>

Frank H. Lincoln, Jr., Portage, and John E. Pike, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Application June 28, 1971, Ser. No. 157,651, now Patent No. 3,759,978, which is a continuation-in-part of abandoned application Ser. No. 72,511, Sept. 15, 1970. Divided and this application Apr. 23, 1973, Ser. No. 353,479

Int. Cl. C07c 61/32, 69/74

U.S. Cl. 260—468 D 11 Claims

5,6-Trans-prostaglandins E<sub>2</sub>, F<sub>2 $\alpha$</sub> , F<sub>2 $\beta$</sub> , A<sub>2</sub>, and B<sub>2</sub> are disclosed. These are useful for the same pharmacological purposes as the known prostaglandins PGE<sub>2</sub>, PGF<sub>2 $\alpha$</sub> , PGF<sub>2 $\beta$</sub> , PGA<sub>2</sub>, and PGB<sub>2</sub>.

3,823,181

# NOVEL 1-BENZOYLOXY-2-LOWER ALKYLAMINO-BENZOCYCLOALKANE DERIVATIVES

Masuo Murakami and Kozo Takahashi, Tokyo, Yasubumi Hirata, Ageo, Kazuo Kubo, Urawa, Toshiyasu Mase and Isao Yanagisawa, Tokyo, and Masaaki Takeda and Hiroki Ino, Ageo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

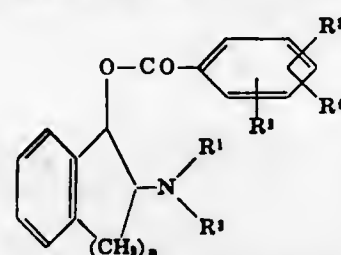
No Drawing. Filed June 14, 1972, Ser. No. 262,623

Claims priority, application Japan, June 22, 1971, 46/44,491; Dec. 6, 1971, 46/98,495; Dec. 10, 1971, 46/100,049

Int. Cl. C07c 93/20

U.S. Cl. 260—477 6 Claims

The 1-benzoyloxy-2-lower alkylaminobenzocycloalkane derivatives represented by the formula



wherein R<sup>1</sup> represents hydrogen atom or a lower alkyl group; R<sup>2</sup> represents a lower alkyl group; R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are the same or different from each other and each represents a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, phenyl group, amino group, a lower alkylamino group, an acylamino group or nitro group; n is an integer of 1-3, and the non-toxic mineral acid salts thereof.

The compounds of this invention have a local anesthetic and analgesic action and are also useful in promoting the function of the stomach.

3,823,182

# PROCESS FOR THE PREPARATION OF THIAMPHENICOL GLYCINATE

Terumaro Nonaka, Konan, Yoshinobu Ishiguro, Hajima-gun, Isao Yamatsu, Ichinomiya, Chiaki Seki, Komaki, Shuzo Aoki, Ichinomiya, Yutaka Ohnuki, Konan, and Yoshihiro Koga, Takehaya-machi, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

No Drawing. Filed May 31, 1973, Ser. No. 365,724

Claims priority, application Japan, June 2, 1972, 47/54,352

Int. Cl. C07c 101/06

U.S. Cl. 260—482 R 2 Claims

An improvement in the process for the preparation of thiamphenicol glycinate in its pharmaceutically acceptable acid salts which are known as the therapeutically

useful synthetic antibiotics, characterized in that thiamphenicol is first subjected to reaction with a lower-alkyl acetoacetate enaminoglycine, and the resulting product is then subjected to an acid hydrolysis. The purposed thiamphenicol glycinate is thus obtained in a good yield without difficulty in the procedure.

3,823,183

# UNSATURATED ESTER OF HALOGENATED ALKENES

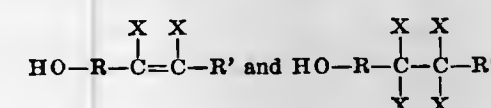
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Original application Dec. 19, 1968, Ser. No. 785,336, now Patent No. 3,637,813. Divided and this application Nov. 15, 1971, Ser. No. 198,949

Int. Cl. C07c 69/52, 69/60

U.S. Cl. 260—485 H 12 Claims

This invention deals with new unsaturated esters of  $\alpha,\beta$ -unsaturated carboxylic acids derived from halogenated alcohols of the formulas



wherein R is a divalent hydrocarbon moiety having at least one and no more than 10 carbon atoms, X is a member selected from the class of bromine and chlorine, and R' is a member selected from the class of hydrogen, X and a monovalent hydrocarbon containing at least one and no more than 20 carbon atoms. Typical esters are the acrylates, methacrylates, maleates, fumarates, itaconates and cinnamates. These monomers possess fire-retardant properties and are useful for the synthesis of polymers and copolymers.

3,823,184

# 16,17-SECO- $\Delta^4$ STEROIDS

Pierre Crabbe, Mexico City, Mexico, and John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

No Drawing. Filed May 12, 1971, Ser. No. 142,739

Int. Cl. C07c 49/56, 69/14, 69/24, 69/74, 69/78

U.S. Cl. 260—488 B 13 Claims

The novel 16,17-secoestra-4,6-dienes, 16,17-seco-13-alkylgona-4,6-dienes and the 14 $\beta$ -isomers thereof useful as antiandrogenic agents and methods for their preparation.

3,823,185

# IMPROVED PROCESS FOR THE PREPARATION OF ETHOXYLATED ISETHIONATES

Irwin S. Schlossman, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed June 18, 1973, Ser. No. 370,899

Int. Cl. C07c 143/10

U.S. Cl. 260—513 B 5 Claims

A process is provided whereby improvement of the production of ethoxylated isethionates in an aqueous medium is achieved. In this improved process the selectivity of ethylene oxide to the desired ethoxylated products is significantly increased by removal of all or a substantial part of the water present in the early stages of the reaction after a small amount of ethylene oxide has reacted. Additionally, ethoxylated isethionates having from about 2 to about 30 ethylene oxide repeating units and containing less than 25% undesirable glycol-ether by-products are provided.

3,823,186

# ANTIBIOTIC SUBSTANCES

Giancarlo Lancini, Pavia, and Ettore Lazzari and Alberto Diana, Milan, Italy, assignors to Lepetit S.p.A., Milan, Italy

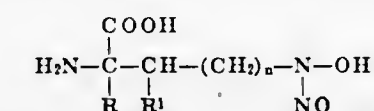
No Drawing. Filed June 23, 1966, Ser. No. 559,749

Claims priority, application Great Britain, July 16, 1965, 30,363/65

Int. Cl. C07c 111/00

U.S. Cl. 260—534 R 1 Claim

A chemical process is described for the preparation of a new antibiotic, alanosine, and its homologues, of the formula



wherein R and R<sup>1</sup> represent hydrogen or a lower alkyl group of 1-8 carbon atoms inclusive and n represents zero or an integer from 1 to 8 inclusive.

3,823,187

# PRODUCTION OF L(-)- $\gamma$ -AMINO- $\alpha$ -HYDROXYBUTYRIC ACID

Takayuki Naito and Susumu Nakagawa, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 19, 1972, Ser. No. 264,105

Int. Cl. C07c 99/00

U.S. Cl. 260—534 M 1 Claim

An improved process for the preparation of L(-)- $\gamma$ -amino -  $\alpha$  - hydroxybutyric acid comprises conversion of L(+)-glutamic acid by reaction with nitrous acid to  $\gamma$ -carboxy- $\gamma$ -butyrolactone which is reacted with ammonia to produce L-2-hydroxy-glutaramic acid which is reacted with sodium hypochlorite to produce L(-)- $\gamma$ -amino- $\alpha$ -hydroxybutyric acid with retention of configuration.

3,823,188

# BIS-META-PHENYLENE UREAS AND THEIR UTILITY AS HERBICIDES

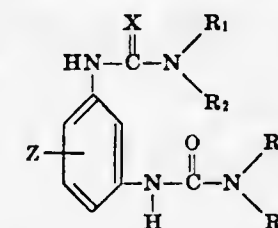
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Oct. 12, 1970, Ser. No. 80,120, now Patent No. 3,707,556. Divided and this application Oct. 2, 1972, Ser. No. 294,113

Int. Cl. C07c 127/00

U.S. Cl. 260—553 C 2 Claims

Bis-meta-phenylene ureas having the formula:



in which X represents oxygen or sulfur, R<sub>1</sub> represents lower alkyl or lower alkenyl, R<sub>2</sub> is hydrogen, R<sub>3</sub> represents alkyl, alkenyl, chloroacetyl, phenyl and chloro substituted phenyl, R<sub>4</sub> represents hydrogen, lower alkyl and furfuryl, and Z represents hydrogen or lower alkyl. The compounds of this invention are useful as herbicides.



3,823,189

**DERIVATIVES OF 3-AMINO-2-HALO-2-CYCLOHEXEN-1-ONE**

Ivo L. Jirkovsky, Montreal, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Jan. 14, 1972, Ser. No. 217,958  
Int. Cl. C07c 97/06

U.S. Cl. 260—577

2 Claims

Enaminoketones characterized by having an amino, arylamino or aryl(lower)alkylamino radical attached to position 3 of a 2-halo-2-cyclohexen-1-one with optional di(lower)alkyl groups at position 5 are disclosed. The compounds are useful antibacterial and antifungal agents. Methods for their preparation and use are also disclosed.

3,823,190

**PROCESS FOR THE MANUFACTURE OF CYCLOALKENONES**

Peter Oberhansli, Kunsnacht, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Mar. 5, 1970, Ser. No. 16,925  
Claims priority, application Switzerland, Mar. 10, 1969, 3,608/69

Int. Cl. C07c 45/18

U.S. Cl. 260—586 R

4 Claims

There is provided a novel process for the preparation of certain known methyl cycloalkenones which are useful as odorants of the jasmine type.

3,823,191

**TETRAKIS (3-MERCAPTOPROPYL) ETHER OF PENTAERYTHRITOL, C(CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>SH)<sub>4</sub>**

Shrikant V. Dighe, Silver Spring, Md., assignor to W. R. Grace Co.

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,625, Oct. 6, 1970. This application Nov. 17, 1972, Ser. No. 307,461

Int. Cl. C07c 149/06

U.S. Cl. 260—609 R

1 Claim

Thioacetic acid is added photochemically, or in presence of a hydroperoxide, to tetraallyl ether of pentaerythritol to prepare pentaerythritol tetrakis (3-thioacetoxy-propyl) ether, which is then hydrolyzed with sodium hydroxide solution to give a polythiol, tetrakis (3-mercaptopropyl) ether of pentaerythritol.

3,823,192

**1,1-BIS(PHENYL)-2-NITROPROPANES**

George Holan, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,265  
Claims priority, application Australia, Aug. 31, 1970, 2,367/70; Feb. 5, 1971, 3,947/71; Feb. 12, 1971, 4,010/71

The portion of the term of the patent subsequent to Apr. 18, 1989, has been disclaimed

Int. Cl. C07c 43/22

U.S. Cl. 260—613 R

5 Claims

New insecticides comprising 1,1-bis(4-substituted phenyl)-2-nitropropanes, -2-nitrobutanes and -2-methyl-2-nitropropanes wherein the 4-substituents of the phenyl radicals are non-identical lower alkoxy groups, or identical or non-identical alkylthio groups, and such compounds wherein one of the 4-substituents is replaced by a 3,4-methylene-dioxy group.

These compounds are prepared by condensing the appropriate p-substituted-benzaldehyde with the appropriate nitro-alkane and reacting the carbinol product with the appropriately substituted benzene.

3,823,193

**PROCESS FOR THE CONTINUOUS PREPARATION OF DICHLOROPROPANOLS**

Hans Fernholz, Fischbach, Taunus, and Dieter Freudenberger, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Pruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 18, 1971, Ser. No. 116,627  
Claims priority, application Germany, Feb. 20, 1970, P 20 07 867.5

Int. Cl. C07c 31/34

U.S. Cl. 260—633

6 Claims

The present invention relates to a process for the continuous preparation of dichloropropanol from allyl alcohol and chlorine in the presence of an ether which has a boiling point of below 170° C. and which has been saturated with hydrogen chloride, which process also comprises separating the ether from the dichloropropanol and recirculating it into the chlorination of allyl alcohol.

3,823,194

**CATALYTIC EXCHANGE REACTION BETWEEN ALIPHATIC BROMIDES AND ALIPHATIC ALCOHOLS**

Morris A. Johnson, James D. Reedy, and Kang Yang, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed June 21, 1972, Ser. No. 265,083

Int. Cl. C07c 27/00, 29/00, 31/02

U.S. Cl. 260—642

10 Claims

A process for catalytically exchanging bromide ions for hydroxyl groups between aliphatic bromides and aliphatic alcohols wherein the bromides and alcohols are reacted in the presence of activated carbon, including activated charcoal.

3,823,195

**PREPARATION OF 1,1,2,3-TETRACHLOROPROPENE FROM 1,2,3-TRICHLOROPROPANE**

Lowell R. Smith, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,742

Int. Cl. C07c 21/04

U.S. Cl. 260—654 R

8 Claims

This process prepared 1,1,2,3-tetrachloropropene from 1,2,3-trichloropropene. 1,2,2,3-Tetrachloropropene is obtained as a by-product. The product and by-product of this process are useful as intermediates in the preparation of pesticides.

3,823,196

**PRODUCTION OF CYCLIC TRIMERS OF 1,3-DIENES**

Hiroyuki Morikawa and Takao Saito, Aml, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed June 7, 1971, Ser. No. 150,802

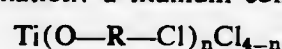
Claims priority, application Japan, June 18, 1970, 45/52,395

Int. Cl. C07c 3/00

U.S. Cl. 260—666 B

9 Claims

A 1,3-diene is caused to contact a catalyst system comprising, in combination: a titanium compound



(where R is an alkylene, cycloalkylene, chloroalkylene or chlorocycloalkylene group of C<sub>2</sub> to C<sub>15</sub>, and n is 1 or 2); an organoaluminum compound AlR'<sub>m</sub>Cl<sub>3-m</sub> (where R'

is an alkyl group of C<sub>1</sub> to C<sub>10</sub>, and m is 2 or 1.5); and an additive which is a sulfoxide SOR''<sub>2</sub> (where R'' is an alkyl or aralkyl group of C<sub>1</sub> to C<sub>10</sub>) or a mixture thereof and a phosphine oxide POR'''<sub>3</sub> (where R''' is an alkyl, aralkyl, or alkoxy group of C<sub>1</sub> to C<sub>10</sub>), the 1,3-diene thereby undergoing cyclic trimerization whereby a cyclic trimer of low content of high polymers is produced at high reaction velocity and with high selectivity.

3,823,197

**PROCESS FOR THE PREPARATION OF ALKYL AROMATIC COMPOUNDS**

Lucio di Fiore and Benedetto Calcagno, Milan, Italy, assignors to Società Italiana Resine S.I.R. S.p.A., Milan, Italy

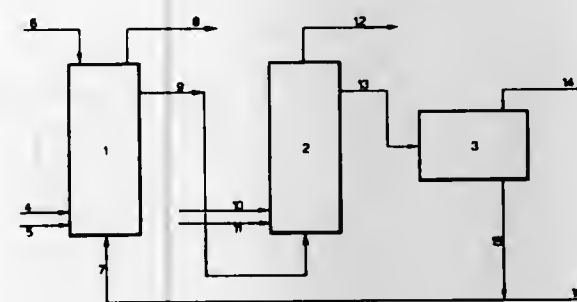
Filed Nov. 2, 1972, Ser. No. 303,151

Claims priority, application Italy, Nov. 17, 1971, 31,202/71

Int. Cl. C07c 3/56

U.S. Cl. 260—671 B

8 Claims



Friedel-Crafts alkylations to give C<sub>9</sub> to C<sub>16</sub>-alkylated benzenes or other hydrocarbons are conducted in a primary alkylation stage and a secondary alkylation stage, spent catalytic complexes of aluminium chloride and hydrocarbons from the first stage being regenerated in the second stage by means of aluminium powder, the amount of chloroalkylic alkylating agent supplied to the second stage preferably being such as to provide from the stoichiometric to 30% over the stoichiometric amount of hydrogen chloride required to convert the aluminium powder to aluminium chloride.

3,823,198

**REMOVAL OF TERTIARY OLEFINS FROM HYDROCARBON COMPOSITIONS CONTAINING SECONDARY OLEFINS**

Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation of abandoned application Ser. No. 49,682, June 25, 1970, which is a division of application Ser. No. 740,761, June 27, 1968, now Patent No. 3,591,523. This application Aug. 27, 1971, Ser. No. 175,734

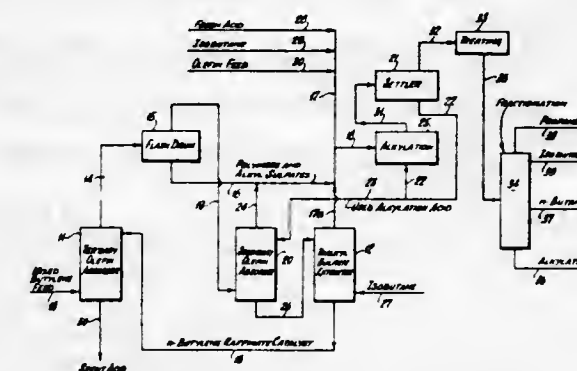
Int. Cl. C07c 11/00

U.S. Cl. 260—677 A

9 Claims

Removing tertiary olefins from their mixture with secondary olefins by selectively polymerizing the tertiary olefins in the presence of polymerization catalyst prepared by reacting concentrated sulfuric acid with an excess of secondary olefins until no further reaction between

secondary olefins and acid occurs and extracting the resulting dialkyl sulfates with an isoparaffin hydrocarbon



solvent, leaving the polymerization catalyst as the raffinate acid.

3,823,199

**PRODUCTION OF 1,6- AND 1,7-OCTADIENES**

Donald Wright, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,343  
Claims priority, application Great Britain, Aug. 18, 1971, 38,734/71

Int. Cl. C07c 11/12

U.S. Cl. 260—680 B

7 Claims

1,6- and/or 1,7-octadienes are produced by reacting a 1,3-butadiene such as butadiene itself with metallic platinum, palladium, rhodium, ruthenium or osmium or preferably with a compound of one or more of these metals in a non-polar solvent such as benzene in the presence of a reducing agent such as formic acid.

3,823,200

**ELECTRICAL INSULATION COMPOUND, PARTICULARLY FOR HIGH POWER, HIGH TENSION COILS TO BE USED IN ROTATING ELECTRICAL MACHINERY, AND INSULATION MATERIAL UTILIZING SAID COMPOSITION**

Henri Vayson de Pradenne, Paris, and Serge Marc dargent, Bois Colombes, France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Continuation of abandoned application Ser. No. 50,854, June 29, 1970. This application Aug. 4, 1972, Ser. No. 278,036

Int. Cl. C08g 45/08

U.S. Cl. 260—831

9 Claims

Electrical insulation sheets, tapes, formed units or the like can be made by impregnating mica flake sheets, asbestos sheet, glass fibers, or agglomerates thereof with particular binder insulation compositions. The compositions comprise a mixture of at least three of the following four components: (1) Epoxy-type resin of bisphenol A of epoxy equivalent between 174 and 195; (2) epoxy-type resin of novolac of epoxy equivalent between 175 and 182; (3) hardener, being a resorcinol-formaldehyde condensate obtained by the reaction of 2 mols of resorcinol and 1 mol of formaldehyde with an organic acid catalyst; and (4) a hardener, other than hardener (3), of phenol novolac resin prepared with an organic acid catalyst and having a chain structure of 5 to 8 links; the hardeners being used with respect to the resins between 0.5 and 1.3 of the stoichiometric quantity, in other words with the resins corresponding to hydroxide/oxyane ratios between 0.5 and 1.3, preferably 0.9.



### 3,823,201 HIGHLY-STABLE GRAFT COPOLYMER DISPERSIONS IN POLYOLS CONTAINING UNSATURATION AND POLYURETHANES PREPARED THEREFROM

Louis C. Pizzini and Gerhard G. Ramlow, Trenton, and John T. Patton and William W. Levis, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
No Drawing. Filed Dec. 4, 1972, Ser. No. 311,809  
Int. Cl. C08f 13/00, 21/02

U.S. Cl. 260—861 8 Claims  
Highly-stable graft copolymer dispersions are prepared by the *in situ* polymerization in the presence of a free radical catalyst of a vinyl monomer in a polyol containing an essential amount of unsaturation. The dispersions are low-viscous liquids which may be advantageously employed in the preparation of flexible urethane foams having enhanced load-bearing properties.

### 3,823,202 THERMOSET POLYESTER RESIN PARTICLES

Lloyd R. Buzbee, Pittsburgh, and Robert D. Lake, Monroeville, Pa., assignors to Koppers Company, Inc.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 215,628, Jan. 5, 1972. This application June 21, 1973, Ser. No. 372,398  
Int. Cl. C08f 1/11

U.S. Cl. 260—861 36 Claims  
Clear cured polyester beads which have excellent reflex reflective properties are prepared by suspension polymerizing a curable resin composition comprising an unsaturated polyester and a vinyl monomeric crosslinking agent in the presence of a water soluble salt.

### 3,823,203 VULCANIZABLE SELECTIVELY HYDROGENATED BLOCK COPOLYMER COMPOSITIONS

Harold E. De La Mare, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.  
No Drawing. Filed Mar. 29, 1971, Ser. No. 129,326  
Int. Cl. C08f 15/00, 19/00

U.S. Cl. 260—876 B 9 Claims  
Vulcanizable block copolymer compositions are provided comprising (1) a selectively hydrogenated block copolymer having, prior to hydrogenation, at least one mono alpha alkenyl arene polymer block and at least one conjugated diene polymer block, said block copolymer having been hydrogenated to saturate at least 80% of the aliphatic double bonds, and (2) an unsaturated block copolymer having at least one mono alpha alkenyl arene polymer block and at least one conjugated diene polymer block. The compositions may be vulcanized with accelerated sulfur system or with peroxide systems, and after vulcanization, are insoluble products that have excellent creep resistance and improved solvent resistance.

### 3,823,204 ACID DYE DYEABLE ACRYLONITRILE COPOLYMER, FIBERS THEREOF AND PROCESS FOR THE PREPARATION THEREOF

Hisao Okada, Elzo Ohta, Takeji Otani, Michimasa Beppu, and Hiroaki Yoneyama, Hiroshima, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan  
No Drawing. Filed Aug. 2, 1972, Ser. No. 277,200  
Claims priority, application Japan, Aug. 16, 1971, 46/62,166

U.S. Cl. 260—898 7 Claims  
An acid dye dyeable copolymer of acrylonitrile, an amino group containing monomer and a quaternary ammonium salt containing monomer, fibers prepared therefrom and a process for preparing the copolymer and the fibers are disclosed. Also disclosed are blends of said copolymer with other copolymers of acrylonitrile.

### 3,823,205 LACQUERS BASED ON ACRYLIC POLYMER BLENDS

Werner S. Zimmt, Wynnewood, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of application Ser. No. 588,699, July 23, 1969, which is a continuation-in-part of application Ser. No. 509,147, Nov. 22, 1965, which in turn is a continuation of application Ser. No. 860,800, Sept. 24, 1969, all now abandoned. This application July 12, 1972, Ser. No. 270,969  
Int. Cl. C08f 29/50

U.S. Cl. 260—901 18 Claims  
The lacquer which comprises a blend of two acrylic polymers in a liquid carrier, the difference between the glass transition temperatures of the polymers being at least 30° C.

### 3,823,206 N-PHOSPHONOMETHYL AMIDES

Peter Golborn, Lewiston, and James J. Duffy, Buffalo, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.  
No Drawing. Filed Mar. 30, 1972, Ser. No. 239,793  
Int. Cl. C07f 9/40; C08f 45/58

U.S. Cl. 260—932 13 Claims  
New compounds are disclosed of the formula:



wherein R' is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1-6 carbon atoms, y is an integer from 1-2 provided that when y is 1, R is selected from the group consisting of hydrogen, lower alkyl of 2-8 carbon atoms, benzyl, dialkylphosphonoalkyl and phenoxyethylene and when y is 2, R is lower alkylene of 1-4 carbon atoms. The compounds of the invention are useful as flame retardant agents for textile materials and in the production of polymers and copolymers which possess flame retardant properties.

### 3,823,207 PROCESS FOR THE PREPARATION OF TRIARYLPHOSPHITES

Hans Bernhard Herzog, Bensheim-Auerbach, and Rudolf Hoppe, Bensheim, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland  
Filed Feb. 4, 1971, Ser. No. 112,738  
Claims priority, application Germany, Feb. 17, 1970, P 20 07 070.6

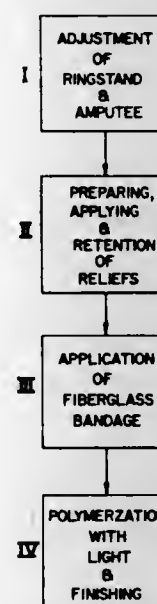
U.S. Cl. 260—976 8 Claims  
Process for the preparation of triarylphosphites from phenols and phosphorous trichloride wherein the reaction occurs separately in three stages in consecutively connected reaction zones, each succeeding stage having a lower pressure and higher temperature than the preceding stage. The invention also provides for an apparatus for effecting the above reaction comprising a reaction vessel in the form of a column with consecutively connected reaction trays capable of being heated.

### 3,823,208 METHOD OF MAKING A PERMANENT PROSTHETIC SOCKET

Charles C. Asbelle, Oakland, Michael F. Arrigo, Berkeley, and Gerald K. Porter, Oakland, Calif., assignors to the United States of America as represented by the Secretary of the Navy  
Filed May 24, 1971, Ser. No. 146,386  
Int. Cl. B29g 7/00; A61f 1/08

U.S. Cl. 264—22 2 Claims  
A method of making a permanent prosthetic socket wherein the amputee is supported by a casting fixture and ultraviolet polymerizable material are applied directly to

the amputee's stump over a polypropylene stockinet to form a permanent socket. A special clam-shell ultraviolet

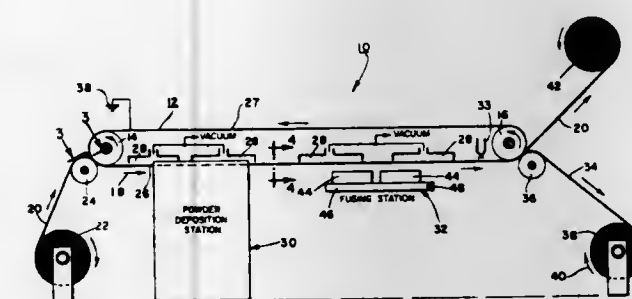


lamp is placed in position and the ultraviolet polymerizable material polymerized.

### 3,823,209 METHOD OF FUSING TOGETHER PARTICULATE, THERMOPLASTIC MATERIAL ON A SUBSTRATE

Lennox Birkhead, Jr., Rowayton, and Alden W. Olsen, New Milford, Conn., assignors to Vitek Research Corporation, Stamford, Conn.  
Filed Oct. 14, 1971, Ser. No. 189,293  
Int. Cl. B29f 5/00

U.S. Cl. 264—25 12 Claims



A method of fusing together particulate, thermoplastic material defining a layer or coating on one surface of a release mold substrate to form a self-supporting sheet which is removable from the substrate. The method includes the steps of supporting the uncoated surface of the uncoated surface of the release mold substrate in intimate and uniform contact with a surface of an insulating pad, supporting the surface of the insulating pad opposite the release mold supporting surface thereof in contact with a thermally conductive support member, applying electromagnetic radiation in the infrared region of the spectrum to the layer from only the coated side of the release mold substrate to fuse together the particulate material of said layer and removing heat from the thermally conductive support member.

### 3,823,210 METHOD OF MANUFACTURING ORIENTED PRODUCT OF SYNTHETIC CRYSTALLINE POLYMER

Hikaru Shii and Eisuke Oda, Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan  
Filed May 16, 1972, Ser. No. 253,840

Claims priority, application Japan, May 22, 1971, 46/34,912; Nov. 4, 1971, 46/87,843

U.S. Cl. 264—41 10 Claims  
Int. Cl. B29d 27/00

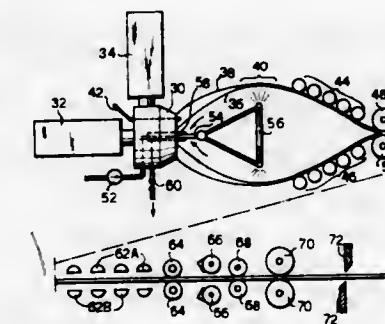


A method of manufacturing oriented product of synthetic crystalline polymer which comprises the steps of drawing uniaxially oriented materials of synthetic crystalline polymer to an extent of at least twice the original size in the direction of said orientation axis at a temperature of more than 30° C. below the melting point of said uniaxially oriented materials; applying tensile stress to the drawn material in the direction of draw axis in a solvent heated to a temperature ranging between a level 2° C. higher and a level 10° C. lower than the temperature at which said oriented material would be dissolved without tension; and under this condition extracting the soluble fractions of said drawn material.

### 3,823,211 SYNTHETIC RESIN LAMINATE AND ITS MANUFACTURING PROCESS

Roberto Colombo, Turin, Italy, assignor to Lavorazione Materie Plastiche L.M.P. S.p.A., Turin, Italy  
Filed Dec. 13, 1971, Ser. No. 207,118  
Claims priority, application Italy, Jan. 12, 1971, 67,093/71

U.S. Cl. 264—47 11 Claims  
Int. Cl. B29c 5/08, 5/10



A synthetic resin laminate comprising a layer of synthetic foam heat-sealed to a biaxially stretched covering



film of synthetic resin. The manufacturing process comprises simultaneously coaxially extruding a tubular film extrudate and a tubular foam extrudate not contacting each other, the film extrudate being external to the foam extrudate, and axially drawing and diametrically differentially expanding the extrudate while in heat-softened state until the foam extrudate laminates on the inside of the film extrudate.

3,823,212

# PROCESS FOR THE PRODUCTION OF COLLAGEN FIBER FABRICS IN THE FORM OF FELT-LIKE MEMBRANES OR SPONGE-LIKE LAYERS

Milos Chvapil, Tucson, Ariz., assignor to Firma Carl Freudenberg, Patent Abteilung, Weinheim, Germany. Continuation-in-part of abandoned application Ser. No. 878,118, Nov. 19, 1969. This application May 28, 1971, Ser. No. 148,116. Claims priority, application Germany, Nov. 27, 1968, P 18 11 290.8-44. Int. Cl. B29d 27/03

U.S. Cl. 264-49

17 Claims

Production of felt-like membranes or sponge-like layers of collagen fibers by decomposing skin and/or tendons or other animal connective tissues rich in collagen under alkaline and/or acid conditions; mechanically comminuting the decomposition product; suspending the comminuted collagen stock obtained in water to form a homogeneous collagen slurry; adding a tanning or cross-linking agent to the slurry; foaming the collagen slurry; freezing the foamed collagen slurry so obtained in the form of a layer at -5 to -40° C.; incubating the frozen slurry for 1 to 30 days; and then freeing the bulk of the water therefrom by simple mechanical squeezing and/or evaporative drying.

3,823,213

# PRODUCTION OF EXPANDED MOLDINGS OF OLEFIN POLYMERS

Fritz Stastny, Ludwigshafen (Rhine), Rudolf Gaeth, Limburgerhof, Pfalz, and Hans-Georg Trieschmann, Hambach, Weinstrasse, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany. No Drawing. Continuation of abandoned application Ser. No. 631,603, Apr. 18, 1967. This application Sept. 18, 1969, Ser. No. 859,477. Int. Cl. B29d 27/08; B29f 5/00

U.S. Cl. 264-51

6 Claims

A process for the production of moldings of expanded polymers of olefins having two or three carbon atoms in which the expanded particles of the polymer, which contain crosslinked portions, are heated in molds and fused together, if desired under pressure.

3,823,214

# METHOD OF CHEMICAL EMBOSSED

John L. H. Allan, Easton, and Nathan D. Field, Allentown, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 867,404, Oct. 17, 1969. This application Feb. 22, 1972, Ser. No. 228,303. Int. Cl. B32b 3/26, 27/30

U.S. Cl. 264-52

10 Claims

An improved process for the chemical embossing of a thermoplastic sheet comprising blending

- (1) a vinyl resin, e.g., polyvinylchloride,
- (2) a plasticizer for the vinyl resin,
- (3) a blowing agent which decomposes when heated at a temperature in the range above the glass transition temperature of the plasticized vinyl resin and below the decomposition temperature of the resin,
- (4) a linear polyester containing at least two olefinically unsaturated sites and capable of further polymerization

of copolymerization in the presence of an addition polymerization catalyst; and  
(5) a monomer containing one olefinically unsaturated site and capable of copolymerization with the polymer of (4) in the presence of an addition polymerization catalyst.

Such a blended composition is formed into a sheet and to such sheet is applied, in a pre-determined pattern, a composition comprising

- (a) a catalyst that will cause polymerization of the system and, optionally,
- (b) a liquid that will penetrate the sheet.

The foaming of the sheet and creation of the embossed effect is accomplished by heating the resulting sheet to a temperature sufficient to fuse the plasticized resin, decompose the blowing agent, and polymerize the olefinically unsaturated component or components.

3,823,215

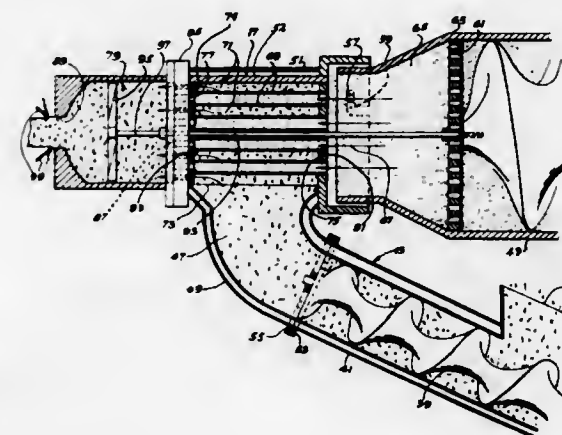
# PROCESS FOR PRODUCING VARIEGATED DETERGENT BARS

Alessandro D'Arcangeli, Castelgandolfo, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,110. Claims priority, application Italy, Jan. 23, 1971, 47,924/71. Int. Cl. B29f 3/12

U.S. Cl. 264-75

6 Claims



A process for the manufacture of variegated detergent bars or cakes includes passing detergent compositions of similar solubilities and temperatures but of different colors, in solid plastic states along substantially parallel paths, out of physical contact with each other but preferably in thermal contact with each other, extruding the compositions, cutting the extrudates to lengths, mixing the cut extrudates together and, while they are mixed, maintaining them at an elevated temperature at which they are plastic and may be fused together tightly, and compacting and extruding them to a variegated detergent bar form, which may be subsequently pressed into variegated detergent cakes, such as soap cakes. Preferably, the base detergent composition, e.g., a white soap, is plodded through a plurality of cylindrical tubes while a colored soap is plodded by a different plodder into the section of a variegating head around such tubes, after which both soaps are extruded at similar velocities into a mixing and contacting section of the variegating head, wherein they are cut to lengths and a whirling motion is imparted to the cut pieces by a rotating cutter. Also described is an apparatus which may be used in practicing the process, including a variegating head containing the mentioned tubes, means for fastening the inlet portions thereof to the plodders, temperature control means and cutting and whirling means for distributing one soap or detergent through the other before final plodding.

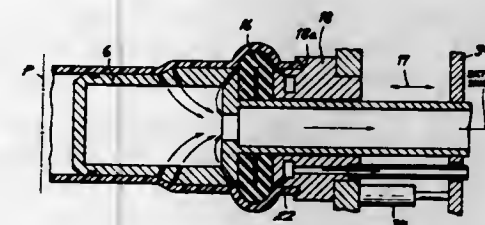
3,823,216

# METHOD OF MAKING A PIPE-COUPLING PART

Aristovoulos G. Petzetakis, Thessaloniki and Chandri St., Moschaton, Piraeus, Greece. Filed May 19, 1972, Ser. No. 255,221. Claims priority, application Greece, July 19, 1971, 45,895. Int. Cl. B29c 17/07

U.S. Cl. 264-89

1 Claim



A method of making pipe-coupling parts in which a plastically deformable end of a pipe or tube is deformed from within by pressing outwardly a forming portion of a tool and by retaining a wall portion axially removed therefrom by suction against the tool and then axially shifting it with respect to another wall portion.

3,823,217

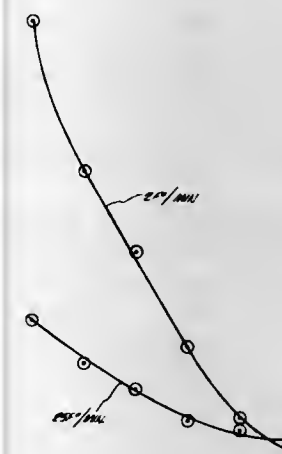
# RESISTIVITY VARIANCE REDUCTION

Andrew J. Kampe, Half Moon Bay, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 18, 1973, Ser. No. 324,786. Int. Cl. C04b 35/52

U.S. Cl. 264-105

10 Claims



In the heat treatment of conductive carbon black-containing self-temperature regulating articles such as resistive heaters to reduce their as-formed resistivity to a value within the range from 5 to about 100,000 ohm-cm., dependence of resistivity on thermal history is reduced, resistivity variance from point to point along the article is diminished, and resistivity of the article for a given content of carbon black is reduced by exposing the article to successive thermal cycles in each of which the article is brought from a first temperature less than the melting temperature of a crystalline polymeric matrix in which the carbon black is dispersed to a second temperature at or above the same, whereafter the article is

permitted to cool below that crystalline melting temperature. In the preferred extruded form where the crystalline polymeric matrix is comprised of blended polyethylene and ethylene-ethyl acrylate copolymer and contains not more than about 15% by weight carbon black, thermal cycling is preferably calculated to achieve total exposure on the order of 24 hours to oven temperatures of about 300° F. over about 5-9 thermal cycles.

3,823,218

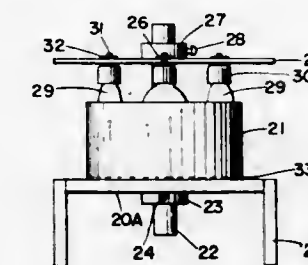
# METHOD OF MOLDING A TURRET

Friedrich H. Geurtsen and Fred J. Wochner, Holliston, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Sept. 11, 1969, Ser. No. 856,946. Int. Cl. B29h 21/08

U.S. Cl. 264-162

9 Claims



A molded turret for carrying containers from and to a transport means (belt) to a labeling station wherein the label is transferred to the containers which are positioned in the turret.

The turret is molded from plastic such that portions of the turret have the configuration of a portion of the container to be carried thereby. The turret is fabricated by positioning at least a portion of the containers within a mold and then pouring a settable plastic into the mold. Thereafter the excess plastic from the molded article is cut away and the containers are removed to provide the molded turret.

3,823,219

# METHOD OF PRODUCING GLASS REINFORCED PLASTIC ARTICLES

John E. Ward, Jr., Granville, and Bordie B. Garick, Newark, Ohio, assignors to Owens-Corning Fiberglass Corporation

No Drawing. Continuation of abandoned application Ser. No. 129,194, Mar. 29, 1971. This application Feb. 27, 1973, Ser. No. 336,134. Int. Cl. B29c 3/00; B29d 3/02; C08f 45/10; C08g 51/10; C08k 1/14

U.S. Cl. 264-331

27 Claims

Glass fibers having a coating of plastic material thereon are coated with an ester of a polyglycol and an unsaturated fatty acid. The fibers are chopped, mixed with a matrix resin forming material and molded under sufficient heat and pressure to hydrolyze the lubricant coating.

3,823,220

# SEPARATION OF RHODIUM FROM IRIIDIUM

Lorraine Guy Donaruma, Potsdam, and Lauri Vaska, Norwood, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed Sept. 11, 1972, Ser. No. 288,051. Int. Cl. C01g 55/00

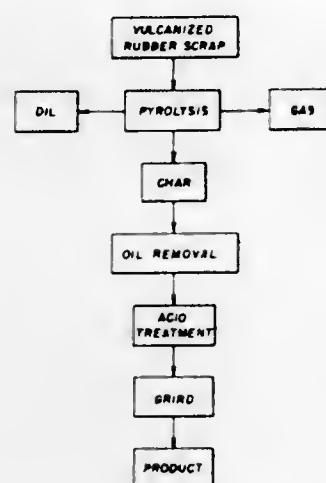
U.S. Cl. 423-22

6 Claims

A method for separating rhodium from iridium by the selective volatilization of a rhodium halide-carbon monoxide product through special control of reaction temperature. Formation of the rhodium halide-carbon monoxide product is favored by employing a water vapor partial pressure over the reaction mixture.

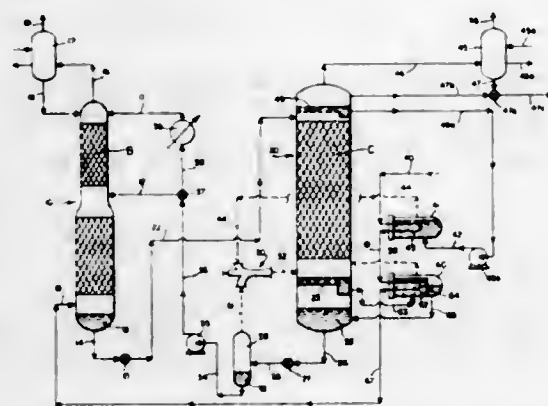


**3,823,221**  
**PRODUCTION OF A CHAR REINFORCING AGENT FROM PYROLYZED SCRAP RUBBER**  
 Lynn B. Wakefield, Grant Crane, and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio  
 Filed Mar. 20, 1972, Ser. No. 236,290  
 Int. Cl. C01b 31/08  
 U.S. Cl. 423—449 3 Claims



The invention relates to a rubber reinforcing agent derived from vulcanized scrap rubber. The scrap rubber is charred, treated for removal of oil and then treated with acid to remove metal compounds. This is then reduced to fine particle size. The product has been found to be a very satisfactory rubber-reinforcing agent.

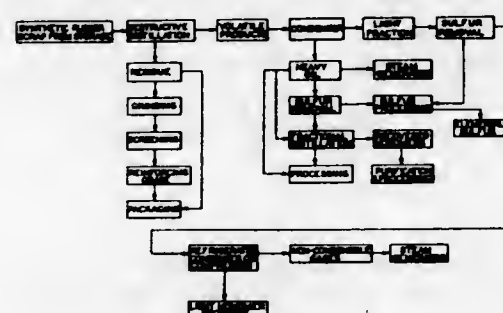
**3,823,222**  
**SEPARATION OF CO<sub>2</sub> AND H<sub>2</sub>S FROM GAS MIXTURES**  
 Homer E. Benson, Pittsburgh, Pa., assignor to The Benfield Corporation, Berwyn, Pa.  
 Continuation of abandoned application Ser. No. 856,393, Sept. 9, 1969. This application Jan. 10, 1972, Ser. No. 216,844  
 Int. Cl. B01d 53/34  
 U.S. Cl. 423—223 9 Claims



Process for removing CO<sub>2</sub> and H<sub>2</sub>S from hot steam-containing gas mixtures using aqueous alkaline scrubbing solutions circulated between a high-pressure absorption stage and a low-pressure regeneration stage where the solution is steam-stripped. More efficient production of stripping steam from the hot feed gas is accomplished by generating a first supply of moderate-pressure steam (e.g. 50 p.s.i.g.) in a water boiler, preferably supplied by aqueous condensate generated in the scrubbing system. The first steam supply is utilized as motive steam in a steam ejector which creates a reduced pressure in a flashing zone supplied with hot, regenerated solution, thereby producing

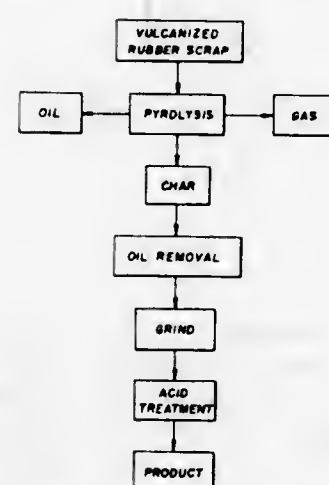
flash steam which is compressed by the motive steam and fed into the regenerator as stripping steam. The hot feed gas leaving the first boiler generates a second supply of lower-pressure steam by indirect heat exchange with regenerated scrubbing solution which second source of steam is fed directly to the regenerator as stripping steam. This system provides increased overall recovery of stripping steam from the hot, steam-containing feed gas, thereby reducing outside steam requirements.

**3,823,223**  
**RUBBER-REINFORCING AGENT**  
 John W. Liska, Cuyahoga Falls, and Joseph A. Beckman, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio  
 Application June 5, 1972, Ser. No. 259,435, now Patent No. 3,772,242, which is a division of application Ser. No. 151,524, June 9, 1971, which in turn is a continuation of application Ser. No. 769,571, Oct. 22, 1968, both now abandoned. Divided and this application June 25, 1973, Ser. No. 373,067  
 Int. Cl. C08c 11/18; C10b 51/00  
 U.S. Cl. 423—445 2 Claims



Scrap synthetic rubber is destructively distilled to produce a char. This char, when ground, is used in the reinforcement of rubbers.

**3,823,224**  
**PRODUCTION OF A CHAR REINFORCING AGENT FROM PYROLYZED SCRAP-RUBBER**  
 Joseph R. Laman and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio  
 Filed Mar. 20, 1972, Ser. No. 236,288  
 Int. Cl. C01b 31/08  
 U.S. Cl. 423—449 3 Claims



The invention relates to a rubber reinforcing agent derived from vulcanized scrap rubber. The scrap rubber is charred, treated for removal of oil, ground and then treated with acid to remove metal compounds. The product has been found to be a very satisfactory rubber-reinforcing agent.

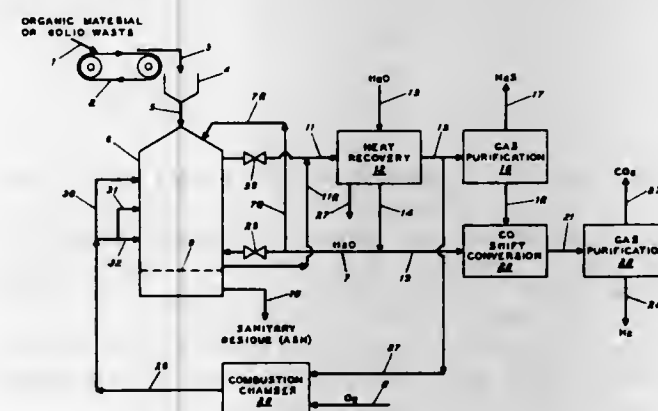
**3,823,225**  
**REMOVAL OF AVAILABLE CHLORINE FROM ALKALI METAL CHLORATE-CHLORIDE SOLUTION AND PRODUCTION OF CHLORINE DIOXIDE FROM SAID SOLUTION**  
 Ernest H. Sprague, Augusta, Ga., assignor to Olin Corporation  
 No Drawing. Filed Oct. 19, 1972, Ser. No. 298,882  
 Int. Cl. C01b 11/02, 11/14; C01d 3/04  
 U.S. Cl. 423—478 14 Claims

A method for reducing the free chlorine in aqueous solutions containing alkali metal chlorate and alkali metal chloride by the addition of a small but effective amount of a hydrazine compound. The resulting treated solution, after adjusting the molar ratio of alkali metal chlorate to alkali metal chloride, is useful as a reactant in the generation of chlorine dioxide useful as a bleaching agent in the paper industry.

**3,823,226**  
**PREPARATION OF ALUMINUM HYDRIDE COMPOSITIONS**  
 Frank M. Brower, Midland, Barbara H. Phillips, Free-land, Norman E. Matzek, Midland, Arthur L. Daniels, Coleman, and Donald F. Musinski, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.  
 Filed Mar. 8, 1962, Ser. No. 179,510  
 Int. Cl. B01j 17/00; C01b 6/00  
 U.S. Cl. 423—645 20 Claims

11. In a process for the preparation of an aluminum hydride wherein the aluminum hydride is prepared from an aluminum hydride etherate by desolvating the etherate, the step of stabilizing the aluminum hydride from decomposition to its elements, which comprises intermixing in an inert atmosphere the aluminum hydride with a complex hydride selected from the group consisting of lithium aluminum hydride, sodium aluminum hydride, sodium borohydride, lithium borohydride and mixtures thereof, in an amount of at least 1/10 mole of the complex hydride per mole of the aluminum hydride, heating the resulting mixture at a temperature in the range of 40° to 140° C. for at least 1/4 hour to stabilize the aluminum hydride from decomposition to its elements and separating the stabilized aluminum hydride from the complex hydride.

**3,823,227**  
**HYDROGEN MANUFACTURE**  
 Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
 Original application May 20, 1970, Ser. No. 39,116. Divided and this application Nov. 24, 1972, Ser. No. 309,299  
 Int. Cl. C01b 1/16, 2/06, 1/02  
 U.S. Cl. 423—655 2 Claims



A process for producing synthesis gas which comprises: (a) feeding an organic feed material, containing hydrogen and at least ten weight percent oxygen and containing less than five weight percent sulfur, to a reaction zone,

(b) feeding steam to the reaction zone, and (c) contacting the steam with the organic feed material in the reaction zone at a temperature between about 800 and 1600° F. Preferably the feed material is solid waste material, most preferably solid municipal waste.

**3,823,228**  
**TGE VIRUS VACCINE**  
 Deam H. Ferris, Greenport, N.Y., and Angel S. Arambulo, Chicago, Ill., assignors to University of Illinois Foundation, Urbana, Ill.  
 No Drawing. Continuation-in-part of abandoned application Ser. No. 184,910, Sept. 29, 1971. This application Aug. 30, 1972, Ser. No. 285,036  
 Int. Cl. A61j 3/07; C12k 1/08  
 U.S. Cl. 424—35 10 Claims

Oral dosage form of villiarily effective biologicals for administration to animals comprises enteric-coated particles having controlled maximum size. Vaccine for protection of swine against TGE comprises enterically coated particles, less than about 2.0 mm. in diameter, containing attenuated TGE virus vaccine.

**3,823,229**  
**INHALATION COMPOSITIONS CONTAINING 7-(β-HYDROXYPROPYL)-THEOPHYLLINE**  
 Gustaf L. Federstrom, Bjorklinge, Sweden, assignor to Pharmacia AB, Uppsala, Sweden  
 No Drawing. Filed Nov. 16, 1971, Ser. No. 199,362  
 Claims priority, application Sweden, Nov. 20, 1970, 15,711/70  
 Int. Cl. A61k 13/00 1 Claim

The invention relates to self-propelling aerosol compositions containing a solution of 7-(β-hydroxypropyl)-theophylline.

**3,823,230**  
**ALDEHYDE CONDENSATION PRODUCTS OF FLUOROALIPHATIC PHENOLS IN SKIN PROTECTIVE COMPOSITIONS**  
 Leland S. Endres, San Luis Obispo, Calif., and Leo F. Gehlhoff, Village of Lake Elmo, and Dallas D. Zimmerman, Village of Shoreview, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
 No Drawing. Original application Oct. 29, 1970, Ser. No. 85,278, now abandoned. Divided and this application Sept. 21, 1971, Ser. No. 182,528  
 Int. Cl. A61k 27/00 9 Claims

Condensation products of aldehydes and fluoroaliphatic phenols are substantive to wool, synthetic polyamides, leather and skin, the compositions preferably being extended with a suitable pharmaceutical medium. The condensation products are useful for the preparation of compositions that render such materials oil and water repellent.

**3,823,231**  
**HAIR BLEACH CONTAINING A THIOCYANATE CATALYST**  
 Frank P. Bucaria, 1952 Sweet Home Road, Williamsville, N.Y. 14221  
 No Drawing. Filed Apr. 20, 1971, Ser. No. 135,759  
 Int. Cl. A61k 7/12 7 Claims

A bleach for human hair, in aqueous emulsion form, which safely and quickly bleaches the hair, includes, as active bleaching constituents, a mixture of pre-compounds, e.g., sodium persulfate, ammonium persulfate, sodium carbonate peroxide, and hydrogen peroxide, a catalyst for aiding the release of oxygen from such materials, e.g., ammonium thiocyanate, water and an emulsifying material, e.g., ammonium oleate. The bleaching composition is prepared shortly before use by quickly combining at least partially pre-mixed portions thereof and is applied promptly to the hair to be bleached, on



which the composition forms a foam of limited height and of a sufficient viscosity to hold in contact with the hair the bleaching constituents and oxygen released.

3,823,232

# WAVING OR UNCURLING HAIR WITH A COMPOSITION CONTAINING AN AMINO ACID ALKALI METAL CARBONATE

Jean Galerne, Paris, France, assignor to Eugene-Gallia, Societe Anonyme, Paris, France

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,921

Claims priority, application France, June 5, 1970, 7020797; Nov. 2, 1970, 7039392

Int. Cl. A61k 7/10

U.S. Cl. 424—72

5 Claims

A composition for permanently curling, waving or uncurling hair and keratinic fibres containing thioglycolic or thiolactic acid, or an ammonium salt or an alkali metal salt of these acids, and also an alkalinizing agent, which includes as the alkalinizing agent the carbonate of an alkali metal salt of an amino acid instead of ammonia, said carbonate being free of the various inconveniences characterizing the use of ammonia during the application of said products.

3,823,233

# REMOVAL OF NITROGENOUS WASTE PRODUCTS WITH POLYALDEHYDES

Carmelo Giordano, Renato Esposito, and Giacomino Randazzo, Naples, Italy, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,514

Claims priority, application Italy, Sept. 3, 1970, 53,194/70

Int. Cl. A61k 27/00

U.S. Cl. 424—180

10 Claims

A process for preparing pure polyaldehydes by oxidation of polysaccharides such as starch. Said polyaldehydes are able to trap in vivo urea, ammonia and some other substance that generally increase in patients with renal or hepatic failure, and therefore can be used for the treatment of renal and hepatic failure.

3,823,234

# MONOHYDRATED PAPAVERINE ADENOSINE-5'-MONOPHOSPHATE MEDICAMENT FOR TREATMENT OF CARDIOVASCULAR DISORDERS

Roland Yves Mauvernay, Riom, France, assignor to Centre Europeen de Recherches Mauvernay C.E.R.M., Riom, France

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,298

Claims priority, application France, Mar. 16, 1971, 7109044

Int. Cl. A61k 27/00

U.S. Cl. 424—180

9 Claims

As a medicament for treating cardiovascular disorders there is provided as the active substance, monohydrated papaverine adenosine-5'-monophosphate. The active substance is particularly suitable for the treatment of various disorders due to circulatory insufficiency of cerebral, peripheral or coronary localization.

3,823,235

# CERTAIN O-(2-PYRIMIDYL) PHOSPHATES AND THEIR USE AS INSECTICIDES

Albert Howard Haubein, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

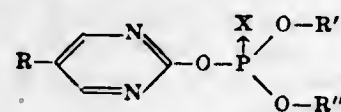
No Drawing. Original application Nov. 12, 1971, Ser. No. 198,415, now Patent No. 3,741,968. Divided and this application Feb. 26, 1973, Ser. No. 336,152

Int. Cl. A01n 9/36

U.S. Cl. 424—200

5 Claims

Disclosed are compounds of the formula:



in which R is selected from the group consisting of H, F, Cl, Br and I, R' and R'' are selected from the group consisting of CH<sub>3</sub> and C<sub>2</sub>H<sub>5</sub>, and X is selected from the group consisting of O and S. These compounds have utility as insecticides.

3,823,236

# 2-ACYLOXYBENZOIC ACID ANILIDE FUNGICIDAL AND BACTERICIDAL AGENTS

Karl Heinz Büchel, Wuppertal-Elberfeld, Ferdinand Grewe, Burscheld, and Hans Scheinpfug, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

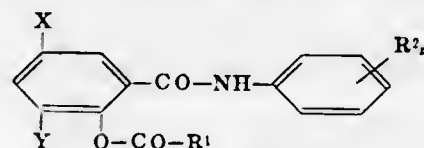
No Drawing. Filed Apr. 21, 1972, Ser. No. 246,442  
Claims priority, application Germany, Apr. 28, 1971, P 21 20 861.7

Int. Cl. A01n 9/20, 9/24

U.S. Cl. 424—230

11 Claims

Fungicidal and bactericidal compositions containing, and methods of combating fungi and bacteria using, a 2-acyloxybenzoic acid anilide of the general formula



(1)

in which

R<sup>1</sup> is alkyl or alkoxy of 1 to 6 carbon atoms, X and Y each independently is chlorine, bromine or tertiary butyl, or X is hydrogen provided that Y is nitro, or Y is hydrogen provided that X is chlorine and R<sup>1</sup> is alkoxy or 1 to 4 carbon atoms, n is 1, 2, 3, or 4, and R<sup>2a</sup> is lower alkyl, halo-lower alkyl, halogen, nitro, lower alkoxy, carbonyloxy, lower alkoxy or lower alkylmercapto.

3,823,237

# INCREASING HEN EGGSHELL THICKNESS WITH 25-HYDROXYCHOLECALCIFEROL COMPOUNDS

Fred Richard Frank, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation of abandoned application Ser. No. 210,232, Dec. 20, 1971. This application Jan. 17, 1972, Ser. No. 218,480

Int. Cl. A61k 27/00

U.S. Cl. 424—236

4 Claims

The administration of 25-hydroxycholecalciferol, 21,25-dihydroxycholecalciferol, 25,26-dihydroxycholecalciferol, 1,25-dihydroxycholecalciferol, 25-hydroxydihydroxycholecalciferol, 25-hydroxyergocalciferol and their acylates to hens increases the thickness of the eggshells. Compositions and methods are provided.

3,823,238

# S-TRIAZOLO-[3,4-a]ISOQUINOLINES IN REDUCING INFLAMMATION

Hans Karl Reimlinger, Brussels, Belgium, Robert W. Shanahan, Allendale, N.J., and Jan Joseph Maurice Vandewalle, Mortsel, Belgium, assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Original application July 27, 1971, Ser. No. 166,626, now abandoned. Divided and this application Apr. 23, 1973, Ser. No. 353,787

Int. Cl. A61k 27/00

U.S. Cl. 424—258

1 Claim

Novel s-triazolo-[3,4-a]-isoquinoline compounds are prepared by methods analogous to known methods and exhibit anti-inflammatory activity.

3,823,239

# ANTI-BACTERIAL PROCESS USING TETRAMISOLE

Roland Thomas Victor Fox, Wokingham, John Roger Hadfield, Yateley, and Peter Doyle, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

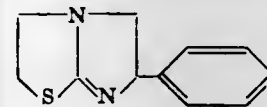
No Drawing. Filed Sept. 1, 1972, Ser. No. 285,809  
Claims priority, application Great Britain, Sept. 30, 1971, 45,562/71

Int. Cl. A01n 9/12, 9/20

U.S. Cl. 424—270

3 Claims

This invention relates to processes for combating plant bacterial diseases using a compound having the formula:



or acid-addition salts thereof.

3,823,240

# FUNGICIDAL HYDANTOIN DERIVATIVES

Michel Sauli, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Original application Oct. 5, 1971, Ser. No. 186,772, now Patent No. 3,755,350. Divided and this application Jan. 18, 1973, Ser. No. 324,788

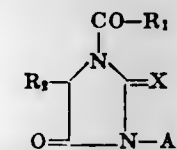
Claims priority, application France, Oct. 6, 1970, 7036084; Aug. 6, 1971, 7128896

Int. Cl. A01n 9/22

U.S. Cl. 424—273

9 Claims

The hydantoin derivatives of the formula:



wherein Ar represents phenyl, or phenyl carrying substituents selected from halogen, alkyl, alkoxy and trifluoro-

methyl, R<sub>1</sub> represents alkoxy or a grouping —NR<sub>2</sub>R<sub>4</sub>, in which R<sub>3</sub> and R<sub>4</sub> represent hydrogen, alkyl or alkenyl, R<sub>2</sub> represents hydrogen or alkyl, and X represents oxygen or sulphur, possess fungicidal properties.

3,823,241

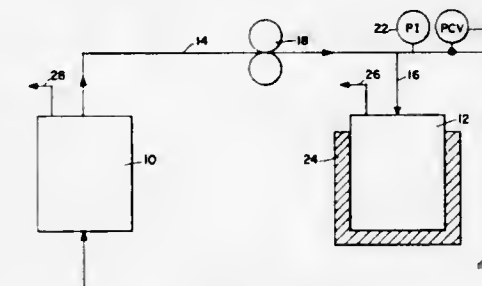
# CRYOGENIC AROMATIZATION OF INSTANT COFFEE

Jayantilal Mohanbhai Patel, Cincinnati, and Richard Francis Durchholz, Loveland, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
Continuation of abandoned application Ser. No. 74,074, Sept. 21, 1970. This application Aug. 17, 1972, Ser. No. 281,569

Int. Cl. A23f 1/04

U.S. Cl. 426—386

17 Claims



A method of transferring the aroma of roast and ground coffee to a coffee aroma absorbant such as an instant coffee to which coffee oil has been added. The method comprises chilling the absorbant to a temperature of at least —40° F. and placing the chilled absorbant in communication with a zone charged with roast and ground coffee held at a higher vapor pressure than the vapor pressure of the chilled absorbant. The aroma essence of the roast and ground coffee is transferred to the chilled absorbant and retained thereon.



## ELECTRICAL

3,823,242

### ELECTROSLAG REMELTING PROCESS

Boris Evgenievich Paton, ulitsa Kotajubinskogo, 11, Kv. 23; Boris Izraelievich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Vladimir Prokhorovich Andreev, prospekt Nauki, 99, kv. 13; Georgy Alexandrovich Bolko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5, all of Kiev; Jury Vasilievich Sobolev, ulitsa Novgorodskaya, 16/2, kv. 13; Adolf Ivanovich Shavrin, ulitsa Lenina, 45, kv. 17, both of Kolpino Leningradskoi oblasti; Evgeny Tikhonovich Dolbenko, ulitsa Garibaldi, 10, kv. 3, and Viktor Vasilievich Chernykh, ulitsa Belomorskaya, 18, korpus 4, kv. 51, both of Moscow, all of U.S.S.R.

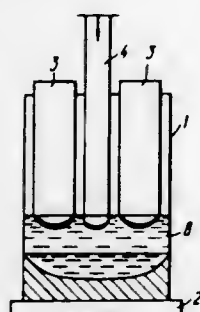
Filed Apr. 25, 1973, Ser. No. 354,436

Claims priority, application U.S.S.R., Apr. 29, 1972, 1778702

Int. Cl. H05b 3/60

U.S. Cl. 13—9

5 Claims



An electroslag remelting process in which fused consumable electrodes are fed into a mould, the electrodes being mounted movably and stationary with respect to the mould and connected to a power source according to a bifilar circuit. The electrodes are arranged in the mould space in parallel rows alternating in such a manner that one row is composed of the electrodes coupled to one leadout of the power source and the other of those coupled to another leadout thereof.

3,823,243

### APPARATUS FOR LIMITING MAST TRAVEL IN ELECTRIC FURNACE SYSTEM

Martin H. Vitale, and Joseph D. Gricol, both of Wilton, Iowa, assignors to Phoenix Steel Corporation, Claymont, Del.

Filed Oct. 29, 1973, Ser. No. 410,567

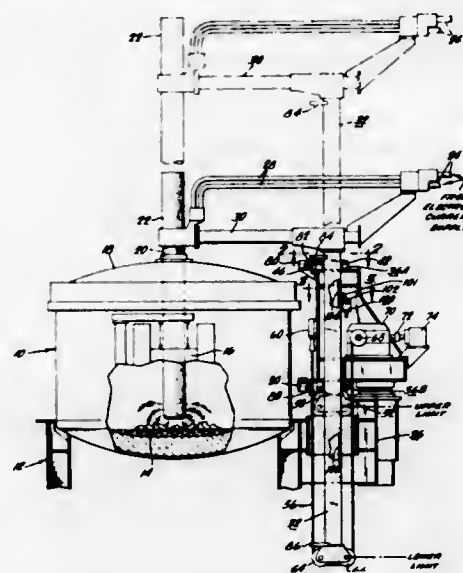
Int. Cl. H05b 7/12

U.S. Cl. 13—13

7 Claims

In electric furnace systems, the electrode for supplying current to the furnace is normally moved up and down by a reciprocating mast mounted by upper and lower mast-guiding means fitting closely about the mast, the reciprocating motion being provided by suitable motor means. To prevent dangerous up-and-down extremes of travel of the mast, there is employed a normally-open type of switch means positioned between the upper and lower mast-guiding means so as to be held closed by a surface of the mast during execution by the mast of its desired maximum length of travel. The mast surface is configured to permit the switch means to open when the mast moves beyond the desired maximum length of travel, and this opening of the switch is caused to deactuate the motor means. Preferably the configuring of the mast surface comprises providing a recess therein so positioned that when the switch arm, which normally rides along the exterior of the mast, reaches the recess, it moves into the recess to permit the switch to open and discontinue the motor operation. The position of the switch is preferably on the side of the mast away from the furnace means and within an at-least-partially protected region. Other arrangements employ more than one recess and/or switch, some of which may be used for normal

tested region. Other arrangements employ more than one recess and/or switch, some of which may be used for normal



arrest of the extreme motion of the mast and others of which may be used as back-up safety devices in case the normal mast-arresting arrangement does not function.

3,823,244

### AUDIO SIGNAL KEYS

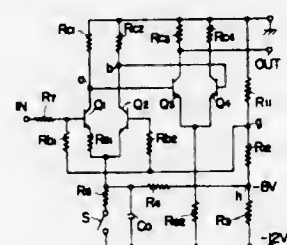
Yasuo Nagahama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Aug. 15, 1973, Ser. No. 388,621

Int. Cl. G10h 1/00

U.S. Cl. 84—1.01

8 Claims



An audio signal keyer suitable for use in an electronic musical instrument comprises two differential amplifiers in cascaded connection. The first differential amplifier has a first input supplied with an audio signal to be keyed, a second input supplied with no AC-signal and a common end supplied with a keying voltage, whereby the first output gives out a keyed signal consisting of an AC-component building up with the determined envelope and a DC-component building up in accordance with the keying voltage variation and the second output gives out only a DC-component of the above-mentioned variation. The second differential amplifier has one input being supplied with the above-mentioned keyed signal of the first differential amplifier and the other input being supplied with the DC-component appearing at the second output of the first differential amplifier. Thereby, at one of the outputs of the second differential amplifier is obtained a keyed audio signal with only the AC-component building up the desired amplitude with the determined envelope, which is free

JULY 9, 1974

ELECTRICAL

371

from the unwanted DC variation and click noise occurring at the beginning of the tone sounding.

3,823,245

### CENTRALIZED ELECTRICAL ARRANGEMENT FOR MUSICAL PERFORMANCE BY GROUPS

Kazohiko Suzuki, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki, Hamamatsu-shi, Japan

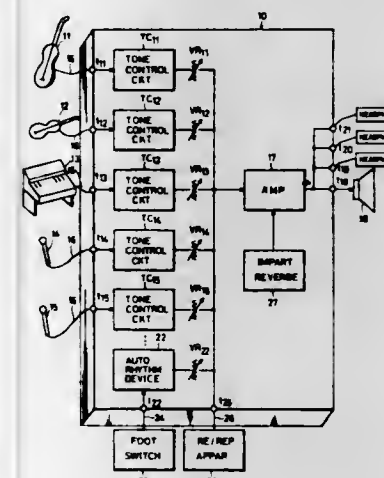
Filed Feb. 7, 1973, Ser. No. 330,287

Claims priority, application Japan, Feb. 9, 1972, 47-17155; Feb. 9, 1972, 47-17156

Int. Cl. G10h 1/00

U.S. Cl. 84—1.04

2 Claims



Means for controlling the tones and the volumes of the sounds to be reproduced from electrical signals delivered by various electronic and/or electrical musical instruments as well as microphones are arranged centrally within a single housing such as a cabinet. The output signals from the aforesaid means are commonly amplified by an amplifier circuit also provided within the housing and are then translated into audible sounds by a loudspeaker positioned outside of the housing. In another embodiment of the invention the housing is served by the console of an electronic organ, in which case the amplifier circuit of the electronic organ itself is utilized for amplification of the signals from the other instruments in use.

3,823,246

### CHORD PLAYING ORGAN INCLUDING A CIRCUIT ARRANGEMENT FOR ADDING FILL-IN NOTES TO THE SOLO PART

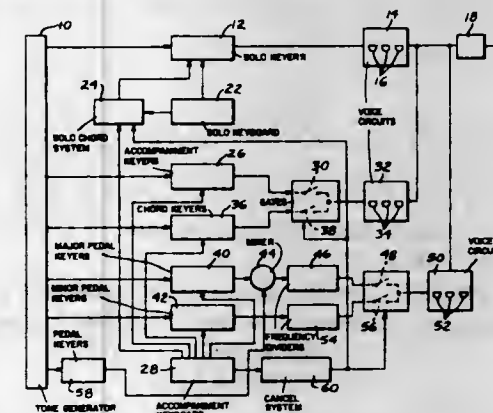
Richard Hebeisen, and Patrick King Doane, both of Jasper, Ind., assignors to Kimball Piano & Organ, Electronic Division, Jasper, Ind.

Filed Apr. 11, 1973, Ser. No. 349,987

Int. Cl. G10h 1/00

U.S. Cl. 84—1.17

21 Claims



An electronic organ which is selectively adjustable between conventional playing and chord playing modes and in which

chord playing mode at least certain ones of the keys of the accompaniment manual key groups of notes which make up chords. When the organ is adjusted into chord playing mode, the depressing of a single chord playing key and a single solo key will actuate circuitry that causes added notes to be sounded in the solo and which are musically related to the solo note being played and to the chord being played and which are preferably within about an octave range of the solo note being played.

3,823,247

### CAPOTASTO

Herbert Bauerfeind, 8521 Brauningshof, Germany

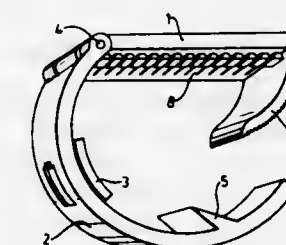
Filed Apr. 18, 1973, Ser. No. 352,326

Claims priority, application Germany, June 30, 1972, 2232031

Int. Cl. G10d 3/00

U.S. Cl. 84—318

5 Claims



A capotasto or capo for clamping to the finger board of a stringed musical instrument to alter its basic pitch, in which the pressure bar of the capo has a comb with close spaced teeth to press on the strings.

3,823,248

### BUS INCORPORATING CURRENT LIMITING REACTANCE

Donald M. Christie, Guelph, Ontario; Ronald W. Lye, and Robert H. Rehder, both of Peterborough, Ontario, all of Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

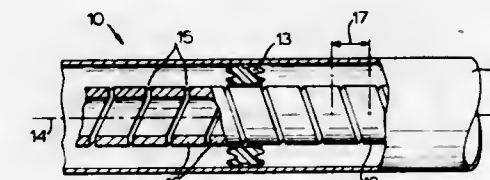
Filed Feb. 28, 1973, Ser. No. 336,795

Claims priority, application Canada, July 13, 1972, 146995

Int. Cl. H02g 5/06; H02h 9/02, 7/22

U.S. Cl. 174—16 B

5 Claims



A bus duct run, consisting of a rigid tubular conductor supported inside a rigid enclosure, has a current limiting reactance incorporated in the conductor. The reactance is obtained from a portion of the conductor formed into a helix with spaced-apart turns. The helix may be a tubular conductor cut helically or a conductor wound helically.



3,823,249

**COMPRESSED-GAS INSULATED HIGH-VOLTAGE CONDUCTOR ASSEMBLY COMPOSED OF A SERIES OF RIGID RECTILINEAR SECTIONS WITH INTERMEDIATE FLEXIBLE CONNECTING SECTIONS**

Carl Dieter Floessel, Flimsbach; Klaus Floessel, Wettingen, and Adolf Eidinger, Nusshausen, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

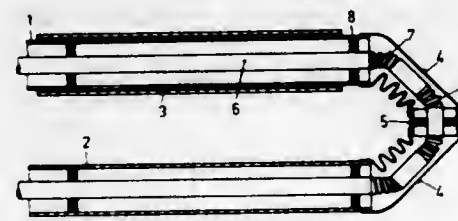
Filed July 16, 1973, Ser. No. 379,400

Claims priority, application Switzerland, Aug. 23, 1972, 12402/72

Int. Cl. H02g 15/08

U.S. Cl. 174—21 C

4 Claims



A compressed-gas-insulated electrical high-voltage conductor assembly is comprised of a number of pressurized gas-filled rigid straight sections arranged in end-to-end relation. Each section is constituted by a length of a rigid metallic tubular member which encloses and supports centrally therein a rigid portion of the electrical conductor, and these rigid conductor-enclosing sections are joined together by means of short flexible sections of the tubular enclosing member and a corresponding flexible portion of the conductor thereby to enable the connected-together rigid sections to be bent through an angle of substantially 180° to facilitate transport from the fabrication point to a remote location for on-site installation.

3,823,250

**METHOD AND APPARATUS FOR CONSTRUCTING INSULATED CABLE PRESSURE BLOCKS**

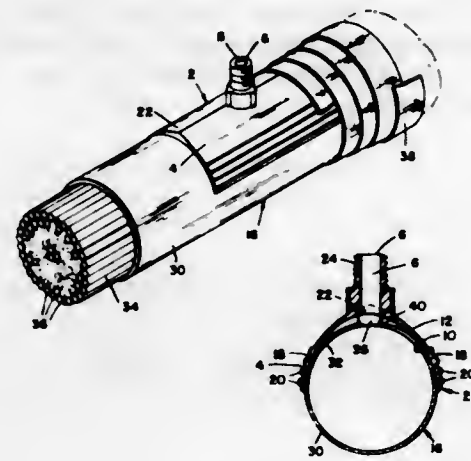
Richard L. De Monsy, Encino, and Norman K. Hankins, Northridge, both of Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed June 18, 1973, Ser. No. 371,080

Int. Cl. H02g 15/20; H01b 7/28, 13/00

U.S. Cl. 174—23 R

16 Claims



A sheath surrounding a multi-wire cable is opened to expose the cable core and a flexible cover sheet is placed over the resulting cut-out to cover the cut-out. The sheet is biased against the cut-out by taping it thereto and it includes an inlet port communicating the exterior of the cable with the cut-out in the sheath. An interior side of the sheet is concavely curved and has intermittent protrusions which space the sheet from

the core to define passageways which communicate with the port opening so that block forming material, such as self-setting plastic can be injected into the passageways and hence into and around the multi-strung cable core. After the plastic sets, it forms a gas tight barrier or pressure block within the cable. The flattened cover sheet has a generally rectangular configuration and side dimensions of at least about 4 inches for coverage of a cut-out having side lengths of at least about 3 inches. The longitudinal center line of the sheet (parallel to the cable axis) has an increased cross-section as compared with remaining portions of the sheet to resist center flattening of the sheet when biased against the cable to enhance the formation of passageways between the concave sheet side and the cable core and to resist collapse of the sheet and a resulting destruction of the passageways.

3,823,251

**ELECTRICAL CONNECTOR FOR INTERIOR WALL PANELS**

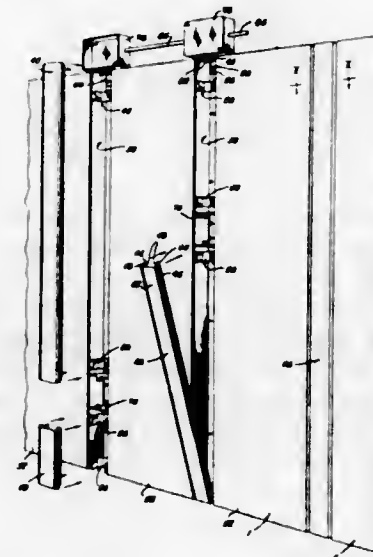
Gary Heithecker; Melvin R. Loseke, and Joe Ferguson, all of Grapevine, Tex., assignors to Mesco Metal Buildings Corporation, Grapevine, Tex.

Filed June 12, 1972, Ser. No. 261,743

Int. Cl. H02g 3/28

U.S. Cl. 174—48

8 Claims



An interior wall panel for buildings wherein a sheet has spaced hollow channels formed therein to receive electrical wires, switches and outlet box receptacles. Resilient clips are secured in each channel adjacent opposite ends thereof and adjacent opposite sides of switches and electrical outlet boxes disposed therein. Elongated filler strips have projections thereon disconnectably secured to the clips, said filler strips bridging the channel in the sheet material and abutting with electrical switches and outlet boxes such that surfaces of a sheet, filler strip, electrical switch covers and outlet box covers substantially lie in a common plane.

3,823,252

**CONDUCTING ELEMENT HAVING BUNDLED SUBSTANTIALLY PARALLEL CRYSTALLINE CONDUCTORS AND PROCESS FOR MANUFACTURE**

Anthony P. Schmid, Riga, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 26, 1972, Ser. No. 301,235 The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.

Int. Cl. H05k 1/02

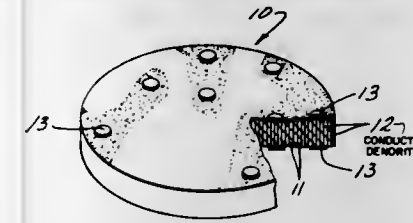
U.S. Cl. 174—68.5

14 Claims

Disclosed is a method for forming an array of conductive crystalline dendrites of reduced rutile in a glass-ceramic insulating matrix by crystallizing certain compositions containing

titanium and silica in a non-oxidizing atmosphere under the influence of a thermal gradient to form a parallel array of conductive reduced rutile dendrites. Several of such dendrites are

each of said grooves having openings through said housing and a clamp member disposed through said openings into each of



joined to form a coaxial bundle (i.e., a bundle having substantially parallel conductors) through the matrix by means of conductive caps on opposing faces of the matrix.

3,823,253

**STRETCHABLE CABLE**

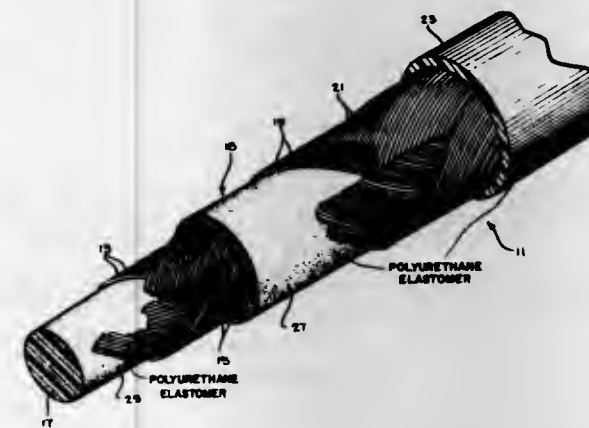
Jack E. Walters, and Robert B. Cole, both of Richmond, Ind., assignors to Belden Corporation, Chicago, Ill.

Filed July 10, 1970, Ser. No. 53,873

Int. Cl. H01b 7/06

U.S. Cl. 174—69

2 Claims



An elongated, uncoiled stretchable and retractable cable is formed with the capability of stretching several times its relaxed length and returning to its relaxed length without being damaged by having inner and outer conductors helically wrapped with opposite lays or serves which may move relative to each other without becoming interlocked as in a braided construction. More specifically, the inner one of the conductors is helically wrapped in one direction about and along a central, elastomeric core and the outer conductor is helically wrapped along and circumferentially about the inner conductor but in an opposite direction. In a similar manner, an outer conductor shield for a coaxial cable may be formed of conductors oppositely laid and helically wrapped about an elastomeric layer separating the shield conductors from the interior conductors. Good resistance to ambient and environmental conditions as well as good stretchability and retractability are provided by using thermoplastic, elastomeric polyurethane as the material for the inner central core, the insulating layer and an outer protective sheath.

3,823,254

**CABLE SPLICE HOUSING**

Robert L. Smith, Minnetonka, Minn., assignor to Roar Plastics, Inc., Hopkins, Minn.

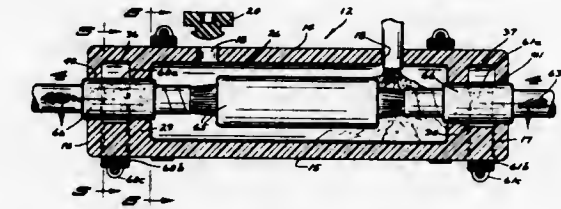
Filed June 18, 1973, Ser. No. 371,189

Int. Cl. H02g 15/08

U.S. Cl. 174—92

6 Claims

A cable splice housing consisting of a separable housing having end wall openings and a central cavity therein, and an internal annular groove adjacent each end of said housing,



said grooves for securing a cable therein, said clamp members being secured outwardly of said housing, and a sealant within said housing.

3,823,255

**FLAME AND RADIATION RESISTANT CABLE**

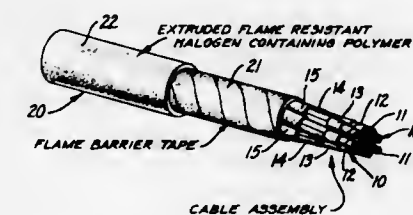
Francis E. La Gase, Utica, and Stevan Jovanovitch, Rome, both of N.Y., assignors to Cyprus Mines Corporation, Los Angeles, Calif.

Filed Apr. 20, 1972, Ser. No. 245,772

Int. Cl. H01b 7/02

U.S. Cl. 174—113 R

5 Claims



A flame retardant, radiation resistant insulated conductor, either in single conductor form or having a plurality of insulated conductor assemblies each comprised of an electrical conductor core, a flexible flame-resistant barrier layer of an inorganic electrical insulating material which surrounds the core, an electrical insulating layer of a polymer material which surrounds the barrier layer, a second flame retardant barrier layer of an inorganic electrical insulating material which surrounds the polymer insulating layer, and a second electrical insulating layer of a halogen containing polymer which surrounds the second barrier layer and jackets the insulated conductor. The plurality of insulated conductors are wrapped together, preferably twisted together, within a flame retardant barrier shell of an inorganic electrical insulating material. The shell is jacketed with a flexible flame retardant, electrical insulator covering of a halogen containing polymer.

3,823,256

**DATA SWITCHING SYSTEM**

Rudolph Louis Wittebol, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,169

Claims priority, application Netherlands, Jan. 11, 1972, 7200352

Int. Cl. H04i 5/24

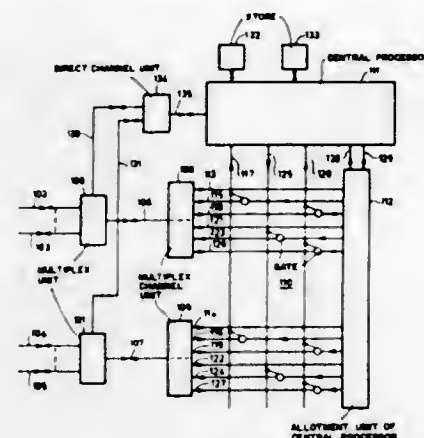
U.S. Cl. 178—3

4 Claims

A description is given of a data switching system for switching direct connections between TELEX lines by way of a central processor. The system configuration of a message switching system is used as a basis. The communication lines are connected to communication units which send request signals to the central processor when a character is received or transmitted. Registers of the central store are permanently associated with the communication lines. In the register of the receive line the address of the register of the send line is



stored. The latter register comprises a number of character locations for storing characters. In reaction to the request



signals, the central processor transfers the characters from the communication unit to the register of the send line or conversely.

3,823,257

### METHOD AND APPARATUS FOR GENERATING A MULTI-COLORED PATTERN

Reinhold Oelmayer; Albert Seelos; Helmut Seitz, all of Kaufbeuren; Walter Ludwig Schnattinger, Eriskirch-Schlatt; Heinz Mayer, Kaufbeuren; Joseph Duell, Oberbeuren; Wilhelm Hertl, Kaufbeuren, and Hans-Jörg Koch, Stuttgart-Böhligen, all of Germany, assignors to Firma Franz Morat GmbH, Stuttgart-Vaihingen, Germany

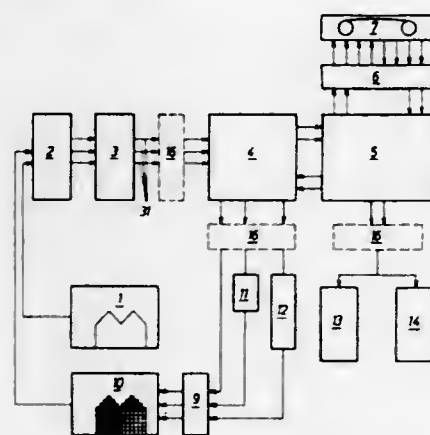
Filed Dec. 29, 1971, Ser. No. 213,507

Claims priority, application Germany, Dec. 30, 1970, 2064387; Dec. 30, 1970, 7048125(U)

Int. Cl. H04n 9/02

U.S. Cl. 178—5.2 R

29 Claims



A method and apparatus for generating a multi-colored pattern comprising the steps of: A. electro-optically scanning a multi-colored drawing; B. driving electrical signals characteristic of the diverse colors; C. permanently storing said signals in a storage device; D. reading out said signals from said storage device; and then E. feeding the read-out signals to a printer whereby there is printed a pattern corresponding to the scanned drawing.

3,823,258

### COLOR FILM SCANNER WITH SINGLE PICK-UP TUBE

Otto Freudenschuss, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Oct. 18, 1972, Ser. No. 298,612

Claims priority, application Austria, Oct. 19, 1971, 9047/71

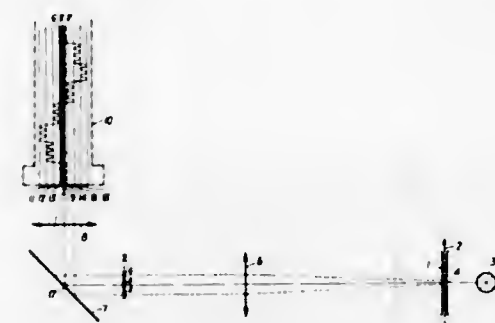
Int. Cl. H04n 9/06

U.S. Cl. 178—5.2 D

6 Claims

A method of picking up an image of an object onto a pick-up device, which image is movable relatively to the pick-up

device, whereby the image is transformed into television signals and the signals are transmitted into different color channels. The method comprises in combination the steps of: decomposing the image optically into lines to obtain light beams of the image in line shape; the light beams project successively corresponding to the lines onto the pick-up device through a color decomposing device extending in the



direction of the lines; the pick-up device is received in the direction of the lines and thereby sweeps in transverse direction to the direction of the lines with a sweeping amplitude corresponding to the height of the image line on the pick-up device, thereby generating the television signals in accordance with the image lines; the television signals are chopped and, the chopped signals are transmitted into the different color channels.

3,823,259

### METHOD AND APPARATUS FOR TRANSFERRING COMMANDS IN CLOSED LOOP TELEVISION INSTALLATIONS

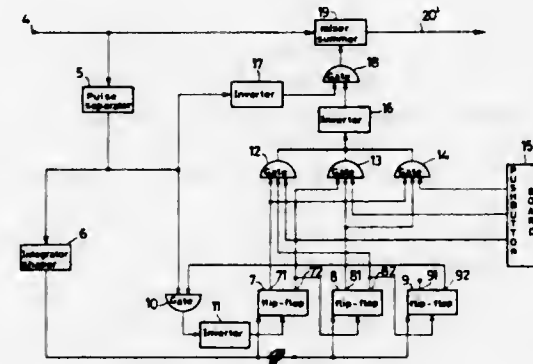
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Mar. 6, 1972, Ser. No. 232,114

Int. Cl. H04n 7/18

U.S. Cl. 178—5.6

9 Claims



A TV-assisted intercommunication system for apartment buildings is disclosed, in which each receiving site is preliminarily associated with a predetermined pulse of a set of line synchronizing pulses as contained in a transmitted video signal. At every command as impressed from a takeup site, an encoded pulse associated with the preselected receiving site is sent, whereafter, in the preselected receiving site, the encoded pulse is recognized by comparing it with the pulses of the transmitted video signal, the result being that a call signal is produced just at the preselected receiving site (e.g., an apartment of the building) and not elsewhere. The method and the circuitry of the invention can be applied to any closed-loop television system.

3,823,260

### COLOUR TELEVISION CAMERA

Willem Van den Bussche, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

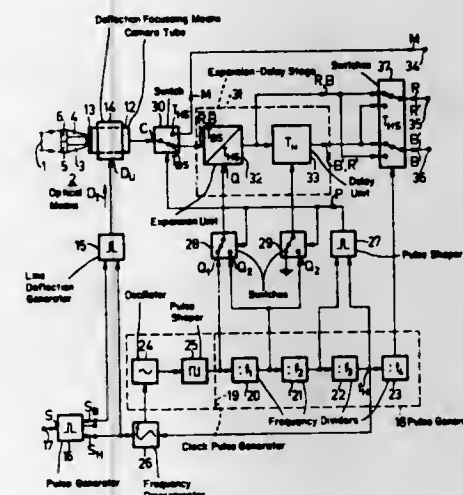
Filed Nov. 27, 1972, Ser. No. 309,708

Claims priority, application Netherlands, Dec. 4, 1971, 71.16690

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST

11 Claims



A colour television camera using one camera tube onto which three separate differently coloured images are projected beside one another in the line scan direction. Compressed images are made on either side of the normal central image through compression optical systems in the line scan direction. The central image is analysed during each line period in the standard line scan period and a compressed image is analysed one line every two lines in part of the standard line blanking period. After signal expansion of the compressed signals simultaneous image signals are obtained with the aid of a delay unit.

3,823,261

### IMAGE MOTION AND CHANGE TRANSDUCERS AND SYSTEMS CONTROLLED THEREBY

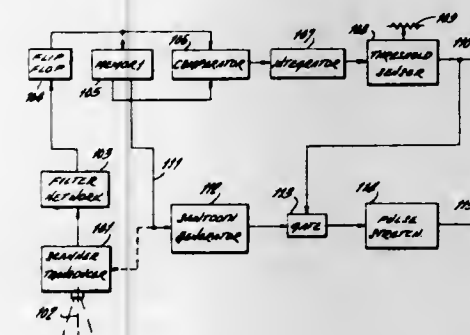
Emil J. Bolsey, White Plains, N.Y. 10606

Continuation-in-part of Ser. No. 778,870, May 27, 1968, Pat. No. 3,617,016, which is a continuation-in-part of Ser. No. 118,194, June 19, 1961, abandoned. This application Oct. 29, 1971, Ser. No. 193,950

Int. Cl. H04n 3/00

U.S. Cl. 178—6.8

9 Claims



An image comparator includes means for scanning a selected area of an arbitrary image and for converting the video pattern into analog video electrical signals which are treated to emphasize their intermediate frequency range components and converted into binary signals for comparison with a signal representative of a reference image.

3,823,262

### FACSIMILE RECORDER WITH COMPENSATION OF THE ELECTROSENSITIVE BLANK NONLINEAR APPLIED VOLTAGE-BURN CHARACTERISTIC

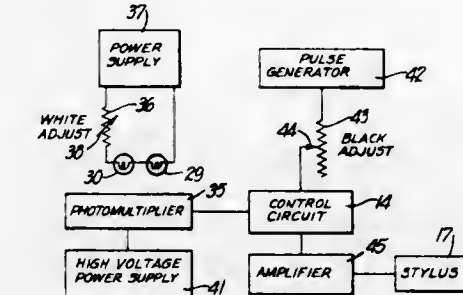
Max S. Adams, Long Beach, and Gunther Wicher, Stanton, both of Calif., assignors to Coloroptics, Inc., Stanton, Calif.

Filed Oct. 24, 1972, Ser. No. 299,872

Int. Cl. H04n 1/22; G01d 15/06

U.S. Cl. 178—6.6 R

2 Claims



A facsimile recorder including a control circuit for amplitude modulating a train of pulses with a voltage signal generated by a photoscanner as it scans an image on a reference document, the control circuit including circuitry for modifying the amplitude of the voltage signal with changes in the intensity of light reflected from the image to compensate for a nonlinear applied voltage-burn characteristic of an electro-sensitive blank to which the amplitude modulated pulse train is applied to produce a facsimile of the image.

3,823,263

### CAMERA TUBE GAIN CONTROL CIRCUIT

John R. Guppy, Hitchin, England, assignor to British Aircraft Corporation, London, England

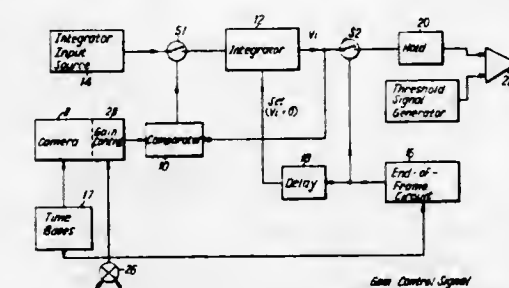
Filed Jan. 26, 1973, Ser. No. 327,203

Claims priority, application Great Britain, Jan. 27, 1972, 3953/72

Int. Cl. H04n 5/34

U.S. Cl. 178—7.2

5 Claims



In an electronic camera tube circuit, a gain-control voltage is produced which varies with the level of the video signals corresponding to the background in the viewed scene. An integrator receives a steady input signal as long as the video signal from the camera exceeds the level of the integrator output. The integrator output thus rises to the background level and is sampled and reset periodically, for example at the end of each frame, the sample providing a gain-control voltage.

3,823,264

### CASCADE VIDEO OUTPUT FEEDBACK AMPLIFIER

Peter Eduard Hafert, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,800

Claims priority, application Great Britain, Apr., 1971, 11561/71

Int. Cl. H04n 5/48

U.S. Cl. 178—7.5 R

8 Claims

A video output amplifier utilizes two transistors arranged in cascode configuration for driving the cathode electrode of a







voltage polarity at the trunk for signaling purposes while leaving the voltage polarity at the exchange invariant for proper operation of electronic output devices such as transistors in the exchange circuit. In either state, the bistable provides a voice signal path from the exchange circuit to the trunk.

3,823,272

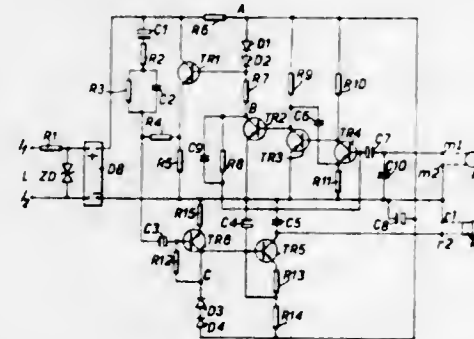
**ELECTRONIC TELEPHONE TRANSMISSION CIRCUIT**  
Camilo Mamansala Tabalba, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.  
Filed Nov. 21, 1972, Ser. No. 308,799

Claims priority, application Great Britain, Dec. 9, 1971, 57196/71

Int. Cl. H04m 1/58; H04b 3/50

U.S. Cl. 179-81 A

2 Claims



This electronic telephone transmission circuit (subset) replaces the conventional subset using the combination of carbon microphone, hybrid transformer and high sensitivity receiver. The circuit includes transmitter and receiver transistor amplifiers, means for effecting line loss compensation for both directions of transmission, and a resistor-capacitor active network configuration for giving all the properties of a hybrid transformer network without the use of any inductances.

3,823,273

**SUBSCRIBER'S TELEPHONE CIRCUIT**

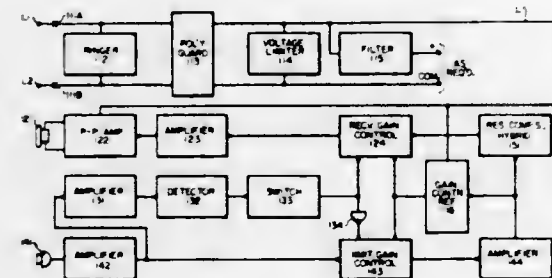
Robert H. Boeman, River Forest, and Robert T. Cleary, Lockport, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 17, 1971, Ser. No. 209,047

Int. Cl. H04m 1/60

U.S. Cl. 179-81 B

11 Claims



A subscriber's telephone circuit providing automatic attenuation and equalization of both receive and transmit voice circuits in response to variations in loop length. An included voice switch also provides attenuation of the receive path circuitry when the subscriber's circuit is operated in the transmit mode.

### 3,823,274 FARTHEST ADVANCE CIRCUIT FOR A REMOTE STATION DICTATING SYSTEM

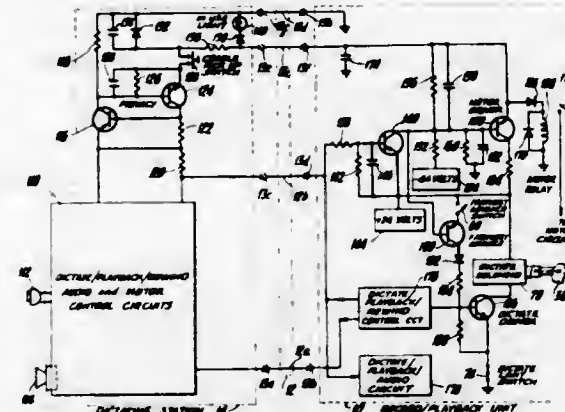
Bjorn J. Matz, Forest Hills, N.Y., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,373

Int. Cl. G11b 15/56; H04m 11/10

U.S. Cl. 179-100.1 DR

5 Claims



An electronic farthest advance switch in the central record/playback unit of an endless tape recording system is biased to become conductive through a mechanical switch which is closed when a loop of recorded tape has been backspaced past the magnetic record/playback head. The conductive farthest advance electronic switch provides a bias voltage to the electronic seizure, dictate and motor driver switches in the record/playback unit to activate the motor and to energize a solenoid connected to a capstan pressure roller mechanism to thereby engage and advance the loop of recorded tape past the record/playback head so that the loop of tape is ready for transcribing. Simultaneously, a reverse bias voltage is supplied to each remote dictating station connected to the central record/playback unit to prevent the remote dictating stations from seizing control of the record/playback unit during the farthest advance operation.

3,823,275

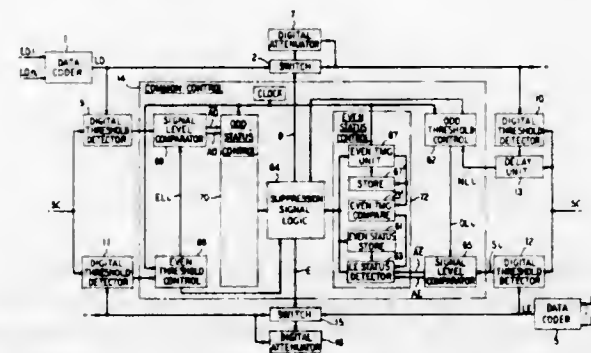
**COMMON CONTROL DIGITAL ECHO SUPPRESSOR**  
Robert Ernest La Marche, Atlantic Highlands, and Carl Jerome May, Jr., Holmdel, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 10, 1972, Ser. No. 279,710

Int. Cl. H04b 3/20

U.S. Cl. 179-170.2

5 Claims



A full echo suppressor having all of its control circuitry located at a near end of a plurality of two-way transmission paths is disclosed. Analogue signal levels on each line of each associated transmit-receive line pair are periodically converted into pcm codes and applied to a plurality of threshold detectors in a time slot for that line pair. Echo suppression is provided for echoes resulting from signal transmissions from the near end when common control circuitry determines, from information obtained from the threshold detectors, that a

receive line is currently idle and the associated transmit line was active a selected interval of time in the past. Echo suppression is provided for echoes resulting from signal transmissions from the distant end when common control circuitry determines, from information obtained from the threshold detectors, that a transmit line is currently idle and the associated receive line is currently active.

3,823,276

**RECORDING/REPRODUCING RADIATION SYSTEM WITH THE RECORD MEDIUM WRAPPED AND GUIDED HELICALLY INSIDE A HOLLOW CYLINDER**

Stefan Maslowski, Aufheim; Manfred Borne, Ulm/Danube; Hans-Peter Huber, Thaltingen, and Werner Löffler, Ulm/Danube, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

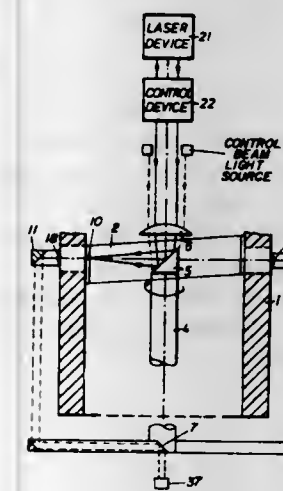
Filed July 30, 1970, Ser. No. 59,471

Claims priority, application Germany, July 31, 1969, 1938790

Int. Cl. G11b 7/00; H04n 5/84

U.S. Cl. 179-100.3 B

16 Claims



A high density optical data recording and reproducing system for use with light-sensitive tape-type recording carriers including a cylinder, a structure for guiding a tape carrying a light-sensitive substance along the inner surface of the cylinder and a mirror for continuously deflecting a recording or reproducing light beam around the periphery of the cylinder while the tape advances along the cylinder axis so that the beam describes a path across each tape oblique to its axis. In the case of recording, the beam is modulated by the information to be recorded and discolours the carrier. In the case of reproduction, the beam traverses the tape and the image on the illuminated portion is enlarged and focussed on a reproduction device.

3,823,277

**TELEPHONE LOCKING DEVICE**

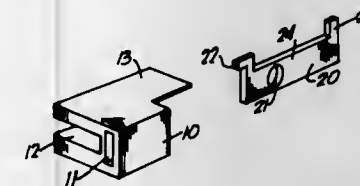
Dietmar H. Rudolph, Queens, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 24, 1972, Ser. No. 299,777

Int. Cl. H04m 1/66

U.S. Cl. 179-189 R

1 Claim



A device for locking a telephone to prevent its use for both incoming and outgoing telephone calls by clamping the

telephone plunger switch button in the down and OFF position. The device consists of two parts slidably fitted together, which are shaped so as to fit about the shelf of the telephone and the telephone switch button. A hole in one of the parts is of a size to admit a conventional telephone dial-type lock, which when so inserted, prevents the parts from sliding together to the position required for removal from an attached telephone.

3,823,278

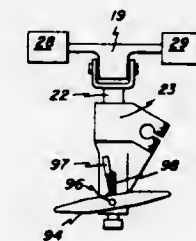
**AERODYNAMICALLY ADJUSTABLE PANTOGRAPH**  
Richard T. Gray, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 26, 1972, Ser. No. 318,182

Int. Cl. B60i 5/12

U.S. Cl. 191-66

12 Claims



Apparatus for maintaining a substantially constant force between a pantograph collector shoe and an overhead contact wire by aerodynamically moving the shoe to follow the vertical profile of the contact wire. The position of the contact wire is detected with respect to the collector shoe or its supporting frame and an airfoil attached to the pantograph is adjusted in response thereto to provide the requisite amount of positive or negative aerodynamic lift for the shoe to adjust its vertical position in correspondence with that of the overhead contact wire.

3,823,279

**FLEXIBLE POWER CONNECTION MEANS FOR TRAVELING ELEMENTS**

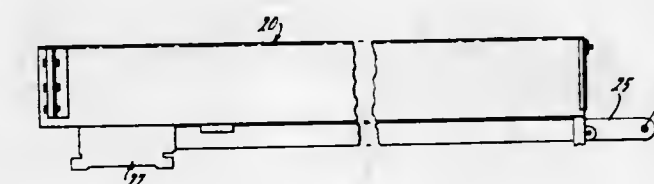
David A. Rausch, and Paul R. Johnston, both of Lancaster, Ohio, assignors to Diamond Press Specialty Corporation, Lancaster, Ohio

Filed Mar. 12, 1973, Ser. No. 340,116

Int. Cl. H02g 11/00

U.S. Cl. 191-12 R

19 Claims



A helically coiled flexible electrical conductor extensible and retractable axially to provide electrical connection to a movable element is slidably supported on a rod which extends through it. Convolutions at the movable end of the coil also overengage a controlling member movable with the movable element and which limits forces exerted upon portions of the conductor close to its movable end.

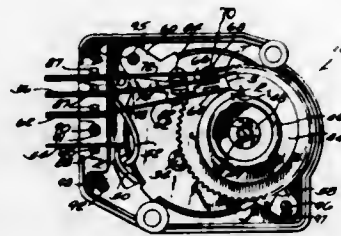


### 3,823,280 TIMER

George Obermann, Niles; Michael H. Eger, Schaumburg, and Michael F. Mialk, Jr., Norridge, all of Ill., assignors to Controls Company of America, Schiller Park, Ill.  
Filed Oct. 26, 1973, Ser. No. 409,961  
Int. Cl. H01h 43/10

U.S. Cl. 200—38 B

6 Claims



The motor subassembly is mounted in the housing with the motor leads dressed between the motor case and the housing and connected to the motor terminal and to a switch blade terminal and does not require grounding. The gear case somewhat divides the motor case to retain the coil while the motor case cover cooperates with the gear case to enclose and journal the gearing with the drive pinion projecting therebetween to drive the gear on the perimeter of the timing cam. The timing cam is journaled on the bushing extruded from the motor cover and in the aperture in the housing cover with the gear cluster extension projecting into and visible in the cam hub to afford visual verification of motor operation. The three switch blades are accurately located in the housing by tabs engaging locating cavities and the pivoted yoke has pads which space the two outside blades from each other. During the time between defrost cycles the No. 1 blade rides on the cam with the No. 2 blade engaging the No. 1 blade. When the No. 1 blade drops off the cam drop, the No. 3 blade engages the No. 2 blade and remains so engaged until the No. 2 blade drops off the cam. The tangential distance between the ends of blades No. 1 and No. 2 determines the duration of the cycle in combination with the rotational speed of the cam. All components are trapped by the assembly of the cover to the housing which is accomplished without fasteners. The great reduction in parts while completely enclosing the product results in a quiet, low cost, accurate timer which is easily serviced in the field by way of easy verification of operation.

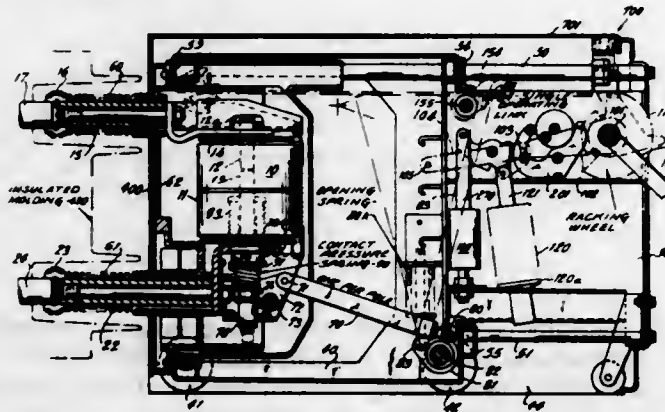
### 3,823,281

#### DRAW-OUT TYPE MODULAR HIGH VOLTAGE SWITCHGEAR AND COMPARTMENT-MOTORIZED RACKING MECHANISM THEREFOR

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.  
Filed Aug. 21, 1972, Ser. No. 282,358  
Int. Cl. H01h 9/20, 33/46

U.S. Cl. 200—50 AA

18 Claims



Racking mechanism for truck mounted withdrawal type switchgear in which circuit interrupter members are mounted

on a frame telescopically movable with respect to the main truck frame. The frame carrying the circuit interrupter elements has disconnect contacts which may be engaged with stationary disconnect contacts connected to busses in a cubicle in a switchboard. The racking mechanism for moving the circuit interrupter carrying frame with respect to the truck mounted frame is motorized including a rotatable shaft on the truck frame with a crank on the shaft. Rotation of the shaft in one direction moves the circuit interrupter frame to engage the disconnect contacts and rotation in the other direction separates the disconnect contacts. The rotation of the shaft is performed by a plate radially mounted on the shaft with sections on opposite sides of the plate and a reciprocal slide member extending adjacent the plate. On each movement of the slide member in one direction the plate and shaft on which it is mounted is rotated through a predetermined angle. The motorized racking mechanism during its rotations causes the slide to operate more than once to complete the movement of the circuit interrupter frame in either the racking-in or racking-out direction. The switchgear also contains opening springs for the contacts which may be recharged with the spring prevented from operating by a circuit condition responsive latch; the same motor may also be used to charge the spring following an opening operation.

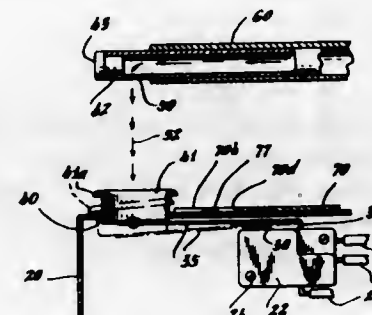
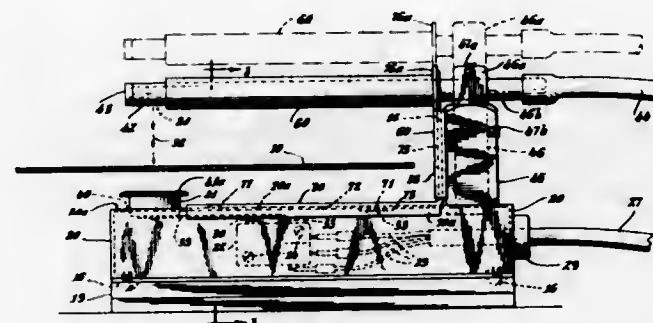
### 3,823,282

#### FLUID OPERATED WEB BREAK DETECTOR ASSEMBLY WITH PERIPHERAL FLANGE FOR MICROSWITCH OPERATOR

George W. Bregar, Des Plaines, Ill., assignor to Korth Engineering Corporation, Schiller Park, Ill.  
Filed May 21, 1973, Ser. No. 362,405  
Int. Cl. B65h 25/14; H01h 3/02

U.S. Cl. 200—61.18

3 Claims



In air stream actuated web-break detectors an air-deflectable cup-like switch actuator is formed with a surrounding lip which shields the partially enclosed switch assembly from incursion of fiber and like particles otherwise tending to obstruct the switching function.

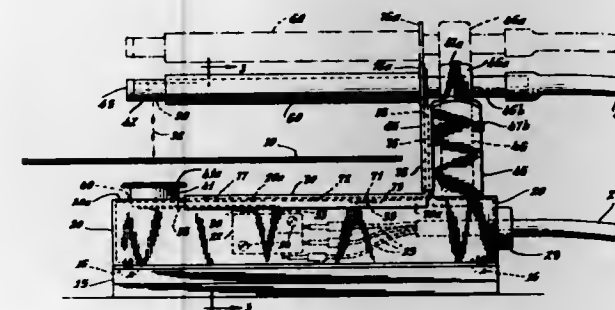
### 3,823,283

#### FLUID OPERATED WEB BREAK DETECTOR ASSEMBLY WITH SWITCH ACTUATOR MOTION BLOCKING MEANS

Clifford L. Larson, Des Plaines, Ill., assignor to Korth Engineering Corporation, Schiller Park, Ill.  
Filed Aug. 20, 1973, Ser. No. 389,889  
Int. Cl. B65h 25/14; H01h 3/02

U.S. Cl. 200—61.18

3 Claims



In air-stream actuated web-break detectors an air-deflectable cup-like switch actuator is formed with a surrounding lip which shields the partially enclosed switch assembly from incursion of fiber and like particles otherwise tending to obstruct the switching function. In operation an air-stream is projected through an elongated tube having an orifice which faces the switch actuator. For disabling the detector for repair purposes, a single movable assembly slides a sleeve over the tube orifice to interrupt the air-stream and concurrently moves into place a part which blocks the motion of the switch actuator.

### 3,823,284

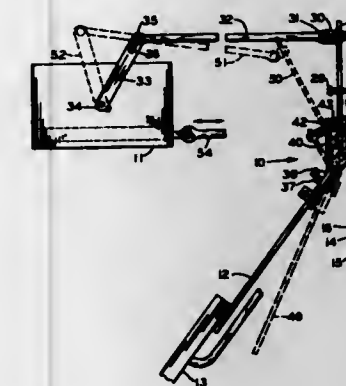
#### FOOT OPERATED VEHICLE SIGNALLING APPARATUS WITH ADJUSTABLE MECHANICAL LINKAGE OPERATING MECHANISM

Benedict J. Hoffman, 2230 Chestnut St., Fort Wayne, Ind. 46803

Filed Mar. 19, 1973, Ser. No. 342,683  
Int. Cl. H01h 3/14

U.S. Cl. 200—61.89

15 Claims



An adjustable hinge linkage connects a control switch with an auxiliary pedal which is actuated by the accelerator pedal of a motorized vehicle. The control switch is actuated by movement from any first switch position to a new switch position so that an automatic signalling apparatus is provided for the control of multicolored lights in response to a change in the position of the accelerator pedal. Thus a colored signal light automatically communicates intended vehicle velocity changes to other drivers before the intended velocity changes occur.

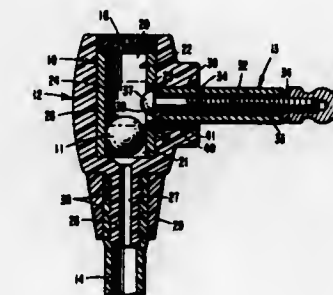
### 3,823,285

#### PNEUMATICALLY ACTUATED SWITCHING DEVICE WITH BALL CONTACT MEANS

Philip W. Dwyer, P.O. Box 51182, Jacksonville Beach, Fla. 32250  
Filed Dec. 27, 1972, Ser. No. 318,735  
Int. Cl. H01h 35/24

U.S. Cl. 200—81 H

21 Claims



An electrically conductive sleeve having a bore therethrough is connected to a first conductor that is adapted to be connected to one side of an electrical circuit. A second conductor is mounted in an opening in the sleeve and is adapted to be connected to the other side of the electrical circuit. An electrically conductive ball is mounted in the bore and is movable by applying pneumatic pressure thereto between a circuit open position out of electrical communication with the second conductor and a circuit closed position in electrical communication with the second conductor and the sleeve. A cam surface extends into the bore and cams the ball into electrical communication with the second conductor and the sleeve in the circuit closed position. In a preferred embodiment, the cam surface is defined by a spring which flexes as the ball moves into and out of the circuit closed position so that the surface of the ball wipes against the surfaces of the bore and the spring, to clean such surfaces and thereby promote effective electrical communication therebetween. The bore is carefully dimensioned to very close tolerances so that the device is responsive to the application of a minimum pneumatic pressure. The pneumatic pressure is supplied by a deformable bulb manufactured in one piece by an injection molding technique to preclude leakage.

### 3,823,286

#### HIGH-VOLTAGE CIRCUIT BREAKER EQUIPPED WITH HYDRAULIC DRIVE

Gerhard Thürk, and Helmut Beier, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany  
Filed May 9, 1973, Ser. No. 358,829  
Int. Cl. H01h 33/34

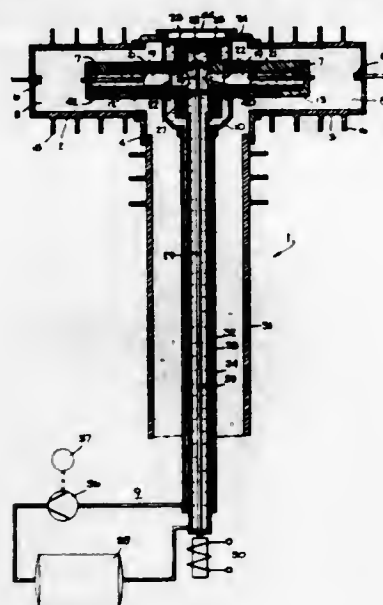
U.S. Cl. 200—82 B

8 Claims

A high-voltage circuit breaker has contacts switchable between open and closed positions and is equipped with a hydraulic actuator operatively connected to the contacts. The actuator is responsive to fluid pressure for switching the contacts. A first fluid supply supplies fluid under low pressure, and a second fluid supply supplies fluid under high pressure. A hydraulic reservoir at ground potential connects the first fluid supply with the second fluid supply for supplying fluid under pressure to the second fluid supply. A valve at high-potential is connected to the hydraulic actuator and includes valve discs for alternately connecting the first fluid supply and the second fluid supply to the hydraulic actuator. The valve discs are controlled from a location at ground potential with the aid of



member made of insulating material and are movable between first and second positions. At least one of the valve discs is ex-



posed to the pressure of the fluid of the second fluid supply which places a tension load on the member and acts in a direction to return the discs to the first position.

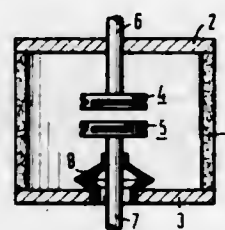
### 3,823,287 VACUUM SWITCH

Hans Bettge, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
Filed Jan. 10, 1972, Ser. No. 216,523  
Claims priority, application Germany, Apr. 1, 1971, 2015528

Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

5 Claims



Circumferential current flow which serves to draw contact members together in a vacuum is produced by a vacuum switch having cup-shaped switch contacts having ring-shaped side portions which are subdivided by slots into segments. The circumferential direction of the current is produced by circumferential slots in the side portions which slots consist of a gap which extends parallel through the contact surface and connects with a vertical, chordially aligned cut in the contact surface.

### 3,823,288 VACUUM INTERRUPTER CAPACITANCE DISCHARGE AND CONTACT GROUNDING SYSTEM

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Nov. 1, 1972, Ser. No. 302,792

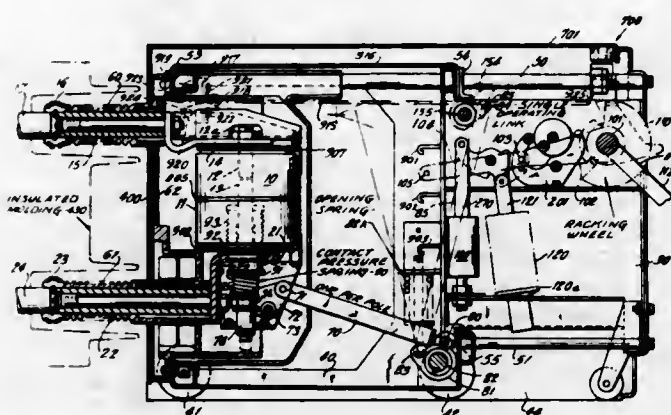
Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

4 Claims

A vacuum interrupter capacitance discharge and contact grounding system for a withdrawal type telescoping circuit breaker mechanism wherein the interrupter is racked toward the frame of the structure to disconnect it and racked away from the frame to connect it in circuit; the frame carrying a

plurality of flexible contact probes electrically connected to the frame which, in turn, has contacts engaging a grounding bus in the compartment. The flexible contact probes are individual to and aligned with a ring on the interrupter through



which any capacitance may be discharged and with the respective terminals of the interrupter to discharge the capacitance and ground the terminals of the interrupter when the interrupter is racked to disconnect position and toward the frame.

### 3,823,289 INTERRUPTER STRUCTURE FOR CIRCUIT BREAKER WITH INDIVIDUAL BLAST VALVES AND TIME- DELAYED UPSTREAM CUTOFF VALVE

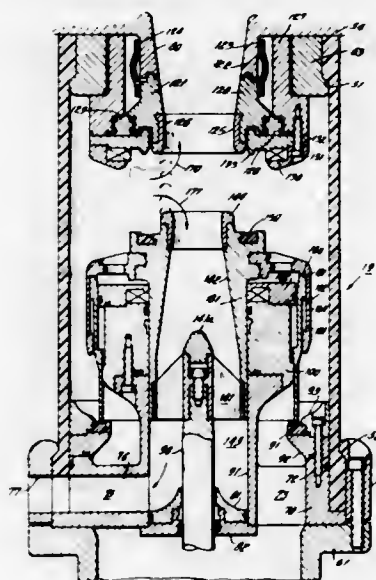
Lorne D. McConnell, Radnor, and Hansruedi Aumayer, Newtown Square, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 27, 1971, Ser. No. 175,507

Int. Cl. H01h 33/80

U.S. Cl. 200—148 B

8 Claims



A plurality of series-connected interrupters are connected in series and are mounted in a low-pressure tank. Pairs of the interrupters are mounted on a high-pressure tank filled with SF<sub>6</sub> gas. Each individual interrupter contains its own blast valve, adjacent cooperating contacts and disposed radially interiorly of a main cooperating contact section, and radially exteriorly of an arcing contact section. Each of the individual interrupters further contain an upstream cutoff valve which cuts off the flow of high-pressure gas after an interruption operation. A time delay is provided for the operation of the cutoff valves.

### 3,823,290 ELECTRICAL SWITCHGEAR

George Caton, Ilkley, England, assignor to Yorkshire Switchgear and Engineering Co., Limited, Yorkshire, England

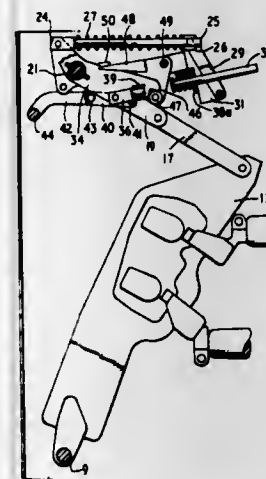
Filed Mar. 12, 1973, Ser. No. 340,304

Claims priority, application Great Britain, Mar. 16, 1972, 12484/72

Int. Cl. H01h 5/10

U.S. Cl. 200—153 SC

12 Claims



Electrical switchgear comprising a set of fixed contacts, a set of movable contacts mounted to close into engagement with the fixed contacts and to open out of engagement with the fixed contacts, a closing spring system having one or more springs, first movable restraining means restraining first ends of said springs, second movable restraining means restraining second ends of said springs, means connecting said second restraining means to move with the movable contacts; an opening spring system having one or more springs, third restraining means restraining first ends of said opening springs, and fourth restraining means restraining second ends of said opening springs; means connecting said third restraining means to said movable contacts; a first lever system for charging said closing spring system by moving said first restraining means independently of said movable contacts; a second lever system for charging said opening spring system by moving at least one of said third and fourth restraining means, such movement not being transmitted through said closing spring system; a first latch for releasably latching said closing spring system in its charged conditions, said first latch being operable when released to release said second restraining means and so allow said movable contacts to move to the closed position under the force in the charged closing spring system; and a second latch for releasably latching said opening spring system in its charged condition, said second latch being operable when released to release said third restraining means to allow said movable contacts to open under the force in the charged opening spring system.

### 3,823,291 ELECTRIC SWITCH FOR PORTABLE ELECTRIC APPLIANCES

Edgar Albert Philip Milcoy, "The Pastures" 3 Backshay Pk., South Milton, near Thurstone, England

Filed Jan. 15, 1973, Ser. No. 323,894

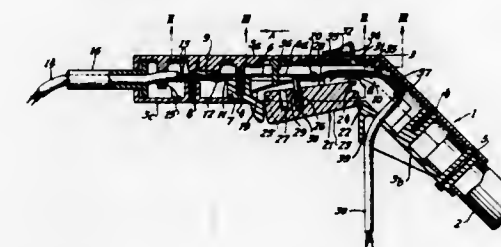
Int. Cl. H01h 3/20

U.S. Cl. 200—157

6 Claims

An electric switch, which is particularly suitable for controlling the operation of a portable electric appliance, for example a lawn mower, comprises a support, a first contact fixed relative to said support, a second contact movable into and out of engagement with the first contact, a contact-actuating member movable relative to the support for effecting electrical contact between the first and second contacts, a locking

means movable relative to said support between a first position in which it prevents engagement of said first and second contacts and a second position in which it allows engagement of the first and second contacts, and means urging the locking means towards said first position. The locking means may



comprise a push button slidably mounted on the support, this push button preferably being positioned relative to the contact-actuating member so that both the push button and the contact-actuating member can be operated by the fingers of one hand of a person operating the appliance on which the switch is mounted.

### 3,823,292 PUSH-BUTTON SWITCH WITH CONDUCTIVE COIL SPRING CONTACT

Taneo Murata, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 341,866

Claims priority, application Japan, Mar. 17, 1972, 47-32197

Int. Cl. H01h 1/06, 13/12

U.S. Cl. 200—159 R

4 Claims



A push-button switch comprises a substrate, supporting thereon an electric circuit, and a slider lever. The slider lever carries a conductive coil spring which functions as a moving contact which will open and close the electric circuit as the slider lever moves relative to the substrate.

### 3,823,293 DIELECTRIC HEATING APPARATUS

Charles L. Gilliatt, Andover, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 277,463, Aug. 2, 1972, Pat. No. 3,770,931.

This application July 2, 1973, Ser. No. 375,404

Int. Cl. H05b 5/00, 9/00

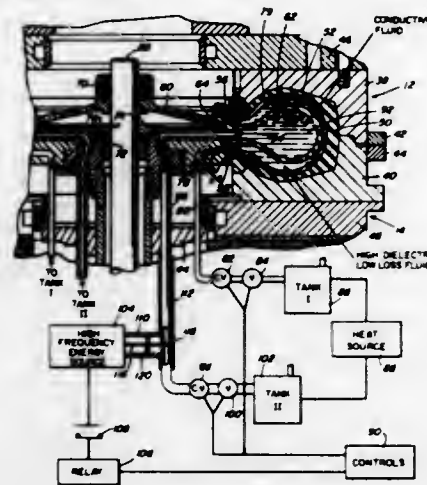
U.S. Cl. 219—10.41

2 Claims

A method of and apparatus for heating moldable articles, such as pneumatic rubber tires, is disclosed utilizing an inner expandable bladder having an electrically conductive fluid, such as mercury, salt water, or woods metal. A source of high frequency energy in the range of, illustratively, from 1 to 60 megahertz is coupled between the conductive fluid and the metallic tire vulcanizing apparatus to rapidly heat the inner casing wall surfaces to the desired curing temperatures. A second outer bladder conforming to the casing walls contains a high dielectric constant low thermal loss fluid, such as silicone oil. The inner bladder is contoured to provide a greater volume of such fluid adjacent to the thinner sidewalls and thereby expose the heated conductive fluid closer to the



thicker tire tread region. The heating field strengths are thereby distributed substantially uniformly in all parts of a



moldable article having a nonsymmetrical cross-sectional configuration and it is maintained in the desired shape during heating.

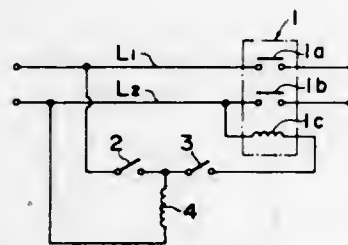
### 3,823,294 DOOR LOCKING SYSTEM FOR AN ELECTRICAL APPARATUS

Takeshi Takayama; Akenji Tanaka; Saburo Hoshina, and Tadayasu Ohtaguro, all of Kawasaki, Japan, assignors to The General Corporation, Kanagawa-ken, Japan  
Filed Aug. 31, 1971, Ser. No. 176,658

Claims priority, application Japan, Oct. 1, 1970, 45-86468; Aug. 31, 1970, 45-76150

Int. Cl. H05b 9/06  
U.S. Cl. 219-10.55

6 Claims



A door locking system for an electrical apparatus is provided with a solenoid-operated contactor having contacts connected in the electrical circuit of the apparatus to which the system is applied. The energizing circuit for the solenoid of the contactor includes at least two switching means. One of the switching means is manually operable for controlling an electromagnetic drive coil that is connected with power supply through said one switching means. Lock means acting upon a door is operated by the drive coil. The other switching means is operated by the operation of the lock means.

### 3,823,295 ELECTRONIC OVEN WITH MODE EXCITER AND TUNING PROBES

Donald J. Simon, and Louis H. Fitzmayer, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

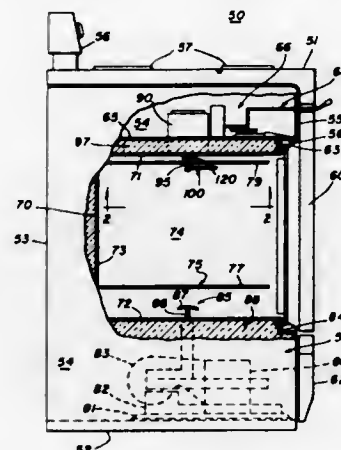
Filed Jan. 2, 1973, Ser. No. 320,140

Int. Cl. H05b 9/06  
U.S. Cl. 219-10.55

12 Claims

An electronic oven includes a heating cavity, a microwave antenna coupled to a source of microwave energy and disposed centrally of the bottom of said cavity for radiating thereto microwave energy of a predetermined frequency for exciting a predetermined primary mode electromagnetic field

in the cavity, a conductive member in the cavity adjacent to the top thereof and rotatably driven about the axis of the antenna for exciting secondary modes complementary to the primary mode at frequencies somewhat higher than the predetermined frequency, and two tuning members mounted at the top



of the cavity adjacent to the path of the conductive members and symmetrically with respect thereto for coupling the highest frequency one of the secondary modes and reducing the frequency thereof without altering coupling of the primary mode.

### 3,823,296 INDUCTION HEATING COIL ARRANGEMENT IN INDUCTION HEATING EQUIPMENT

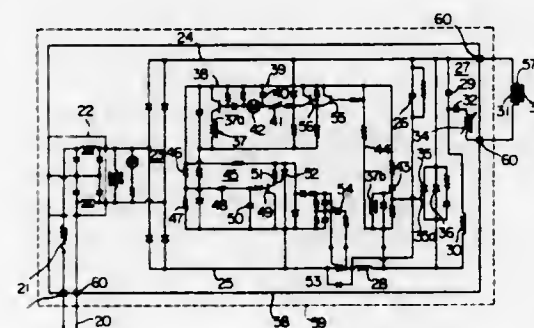
Keizo Amagami; Hazime Mori; Takao Kobayashi; Mitsuyuki Kiuchi, and Yoshio Ogino, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed July 26, 1972, Ser. No. 275,306  
Claims priority, application Japan, Apr. 10, 1972, 47-36368; Apr. 10, 1972, 47-36369; Apr. 10, 1972, 47-36592; Apr. 12, 1972, 47-37247; Apr. 10, 1972, 47-42647[U]

Int. Cl. H05b 5/04

U.S. Cl. 219-10.77

2 Claims



Herein disclosed is an inverter device for use in an induction heating equipment in which an oscillating current having a suitable frequency is fed to an induction heating coil which is placed in proximity to a material to be heated, whereby eddy current and hysteresis losses are invited in the material to be heated so that heat is generated in the material. The inverter device features provision of noise preventive means, adapted to dampen out the high-frequency field built up by the component elements of the inverter circuit, leak current preventing means adapted to prevent leakage of current from the material to be heated to ground, and a variable inductor arrangement adapted to vary the apparent inductance of the induction heating coil. A typical application of the inverter device is an induction heating cooking equipment.

### 3,823,297 LOAD CONTROLLED INDUCTION HEATING

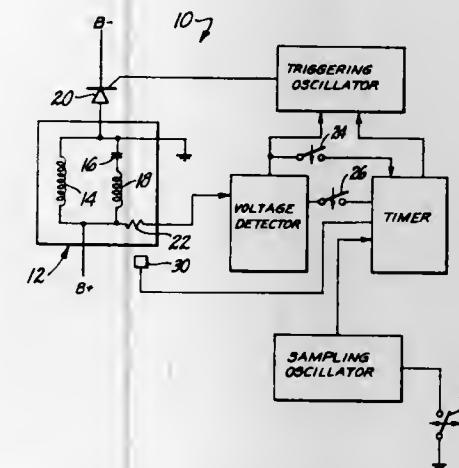
Ronald J. Cunningham, 5460 Eagle Rockview Dr., Los Angeles, Calif. 90041

Filed Oct. 2, 1972, Ser. No. 294,218

U.S. Cl. 219-10.77

Int. Cl. H05b 5/04

30 Claims



An induction heating apparatus employing a series tuned, resonant circuit including a work coil adapted to be coupled to a load to be heated in a parallel, tuned, resonant tank circuit, a current release means for releasing current pulses to the tank circuit so as to cause resonance in this tank circuit and an operation control means for controlling the release of current pulses by the current release means can be made essentially automatic in operation to various degrees by including within the apparatus one or more of several different means.

The apparatus preferably includes a detector means for determining the presence or absence of the load coupled to the work coil and associated means for regulating the release of current pulses in accordance with the presence or absence of such a load. This detection means is preferably a voltage detection means used in conjunction with a sampling means serving to cause a release of current pulses without causing significant heating so that a voltage change in a tank circuit can be detected even when the apparatus has not been used for heating. When a load is detected by the detection means the apparatus is operated for either a time interval or until a predetermined condition of the load is reached unless during such a period the load is for any reason removed from the work coil.

### 3,823,298 CASSETTE-TYPE TUBE WELDER

Roderick G. Rohrberg, and Dale R. Brubaker, both of Torrance, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 8, 1973, Ser. No. 368,390

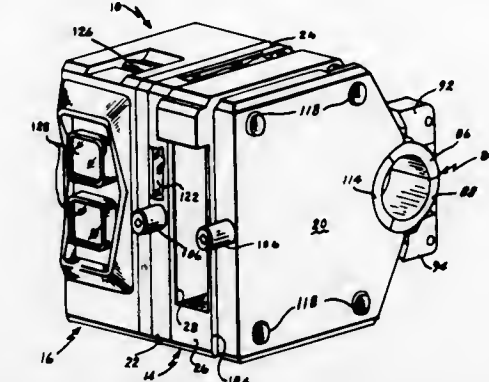
U.S. Cl. 219-60 A

Int. Cl. B23k 9/02

10 Claims

A cassette-type tube welder for the rapid in-place welding of tubes. This welder includes an electric welding means, a tube gripping means and a power pack having a drive motor and controls. The welding means is in the form of a welding cassette which contains a rotatable tube encircling means that houses the welding electrode. A hydraulically operated piston

supplies the motive force to a gripping means secured to the welding cassette in order to butt the tubes to be welded during



the welding operation. This tube welder may further be made in a variety of sizes and may accommodate a variety of cassettes.

### 3,823,299 METALLURGICAL BONDING AND FORMING PROCESSES AND APPARATUS

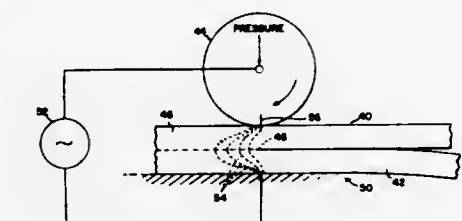
Arthur G. Metcalfe, San Diego, and Fred K. Rose, Chula Vista, both of Calif., assignors to International Harvester Company, San Diego, Calif.

Division of Ser. No. 856,526, Sept. 8, 1969, Pat. No. 3,644,698. This application Feb. 18, 1972, Ser. No. 227,683

U.S. Cl. 219-83

Int. Cl. B23k 11/06

21 Claims



Methods of and apparatus for forming a continuous solid state diffusion bond between metallic members in which the members to be joined are locally and progressively subjected to heat and pressure. Heating is achieved by workpiece resistance to controlled electrical current, and pressure is applied by rotatable electrodes that: generate contact between the members being joined and produce the deformation necessary to achieve a specified joint configuration therebetween; supply the controlled electric current to heat the workpiece locally and progressively; and are maintained at a temperature which results in essentially isothermal local conditions in the workpiece. Preferably, controls capable of regulating the bonding temperature are provided to insure that a uniform joint is produced. Methods of and apparatus for forming metallic members with and without bond formation by the techniques just described.

### 3,823,300 SEAM WELDING METHOD

Robert H. Blair, Bay City, Mich., assignor to Resistance Welder Corporation, Bay City, Mich.

Filed Dec. 11, 1972, Ser. No. 313,773

U.S. Cl. 219-83

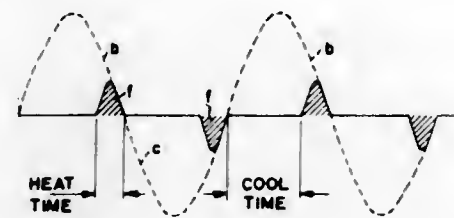
Int. Cl. B23k 11/06

7 Claims

A high speed seam welding method wherein single phase alternating current welding pulses, of sufficient amperage to produce the energy to weld the material when transmitted during only a fractional portion of each current half cycle, are applied to electrode mechanism during only a less than max-



imum amplitude fractional portion of the wave form representing each successive current half cycle, and the current is substantially cut off between current applications to



permit cooling. The relative seam welding movement of the electrode mechanism and the material to be seam welded is coordinated with the duration of the welding and cooling periods to more rapidly form a line of uniform weld nuggets.

3,823,301

# **APPARATUS FOR GRANULATING STRAND OR ROD-SHAPED MATERIAL**

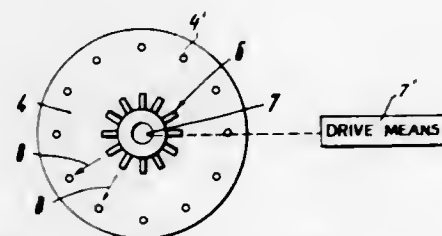
Walter Swarat, Elmhurst, Ill., assignor to Condux-Werk Herbert A. Merges KG, Wolfgang near Hanau, Germany  
Filed Dec. 8, 1972, Ser. No. 313,566

Claims priority, application Germany, Dec. 9, 1971, 2161004

Int. Cl. B23k 27/00

U.S. Cl. 219-121 L

2 Claims



Material which has been shaped into the form of rods or strands is cut into pieces, adjacent the region where it is shaped, by a laser beam directed transverse to the length of the rods or strands.

3,823,302

# **APPARATUS AND METHOD FOR PLASMA SPRAYING**

Erich Muehlberger, Costa Mesa, Calif., assignor to Geotek, Inc., Amityville, Long Island, N.Y.

Continuation of Ser. No. 214,584, Jan. 3, 1972, abandoned.

This application June 21, 1973, Ser. No. 372,260

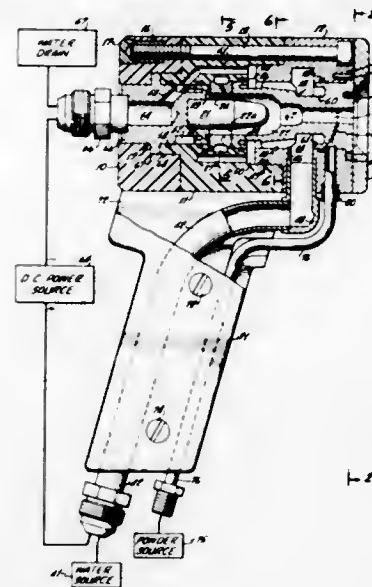
Int. Cl. B23k 9/00

U.S. Cl. 219-121 P

26 Claims

An extremely high-powered electrical plasma-jet spray torch is constructed economically, safely, and in a compact manner, by use of three coaxial body members held together by longitudinal, internal bolts. No external housing is necessary, the handle being screwed directly onto one of the body members. Two removable electrodes are provided and are separated from each other by a gas-injector ring of heat-resistant insulating material. The electrode ends adjacent the gas injector are water-cooled and are provided with O-ring seals.

Powder is injected into the plasma by use of a rotatable anode adapted to permit selective use of different types of injection, thus vastly increasing the utility of the anode.



In accordance with the method, supersonic flow is employed in combination with very high powers, and plural-port powder injection, to achieve extremely high spray rates.

3,823,303

# **CERAMIC DIE PRESS SYSTEM**

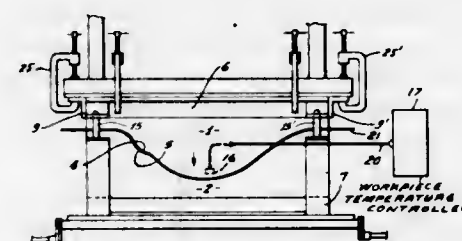
William E. Manchester, Lomita, and Douglas B. Hugill, Hermosa Beach, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Aug. 28, 1972, Ser. No. 284,422

Int. Cl. B21j 5/00

U.S. Cl. 219-153

3 Claims



A method of forming sheet metal, especially titanium, utilizing resistance heating of the sheet metal part, and forming the part by use of relatively simple ceramic dies. The forming method includes closely controlled cooling of the formed part between the forming dies before removal from the dies to eliminate undesirable warping due to uncontrolled cooling.

3,823,304

# **AUTOMATIC CONTROL SYSTEM FOR LIMITING ICE FORMATION IN GUTTERS AND DOWNSPOUTS**

Roman Siemianowski, 1647 N. Paulina St., Chicago, Ill. 60622

Filed May 14, 1973, Ser. No. 360,148

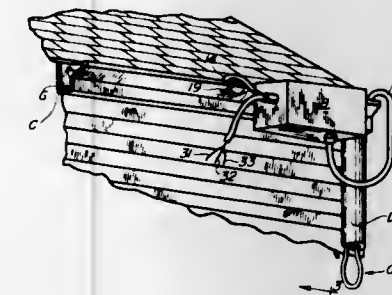
Int. Cl. H05b 1/00

U.S. Cl. 219-213

7 Claims

A gutter waste sensor comprising a grounded electrode and a water sensing electrical probe mounted on an insulated block which is vertically adjustable to various levels on a hollow stand extending upward from the bottom of the gutter. The water sensing probe is located and spaced protectively between members of the vertical stand. The grounded electrode terminates on the stand at a lower level than the probe. The probe and grounded electrode are part of a solid state

electronic circuit for detecting the presence of water at the predetermined level in the gutter and energizing an electrical



heating cable system laid therein to limit the accumulation of ice and prevent the overflow of water therefrom during a thaw.

3,823,305

# **ARRANGEMENT FOR REGULATING SUPPLY OF HEAT FROM A HEAT ACCUMULATING DEVICE**

Johann Schroder, Aachen, Germany, assignor to U.S. Phillips Corporation, New York, N.Y.

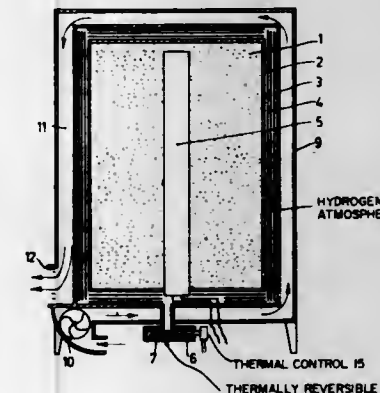
Filed June 16, 1972, Ser. No. 263,673

Claims priority, application Netherlands, June 24, 1971, 7108700

Int. Cl. F28f 13/02; F24h 7/04; H05b 1/02

U.S. Cl. 219-365

8 Claims



A heat accumulating device includes a double-walled reservoir filled with a material suitable for storing heat and provided with heating means for heating the material. The free space bounded by the double walls of the reservoir accommodates a plurality of foil radiation screens and the free space is further filled with a hydrogen atmosphere. The hydrogen filled free space is in communication with a reservoir containing a thermally reversible hydrogen getter. By regulation of the temperature of the hydrogen getter by means of an electric heater associated therewith, the hydrogen pressure in the free space and hence thermal conductivity of the free space is controlled whereby the transfer of heat through the walls of the reservoir from the heat storage material is readily regulated. Means may be provided to effect the supply of heat from the reservoir to the surrounding ambient by forced convection. The free space may be divided into a plurality of compartments completely separated from each other with each compartment being communicating with a separate thermally reversible getter whereby discharge of heat from different portions of the reservoir can be separately regulated.

3,823,306

# **HOT AIR SEALING APPARATUS**

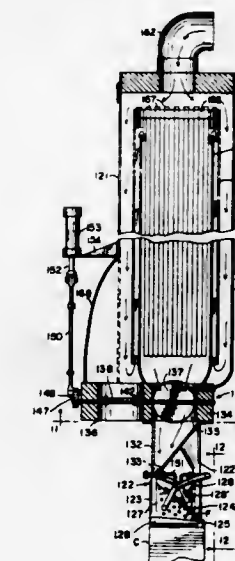
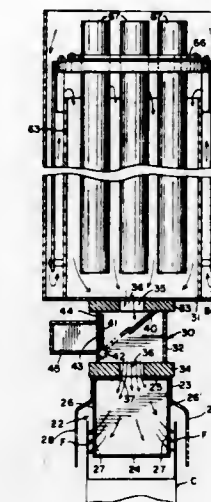
Robert E. Davis, 19 Cook Rd., Nutley, N.J. 07110

Filed Jan. 30, 1973, Ser. No. 328,148

Int. Cl. H05b 1/00; B65b 51/20

U.S. Cl. 219-373

5 Claims



A carton sealing apparatus for incorporation in a carton filling and closing line which is characterized by a hot air generator with a discharge nozzle having perforated areas positioned for applying hot air to carton closure panels advanced past the same which panels are supplied with a heat activatable adhesive substance, and associated mechanism for guiding the panels into carton closing position where they are sealed by the adhesive. A bypass arrangement is provided adjacent the nozzle to enable quick discontinuance of the application of the hot air to the adhesive carrying surfaces and equally quick resumption of the application of the hot air without discontinuing the air flow or changing its character.

3,823,307

# **HEATING VESSELS**

Robert Weiss, Sursee, Switzerland, assignor to Sursee-Werke AG, Sursee, Switzerland

Filed Apr. 26, 1973, Ser. No. 354,533

Claims priority, application Switzerland, May 9, 1972, 6859/72

Int. Cl. F27d 11/02

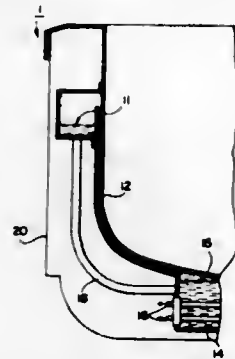
U.S. Cl. 219-439

9 Claims

A closed heating system for heating vessel comprising a water reservoir located underneath the bottom of the vessel, a narrow conduit extending upwardly along the sides of the vessel to create a capillary action on the rising steam and prevent



air-steam mixing in the conduit, a steam-air separation chamber connected to the top of the conduit for trapping air



in the system and condensing the steam, and a condensate return conduit for returning condensed steam to the reservoir.

### 3,823,308 CREDIT CARD VERIFIER

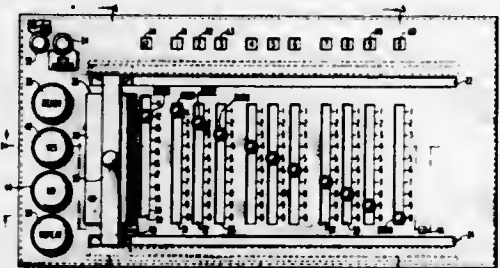
Kenneth M. Goldberg, Three Lakes St., Lynnfield, Mass. 01940

Continuation of Ser. No. 890,265, Nov. 26, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 210,272

Int. Cl. G06k 5/00; H04m 11/00

U.S. Cl. 235-61.7 B

19 Claims



A low cost credit card verifier unit for use in conjunction with a time-shared central processing unit (CPU) or computer in a credit card verification system. The unit includes a tone generator for generating a series of ten tones identifying the code on a credit card whose status is to be checked. Ten adjustable digit set buttons are manually positioned in accordance with the code on the credit card. In one form of the invention, after the verifier unit is connected to the CPU via a telephone line, a roller is moved from a starting position sequentially over the positioned buttons to depress them and cause them to operate the tone generator which transmits to the CPU a series of ten tones corresponding to the code on the card. After the roller has traversed all the buttons, it is now in a second position. Upon receipt of the tones, the CPU sends back to the verifier unit a status signal of the credit card. Moving the roller back to its starting position resets the circuits of the verifier unit to permit another credit card code to be sent to the CPU. The verifier unit also contains means for accessing the CPU and a ready light which is energized by a ready signal transmitted by the CPU when the CPU is ready to accept data. A movable stop on the verifier unit normally prevents the roller from leaving its starting position, but the stop is depressed upon energization of the ready light to permit movement of the roller across the digit set buttons to a second position. Another stop normally prevents the roller from returning from its second position to its starting position, but this stop is depressed by energization of either a status lamp or repeat lamp on the verifier unit. The repeat lamp is energized by a repeat signal transmitted by the CPU when an invalid code is transmitted or upon a CPU malfunction. The repeat lamp is also energized if no signal is received from the CPU a predetermined time after computer access has been indicated. The roller may then be returned to its starting posi-

tion where it actuates a reset button which de-energizes all the indicating lamps. After each status or repeat signal, the CPU also transmits a disconnect signal which automatically disconnects the verifier unit from the telephone line, thereby keeping telephone company time charges to a minimum. The credit card verifier unit also contains an additional foreign company digit set button for identifying to the CPU the name of the company which issued the particular credit card to be verified. This button is also depressed by the roller and transmits along with the credit card code tones an additional tone identifying the company.

### 3,823,309 MULTIPLE KEY ASSEMBLY FOR CALCULATORS AND THE LIKE

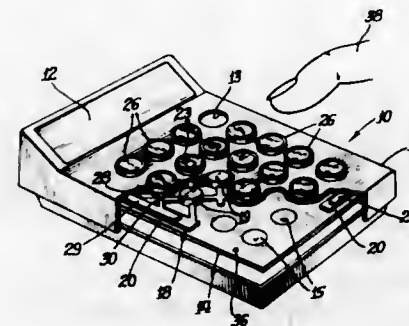
Jerome C. Caruso, 1165 W. Ash Lawn Dr., Lake Forest, Ill. 60045

Filed June 21, 1973, Ser. No. 372,394

Int. Cl. G06c 7/02; B41j 5/08

U.S. Cl. 235-145 R

4 Claims



The keyboard for a small electronic calculator comprises a matrix of bosses connected by flexible webs. The bosses have the indicia printed on the top thereof. Projections extend from the underside of the bosses to the electric switches arranged on a separate circuit board. Each boss is covered with a transparent plastic cap, which caps are connected by integral webs.

### 3,823,310 PULSE TRAIN MODIFICATION CIRCUIT

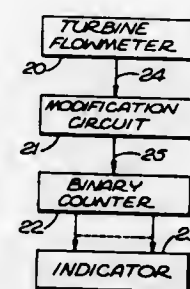
Paul Zoltan Kalotay, and George Aloysious Fitzpatrick, both of Monterey Park, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,662

Int. Cl. G01f 1/04

U.S. Cl. 235-151.34

19 Claims



For the purpose of indicating the total volume of fluid flow in a pipeline corrected to 60° (Fahrenheit) barrels, the pulse train output of a turbine flowmeter is corrected for temperature by eliminating every tenth pulse leaving sets of nine and adding a number of pulses to the sets of nine, which number is directly proportional to that contained in an analog-to-digital converter storage register. The converter is connected to circuits which produce a D.C. voltage proportional to the temperature of the fluid. An inverter, two differentiators and an OR gate are employed to produce pulses at a pulse repetition frequency (PRF) twice that of the incoming pulses. The pulse

adding circuit has a set of first, second . . . eighth AND gates which receive pulse trains of pulse repetition frequencies  $f$ ,  $f/2$ ,  $f/4$ ,  $f/8$ ,  $f/16$ ,  $f/32$ ,  $f/64$ , and  $f/128$ , respectively, where  $f$  is twice the PRF of the incoming pulses. The first, second . . . eighth AND gates are controlled by the first, second . . . eighth flip-flop in the register, where the first, second . . . eighth flip-flops correspond to the most, next most . . . least significant digits of the number contained in the register. An insertion circuit adds the pulses to the sets of nine at a time  $T/2$  before and/or after one pulse in one set of nine, where  $T = f/2$ . A divide-by-ten divider is connected from the AND gates to reduce the number of added pulses so that they vary the average number of pulses recorded by a counter that counts the sets of nine plus the added pulses. The number of counted pulses then can vary from 90 percent to about 110 percent of the incoming pulses for register binary numbers from zero to 1111111. An indicator is connected from the counter to indicate the count thereof.

### 3,823,311 SUM OF CROSS PRODUCTS MULTIPLICATION AND ROUNDING

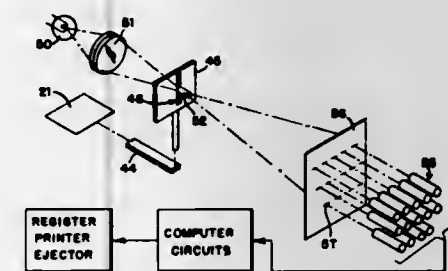
Kenneth C. Allen, and Edwin E. Boshinski, both of Dayton, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Continuation of Ser. No. 85,139, Oct. 29, 1970, abandoned, which is a division of Ser. No. 422,730, Dec. 31, 1964, Pat. No. 3,557,353. This application July 6, 1973, Ser. No. 369,282

Int. Cl. G06f 7/52

U.S. Cl. 235-160

4 Claims



A computing and printing scale system includes a pulse generator and an optical scale incorporating a mechanism which reads out the balance position of the platter and stores the weight information by selective transmission of pulses directly to a series of pulse counters each representing one column of weight information. Thereafter, the value of the weighed load at a preset unit price is computed by selective transmission of pulses to a series of value counters in accordance with partial product multiplication of the digits of weight and unit price, controlled in part by the weight counters. Finally, the weight and value information stored in the counters is transmitted to a printer-register which prints the information on a label.

### 3,823,312 ILLUMINATED BOOK HOLDER

Miriam Weinstein, Panther Valley, W6-Apt. 8, Hackettstown, N.J.

Filed Feb. 16, 1973, Ser. No. 333,198

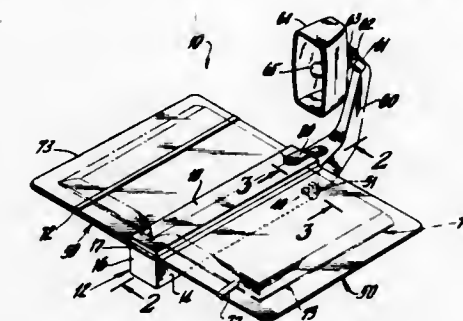
Int. Cl. F21v 33/00

U.S. Cl. 240-6.4 B

11 Claims

This book holder comprises a spine in form of a container for batteries. The container is open at the top so that the batteries can be dropped down therein. A cover closes the top of the container. Leaves hinged to the upper ends of the side walls of the container, extend outwardly to support the covers of a book placed in the holder, with the spine of the book resting on the cover of the container. A lamp holder is mounted on the forward end of the container and has a hinged lamp ad-

justable to direct light to various parts of the leaves of the book on the holder. A switch on the container is controlled to automatically turn the lamp "on" when the holder leaves are spread open to open the book for reading and to turn the lamp



"off" when the leaves of the holder are brought together to close the book. The book cover can be slipped under bands on the holder leaves to open and close the book when the holder is opened or closed, respectively.

### 3,823,313 LASER FANNING DEVICE

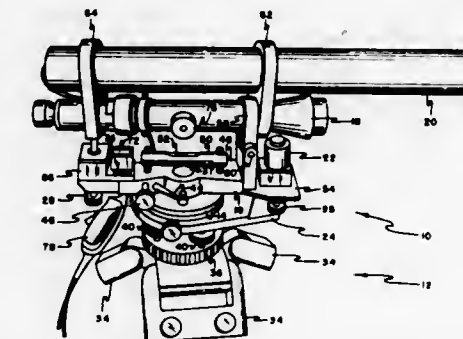
Norman P. Unema, Hudsonville, Mich., assignor to Laser Alignment Inc., Grand Rapids, Mich.

Filed Feb. 14, 1972, Ser. No. 225,969

Int. Cl. F21v 19/02

U.S. Cl. 240-44.26

23 Claims



A laser generator is mounted on a conventional transit for rotation about a vertical axis. A crank is interconnected at one end to the support structure of the transit and at its other end to the drive of an electric motor affixed to the transit and laser generator. Operation of the motor and crank causes rotational and reciprocal movement of the transit and generator about an axis to develop a datum plane of light. A control knob provides grade adjustment and is linked to a digital counter to provide a visual readout of the grade.

### 3,823,314 LAMP ASSEMBLIES

Michael John Germany, Lichfield, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed June 13, 1973, Ser. No. 369,546

Claims priority, application Great Britain, June 13, 1972, 27537/72

Int. Cl. F21v 7/00

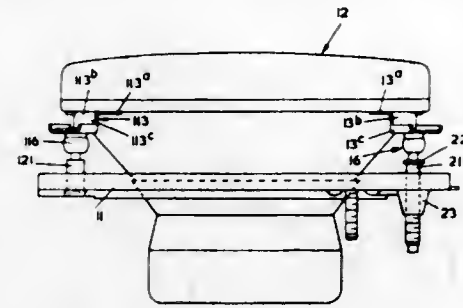
U.S. Cl. 240-41.6

6 Claims

A lamp assembly comprises a lamp unit, a support member for attachment to a motor vehicle, and a pair of spaced adjustment devices for adjusting the position of the lamp unit relative to the support member. The lamp unit is also connected with the support member by a pivot assembly so that adjustment of either adjustment device causes the lamp unit to be moved relative to the support member about an axis which passes through the pivot assembly and the other adjustment



device. Each adjustment device comprises a flange secured to the lamp unit, a coupling member snap-fitted into a slot in the flange, and a screw-threaded shank having a ball engaged as a



snap-fit in a socket on the coupling member. The shank is screw-threaded into a nut secured to the support member so that rotation of the shank relative to the nut causes adjustment of the lamp unit relative to the support member.

3,823,315

### AUTOMATIC GAIN METHOD AND CONTROLLER FOR MASS SPECTROMETER

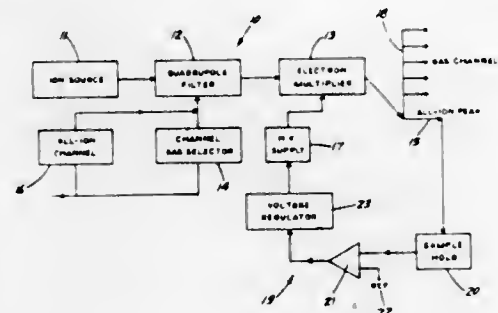
Mostafa A. Mosharrafa, Edina, Minn., assignor to Automated Medical Systems, Inc., Minneapolis, Minn.

Filed Oct. 30, 1972, Ser. No. 302,256

Int. Cl. H01J 39/34; B01d 59/44

U.S. Cl. 250-283

13 Claims



A method and apparatus for analyzing relative abundance of the composition of a sample with a mass spectrometer having an electron multiplier controlled with a high voltage supply. When the sample is a gas mixture, the volume per cent of a gas is analyzed. The all-ion peak signal is repetitively sampled and held to produce an analog output voltage. This output voltage is compared with a reference voltage via an error amplifier in a feedback loop to control the high voltage applied to the electron multiplier so that the all-ion peak signal of the mass spectrometer is maintained a constant.

3,823,316

### IONIZING RADIATION APPARATUS AND METHOD FOR ANALYZING FLOWING SUBSTANCES

Colin Ralph Boswell, North Island, New Zealand, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 3, 1971, Ser. No. 168,607

Claims priority, application Great Britain, Aug. 10, 1970, 38512/70

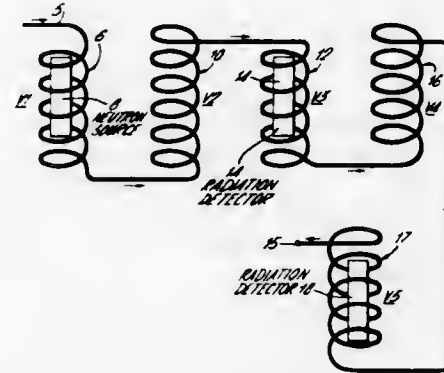
Int. Cl. G01n 23/12

U.S. Cl. 250-375

5 Claims

Methods and apparatus are disclosed for analyzing a flowing sample to detect one substance therein having a predetermined half-life, or two (or more) substances having respectively different half-lives. The sample flows past a first location, where it is irradiated with neutrons, and then through a single detecting location or two or more serially arranged detecting locations (according to the number of substances to be

detected) where the radiation is detected for subsequent analysis of its spectrum. When detecting one substance, it is proposed to select a flow rate in relation to the particular delay volumes in the system such that the radiation activity is a maximum at which value it is little dependent on small changes in the flow rate. This flow rate would be different for each of two substances to be detected, and, in such a case, it is



3,823,317

### THERMOCOPYING APPARATUS

Gerhard Ritzerfeld, 1000 Berlin 33, Schorlemer Allee 14, Germany

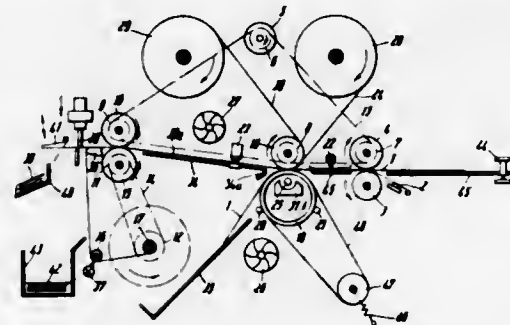
Filed Nov. 10, 1972, Ser. No. 305,590

Claims priority, application Germany, Dec. 13, 1971, 2162466

Int. Cl. G01d 15/10

U.S. Cl. 250-318

11 Claims



The thermocopying arrangement includes a source of infrared radiation focused on a line between a rotary transparent tube and a pressure roller. A transfer web having on one side a heat-responsive layer is transported through the line with the layer facing away from the source of radiation, and is wound up on a reel. At the same time, a master sheet is transported through the line in contact with the free other side of the transfer web, and a copy sheet web, or an individual copy sheet, is transported through the line in contact with the layer so that an image of the master sheet is formed on a copy sheet section, or on a copy sheet. After passage through the line, the master sheet and the copy sheet are separated from the transfer web which is wound up for further use. The separated master sheet can be again fed by the machine operator to the line of focused infrared radiation together with the transfer web and a new copy sheet.

3,823,318

### CIRCUIT ARRANGEMENT FOR EXPOSURE MEASURING DEVICES

Gerhard Krause, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

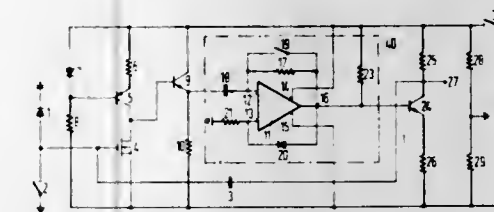
Filed Jan. 10, 1973, Ser. No. 322,306

Claims priority, application Germany, Mar. 7, 1972, 2210945

Int. Cl. H01J 39/12

U.S. Cl. 250-214 P

10 Claims



Circuit arrangement for exposure measuring devices with a light detector operating as a photo element and measuring light conditions, which element is switched on at the initiation of a light measurement and operates into a load as well as an amplifier with a high-pass characteristic.

3,823,320

### ELECTRO-OPTIC DEVICE FOR COUNTING OBJECTS

Johan Ledoux, Wageningen, Netherlands, assignor to N. V. Ledoux, Dodewaard, Netherlands

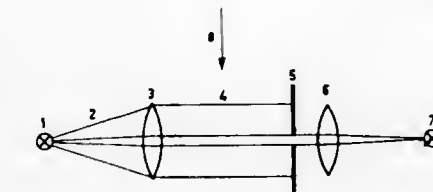
Filed Sept. 7, 1972, Ser. No. 286,998

Claims priority, application Netherlands, June 16, 1972, 7208307

Int. Cl. G01p 3/68

U.S. Cl. 250-222 PC

1 Claim



A ribbon-shaped beam of light is projected onto an objective lens, and a light transducer has a sensitive surface onto which the ribbon-shaped beam of light is focussed by the lens as a small light spot. The ribbon-shaped beam of light extends transverse to and intersects the path of movement of the objects. Means, arranged across the path of the ribbon-shaped beam maintains a predetermined gradation in light density across the width of the beam.

3,823,321

### PARTICLE-BEAM APPARATUS SUCH AS AN ELECTRON MICROSCOPE OR THE LIKE

Moriz Von Rauch, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 275,561, July 27, 1972, abandoned.

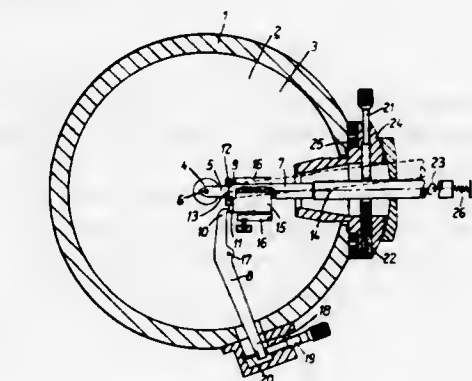
This application July 30, 1973, Ser. No. 383,712

Claims priority, application Germany, Aug. 20, 1971, 2142587

Int. Cl. H01J 37/20

U.S. Cl. 250-442

4 Claims



A particle-beam apparatus such as an electron microscope or the like has a housing containing a beam generator for generating a particle beam, and a specimen carrier for receiving a specimen to be investigated in the apparatus. The specimen carrier is penetrable by the beam and is displaceable within the housing transversely to the beam. An adjusting mechanism for effecting the transverse displacement of the specimen carrier is disclosed and includes two pivotally mounted positioning levers having end portions facing the specimen carrier and movable in mutually perpendicular directions. The first positioning lever is rigidly connected to the specimen carrier. A bearing assembly disposed outside the region of the specimen carrier is also provided and includes a pivot bearing for receiving the end portion of the first positioning lever in force-locking engagement therein. The pivot bearing has a center of rotation about which the first positioning lever is pivotable. A displaceable mount accommodates the bearing and the second positioning lever engages the mount for adjusting the displacement of the center of rotation with respect to the particle beam.

3,823,319

### POROSITY DETERMINATION WITH MUDCAKE CORRECTION

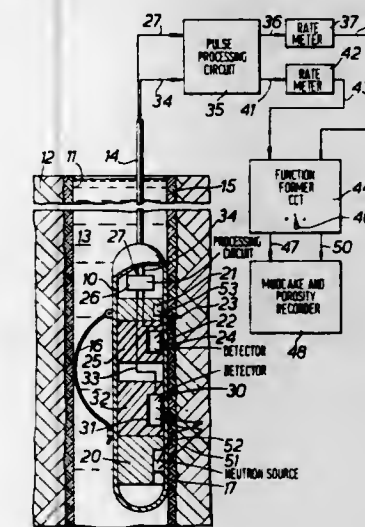
Jay Tittman, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 65,876, Aug. 21, 1970, abandoned. This application Mar. 23, 1973, Ser. No. 344,300

Int. Cl. G01t 1/16

U.S. Cl. 250-265

7 Claims



An illustrative embodiment of the invention provides an accurate mudcake correction for sidewall neutron borehole logging tools. A sidewall porosity sonde is equipped with a vertically separated neutron source and a neutron detector that are both eccentric in the tool in order to engage one side of the borehole wall. This basic porosity measuring array is supplemented by a source of lower energy neutrons having appreciably shorter slowing down length and another detector, for appropriately sensing the influence of the mudcake. A circuit combines signals from the detectors to produce an indication of the formation porosity.



3,823,322

**PHOTOGRAPHIC FILM HANDLING APPARATUS FOR CHARGED-PARTICLE BEAM EQUIPMENT**

Dieter Willach, Gluckweg; Bernd Schiewe, Uhlandstr., and Volker Rindfleisch, Stanser, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

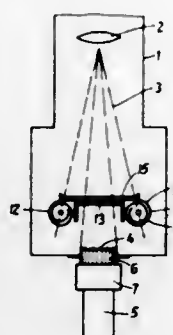
Filed Nov. 30, 1972, Ser. No. 310,877

Claims priority, application Germany, Nov. 30, 1971, 2160052

Int. Cl. H01j 37/26; G01n 23/00

U.S. Cl. 250-469

5 Claims



Improved photographic film handling apparatus for use with charged-particle beam equipment, such as electron microscopes, permits either photographic recording or direct viewing on a picture screen without removing the film handling apparatus from the beam path. The apparatus includes film supply means, a transport mechanism mounted in the beam path, and exposed film storage means. The photographic film, or other picture recording medium, is arranged in consecutive picture areas, each separated by a space sufficient to permit at least part of the charged-particle beam to pass through a matching opening in the transport mechanism for reception by a direct view fluorescent viewing screen or by a television camera for multi-station remote viewing. The recording medium can be either in conventional roll film form, with openings cut in the film between consecutive picture areas, or in plate form, with the plates mounted on a link-type carrier having joints in the regions between the recording plates.

3,823,323

**RADIATION DOSAGE MEASURING APPARATUS AND METHOD FOR THERMOLUMINESCENT DOSIMETERS**

Alun R. Jones, Deep River, Ontario, and Warren F. Richter, Petawawa, Ontario, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

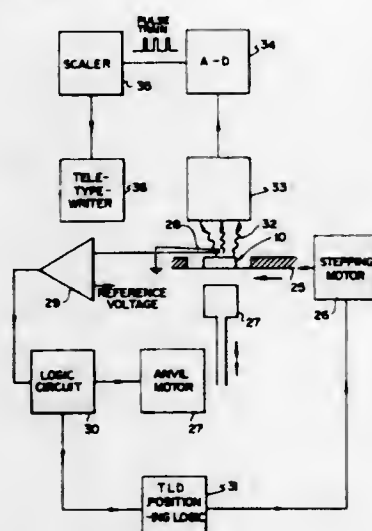
Filed Nov. 24, 1972, Ser. No. 309,526

Claims priority, application Canada, Jan. 7, 1972, 131908

Int. Cl. G01t 1/11

U.S. Cl. 250-484

5 Claims



An automatic reading device for thermoluminescent dosimeters wherein the TLD is placed over a heated surface

with a thermocouple placed between the side of the TLD away from the heated surface and the end of a light-pipe leading to a photo-multiplier tube or other light measuring device. In this arrangement only the heat that flows from the heater through the TLD to the thermocouple is measured and used for control purpose.

3,823,324

**APPARATUS FOR FORMING RELIEF PRINTING PLATE FROM LIQUID PHOTO-SENSITIVE RESIN**

Kaname Watabe, Osaka, Japan, assignor to Teijin Limited, Osaka, Japan

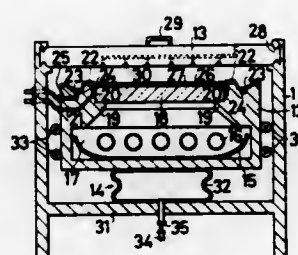
Filed Mar. 20, 1973, Ser. No. 343,022

Claims priority, application Japan, Apr. 1, 1972, 47-32856

Int. Cl. H01j 37/00

U.S. Cl. 250-492

7 Claims



The present apparatus comprises a hollow structure closed with a transparent glass plate under which a source of ultraviolet rays is provided, the hollow structure having a first space surrounding the glass plate and a second space at the outside of the first space. Spacer provided adjacent to the first space, the upper surface of the spacer means being on a level slightly higher than that of image bearing negative placed upon the glass plate except at some portions forming excessive resin discharge ports; vacuum suction means for a cover film placed upon a negative and extending over the second space, the suction means being communicated with the first and second spaces; a pressing board adapted to abut against a supporting base plate of a liquid photo-sensitive resin when the hollow structure is moved up; and means for discharging a predetermined amount of the resin upon the cover.

3,823,325

**X-RAY LASER**

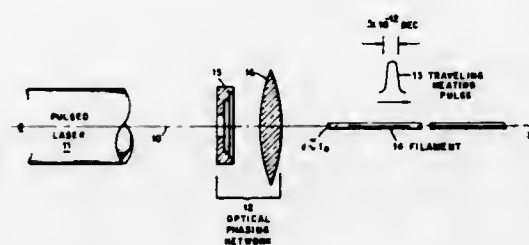
Lowell L. Wood, Simi, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 23, 1973, Ser. No. 381,631

Int. Cl. G03b 41/16

U.S. Cl. 250-493

6 Claims



An x-ray laser utilizing rapid flash heating of a filament of intermediate Z material to temperatures of the order of the K-shell binding energy of the material.

3,823,326

**METHOD OF AND APPARATUS FOR READING INFORMATION CONTAINED IN CODED FORM**

Johann Plockl, Unterhaching, Germany, assignor to Sick, Erwin, Optik-Elektronik, Waldkirch, Germany

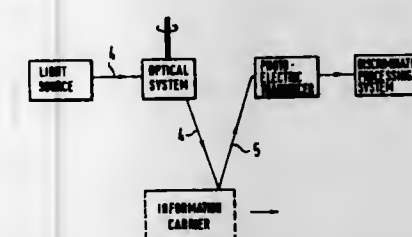
Filed Mar. 16, 1973, Ser. No. 342,250

Claims priority, application Germany, Mar. 24, 1972, 2214386; Sept. 15, 1972, 2245235

Int. Cl. G08c 9/06

U.S. Cl. 250-568

11 Claims



Information provided in the form of a linear code of light and dark regions is provided on an information carrier and the carrier is passed through the path of a circulating light beam which is reflected by the code to a photo-electric transducer providing an output to an electronic discriminating processing system which is programmed to identify the code.

3,823,327

**ARRANGEMENT FOR SYMMETRICALLY DISTRIBUTION LOAD TO ELECTRICAL MACHINES OPERATED IN PARALLEL**

Karl-Heinz Bayer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

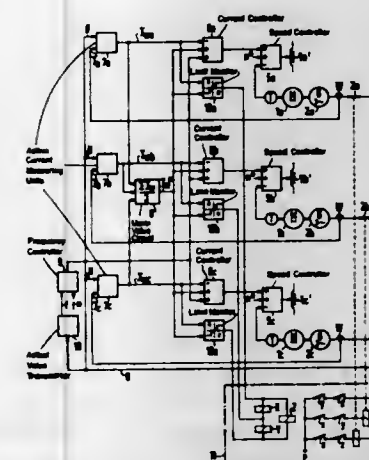
Filed Dec. 18, 1972, Ser. No. 315,865

Claims priority, application Germany, Dec. 21, 1971, 2163397

Int. Cl. H02j 1/10

U.S. Cl. 307-58

5 Claims



An arrangement is disclosed for symmetrically distributing load to parallel operated electrical machines such as direct-current to alternating current converters, inverters of an interruption-free power supply installation or the like. A plurality of current controllers corresponding to respective ones of the machines is provided. Each controller has at least two inputs for respectively receiving an actual value signal indicative of the actual machine current of the corresponding electrical machine and a reference signal indicative of the mean value of the individual actual machine currents. An improvement of the stability is thereby achieved, particularly when individual machines are connected and disconnected during operation. Automatic monitoring and equipment for disconnecting faulty machines without interruption of the current supply to the consumer can also be provided.

3,823,328

**LIQUID LEVEL CONTROL SYSTEM AND SWITCH ASSEMBLY THEREFOR**

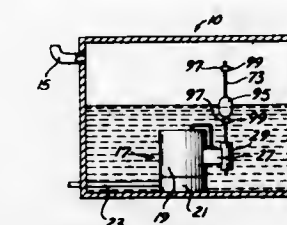
William Forbes Barton, Arlington Heights, Ill., and William E. Reese, Mansfield, Ohio, assignors to Grigsby Barton, Inc., Rolling Meadows, Ill. and Peabody Barnes, Inc., Mansfield, Ohio

Filed Nov. 17, 1972, Ser. No. 307,647

Int. Cl. H01h 5/02

U.S. Cl. 307-118

11 Claims



A liquid level control system which includes a reed switch actuating assembly having a magnet movable in response to a change in liquid level to effect opening and closing of reed switch contact elements. Pole pieces are positioned at opposite ends of the travel stroke of the magnet and effect snap-action movement of the magnet as it approaches either of the pole pieces, the pole pieces serving to establish magnetic latching of the magnet until a predetermined force is applied thereto to separate the magnet from the associated pole piece. The magnet is connected to a float or the like for movement in response to a change in liquid level within a tank to effect energizing of pump means.

3,823,329

**SWITCHING MECHANISM**

Alan Reginald Crook, and Norman Lumsden, both of Peterborough, England, assignors to British Domestic Appliances Limited, Peterborough, England

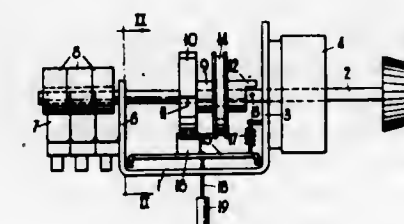
Filed Dec. 19, 1972, Ser. No. 316,507

Claims priority, application Great Britain, Dec. 29, 1971, 60619/71

Int. Cl. H01h 7/00

U.S. Cl. 307-141

18 Claims



A switching mechanism has a member rotatable from an 'off' position to one or more angular positions in which switch contacts are operated to control the energization of an electric motor driving the clothes drum of a tumble dryer. The switch contacts may also control the energisation of gas or electric heating elements of the tumble dryer. A spiral spring is arranged to quickly return the rotatable member to the 'off' position when a door giving access to the clothes drum is opened, thus de-energizing the electric motor and the heating elements. The rotation of the rotatable member may be arranged to wind a clockwork motor which drives the rotatable member slowly back to the 'off' position and thus governs the period of energisation of the electric motor. Alternatively the period of energisation may be governed by temperature sensitive switching means arranged to make and break the energising circuit of the electric motor in accordance with the temperature of air heated by the heating means.



3,823,330

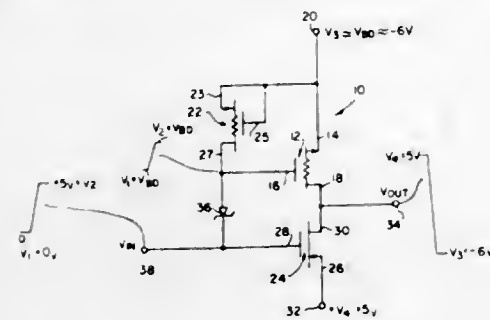
## CIRCUIT FOR SHIFTING AND AMPLIFYING INPUT VOLTAGES

A. Karl Rapp, Beverly, N.J., assignor to Inselek Inc., Princeton, N.J.

Filed Jan. 18, 1973, Ser. No. 324,580  
Int. Cl. H03k 19/40

U.S. Cl. 307—214

18 Claims



A circuit for shifting and amplifying input voltages includes a p-channel enhancement-type FET and an n-channel deep-depletion type FET which are adapted to be alternately rendered conductive and nonconductive. A first source of reference potential is connected to the n-channel deep-depletion type FET and a second source of reference potential is connected to the p-channel enhancement-type FET, which sources of reference potential are adapted to be coupled to an output terminal when their respective FETs are rendered conductive. A breakdown voltage device and a second n-channel deep-depletion type FET are provided, according to one embodiment of the invention, and are arranged such that the second FET acts as a current source to break down the breakdown device. The breakdown device thereby properly translates the input voltage, applied at the input of the circuit, to appropriate levels to control the p-channel enhancement-type FET and the first n-channel deep-depletion type FET. According to another embodiment of the invention, another p-channel enhancement-type FET is provided in order to pull up the input voltage.

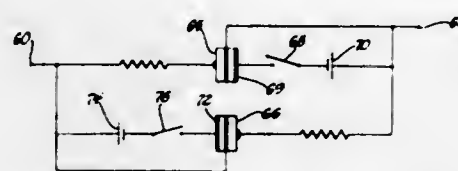
3,823,331

## BI-DIRECTIONAL ARRANGEMENT OF AMORPHOUS ELECTRONIC CONTROL DEVICES

Hellmut Ertzschke, Chicago, Ill.; Stanford R. Ovshinsky; Robert F. Shaw, both of Bloomfield Hills, Mich.; Marvin Silver, and Pavel Smejtek, both of Chapel Hills, N.C., assignors to Energy Conversion Devices, Inc., Troy, Mich.  
Continuation-in-part of Ser. Nos. 139,004, April 30, 1971, abandoned, and Division of Ser. No. 184,179, Sept. 27, 1971.This application July 9, 1973, Ser. No. 377,415  
Int. Cl. H03k 17/00, 3/26

U.S. Cl. 307—241

1 Claim



An electrical circuit comprising a pair of three terminal electronic control devices connected in back-to-back relation, each current control device comprising a body of essentially amorphous, semiconducting material defining a primary current path, and a voltage controlled electron emitter interfaced with the body through a thin electrode and an insulator layer to selectively vary the conductivity of the body of injecting high energy charge carriers into the body through the electrode.

3,823,332

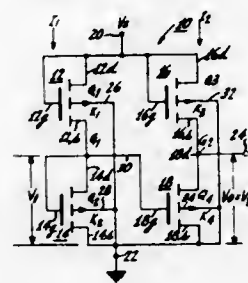
## MOS FET REFERENCE VOLTAGE SUPPLY

Rubin Feryszka, Somerville, and Joseph Otto Preisig, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.  
Filed Jan. 30, 1970, Ser. No. 7,148

Int. Cl. H03k 1/12

U.S. Cl. 307—297

8 Claims



A means for obtaining regulated reference supply voltages substantially at one or more integral multiples of the threshold voltage ( $V_t$ ) of field effect transistors fabricated completely with field-effect-transistors on a single monolithic integrated circuit chip.

3,823,333

## HALL-VOLTAGE DEVICE

Ferdinand Hubert Franciscus Gerardus Spierings, Asserpark 11, Wageningen, Netherlands

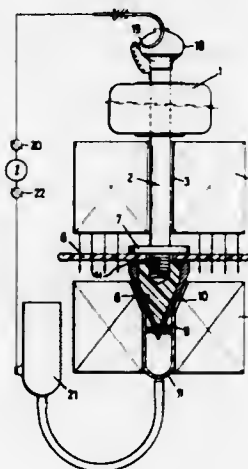
Filed Aug. 9, 1972, Ser. No. 279,083

Claims priority, application Netherlands, Aug. 10, 1971, 7111003

Int. Cl. G21d 7/02

U.S. Cl. 310—11

4 Claims



A Hall-voltage device comprising means for generating a magnetic field and a fluid-containing body in this field, which fluid contains charged particles. The device further comprises means for moving the body relative to the magnetic field in a plane essentially normal to said field and means for collecting and measuring the Hall-voltage produced in the body upon such a movement, the latter means consisting of two electrodes connected to spaced apart points of the fluid.

3,823,334

## ELECTRICAL APPARATUS WITH HIGH VOLTAGE ELECTRICAL CONDUCTOR INSULATED BY MATERIAL INCLUDING HIGH DIELECTRIC CONSTANT INSERTS

Harold M. Philofsky, Pittsburgh, Pa., and Pravin A. Sanghavi, Bombay, India, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1973, Ser. No. 380,330

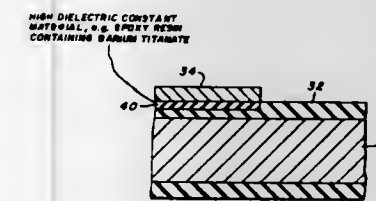
Int. Cl. H02k 3/40

U.S. Cl. 310—196

5 Claims

A high voltage, insulated conductor for electrical equipment such as dynamoelectric machines where non-uniform

electric stresses occur. The insulation has inserts of a material of high dielectric constant incorporated in the insulation in re-



gions of maximum stress to change the stress distribution in a manner to reduce the maximum stress.

3,823,335

## ELECTRODE ARRANGEMENT SERVING TO ACCELERATE A CHARGE CARRIER BEAM IN A VACUUM

Wilhelm Scheffels, Germering, and Ruprecht Hoffmann, Grobenzell, both of Germany, assignors to Steigerwald Strahltechnik GmbH, Munich, Germany

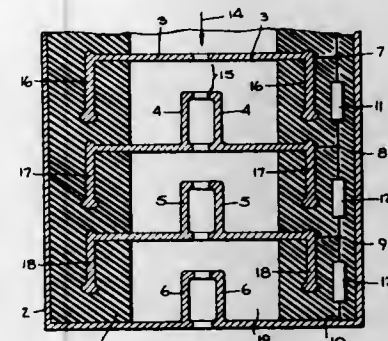
Filed June 18, 1971, Ser. No. 154,510

Claims priority, application Germany, June 23, 1970, 2030747

Int. Cl. H01j 31/02; H01j 29/46

U.S. Cl. 315—15

15 Claims



An electrode assembly for accelerating charge carriers in a charge carrier beam includes acceleration electrodes fixedly mounted inside an evacuable chamber formed by an insulating body and a surrounding enclosure. A supplementary conductor element is embedded within the walls of the insulating body, in a fashion in which it substantially encircles, or circumscribes, both the acceleration path and also at least in part the acceleration electrodes. The supplementary conductor is conductively connected to one of the electrodes which it circumscribes, thus maintaining electrode and supplementary conductor at the same electric potential.

3,823,336

## SHADOW MASK SUPPORT STRUCTURE INCLUDING A PLURALITY OF BIMETALLIC ELEMENTS FOR EACH LEAF SPRING

Hiroyo Nakamura, Takatsuki; Ken-Ichi Doi, Kobe; Akira Sato, Takatsuki, and Yushin Suzuki, Amagasaki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan  
Division of Ser. No. 19,945, March 16, 1970, Pat. No. 3,660,708. This application Feb. 10, 1972, Ser. No. 225,307

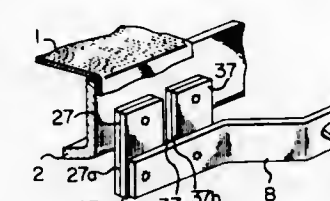
Claims priority, application Japan, Mar. 19, 1969, 44-21833; Mar. 19, 1969, 44-21834

Int. Cl. H01j 29/06, 31/20, 29/08

U.S. Cl. 313—85 S

1 Claim

In a shadow mask support means comprising a bi-metal piece having one end secured to a shadow mask frame with the other end left free, and a leaf spring secured at one end to said free end of the bi-metal piece and extending therefrom toward a pin provided on a side wall of a face panel, the im-



proved residing in that a metallic plate portion disposed between said frame and said spring is so arranged that it is displaced due to thermal deflection of the bi-metal at the end adjacent to said pin by an amount smaller than the displacement at the opposite end.

3,823,337

## CATHODE FOR AN ELECTRIC DISCHARGE TUBE

Antonius Johannes Albert van Stratum; Pieter Zalm, both of Emmasingel Eindhoven, and Niranjana Kumar Mitra, Best, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

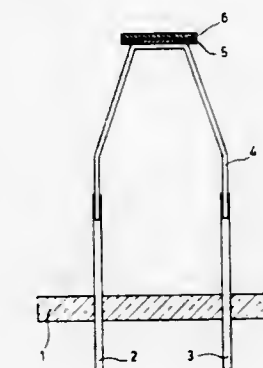
Filed May 25, 1973, Ser. No. 363,877

Claims priority, application Netherlands, May 30, 1972, 7207276

Int. Cl. H01j 1/14, 19/06

U.S. Cl. 313—346

2 Claims



A cathode suitable for poor vacuum conditions and repeated exposures to air consists of a molybdenum support, compact or compressed powder, welded on a tungsten wire and having thereon a compressed mixture of rhenium with lanthanum hexaboride. Instead of rhenium, a tungsten boride such as  $W_2B_6$  or  $W_2B_5$  may be chosen.

## ERRATUM

For Class 315—15 see:  
Patent No. 3,823,335

3,823,338

## CATHODE-RAY TUBE NON-LINEARITY CORRECTION CIRCUIT

John I. Garrett, Ogallala, Nebr., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 3, 1972, Ser. No. 294,604

Int. Cl. H01j 29/70

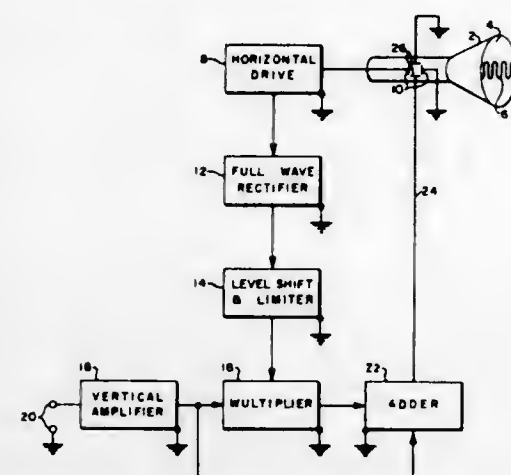
U.S. Cl. 315—276 D

6 Claims

A non-linearity, or barrel-effect, distortion of a cathode-ray tube display is corrected by deriving a first input signal for a multiplier circuit from a horizontal ramp signal by a full-wave rectification and level-shifting process to extract two predeter-



mined portions of the ramp signal connected by a zero level signal. The first input signal is multiplied by a second input



signal obtained from a vertical drive signal for the cathode-ray tube, and the resulting product signal is added to the original vertical drive signal to obtain a modified vertical drive signal.

3,823,339

#### DIODE RECTIFIER SOCKETED ELECTRICAL DEVICES AND DIODE RECTIFIERS THEREFOR

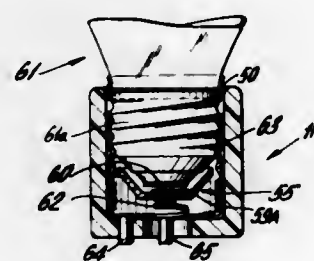
Edmond H. Borneman, Short Hills, and John L. Galvagni, Cedar Grove, both of N.J., assignors to Electronic Laboratories International, Inc., Cedar Grove, N.J.

Filed Oct. 4, 1972, Ser. No. 294,945

Int. Cl. H05b 37/02

U.S. Cl. 315—69

9 Claims



This electrical device comprises an electrically operated article, such as a lamp, which has a base that fits into a socket. The electrical connection from the socket to the electrically operated article is made through a diode rectifier. The rectifier is a semi-conductor. The purpose of the rectifier is to change the voltage of the electrically operated article from A.C. to D.C. current with the top halves of the alternating waves cut off and at the same time to reduce the temperature and extend the life of the article. In case of a lamp, its life is lengthened because the filament will evaporate more slowly and retard darkening of the bulb, thereby reducing replacement costs. To get the same lumens as is normal for a lamp of a predetermined wattage and without the rectifier, the rectified lamp must be of a higher nominal wattage. The rectifier is a chip that comprises a semi-conductor between metal contacts or metalized contacts and with the edges of the semi-conductor protected by insulation material which integrates the parts of the rectifier into a unit. The rectifier is in the socket and between a terminal of the article and a terminal of the socket. Said unit is removable from at least one of them. The unit is in electrical contact with said terminals, and may be fixed either to the article terminal or to the socket terminal, but not to both. In any event, the unit is outside of the conductive systems of the electrically operated article and outside the conductive system of the socket, and serves to connect them in series circuit. In one form of the invention the rectifier unit is fixed to the central bottom contact of a lamp base or to a terminal of the lamp base. In another form of the invention,

the rectifier unit is fixed to a pair of terminals of the lamp base connecting a pair of filaments in the lamp in parallel. In yet another form of the invention the unit is on an insulator flange centralized with respect to the socket and removable from the socket and lamp base, and may be dropped into the socket. In still another form of the invention, the rectifier unit is mounted on and fixed to a terminal of the socket, and the lamp base is removable from the socket and out of contact with said unit.

3,823,340

#### CIRCUIT FOR GENERATING A SAWTOOTH-SHAPED CURRENT THROUGH A COIL BY COMPENSATING FOR DEFLECTION COIL RESISTANCE

Peter Ketelaar, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

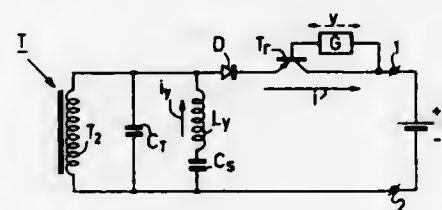
Filed Feb. 12, 1973, Ser. No. 332,010

Claims priority, application Netherlands, Feb. 19, 1972, 7202214

Int. Cl. H01j 29/70

U.S. Cl. 315—27 GD

10 Claims



A deflection circuit in which a switching element, for example, a thyristor is driven during the flyback period. During the scan a diode automatically becomes conducting so that a constant direct voltage is applied to the deflection coil. An additional source which may be for example a transistor is included between the direct voltage source and the diode, thus enabling the linearity to be improved and/or the East-West correction to be achieved. In a picture display apparatus having an index tube the source may be the output of a control circuit for stabilizing the index frequency.

3,823,341

#### MAGNETIC BLAST ALTERNATING CURRENT CIRCUIT INTERRUPTER COMPRISING A RECTIFYING ARC EXTINCTION CIRCUIT

Yves Pelenc, La Tronche, and Georges Bernard, Saint-Egreve, both of France, assignors to Merlin Gerin, Grenoble, France

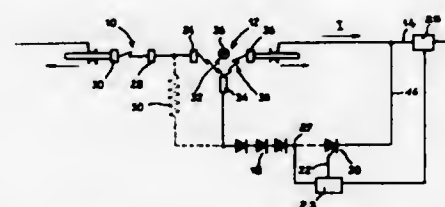
Filed Mar. 23, 1973, Ser. No. 344,204

Claims priority, application France, Mar. 28, 1972, 72.10942; Dec. 18, 1972, 72.45142; Mar. 6, 1973, 73.04228

Int. Cl. H02h 7/22

U.S. Cl. 317—11 A

21 Claims



An alternating current circuit interrupter comprising separable contacts to draw an arc and at least one auxiliary shunt path including series connected rectifiers and a controlled rectifier which can be triggered shortly before current zero in the appropriate current half-cycle. A terminal electrode of the shunt path is disposed adjacent the contacts and magnetic blast means to blow the arc against the electrode only when the current has the instantaneous direction corresponding to the conducting sense of the rectifiers to switch

the current to the shunt path. Means may be provided to prevent the stagnation of the arc roots and to permit commutation of the current during any half-cycle to a single or to a double shunt path.

3,823,342

#### VOLTAGE PROTECTION CIRCUITRY FOR DIRECT CURRENT POWERED MACHINERY

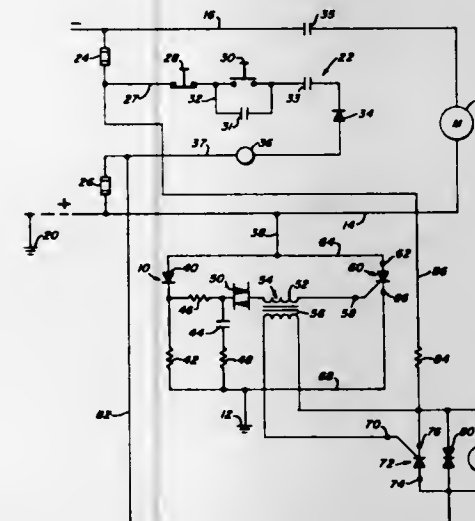
John F. Burr, Pittsburgh, Pa., and Gary L. Powell, Fairmont, W. Va., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed June 25, 1973, Ser. No. 373,130

Int. Cl. H02h 7/09

U.S. Cl. 317—13 R

9 Claims



A diode and a current limiting resistor are serially connected between a grounded electrical conductor and the frame portion of an electrically operable machine supplied with direct current power from a remote power source through trailing conductors connected to the machine load. The diode is operable to prevent the frame from being raised to the full-line voltage of the power source in the event the polarity of the conductors is reversed. The current limiting resistor limits the flow of current, caused by transient voltages appearing on the frame, to an intrinsically safe level. A capacitor and a plurality of resistors arranged in parallel circuit relation with the current limiting resistor monitor the existence of a fault voltage appearing thereacross. When the capacitor receives a charge of a predetermined magnitude, a diac serially connected to the capacitor conducts current therethrough to the gate terminal of a first silicon controlled rectifier. The first silicon controlled rectifier switched to a conductive state provides a direct path for the flow of current from the frame to the grounded conductor. A second silicon controlled rectifier, switched to a conductive state upon actuation of the first silicon controlled rectifier, deenergizes a relay to thereby terminate operation of the machine and signal the condition of fault voltage applied to the frame.

3,823,343

#### COMMUTATION DIRECTING CIRCUIT FOR FAULT CURRENT LIMITING STATIC SWITCH

Floyd L. Steen, Lansdowne, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sept. 29, 1970, Ser. No. 76,446

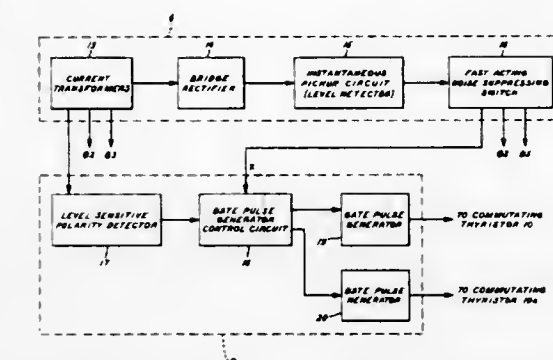
Int. Cl. H02h 3/08, 7/14

U.S. Cl. 317—20

6 Claims

Circuitry for directing commutation in an inverse parallel connected power thyristor switch including selectively operable commutation circuits for interrupting a fault current in

response to a stop signal from an overcurrent detector. The directing circuitry monitors current flowing through the



switch to determine its direction and enables the stop signal to actuate the commutation circuit associated with the fault current conducting thyristor.

3,823,344

#### ARRANGEMENT PROVIDED WITH AT LEAST TWO COMBUSTION FLASH BULBS

Pal Geza Havas, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

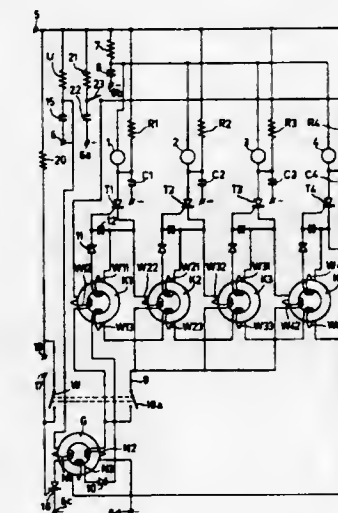
Filed June 4, 1973, Ser. No. 366,445

Claims priority, application Netherlands, June 17, 1972, 72.8320

Int. Cl. F23q 7/02

U.S. Cl. 317—80

8 Claims



The invention relates to an arrangement for the successive ignition of at least two combustion flash bulbs in which each bulb is arranged in series with a thyristor. The invention provides a solution for rendering the thyristors conducting with the aid of a shift register which is provided with cores of a magnetic material having a substantially rectangular hysteresis loop.

3,823,345

#### ELECTRIC IGNITER CONSTRUCTION

Richard K. Mitts, 300 Cienega Dr., Fullerton, Calif. 92635; Wilbur F. Jackson, 27352 Rainbow Ridge Rd., Rolling Hills, Calif. 90274, and James R. Willson, 9342 Bixby Ave., Garden Grove, Calif. 92641

Continuation of Ser. No. 107,767, Jan. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 807,509, March 17, 1969, Pat. No. 3,562,590. This application Dec. 27, 1972, Ser. No. 318,791

Int. Cl. F23q 7/10

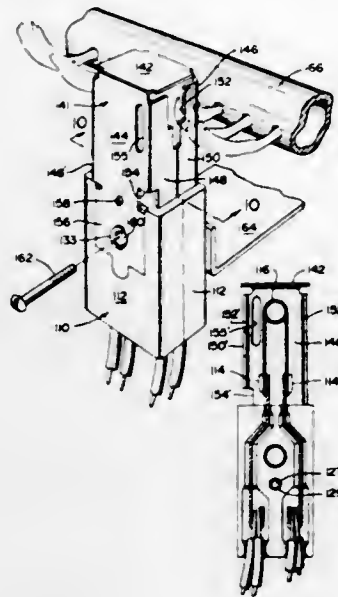
U.S. Cl. 317—98

14 Claims

An electric igniter assembly including a casing in which the major length of the igniter element is enclosed so that only a



small portion is disposed in proximity to a gas burner; the electrical connectors for the igniter element and the electrodes that are attached to power leads are disposed remote from the flame issuing from the gas burner as well as being fixedly supported in the casing which includes shock absorbent material



to reduce possibilities of breakage of the igniter element. A shield mounted upon the casing surrounds the igniter element so as to readily enable direct ignition of the gas burner and thereafter protect the igniter from direct burner flame impingement.

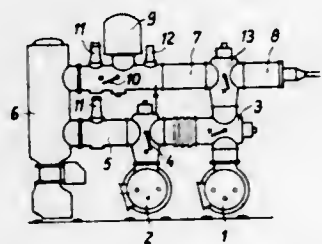
### 3,823,346 COMPRESSED-GAS-INSULATED ELECTRIC SWITCHING SYSTEM

Willi Olsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany  
Filed Jan. 9, 1973, Ser. No. 322,209  
Claims priority, application Germany, Jan. 20, 1972, 2203102

Int. Cl. H02b

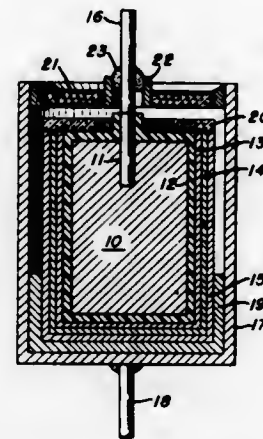
U.S. Cl. 317-103

5 Claims



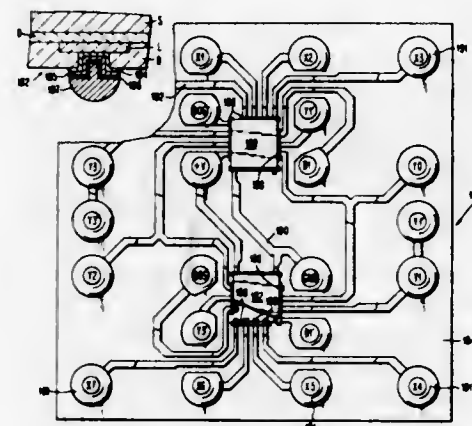
An electric high-voltage switching system of the metal-clad compressed-gas-insulated type has two bus bars individually connected through bus bar disconnect switches with a power circuit breaker from which a branch line is supplied with current. An additional disconnect switch connects at least one of the bus bar disconnect switches on its side connected with the bus bar, with the branch line. Closing of this additional disconnect switch permits the branch line to remain powered when the bus bar disconnect switch is opened and/or the power circuit breaker is opened.

### 3,823,347 SOLID ELECTROLYTIC CAPACITOR Steven Karlik, Jr., Palm Beach Gardens, Fla., assignor to National Components Industries, Inc., West Palm Beach, Fla. Filed Apr. 19, 1972, Ser. No. 245,520 Int. Cl. H01g 9/05, 9/10 U.S. Cl. 317-230 1 Claim



A solid electrolytic capacitor having a stem extending from a porous anode and carrying a semi-conductive layer deposited over a dielectric film. An inorganic mask is placed over the stem in the region where it emerges from the anode, which mask prevents creepage of the semi-conductive layer onto the stem and also, serves to strengthen the area where the stem emerges from the anode.

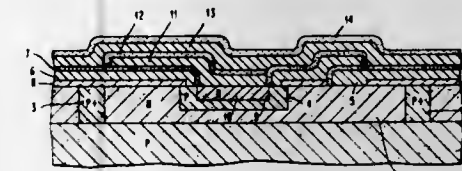
### 3,823,348 MONOLITHIC INTEGRATED STRUCTURE INCLUDING FABRICATION AND PACKAGE THEREFOR Benjamin Agusta; Paul H. Bardell; Paul P. Castrucci, all of Poughkeepsie; Robert A. Henle, Hyde Park, and Raymond P. Pecoraro, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y. Division of Ser. No. 539,210, March 31, 1966, Pat. No. 3,508,209. This application Apr. 16, 1970, Ser. No. 33,119 Int. Cl. H01l 5/00 U.S. Cl. 317-234 R 3 Claims



A monolithic integrated semiconductor structure is described that has a plurality of functionally isolated individual cells that are electrically interconnected. Each of the cells is an object or mirror image cell that is vertically, horizontally and diagonally displaced from the object cell. The plurality of cells provide a memory array with electrical components of each memory cell composed of active and passive semiconductor devices. Other important aspects of the structure include underpass connections and active devices in a common portion of the structure which are electrically interconnected at the same node potential by means of a highly doped buried region within the common portion of the structure.

ture. In particular, a sophisticated packaging scheme for containing such a highly complex array of memory cells is disclosed.

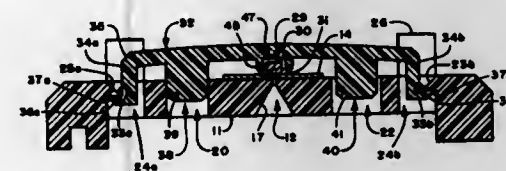
### 3,823,349 INTERCONNECTION METALLURGY SYSTEM FOR SEMICONDUCTOR DEVICES Vir A. Dhaka, Hopewell Junction, and Andrew F. Kozik, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y. Division of Ser. No. 4,966, Jan. 22, 1970, Pat. No. 3,681,147. This application May 17, 1972, Ser. No. 254,322 Int. Cl. H01l 7/00 U.S. Cl. 317-234 R 4 Claims



Semiconductors having very narrow base widths can be fabricated by using ion implantation through the contact metallization as a mask, then expanding and passivating the metallization by anodization so as to protect the semiconductor junction.

Aluminum metallization has predictable expansion characteristics as it oxidizes or is anodized, and the oxide has insulating properties. This predictable expansion of aluminum oxide permits a dynamic control of the size and shape relationship between adjacent semiconductive regions such as emitter and base or base-collector. The expansion of the contact metallization provides a mask opening with closely corresponding dimensions and permits very close control of narrow semiconductor regions.

### 3,823,350 PROTECTIVE CARRIER FOR SEMICONDUCTOR CHIPS Charles L. Stoner, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C. Filed Sept. 5, 1973, Ser. No. 394,585 Int. Cl. H01l 3/00, 5/00 U.S. Cl. 317-234 R 4 Claims

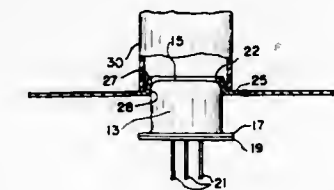


A protective carrier for microcircuit devices, e.g., semiconductor chips, having beam leads is described, wherein a cover retains the chip such that its beam leads are in electrical contact with electrically conductive leads of a base so that the chips may be readily handled and tested while so retained.

### 3,823,351 SEMI-CONDUCTOR AND HEAT SINK FIN ASSEMBLY Arthur E. Chambers, Grosse Ile, Mich., assignor to Carbidex Corporation, Southgate, Mich. Continuation-in-part of Ser. No. 291,898, Sept. 25, 1972, abandoned. This application Sept. 6, 1973, Ser. No. 394,734 Int. Cl. H01l 3/00, 5/00 U.S. Cl. 317-234 R 1 Claim

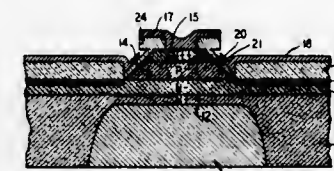
A semi-conductor is housed within a metallic can closed at its top and having a base flange and one or more heat sink fins.

Each heat sink fin includes a flexible metallic heat conductive body 0.005 inch thick of disc-shape, centrally apertured and



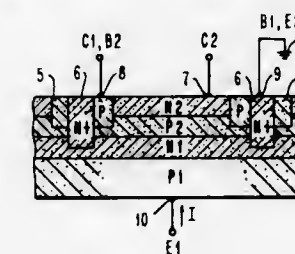
snugly and frictionally mounted over said can. Each fin includes a central annular flange. The fins and flanges in registry for uniform spacing.

### 3,823,352 FIELD EFFECT TRANSISTOR STRUCTURES AND METHODS Bernard Roger Pruniaux, Conflans St. Honorine, France; Terence James Riley, Warren; Robert Morgan Ryder, Summit, both of N.J., and Herbert Atkin Waggener, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J. Filed Dec. 13, 1972, Ser. No. 314,785 Int. Cl. H01l 11/00; B01j 17/00 U.S. Cl. 357-23 13 Claims



A field effect transistor is made in a mesa configuration with the top portion of the mesa being the source region and with the limits of the gate electrode being defined by a shadow mask that overhangs part of the mesa. A drift region layer of moderately high resistivity is included between the transistor channel region and the drain region and constitutes the upper wafer substrate surface from which the mesa extends. A thin implanted layer in the upper surface of the drift region layer limits the extent of the channel in the mesa, and a thick oxide over the drift layer reduces the coupling from the gate electrode to the drift region.

### 3,823,353 MULTI LAYERED VERTICAL TRANSISTOR HAVING REACH-THROUGH ISOLATING CONTACTS Horst H. Berger, Sindelfingen, and Siegfried K. Wiedmann, Stuttgart, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y. Filed Mar. 2, 1973, Ser. No. 337,510 Claims priority, application Germany, Mar. 14, 1972, 22121682 Int. Cl. H01l 11/00, 15/00 U.S. Cl. 357-40 6 Claims



Logic circuits for performing the INVERTER and NOR functions, and monolithic integrated structures for realizing



the circuits. The basic circuit comprises PNP transistor and an NPN transistor. The emitter of the PNP transistor has its base grounded and its collector connected to the base of the NPN transistor having its emitter grounded. The logic signal input is at the base of the PNP transistor. The output is taken at the collector of the NPN transistor and is the inverse of the input. Two such basic circuits are interconnected to provide the NOR function.

### 3,823,354 HALL ELEMENT

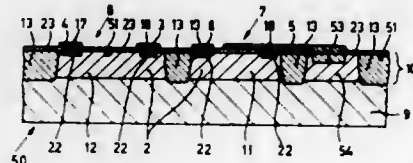
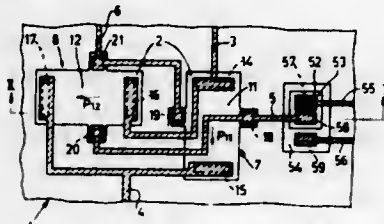
Johannes Hendrikus Hubertus Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,892

Claims priority, application Netherlands, June 1, 1972, 727395

Int. Cl. H011 17/00

U.S. Cl. 317—235 R



The invention relates to a semiconductor device having a Hall element. In order to reduce the offset voltage between the connection contacts for deriving the Hall signals and in order to increase the stability, the Hall element shows a number of sub-Hall elements which are arranged parallel to each other. The Hall bodies of the sub-Hall elements, viewed on the surface of the semiconductor body, are situated beside each other in the semiconductor body and show different directions of current. The semiconductor body may be constituted by an epitaxial layer of n-type silicon on a substrate of p-type silicon. The Hall element may be manufactured by using methods which are generally known in manufacturing integrated circuits.

### 3,823,355 CONTACTLESS SWITCH DEVICE

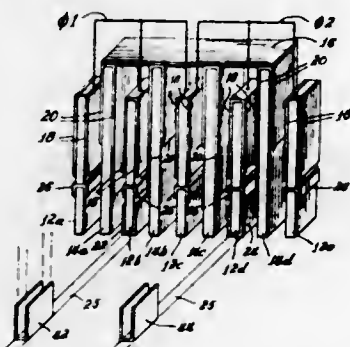
James E. Batz, Northbrook, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Nov. 12, 1971, Ser. No. 198,305

Int. Cl. H01g 5/14

U.S. Cl. 317—246

11 Claims



A contactless switch device for coupling one or more electrical input signals of predetermined phase to an output

sensing circuit wherein a plurality of parallel spaced insulating members are movable relative to each other upon depressing a control plate and have electrical conductive surface areas selectively disposed thereon. Excitation signals of predetermined phase are directly connected to selected of the conductive surface areas and are capacitively coupled to sensor elements upon depressing the control plate, electrostatic shield means minimizing coupling of the signals to the sensor elements when the control plate is in its normal nondepressed position.

### 3,823,356 CONTROL SYSTEM FOR CAR WASHING MACHINES

Jorma Paavola, Helsinki, and Lasse Julita, Tampere, both of Finland, assignors to Kone-Lamminen Oy, Tampere, Finland

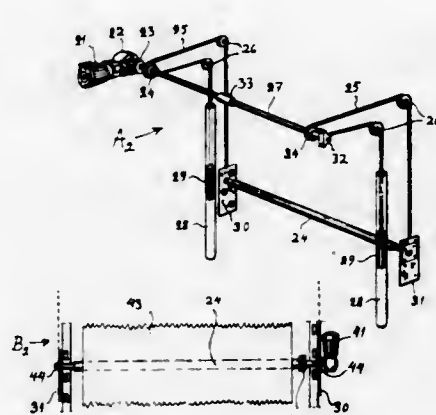
Filed Sept. 5, 1972, Ser. No. 286,403

Claims priority, application Finland, Sept. 2, 1971, 2464/71

Int. Cl. G05b 13/02

U.S. Cl. 318—39

13 Claims



System for controlling the functions of a car washing machine, having a carriage of portal construction, movably mounted on a base on rails and the like on which the machine performs a washing procedure, moving longitudinally over the car to be washed, the machine being provided with rotatable brushes for washing the top and the side surfaces of the car, said brushes being provided with means controlling the pressure of said brushes against the surfaces of the car being washed, while variations of the pressure are also used to control the longitudinal movements of the machine relative to the car, wherein the forces affecting said brushes are sensed and measured by strain gages, for measuring the strain, torque and elongation on the brushes, and wherein the differences determined by the strain gages are arranged to control the brushing pressure against the car as well as the longitudinal movements of the machine so that the brushing pressure is maintained within preset limits, in spite of varying contours of the car, as well as of the varying mains voltage and other parameters.

### 3,823,357 STARTING DEVICE FOR A SYNCHRONOUS MACHINE

Jorg Sapper, Windisch, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 23, 1973, Ser. No. 326,000

Claims priority, application Switzerland, Feb. 7, 1972, 1685/72

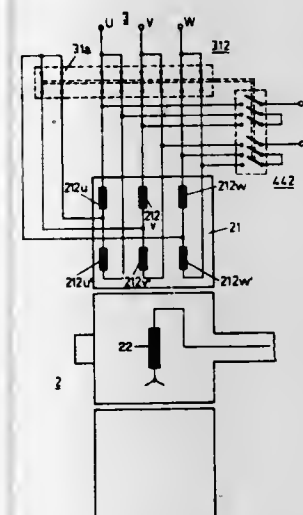
Int. Cl. H02p 1/50

U.S. Cl. 318—183

4 Claims

A starting arrangement for a polyphase synchronous machine includes a polyphase induction machine having a wound rotor which is coupled to the rotor of the synchronous machine for rotation therewith. The rotor winding of the induction machine is closeable through a starting load-circuit, switching means are provided for switching over the stator

winding of the induction machine from its connection to a polyphase alternating current supply source to a direct current



excitation, and the rotor winding of the induction machine is connected to the rotor winding of the synchronous machine through a rectifier.

### 3,823,358 BATTERY PEAKING UNIT FOR FUEL CELL POWER PLANTS

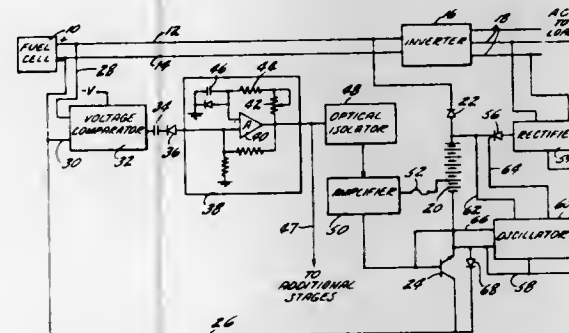
Paul R. Rey, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 18, 1973, Ser. No. 371,196

Int. Cl. H02j 7/00, 7/34

U.S. Cl. 320—3

5 Claims



An auxiliary storage battery or other DC rechargeable power source is connected in parallel with a fuel cell to supply additional current to a load when an overload such as the starting of a motor causes the fuel cell voltage to drop. The fuel cell voltage is sensed and when it reduces below a preselected value the auxiliary battery supplies current to the load for a preselected time interval. The storage battery is recharged by power supplied by the fuel cell only during periods when the battery is not supplying current to the load. Excessive battery drain is prevented by shutting down the peaking unit whenever fluctuations in the fuel cell voltage cause multiple peaking cycles.

### 3,823,359 INHIBIT AND RESET CIRCUIT

Charles W. Koeller, Yellow Springs, and Stephen J. C. Chan, Dayton, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Mar. 7, 1973, Ser. No. 338,673

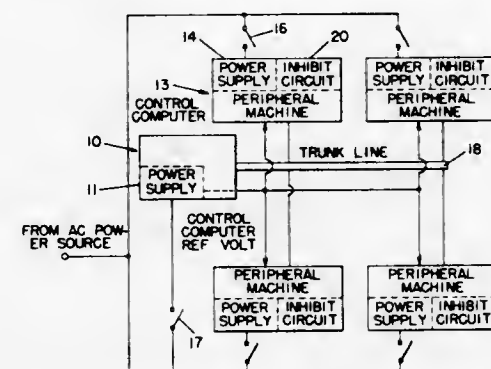
Int. Cl. H02m 1/18

U.S. Cl. 321—11

10 Claims

The circuit of the present invention is used in conjunction with a peripheral machine power supply to control the connection of the peripheral machine to the trunk line of a com-

puter processing unit such that the peripheral machine does not load the trunk line unnaturally during power "on" and "off" transitions. Means are provided for sensing the AC power supplied to the peripheral machine and for providing a signal indicative of the presence or absence of AC power. A delay means receives the provided signal and delays the pro-



vided signal for a period of time sufficient to allow the peripheral machine's power supply to reach operating level and for a minimal time in anticipation of the machine's power supply dropping out of its operating level. Means responsive to the delayed signal connects or disconnects the peripheral machine from the trunk line when power operating levels are reached or not reached, respectively.

### 3,823,360 CONTROL CIRCUIT FOR CHOPPED FEEDING

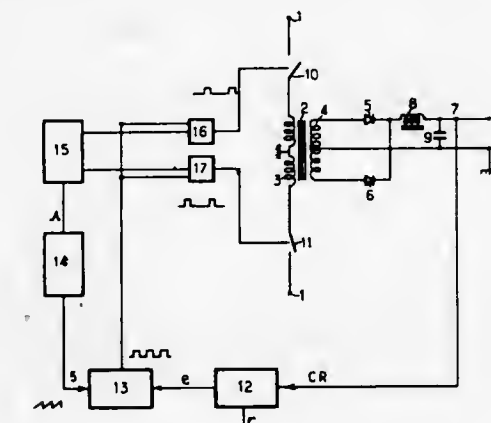
Ludovic Grandin de l'Eprevier, Belfort, and Andre Achille Brecy, Danjoutin, both of France, assignors to Societe Industrielle Honeywell Bull, Paris, France

Filed Dec. 29, 1972, Ser. No. 319,825

Int. Cl. H02m 7/00

U.S. Cl. 321—18

6 Claims



A control circuit is provided for chopped feeding which circuit receives at its inputs an alternating voltage and at its outputs delivers a direct chopped voltage. The choppers are controlled by comparing an error voltage with a sawtooth signal on a fixed frequency generated by a unijunction transistor, whose output is connected to a bistable for channel switching.

### 3,823,361 CONTROL DEVICE FOR A REVERSIBLE STATIC FREQUENCY CONVERTER

Vladislav Vasilievich Talov, ulitsa Jubileynaya, 11, kv. 107, and Vladimir Grigorovich Yatsuk, ulitsa Pervomaiskaya, 8, kv. 57, all of Istra Moskovskoi oblasti, U.S.S.R.

Filed Sept. 25, 1972, Ser. No. 292,169

Int. Cl. H02m 7/00

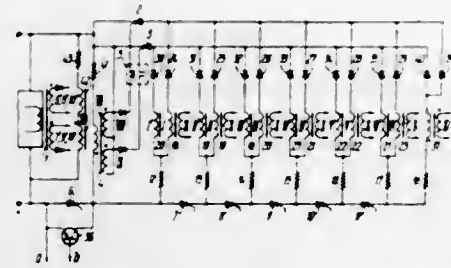
U.S. Cl. 321—27 R

1 Claim

A control device for a reversible static frequency converter comprising a DC power supply source and connected thereto,



a master generator, a reversible unit with two key thyristors and a push-pull shift register consisting of separate cells each comprising a controlled semiconductor switch, and a thyristor for example, with one electrode connected to the direct and reverse count windings of output pulse transformers of two different cells, the other ends of said windings being con-



nected to said key thyristors. The reversible unit, comprises a pulse transformer having its primary winding connected between the electrode of the semiconductor switch of the first cell of the shift register and the negative pole of a DC power supply source, the secondary windings being connected via commutation elements to a respective circuit controlling said two key thyristors.

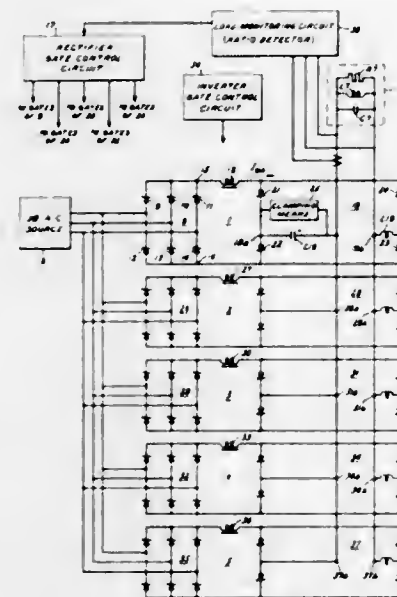
### 3,823,362 COORDINATED MASTER-SLAVE CONVERTER SYSTEM FOR VARIABLE-POWER TANK LOADS

Ronald B. Bailey, Waynesboro, Va., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 2, 1973, Ser. No. 328,894  
Int. Cl. H02m 5/44

U.S. Cl. 321-27 MS

7 Claims



A plural converter system, including parallel-connected current-source inverters, efficiently delivers alternating current to a tank load having variable power requirements. One of these inverters is a master and the remainder are slaves, and each has a maximum power rating and a loading range that is a fraction of the corresponding parameters of the load. The master inverter is started initially to charge the load, and the slaves are selectively controlled in response to the actual power requirement of the load so that the proper converters are running to supply the load demand without exceeding either the maximum unit rating or the limited range of any individual converter.

### 3,823,363 COOLING FAN OPERATING CIRCUITS FOR ROAD VEHICLES

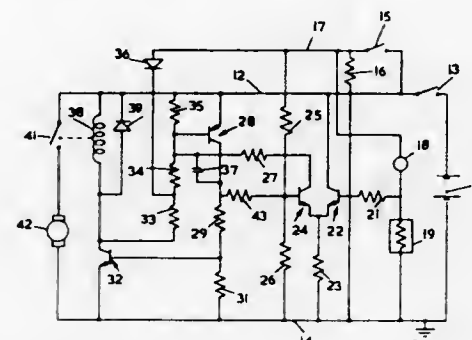
William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company Limited, Birmingham, England  
Filed Apr. 2, 1973, Ser. No. 346,883

Claims priority, application Great Britain, Apr. 7, 1972, 16056/72

Int. Cl. B60h 3/04

U.S. Cl. 322-33

3 Claims



A cooling fan for a road vehicle is operated in accordance with water temperature by sensing a potential close to a temperature gauge. This potential fluctuates by virtue of a vibrating contact voltage regulator used in the circuit, and a memory arrangement is used so that the operating of the circuit is independent of the regulator.

### 3,823,364 METHOD AND DEVICE FOR PROVIDING COMPENSATION FOR GYROMAGNETIC EFFECT IN YAWING MOTION OF CRAFT-CARRIED TOTAL-FIELD MAGNETOMETERS

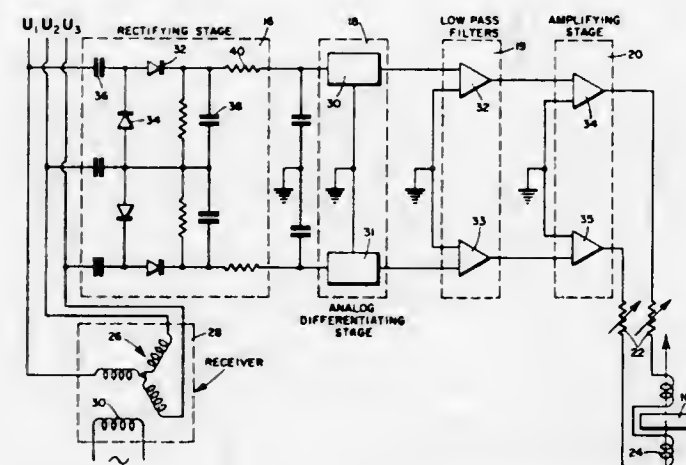
Michel Cordelle, Grenoble; Jean Crescini, Domeng; Henri Glenat, Biviers, and Antoine Salvi, Fontaine, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 3, 1972, Ser. No. 240,540

Claims priority, application France, Apr. 9, 1971, 71.12816  
Int. Cl. G01r 33/08

U.S. Cl. 324-0.5 R

7 Claims



The method and the device provide compensation for the gyromagnetic effect which is sustained by a total-field magnetometer having a sensing winding and which arises from angular movements performed about a given direction by a craft which carries the magnetometer. An electric signal is produced and the intensity of said signal is proportional to the angular velocity of the craft about said direction. A correction which is proportional to the signal and takes into account the angle made by said direction with the lines of force of the field to be measured is made in the indications supplied by the magnetometer.

### 3,823,365 METAL DETECTING APPARATUS HAVING IMPROVED GROUND-EFFECT IMMUNITY

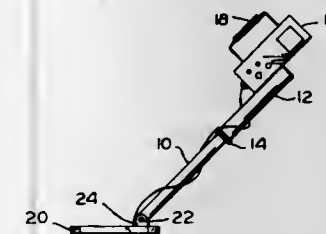
Sherman D. Anderson, Rt. 3, Box 539, Klamath Falls, Oreg. 97601

Filed Jan. 24, 1973, Ser. No. 326,515

Int. Cl. G01v 3/10

U.S. Cl. 324-3

16 Claims



A BFO metal detector includes a support for carrying a search coil and plural compensating coils which prevent ground effects from changing the beat frequency output. The search coil forms part of a tuned circuit of a first oscillator while plural compensating coils form part of a tuned circuit of a second oscillator, the frequency of which is far enough removed from that of the first oscillator to prevent lock-in. The output of one or both of the oscillators is suitably converted to a frequency close enough to the remaining frequency to provide an audible beat.

### 3,823,366 SYSTEM FOR TESTING SOLENOID RESPONSE TIME UNDER LOAD AND HOLDING POWER UNDER INCREASING LOAD CONDITIONS

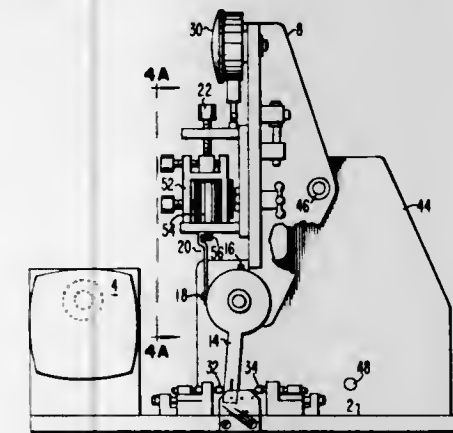
Donald F. Fabry, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 26, 1973, Ser. No. 345,181

Int. Cl. G01r 31/02

U.S. Cl. 324-28 R

17 Claims



Solenoids of varying specifications may be tested for push or pull in either a horizontal or a vertical position by means of this system. Included within the test system are: a fixture for receiving solenoids of varying dimensions, a magnetic clutch to transmit the torque of a motor into a test load for the solenoid, circuitry to control the testing of the solenoid, and circuitry responsive to the test environment to automatically determine whether the solenoid has passed or failed predetermined test specifications. The solenoid is first tested for time response under load and then is tested for holding power under an increasing load. These tests are performed automatically and in addition indicating lights are provided to indicate to an operator whether the solenoid has passed or failed the tests.

### 3,823,367 BATTERY PACKAGE WITH END OF LIFE CONDITION INDICATOR

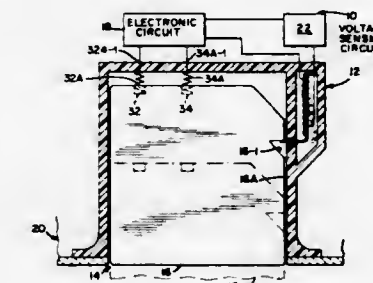
Gordon E. Kaye, Garrison, and George Sussingham, Mount Vernon, both of N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Sept. 4, 1973, Ser. No. 393,766

Int. Cl. H01m 31/04; G01n 27/42

U.S. Cl. 324-29.5

10 Claims



A battery pack for small portable and hand-operable devices, arranged to be detent-locked in operating position so long as the battery voltage exceeds minimum satisfactory operating value for the device and to be released and ejected, partially for visible indication, when battery voltage drops below minimum satisfactory operating value.

### 3,823,368 CALIBRATION AND BALANCE SYSTEM IN PULSE EDDY CURRENT TESTING APPARATUS

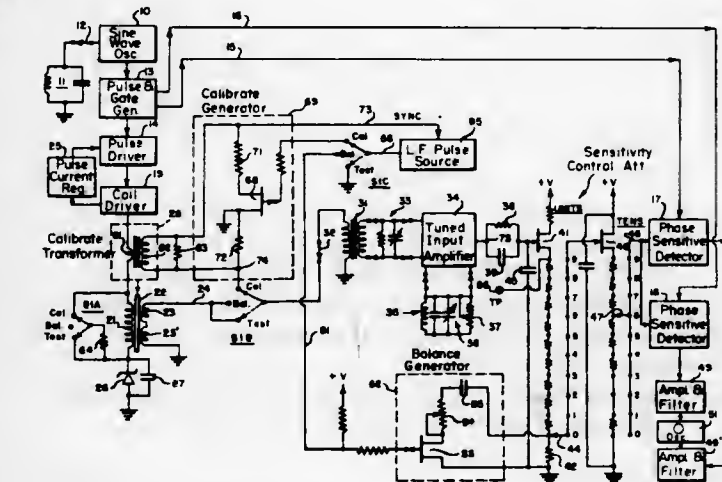
Sven E. Mansson, Hovik, Sweden; Robert A. Brooks, Rye, and Paul J. Bebeck, Bronx, both of N.Y., assignors to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed May 8, 1973, Ser. No. 358,359

Int. Cl. G01r 33/12

U.S. Cl. 324-40

11 Claims



The pulse eddy current testing apparatus includes test coil means having a primary winding(s) supplied with driving pulses, and a pair of secondary windings in series opposition for producing output signals varying with defects or flaws in objects under test. The output signals are supplied to an input transformer and tuned amplifier, and then through an attenuator to a pair of phase-sensitive detectors. The quadrature outputs of the detectors are supplied to an oscilloscope for indicating the amplitude and phase of the signals supplied thereto. The calibration and balance check apparatus includes a low frequency pulse source, a calibrate transformer having a primary in series with the primary winding(s) of the test coil means, a calibrate generator for receiving the outputs of the calibrate transformer and the low frequency pulse source to produce a modulated calibration check signal, and a balance generator for connection to the output circuit of the tuned



amplifier and the low frequency pulse source for producing a modulated balance check signal. Switchable means in the calibration condition connects a low impedance across the primary winding(s) of the test coil means, disconnects the secondary windings from the input transformer, and supplies the calibration check signal to the input transformer to produce a calibration check indication on the oscilloscope. For balance check the test coil means is connected to the input transformer, and the balance check signal is supplied through the attenuator to the detectors to produce a balance check indication on the oscilloscope. Provision is made to standardize the displays on the oscilloscope so that proper calibration and balance are readily observed, and adjustments facilitated.

3,823,369

# TRANSFORMER TESTER FOR INDICATING SHORTED CONDITIONS IN POWER TRANSFORMERS

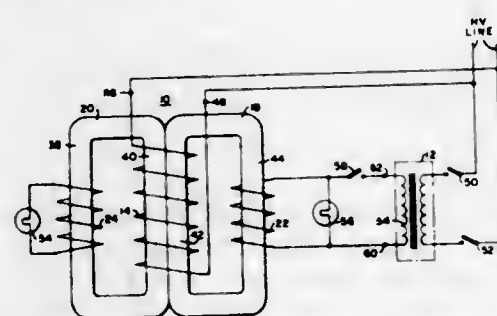
Ram Ratan Prasad Sinha, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 24, 1972, Ser. No. 247,166

Int. Cl. G01r 31/02, 31/06

U.S. Cl. 324-51

1 Claim



Test apparatus for determining the condition of a transformer. An input winding is disposed around two magnetic cores. An output winding is wound around one core and is connected to an indicating lamp. Another output winding is wound around the other core and is connected to another indicating lamp and to the transformer being tested. A faulty transformer loads the magnetic circuit of one magnetic core and causes the flux to flow through the other magnetic core and change the brilliance of the indicating lamps.

3,823,370

# WIRE INSULATION TESTING APPARATUS WITH MEANS INDICATING INSULATION FAULTS PER PREDETERMINED INCREMENTAL LENGTH

Wesley William Pendleton, and Robert Clifton Thompson, both of Muskegon, Mich., assignors to Ansco Wire & Cable Company, New York, N.Y.

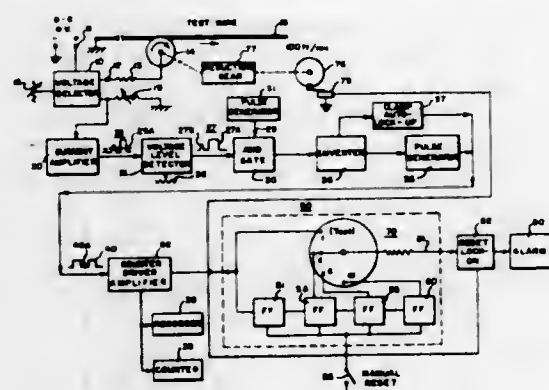
Continuation of Ser. No. 876,968, Nov. 14, 1969, abandoned.

This application Aug. 9, 1971, Ser. No. 170,307

Int. Cl. G01r 31/12

U.S. Cl. 324-54

1 Claim



Test apparatus is disclosed which provides continuous non-destructive tests for faults in insulation coatings on wire.

Means are provided for counting detected faults and actuating an alarm when the fault rate exceeds an undesired limit for any predetermined incremental length of wire. Switch means are provided which automatically adjust measuring sensitivity to correspond with the switch selected D-C test voltage applied to the insulation under test.

3,823,371

# DEVICE FOR MEASURING PHYSICAL PROPERTIES OF A MOVING WEB

Paul Lippke, deceased, late of Walter Rathenau-Strasse 14, Neuwed, Germany (by Rudolf Hlemke, executor)

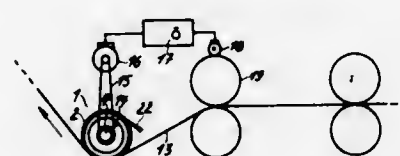
Filed May 30, 1972, Ser. No. 267,952

Claims priority, application Germany, July 1, 1971, 2132712

Int. Cl. G01r 27/26

U.S. Cl. 162-263

5 Claims



A device for measuring physical properties of a moving web which passes over successive peripheral sections of a hollow rotatable drum which within the range of value indicator means within the drum is adapted to engage the web the properties of which are to be measured.

3,823,372

# METHOD AND APPARATUS FOR MEASURING THE TOTAL SURFACE AREA CONCENTRATION OF PARTICLES ENTRAINED IN A GAS

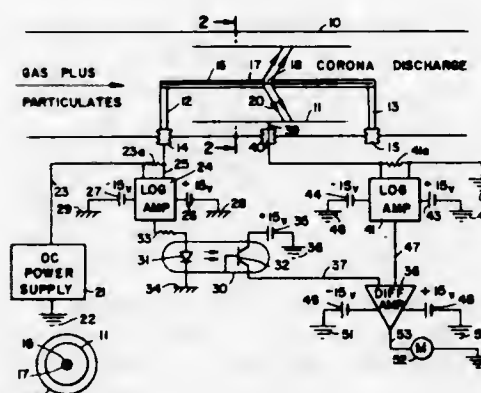
Donald N. Hanson, Orinda, and Alexis T. Bell, Oakland, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 6, 1972, Ser. No. 304,017

Int. Cl. G01n 27/70, 15/00

U.S. Cl. 324-71 R

15 Claims



The total surface area concentration of particles entrained in a gas is determined by measuring the original and residual currents resulting from a low-intensity gaseous ion source operating in a space through which the particle-laden gas is flowed. A short corona discharge is a typical example of such a source. The measurement is independent of current and does not require knowledge of particle size distribution.

3,823,373

# PROVING CIRCUITS FOR VEHICLE WHEEL SPIN OR SLIDE CORRECTION APPARATUS

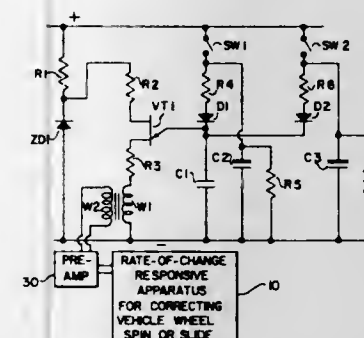
Peter P. Pike, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Continuation-in-part of Ser. No. 21,272, March 20, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,761

Int. Cl. G01r 31/00; H03k 3/26

U.S. Cl. 324-73 R

8 Claims



A proving circuit for an apparatus for correcting vehicle wheel spin or slide includes an oscillator for generating a first output signal the frequency of which varies over a given range in accordance with a first rate of change law and a second signal which varies over a given range of frequencies in accordance with a second rate of change law, the rate of change laws being such that when the signals are applied to the apparatus as a simulated rate of change of velocity signal the correct operation of the apparatus is initiated by one of the signals but not by the other. The output of the proving circuit is magnetically coupled to the pick-up coil of the wheel speed detector of the apparatus so that the detector and pre-amplifier which form the input to the apparatus are proved as well.

3,823,374

# METHOD AND APPARATUS FOR THE PRESENTATION OF FREQUENCY

Rene Dandliker, and Paul D. Iten, both of Oberrohrdorf, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

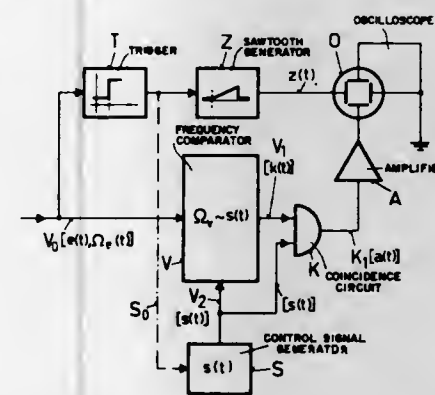
Filed Oct. 4, 1972, Ser. No. 296,062

Claims priority, application Switzerland, Oct. 7, 1971, 14710/71

Int. Cl. G01r 23/14

U.S. Cl. 324-79 R

17 Claims



A method of presenting frequency whereby an input signal is compared with a comparison frequency which is variable in accordance with a control signal. Agreement between a frequency contained in the input signal and the comparison frequency has the effect of producing an indication signal and, by relating the corresponding deviation of the control signal to the indication signal, an output signal. When applied to an input signal having a defined and periodically variable instantaneous frequency, the modulation periods of the comparison frequency exhibit a different phase position relative to the

periods of the instantaneous frequency in at least two consecutive periods of the instantaneous frequency.

3,823,375

# SYSTEM FOR TRANSMITTING PRIORITY MESSAGES AND SECONDARY MESSAGES

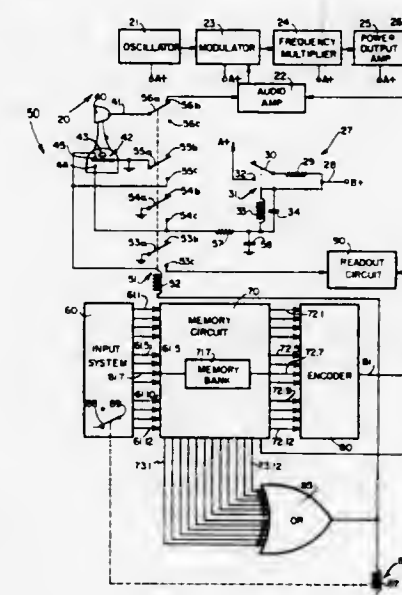
Keith H. Wycoff, P.O. Box 308, Lexington, Nebr.

Filed Nov. 8, 1971, Ser. No. 196,314

Int. Cl. H04b 1/00

U.S. Cl. 325-57

25 Claims



There are provided a first input for the priority message and a second input for the secondary message. A memory circuit coupled to the second input stores the secondary message. A sensing circuit is responsive to the concurrence of the absence of a priority message and the presence of a secondary message to provide a control signal. A readout circuit is responsive to the control signal to cause the memory circuit to release the stored secondary message. An output circuit accepts either the priority message if present, or the secondary message from the memory circuit.

3,823,376

# TRANSMITTER FOR THE TRANSMISSION OF ANALOGUE SIGNALS BY PULSE CODE

Johannes Anton Greefkes, Emmasingel, Eindhoven, and Jan Korevaar Geerlok, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

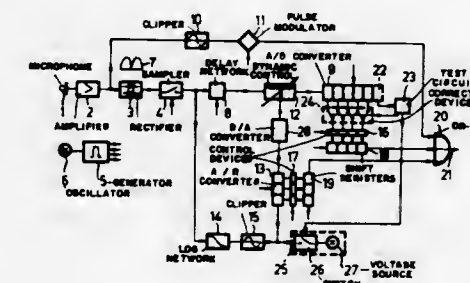
Continuation of Ser. No. 120,542, March 3, 1971, abandoned.

This application Mar. 19, 1973, Ser. No. 342,447

Int. Cl. H04b 1/04

U.S. Cl. 325-141

9 Claims



Pulse code modulation transmitter including an instantaneous dynamic control device having a segment-shaped control characteristic, in which the successive amplitude values are converted into codegroups in a first analog-to-digital con-



verter and the different segments of the control characteristic being characterized by codegroups in a second analog-to-digital converter in order to considerably reduce the accuracy requirements in their form. A test circuit is connected to the first analog-to-digital converter formed with an enlarged coding range for the purpose of testing the pulse having the greatest weight and a correction device controlled by the test circuit is coupled for the purpose of correcting codegroups to both the first and the second analog-to-digital converter.

3,823,377

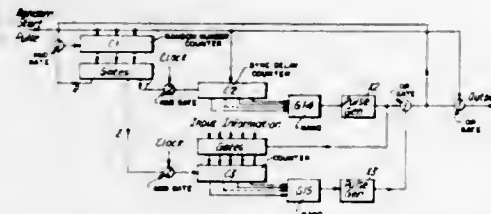
## COMMUNICATION SYSTEMS

Patrick J. Keane, Iron Acton; Alan B. Moor, Reading, and Michael J. Routley, Stoke Gifford, all of England, assignors to British Aircraft Corporation Limited, London, England  
Filed Jan. 8, 1973, Ser. No. 321,798  
Claims priority, application Great Britain, Jan. 11, 1972, 1294/72

Int. Cl. H04b 1/04

U.S. Cl. 325—143

1 Claim



A transmitter for use in a communication system in which successive frames of coded data are transmitted over a multi-channel link from a transmitting station to a receiving station includes a code generator for generating the successive frames of coded data and means for jittering the start of the successive frames of coded data such that the start of each frame is delayed by a random amount.

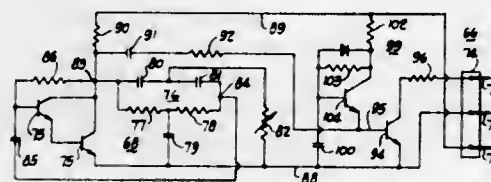
3,823,378

## TRANSMITTER SUBCODER

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio  
Filed Dec. 2, 1971, Ser. No. 204,149  
Int. Cl. H04b 7/00

U.S. Cl. 325—155

21 Claims



A transmitter subcoder is disclosed with the transmitter having a carrier frequency and a modulation frequency and the subcoder influencing the modulated carrier at a third frequency rate. Typically the third frequency is lower than either the modulation or carrier frequencies and a disclosed influencing circuit is to interrupt the modulated carrier at the third frequency rate. The subcoder is easily connected to the transmitter, for example, by plugging into electrical junctions on the transmitter with the transmitter completely operative as a modulated transmitter prior to electrical connection of the subcoder. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,823,379

## TELEVISION AUTOMATIC GAIN CONTROL CIRCUITRY PROVIDING FOR COMPATIBLE CONTROL OF VHF TUNER AND UHF TUNER

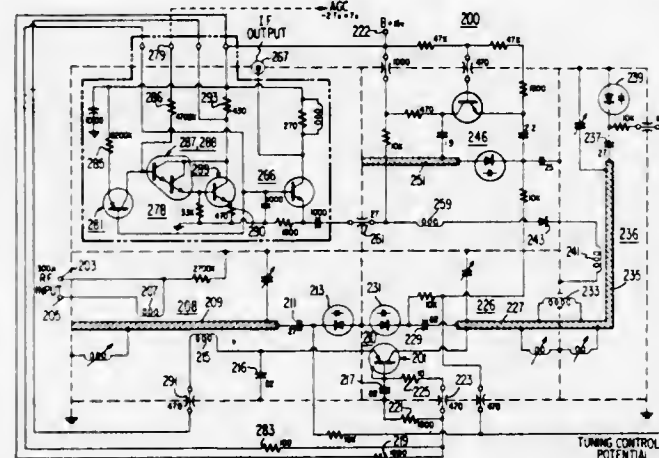
John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,644

Int. Cl. H04b 1/16; H04n 5/52

U.S. Cl. 325—405

9 Claims



A television automatic gain control circuit which transforms the low input impedance of the gain control terminal of a stage such as a grounded base bipolar transistor RF amplifier of a UHF tuner or a PIN diode attenuator utilized for tuner gain reduction to an impedance comparable to that of the impedance of the gain control terminal of an MOS/FET transistor used as an RF amplifier of a VHF tuner. Additionally, the control circuit provides for clamping of the AGC voltage at a selected level to provide AGC delay different from VHF AGC delay. Also, a predetermined voltage offset is provided to translate the AGC voltage applied to the RF amplifier of the VHF tuner before being applied to the gain controlled stage of the UHF tuner.

3,823,380

## MICROWAVE DOWN CONVERTER EMPLOYING HALF WAVE OPEN CIRCUIT RESONATORS WITH OUTPUT TAKEN AT VOLTAGE NULL OF INPUT SIGNAL

George Young, Beverly, Mass., assignor to Varian Associates, Palo Alto, Calif.

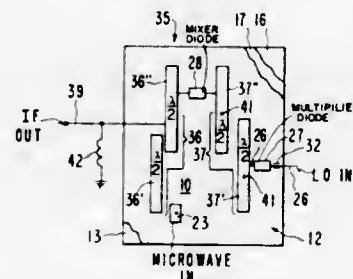
Filed Nov. 20, 1972, Ser. No. 308,225

Claims priority, application Germany, Sept. 7, 1971, 2144638

Int. Cl. H04b 1/26

U.S. Cl. 325—445

9 Claims



A pair of half wavelength open ended stripline resonators, resonant at a microwave input frequency and a microwave local oscillator frequency respectively, are excited with microwave input energy to be down converted and local oscillator energy, respectively. A mixer interconnects the two half-wave resonators to produce an intermediate frequency signal which is coupled onto said half wavelength resonators. The output intermediate frequency is extracted from one of the half wavelength resonators at a voltage null for the microwave

excitation thereof, whereby the intermediate frequency energy is extracted without the requirement of an output microwave bypass capacitor. The local oscillator microwave energy is obtained by multiplying a VHF local oscillator signal and exciting a half wavelength stripline resonator which in turn is coupled to the local oscillator half wavelength resonator.

3,823,381

## CAPS AND CONNECTORS WITH POSITIONING CAM AND METHOD OF FORMING

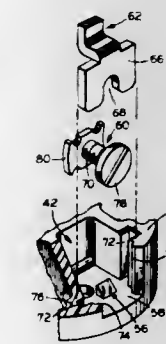
Robert E. Maloof, East Greenwich, R.I., assignor to General Electric Company, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,410

Int. Cl. H01r 3/00

U.S. Cl. 339—196 M

4 Claims



The assembly of heavy duty caps and connectors is improved by incorporation of a wire clamp positioning ramp in the base of a clamp well in combination with a clamp restraining wall proximate the foot of the ramp. On gravity feed of a wire clamp into the well, the screw and clamp plate of the wire clamp are brought automatically into operation position. An electrode having a forked bottom end is then inserted into the well to straddle the shank of the screw of the wire clamp so that electric power is furnished to the electrode when a wire is gripped by the wire clamp.

## ERRATUM

For Class 339—259 see:  
Patent No. 3,823,392

3,823,382

## SYSTEM FOR INHIBITING MOTOR VEHICLE OPERATION BY INEBRIATED DRIVERS

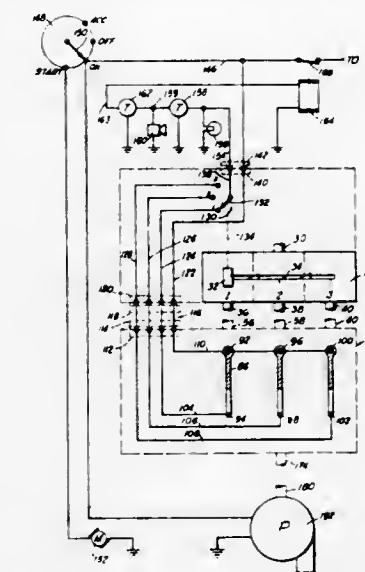
Amos L. Gaddy, 1534 Ridgewood Dr., Griffin, Ga. 30223  
Filed June 22, 1973, Ser. No. 372,588

Int. Cl. G08b 21/00

U.S. Cl. 340—53

16 Claims

A motor vehicle is equipped with a system for inhibiting operation by a drunk driver. A sample of the driver's breath is directed to a chamber containing chemical granules which react with alcohol fumes exothermally. A temperature responsive switch, which is in the form of a capillary tube partially filled with mercury and having electrodes at each end, extends through the chemical granules and is connected in a control circuit. The control circuit includes timers, alarms, and a relay for opening the ignition circuit of the vehicle. Upon actuation of the temperature responsive switch, an alarm and a timer are energized. After a predetermined time interval, the timer energizes a second alarm and a second timer. The second timer, after a predetermined time interval, energizes the relay to open the ignition circuit of the vehicle. Three such cham-



breath to one of the chambers, and a selective switch is provided for connecting the temperature responsive switch in the selected chamber to the control circuit.

3,823,383

## AUDIBLE SPEEDOMETER

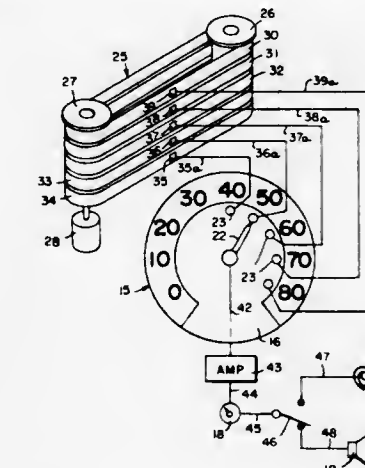
John Mallinger, 109 W. Childs St., Woodbury, N.J. 08096, assignor to General Electric Company, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,498

Int. Cl. B60q 1/54

U.S. Cl. 340—62

5 Claims



An audible speedometer wherein sound reproduction means is operatively connected to a plurality of intelligent signal sources and vehicle speed sensing means for reproducing an intelligent audio-signal indicative of vehicle speed.

3,823,384

## WARNING BLINKER

Hubert Messmer, Drosselweg 11, 7778 Markdorf; Walter Monnerjahn, Maizer Strasse 89, and Werner Rudolph, Graber Strasse 39, both of 6509 Gau-Oderheim, all of Germany

Filed Sept. 8, 1972, Ser. No. 287,440

Claims priority, application Germany, Sept. 9, 1971, 21146

Int. Cl. B60q 1/26

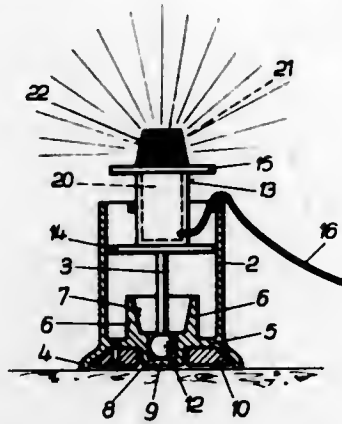
U.S. Cl. 340—84

5 Claims

A portable warning light for motor vehicles is adapted to be connected to the vehicle electrical supply. The light is comprised of two parts. One part comprises a hand hold, an elec-



tric lamp, an electric cable and wind-up reel. The other part comprises a housing, which when the light is not in use, completely encloses the lamp and the cable reel. When the lamp is in use, the other part receives the handle to hold the lamp in an elevated position.

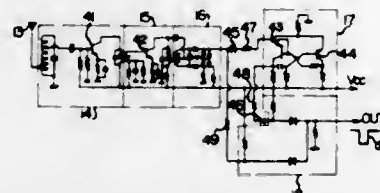


3,823,385

**REMOTE CONTROL SYSTEM UTILIZING F.S.K. AND FREQUENCY SEQUENCE DISCRIMINATOR MEANS**  
Tsutomu Kitamura, Fujisawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Feb. 26, 1973, Ser. No. 336,064  
Claims priority, application Japan, Feb. 29, 1972, 47-21357; Mar. 3, 1972, 47-22522  
Int. Cl. H04j 1/20

U.S. Cl. 340-171 R

4 Claims



A remote control system using a signal consisting of portions of mutually different frequencies. The transmitter unit transmits a continuous signal which is formed by changing the frequency of the signal at a predetermined period. The receiver unit receives this continuous signal, and discriminates the frequency, taking the AND output of this discriminated signal and a delayed signal thereof to obtain a control signal. The transmitter unit comprises a simple structure consisting of a signal generator capable of generating signals of different frequencies, whereas the receiver unit can prevent errors in the operation of the control due to noises etc.

3,823,386

**CURRENT STEERING NETWORK**  
Barrie Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

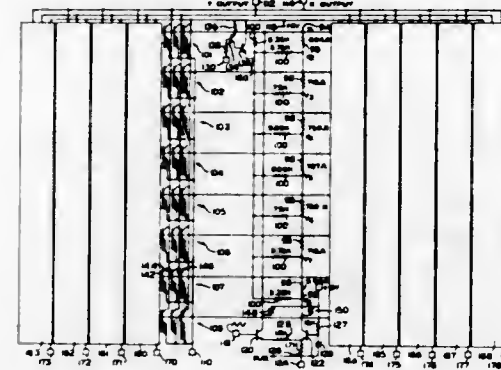
Division of Ser. No. 845,393, July 28, 1969, Pat. No. 3,651,510. This application June 10, 1971, Ser. No. 151,927  
Int. Cl. H04q 1/18

U.S. Cl. 340-172 R

6 Claims

Sets of transistors each having a selectable number of emitters are employed for dividing current between the X and Y deflection means of an XY display device wherein each set of transistors defines a break point on a given alphanumeric character. Smooth transitions are made between each set of transistors and the next set, defining separate character break points, so as to generate a character stroke therebetween. In-

numerable combinations of emitters are possible for generating different characters, each with a different group of

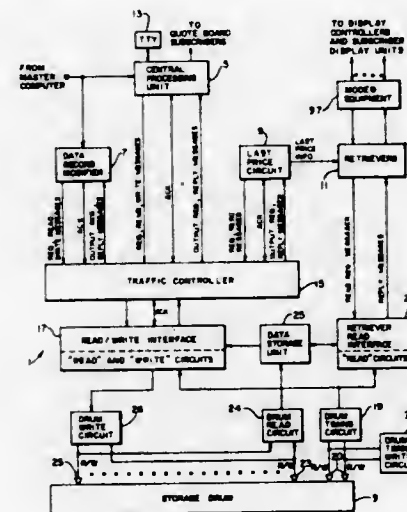


3,823,387

**INFORMATION STORAGE AND RETRIEVAL SYSTEM**  
Ronald E. McClellan, Cinnaminson, N.J., assignor to Ultronic Systems Corp., Moorestown, Del.  
Filed Dec. 4, 1972, Ser. No. 311,841  
Int. Cl. G11c 7/00

U.S. Cl. 340-172.5

25 Claims



An information storage and retrieval "slave" system for storing, processing, and supplying information to subscribers relating to securities and commodities traded on various security and commodity exchanges. The information storage and retrieval system includes a storage drum on which there is stored several classes of security and commodity information. Information may be read from, or new information written onto, the storage drum by means of a plurality of input devices which communicate with the drum by means including a read/write interface. The read/write interface includes a plurality of "read" and "write" coincidence circuits each of which is assigned to and used in the execution of a particular type of read or write operation initiated by an input device. Before a particular read or write operation may be initiated by an input device, the availability of the "read" or "write" circuit assigned to that operation, that is, whether it is busy or is not busy with another operation, must first be checked. This check is executed by status-determining circuitry in the read/write interface in response to a request message initiated by the input device and transferred to the read/write interface by a traffic controller which scans the input devices in succession looking for active request messages. In the event the read

or write circuit is available, an acknowledge signal is produced by the read/write interface and transmitted to the input device via the traffic controller. The input device operates in response to the acknowledge signal produced by the read/write interface to produce an input read or write message which is then transferred to the read/write interface by the traffic controller and processed by the read/write interface either to read information from the drum or to write information onto the drum.

3,823,388

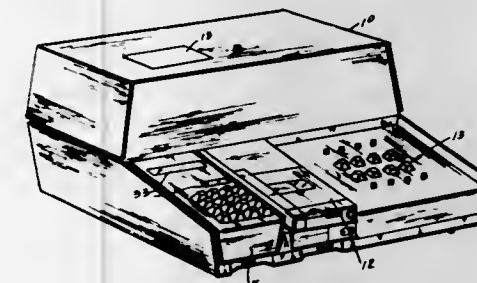
**DATA COLLECTION AND UTILIZATION SYSTEM**  
George E. Chadima, Jr., and Robert A. Bruce, both of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Filed Feb. 10, 1971, Ser. No. 114,249

Int. Cl. G06f 3/02, 3/06

U.S. Cl. 340-172.5

48 Claims



A data collection and utilization system having a portable data key entry and memory unit and a portable recorder, both of which operably fit into a console system. The key entry unit and the recorder may be coupled together by a cable and used apart from the console for entering numeric or alphabetic data into memory and for taking data from memory to the recorder. The two units may be readily electrically coupled to the console system by a series of pin connections which make contact when the units are placed in their carriage slots in the console. When so coupled, the portable units and the console operate to convert data from the tape through memory to various points of data utilization such as print-out or transmission. The present disclosure describes the logic circuitry which accomplish this unique portability, data storage and data handling capability.

3,823,389

**DATA PROCESSOR WITH SELECTABLE OPERATING MODES**

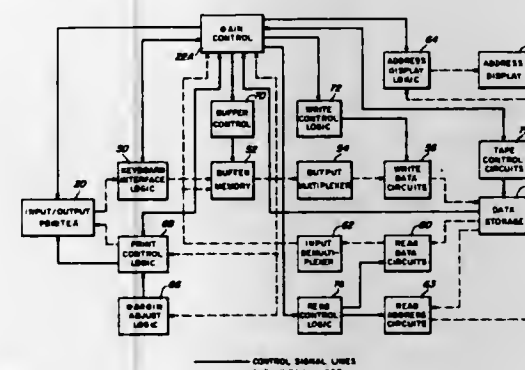
Richard E. Heitman, Acton, and Richard C. Norris, Belmont, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed May 18, 1972, Ser. No. 254,726

Int. Cl. G06f 3/10; G11b 13/00

U.S. Cl. 340-172.5

9 Claims



A word processing system incorporating a typewriter as an input/output terminal, a mass storage system such as a mag-

netic tape recorder/player for storing data, and a shift register connected as a buffer memory between the typewriter and the recorder/player. The system is operative in two basic modes. The first is a draft mode in which the typewriter is operable manually to write characters and generate corresponding signals which are transferred through the buffer to storage on tape or is operable in response to signals transferred from tape. The second is a final mode which differs in that there is no storage made of signals corresponding to characters written by manual manipulation of the typewriter.

The system also includes skip/delete controls; a character key, a word key and a line key which, if operated when the system is in the draft mode cause deletion of the signals corresponding to the selected character, word or line from storage, and if operated when the system is in the final mode cause the typewriter to skip writing of the selected character, word or line without however altering the storage of the signals.

3,823,390

**MUSICAL TONE WAVE SHAPE GENERATING APPARATUS**

Norio Tomisawa, Hamamatsu; Yasuji Uchiyama, Hamakita; Takatoshi Okumura, and Toshio Takeda, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

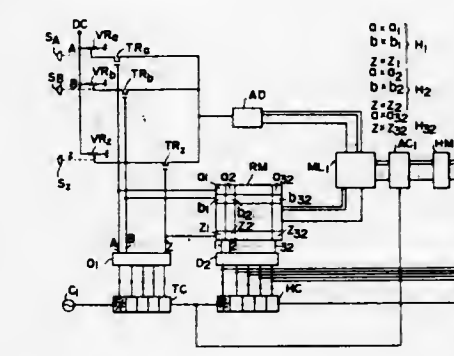
Filed Jan. 15, 1973, Ser. No. 323,609

Claims priority, application Japan, Jan. 17, 1972, 47-6757

Int. Cl. G10h 1/00; G06f 7/00, 13/00

U.S. Cl. 340-172.5

9 Claims





$z_2, \dots, m$ th harmonics:  $a_m, b_m, \dots, z_m$ ) for the respective tone color waves are sequentially read from the first memory. The amplitude signals and the level signals are respectively multiplied with each other tone color by tone color, and thereafter are added cumulatively for each of the fundamental waves and the harmonics to produce each cumulative value  $H_p = (a \times a_p) + (b \times b_p) + \dots + (z \times z_p)$ ; where  $p = \dots, m$ . On the other hand, values of the sinusoidal function at the respective address points  $PQ \bmod N$ , where  $Q = 1, \dots, N$ , are read from the second memory and these read out outputs are multiplied by the respective value  $H_p$ . The products of the multiplication are added cumulatively for values  $H_1$  through  $H_m$  to obtain a signal

$$Y_Q = \sum_{p=1}^m H_p \cdot X_{PQ \bmod N}$$

This signal  $Y_Q$  is sequentially written in an address  $Q$  in the third memory to constitute the desired musical tone wave shape. Then this musical tone wave shape is read out at an appropriate rate.

3,823,391

## SYSTEM FOR MONITORING REMOTELY RELATED BUILDINGS

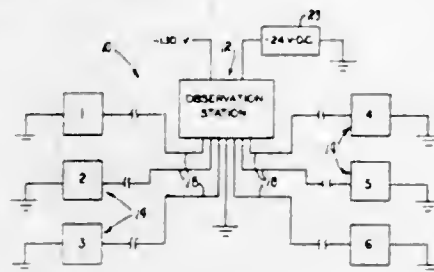
Paul R. Worsley, Jr., and Jerry D. Baker, both of Fresno, Calif., assignors to Valley Burglar & Fire Alarm Company

Filed Jan. 22, 1973, Ser. No. 325,631

Int. Cl. G08b 23/00

U.S. Cl. 340—213 R

11 Claims



A system for accommodating a simultaneous monitoring of the integrity of a plurality of remotely related buildings from a common observation station, characterized by a plurality of monitoring units each having an integrity monitoring circuit, integrated with one of a plurality of said remotely related buildings for continuously conducting an electrical current, the amperage of which is indicative of building integrity, and an observation circuit located at the observation station common to all monitoring units remotely related to the buildings including circuit means responsive to changes in said amperages for providing intelligence indicative of a changed status of building integrity.

3,823,392

## FEMALE CONTACT BLADE

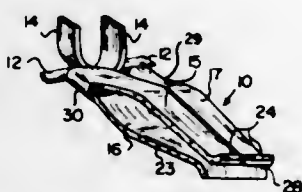
Louis F. J. Pfeiffer, Springfield, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.

Filed Sept. 5, 1972, Ser. No. 286,202

Int. Cl. H01r 11/22

U.S. Cl. 339—259 R

7 Claims



A female contact blade is made economically, having good spring tension to each leg, one leg portion made of two sections, each supported by a shoulder.

3,823,393  
DATA TRANSFER DEVICE FOR WORD PROCESSING SYSTEM

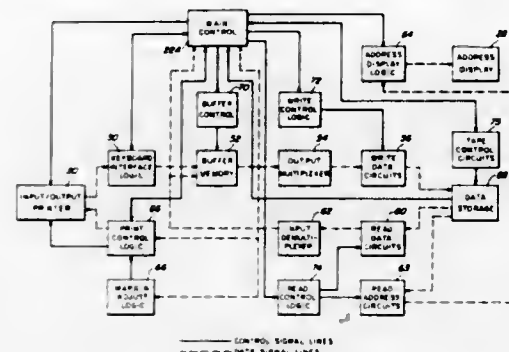
Richard C. Norris, Belmont, Mass., assignor to Arthur D. Little Inc., Cambridge, Mass.

Filed Oct. 2, 1972, Ser. No. 294,332

Int. Cl. G06f 13/00

U.S. Cl. 340—172.5

5 Claims



The invention is for use in a word processing system employing a typewriter, a buffer memory, a recording system having magnetic tape storage in which data can be stored in sequences or blocks and a read head for reading data from the tape, the system permitting transfer of data between the typewriter and tape storage in both directions through the buffer memory. Means are provided for automatically transferring data from a given block in the tape storage to the buffer memory whenever the read head is located at the beginning of the given data block and conditions of system operation exist from which it can be expected that transfer of data to the buffer from tape would be desired by the operator.

3,823,394

## SELECTIVE CONTROL OF DISCHARGE POSITION IN GAS DISCHARGE DISPLAY/MEMORY DEVICE

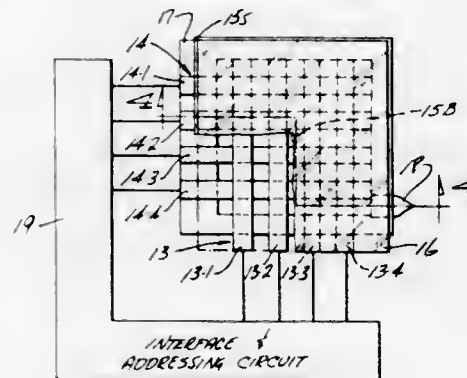
Bernard W. Byrum, Jr., Toledo, and Roger E. Ernsthausen, Luckey, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed June 28, 1972, Ser. No. 267,102

Int. Cl. H03b 37/00; H01j 17/04

U.S. Cl. 340—173 PL

8 Claims



There is disclosed a gas discharge display/memory device wherein the discharge is selectively controlled for various advantages, particularly increased light output and panel brightness. The device is characterized by an ionizable gaseous medium in a thin gas chamber between a pair of opposed dielectric charge storage members, each dielectric member being backed by an array of electrodes with each array being appropriately oriented relative to the other array so as to form a multiplicity of gas discharge cells. Both opposing dielectric charge storage surfaces of each cell are coated with a first layer of low electron yield material and a second layer of high electron yield material — in the geometric form of dots, lines, etc., — the second layer being appropriately positioned such

that it is surrounded by the first layer of low electron yield material and such that two opposing surfaces of high electron yield material at or near a discharge cell site cause the cell discharge to occur at the pair of opposing surfaces of high electron yield material. The relative position of the high electron yield material surfaces can be utilized to maximize the visible light output from the panel. The Townsend's (gamma) second coefficient of the high electron yield material is at least 1.5 times the Townsend's second coefficient of the low electron yield material.

3,823,395

## REMOTE CONDITION INDICATOR FOR LOAD-LIFTING DEVICE

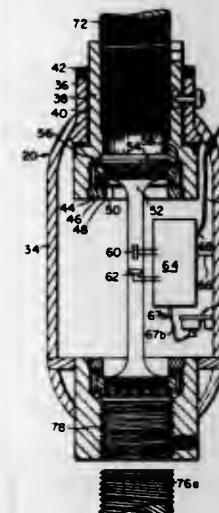
Edward T. Rigney, Wayland; Bradford W. Edgerton, Lynnfield, and Richard A. Benson, Bedford, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.

Filed May 30, 1972, Ser. No. 258,079

Int. Cl. G08b 21/00; B66c 15/00

U.S. Cl. 340—267 C

18 Claims



A condition indicator for a load-lifting device has a sensor at the load end of a lifting cable to measure the weight of the load being lifted, the tilt of the hook or some other condition at the load end. A transmitter associated with the sensor transmits a signal representative of the condition to a remote receiver which causes an indicator to display a signal indicative of the condition being sensed. The transmitter and receiver operate at kilohertz frequencies and utilize the load-lifting cable and the crane boom as a transmission line between them. This minimizes radiation to other units and also minimizes stray radiation pickup from other units in the vicinity.

3,823,396

## DIGITAL TO ANALOG CONVERTER INCORPORATING MULTIPLE TIME DIVISION SWITCHING CIRCUITS

Tenny D. Lode, Cherry Hills Village, Colo., assignor to Electronics Processors, Inc., Englewood, Colo.

Filed Apr. 17, 1972, Ser. No. 244,738

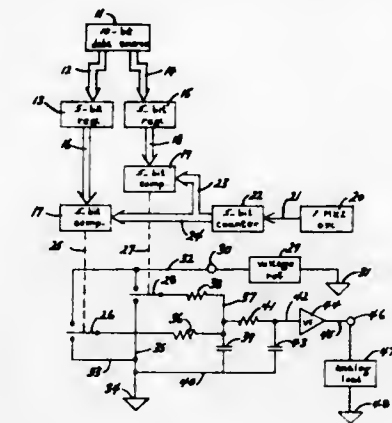
Int. Cl. H03k 13/06

U.S. Cl. 340—347 DA

15 Claims

A Digital-to-Analog converter system incorporating time division switching circuits whose average outputs are proportional to the values of controlling digital signals. In one form, two time division switching circuits are employed to generate "coarse" and "fine" analog voltages which are summed and filtered to obtain a composite or total converter voltage output. The coarse switching circuit is controlled by a more sig-

nificant group of bits of the controlling digital word, while the fine switching circuit is controlled by a less significant group



3,823,397

## SERIAL TO PARALLEL CONVERTER FOR BINARY SIGNALS OF TWO DIFFERENT PULSE WIDTHS

Robert Howard, Roslyn, N.Y.; Prentice I. Robinson, Hudson, and Herbert E. Menhennett, Windham, both of N.H., assignors to Centronics Data Computer Corporation, Hudson, N.H.

Division of Ser. No. 35,405, May 7, 1970. This application July 14, 1972, Ser. No. 271,817

Int. Cl. G06f 5/04

U.S. Cl. 340—347 DD

6 Claims



A high-speed printer of the dot matrix type in which incoming information to be printed, presented in either serial or parallel form, is examined for invalid bits and loaded into a buffer in parallel fashion. Printing does not begin until the buffer is loaded to print a line of the desired length. Printing begins as soon as the first character loaded into the buffer reaches the output stage at which time the actuation of the print wires of the dot matrix are moved across the paper document at a substantially constant speed. Detection of the location of the carriage assembly moving the printer head assembly is performed independent of the movement of the carriage to actuate the print wires at the appropriate locations. Logical circuitry is provided for detecting the presence of invalid characters and the buffer and serial-to-parallel converter are cleared prior to the loading of the next group of characters to be printed on the next line of print. During serial transmission, the printer assembly generates Acknowledge signals to indicate to the transmitting facility that the previous character has been received and stored.



3,823,398

**RADAR CROSS CORRELATOR**

Donald J. Horton, Ottawa, Ontario, and Martin L. Stanley-Jones, North Gower, Ontario, both of Canada, assignors to Canadian Patents and Development Limited, Ontario, Canada

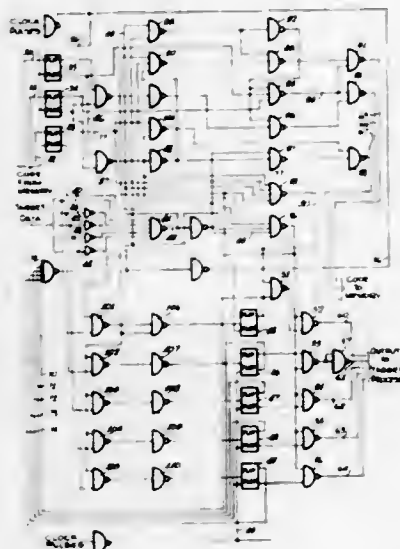
Filed Oct. 10, 1972, Ser. No. 296,398

Claims priority, application Canada, Dec. 3, 1971, 129260

Int. Cl. G01s 9/02

U.S. Cl. 343—5 DP

8 Claims



Apparatus for cross correlating radar returns in digital form in a radar system where a predetermined number of radar return signals at the same range from successive scans are required to provide a target display, includes a memory having time slots for storing the returns in digital form. The time slots represent consecutive units of range. A fine range is provided within each time slot so that a critical area is defined adjacent each boundary of a time slot. If a return falls within a critical area, the data representing this return is compared with the data for the corresponding time slot of the previous scan, and if movement has taken place between the critical area on one side of the boundary to the critical area on the other side of the boundary the latest return is placed in the same location as the previous return.

3,823,399

**METHOD AND APPARATUS FOR MEASURING DISTANCE TO TARGET USING FREQUENCY-MODULATED CONTINUOUS WAVES**

Teruo Yamanaka, 69-1, Yagotaurayama, Tenpaku-cho, Showa-ku, Nagoya-shi, Aichi-ken, Japan

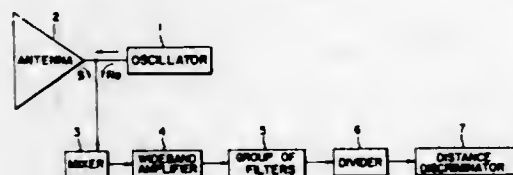
Filed Aug. 29, 1972, Ser. No. 284,680

Claims priority, application Japan, Sept. 2, 1971, 46-67763

Int. Cl. G01s 9/23

U.S. Cl. 343—14

21 Claims



An improvement of a method for measuring distance to target using transmitted and reflected frequency-modulated continuous waves is provided. A low frequency wave produced by mixing a transmitted wave and a wave reflected from the target is separated into frequency components such as a Doppler signal component, a fundamental wave component and its harmonic components. Then, Doppler signals are obtained from the fundamental wave and harmonic components. The

ratio in intensity between at least two Doppler signals is calculated to measure the distance to the target. Since the phase of Doppler signal is reversed depending upon whether the target is moving toward or away from the distance measuring apparatus, the direction of the relative movement between the target and the apparatus may be detected. Furthermore, the relative speed between the target and the distance measuring apparatus may be detected from the frequency of each Doppler signal. When the ratio of the distance to the target to the relative speed reaches a predetermined value, a command signal to actuate a device is produced.

3,823,400

**ELECTRONIC TACAN AZIMUTH STABILIZATION**

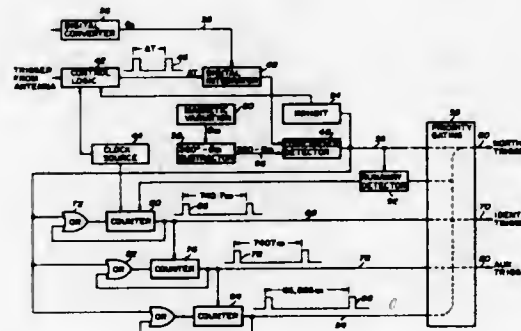
Denis L. Deck, Salt Lake City, Utah, assignor to E-Systems, Dallas, Tex.

Filed Oct. 12, 1972, Ser. No. 296,967

Int. Cl. G01s 1/50

U.S. Cl. 343—106 R

22 Claims



Tactical Radio Navigation systems provide distance measuring information to an interrogating aircraft in response to pairs of interrogation pulses received at a beacon transponder. The system also provides bearing and identification information. A single antenna functions to both receive the interrogation pulses and radiate the position determining signals in a radiation pattern having a single fundamental lobe and nine harmonic lobes superimposed thereon with a complete pattern being rotated at a constant speed. In such a system, it is necessary to know when the rotating radiated pattern is pointing 90° clockwise from magnetic north so that a reference pulse may be transmitted to orient the pattern to an interrogating aircraft. Radio navigation systems at fixed sites are oriented on installation to provide accurate indexing information as to the radiated pattern. Systems mounted on a moving platform, however, wherein the antenna does not maintain a fixed orientation, require additional indexing information to properly orient the radiation pattern to an interrogating aircraft. This additional processing of reference pulse information is provided by time incrementing the moving platforms heading reference for a period calculated to orient the radiation pattern with reference to magnetic north. The incrementing time is determined by comparing the incremented heading reference with a signal related to magnetic north.

3,823,401

**SYNCHRONOUS DATA TRANSMISSION NETWORK**

Edward A. Berg, Vienna, and Frank T. Chen, Merryfield Village, both of Va., assignors to Data Transmission Company, Vienna, Va.

Filed Oct. 4, 1972, Ser. No. 294,839

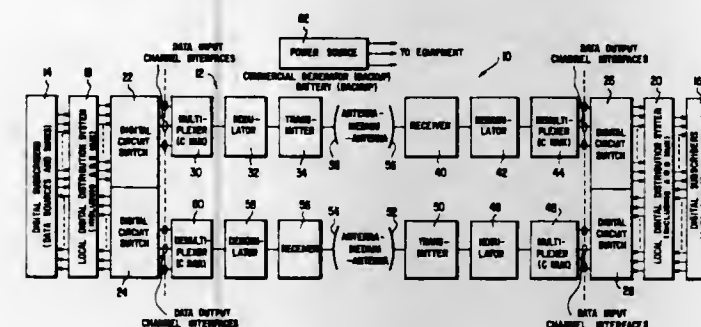
Int. Cl. H04J 3/00

U.S. Cl. 343—204

29 Claims

Disclosed is a common carrier type network for the high speed transmission of digital data. Data channels are mul-

tiplexed for transmission over a microwave backbone trunk in a synchronous manner and subscriber interconnection is ef-



fect at an intermediate multiplex level by a time division switch matrix. Full duplex transmission is by way of two digitally modulated microwave carriers.

3,823,402

**ANTENNA DEPLOYED FROM AIRCRAFT TO CONTACT A BODY OF WATER FOR LENGTH REDUCTION**

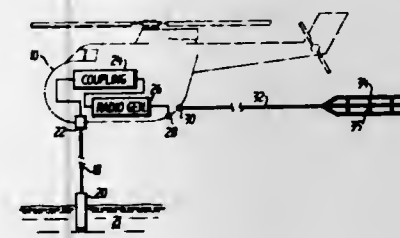
Nelson B. Sharp, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1972, Ser. No. 314,486

Int. Cl. H01q 1/30

U.S. Cl. 343—705

8 Claims



The method and apparatus is disclosed for radiating low-frequency radio waves. In particular, an extended length of a vertical radiator or antenna is suspended from a suitable aircraft, such as a helicopter, to extend a distance corresponding to approximately one-fourth of the wavelength of the radio wave to be radiated, and to contact sea water through a low-resistance connection. In this manner, a ground plane is formed for the antenna so that the physical length of the antenna may be reduced by approximately one-half and still be electrically one-half wavelength long as needed for efficient operation at resonance. In an illustrative embodiment of this invention, the suitable low-resistance connection may be effected by a drogue, which is attached to the lower end of the antenna to make a low-resistance connection between the antenna and the sea water. Illustratively, the drogue includes a surface area of an electrically conductive material, sufficiently large to make the low-resistance connection needed to conduct the large currents which flow at this point in the antenna. In operation, the aircraft takes off, and as it ascends, the antenna is unwound from a reel to provide the desired length dependent upon the frequency (wavelength) of the radio wave to be propagated. It may be understood that the length of the antenna is dependent upon the height of the aircraft. Further, a counterpoise may be extended from the aircraft to reduce the length of the vertical antenna required and also to reduce the voltage gradients established about the aircraft.

3,823,403

**MULTITURN LOOP ANTENNA**

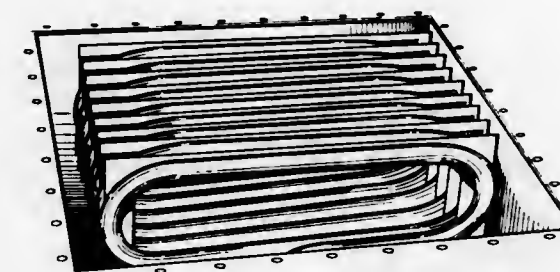
Carlton H. Walter, Benedikt AA. Munk, and Gary A. Thiele, all of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ga.

Filed June 9, 1971, Ser. No. 151,228

Int. Cl. H01d 1/112

U.S. Cl. 343—708

21 Claims



The invention is a multiturn loop antenna of an efficient design suitable for use singly, in arrays, or for inductively exciting radiating currents on a structure — the surface and the elements radiating to achieve optimum system performance. The antenna may be fed balanced or unbalanced and its input impedance may be either capacitive or inductive. In a preferred embodiment for omnidirectional coverage the antenna is positioned in a dielectric or ferrite filled cavity; the antenna may be a single element for linear polarization or a pair of multiturn loops at right angles to each other and with 90° phasing to effect circular polarization.

3,823,404

**THIN SANDWICH TELEMETRY ANTENNA**

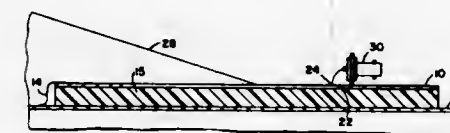
Harold B. Buie, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1973, Ser. No. 358,552

Int. Cl. H01q 13/10, 1/28

U.S. Cl. 343—708

7 Claims



A thin sandwich slot antenna is provided which produces a cardioid shaped antenna pattern. The antenna structure requires no antenna cavity or other remote structure behind the antenna. A thin-film antenna is supported by a thin dielectric strip and contoured to the shape of support structure. A metallic support structure becomes the ground plane for the antenna otherwise a metallic ground plane is placed behind the radiating element.

3,823,405

**VISUAL AND MAGNETIC RECORDING SYSTEMS**

Joseph R. Andreaggi, Short Hills; Robert J. Graf, Newark, and Matthew J. Relis, Teaneck, all of N.J., assignors to said Graf, by said Andreaggi, a part interest

Filed May 8, 1972, Ser. No. 250,872

Int. Cl. G11b 5/00

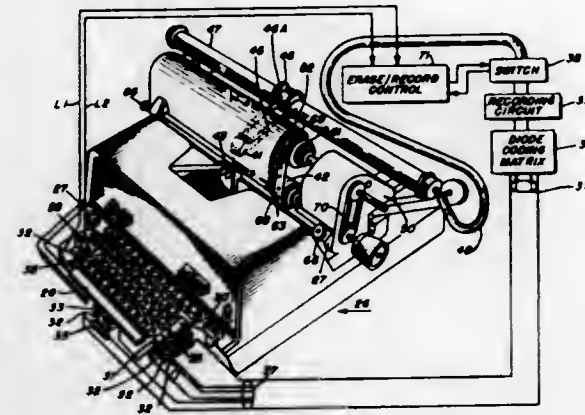
U.S. Cl. 346—74 MP

39 Claims

Disclosed is a system for visually and magnetically recording data indicative of characters on opposite sides of a paper sheet having a magnetizable backing. The data are recorded with a typewriter which includes a head for recording coded magnetic bits indicative of each character visually printed on the sheet. The head is coreless and is comprised of a plurality of windings, only certain of the windings write or record



bipolarity magnetic bits onto the backing, the remaining windings serve as both spacer and erase windings. Recording is accomplished by feeding large amplitude, short duration current pulses to the recording windings. The magnetic bits for each magnetically recorded character are selectively erased by applying bipolarity, low duty-cycle pulses of succes-



sively lower amplitudes to the backing by way of the windings and different modes of erasing various areas on the recording medium are disclosed. Also disclosed is a system for decoding the magnetic bits stored on the backing, wherein a head sequentially scans a rotating line of magnetic bits and sequentially reads out each character of the line. The entire document is read by stepping the head from line to line.

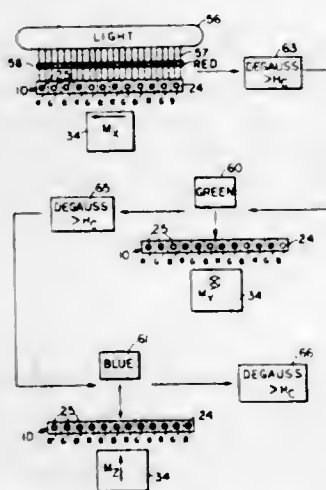
3,823,406

**METHODS, APPARATUS AND MEDIA FOR MAGNETICALLY RECORDING INFORMATION**  
Frederick J. Jeffers, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,646  
Int. Cl. G01d 15/12, 15/20

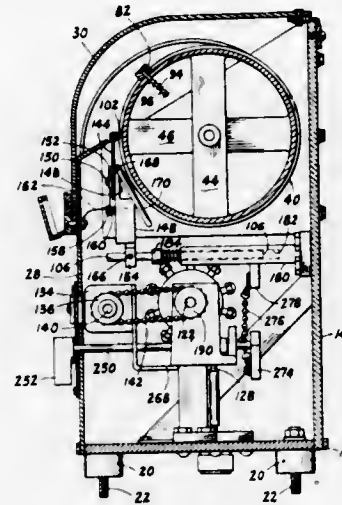
U.S. Cl. 346—74.1

58 Claims



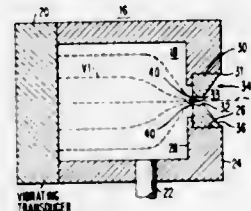
Methods, apparatus and media for magnetically recording at least first and second color components of an image employ anisotropic magnetizable particles in a matrix. The first color component is recorded by selectively orienting and disorienting first groups of anisotropic particles, and the second color component is recorded by selectively orienting and disorienting second groups of anisotropic particles.

**3,823,407**  
**DEPTH PENETRATION DRILLING RECORDER**  
Henry L. Williams, Oklahoma City, Okla., assignor to Midland Industries, Incorporated, Oklahoma City, Okla.  
Filed Feb. 1, 1973, Ser. No. 328,751  
Int. Cl. G01d 5/04; E21b 45/00  
U.S. Cl. 346—128 2 Claims



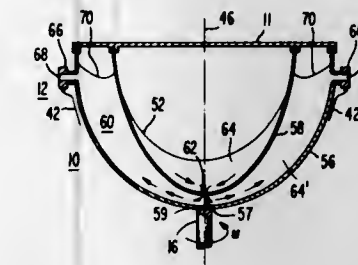
A recorder for monitoring the depth of penetration and downtime of a drill during drilling operations with respect to drilling time. The recorder includes a chart carried by a rotating drum provided with means to move at a predetermined constant speed and having a chart means carried on the periphery thereof, a recording element being engageable with said chart for making a record thereon, an adjustable recording element deflection and counting means, and an input drive means. The adjustable recording element deflection means, including a cam hub with a plurality of cam arms extending radially outward therefrom and being individually adjustable in length for effecting proportionate deflection of the recording element, is driven by the input drive means and is in communication with the recording element which traces and digitally displays the total depth of penetration and downtime of a drill with respect to time on said chart during drilling operations.

**3,823,408**  
**HIGH PERFORMANCE INK JET NOZZLE**  
William M. Gordon, III, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Nov. 29, 1972, Ser. No. 310,297  
Int. Cl. G01d 15/18  
U.S. Cl. 346—140 1 Claim



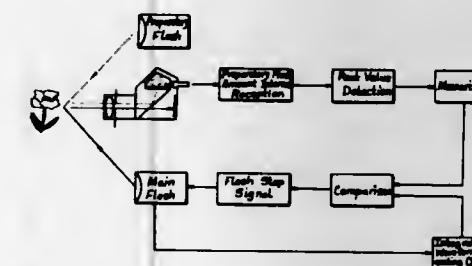
An improved ink jet nozzle structure utilizes an ink supply chamber having a source of ink under pressure connected thereto and a nozzle passage provided with a jewel nozzle having an orifice with a low aspect ratio and defined by an abrupt or sharp entrance on the chamber side.

**3,823,409**  
**ROTATABLE PARABOLOIDAL RESERVOIR USEFUL IN AN INK JET PRINTER**  
Ross Michael Carrell, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.  
Filed Jan. 30, 1973, Ser. No. 328,136  
Int. Cl. G01d 15/16  
U.S. Cl. 346—140 9 Claims



An ink reservoir having the form of a vertical paraboloid of revolution is provided with ink jets directed radially outward. The reservoir is rotated about its axis while paper is driven past the ink jets which are selectively operated to eject ink on to the paper. The reservoir has a parabolic passageway adjacent to its wall and conforming to its shape through which ink stored in the reservoir flows to the ink jets. The paraboloidal shape of the reservoir and its angular velocity are such that the ink is forced up to the ink jets through the parabolic passageway regardless of the amount of ink in the reservoir. The parabolic passageway prevents the centrifugal force and the pressure head of the stored ink from acting on the ink adjacent to the ink jets and thereby causing unwanted leakage therethrough.

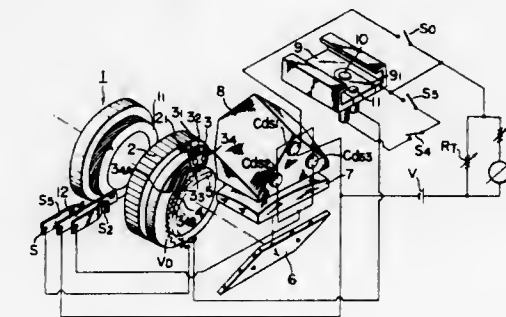
**3,823,410**  
**CAMERA SHUTTER CONTROLS UTILIZING LIGHT FROM DIFFERENT SOURCES**  
Seijiro Tokutomi, Fujisawa, and Masahiro Kawasaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
Filed Feb. 20, 1973, Ser. No. 333,750  
Claims priority, application Japan, Feb. 23, 1972, 47-19137  
Int. Cl. G03b 15/05  
U.S. Cl. 354—33 10 Claims



A camera which has an objective and a photosensitive device capable of receiving light which has travelled through the objective. This photosensitive device receives light created during preparatory flash illumination and forms part of a preparatory circuit for creating an electrical quantity which achieves a peak value during the preparatory flash illumination. A memory device such as a capacitor retains this peak value and is then used together with a control circuit to terminate flash illumination during a subsequent main flash

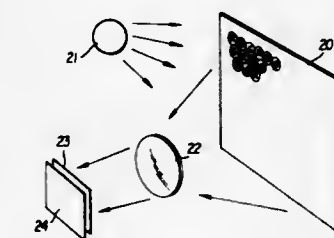
which provides illumination during film exposure. Thus, the duration of the main flash is determined in accordance with the peak value retained by the memory device.

**3,823,411**  
**FLASH DISABLING INTERLOCK RESPONSIVE TO INTERCHANGEABLE LENS SELECTION**  
Goro Hasegawa, Tokyo; Masao Aoyagi, Yokohama, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Feb. 1, 1973, Ser. No. 328,738  
Claims priority, application Japan, Feb. 14, 1972, 47-15424; Feb. 14, 1972, 47-15425  
Int. Cl. G03b 15/03  
U.S. Cl. 354—33 9 Claims



A discriminator feature means is provided on an interchangeable lens which has an angle of view larger than the light beam width angle of the flash projector normally used with the camera. The camera body is equipped with a sensor to disable flash photography when such a lens is fitted on to the camera body.

**3,823,412**  
**MULTICOLOR DISPLAY**  
Albert A. Friesem, Ann Arbor, Mich., assignor to Harris-Inter-type Corporation, Cleveland, Ohio  
Filed Mar. 30, 1972, Ser. No. 239,594  
Int. Cl. G03b 33/00, 33/16  
U.S. Cl. 354—100 8 Claims



A multicolor display system including a viewing screen having a multiplicity of closely spaced photoluminescent segments thereon in a regular array of alternating red, blue and green segments. A hologram which was recorded at or near the Fourier transform plane of the input information is positioned relative to the screen to project an image of the recorded information thereon when the hologram is illuminated by a readout beam. The information is recorded in a coded format representative of multiple colors contained in the original subject from which the information was derived.



3,823,413

**FILM SPEED ENHANCEMENT CAMERA**

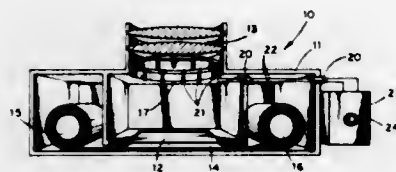
Melrose R. Cole, Prides Crossing, Mass., assignor to C &amp; C Research, Inc., Danvers, Mass.

Filed July 17, 1972, Ser. No. 272,684

Int. Cl. G03b 27/54

U.S. Cl. 95-1 R

18 Claims



A camera having a controlled internal light source for enhancing the speed and sensitivity of the film therein at the time of exposure. The light is below the level necessary for visual fogging but decreases the amount of image photons required to reach the threshold density of the film.

**ERRATA**

For Classes 357-27, 357-23 and 357-40 see:  
Patents Nos. 3,823,353 thru 3,823,354

3,823,414

**MAGNETIC RECORD APPARATUS WITH SWITCHING MEANS TO SELECT TAPES AND INTERRUPT FOR ANNOUNCEMENTS**

Philip Hodgson, St. Martins; Robert Thomas Munson, St. Peter, and Gordon Howard Reed, St. Owen, all of England, assignors to Television Research Limited

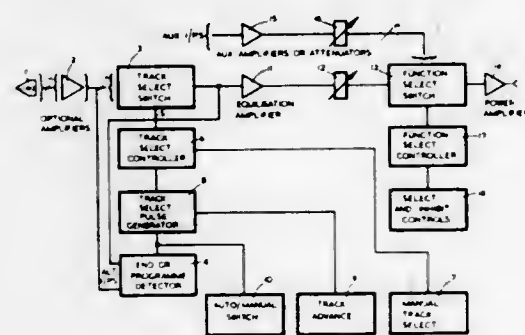
Filed Sept. 19, 1972, Ser. No. 290,323

Claims priority, application Great Britain, Sept. 20, 1971, 43706/71

Int. Cl. G11b 5/56, 15/16

U.S. Cl. 360-64

29 Claims



In magnetic record apparatus for sound distribution systems it is desirable to have automatic means for switching from one tape to the next at the end of each tape program, to select one of a number of tapes and to interrupt the playing of the tapes to make announcements and the like. Such a magnetic record apparatus includes a signal path switching arrangement in which a signal path may be established between a terminal of a plurality of terminals of one kind and a terminal of another kind through the intermediary of a semi-conductive control device said device being arranged to establish or block said signal path by application to at least one control electrode thereof of a control potential.

3,823,415

**ROTARY MAGNETIC HEAD APPARATUS HAVING AN AIR-BEARING SUPPORTED HEAD WHEEL**

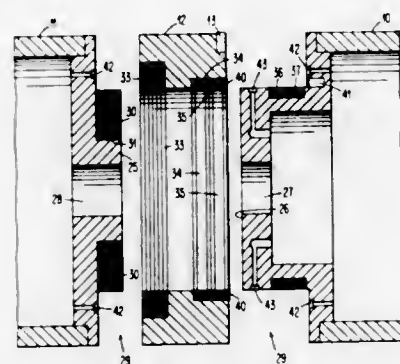
Gene A. Fisher, Lafayette; Donovan M. Janssen, and David Stedman, both of Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,303

Int. Cl. G11b 5/52

U.S. Cl. 360-102

23 Claims



Rotating head apparatus, for use in magnetic tape recording and/or reproduction, having an annular rotor or head wheel which is air-bearing supported radially and in opposing axial direction. The rotor itself physically supports a magnetic head, a power transformer secondary winding, electric amplifier means, a motor rotor, the movable member of a rotary signal transformer, and the movable member of an optical speed transducer. The rotor is positioned within an annular cavity formed by two mandrel halves. These mandrel halves are mounted in accurate end-to-end alignment at a joint forming a portion of the cavity. The cavity wall includes the motor stator, the stationary member of both the rotary signal transformer and the speed transducer, and air-blowing jets which supply the rotor-supporting air bearing. Thus, the annular rotor rotates with no physical engagement to the mandrel halves or the various means carried thereby.

3,823,416

**FLYING MAGNETIC TRANSDUCER ASSEMBLY HAVING THREE RAILS**

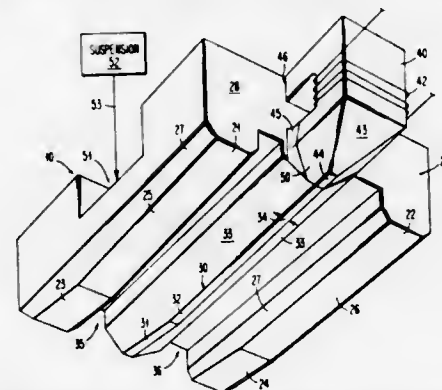
Michael Walter Warner, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,032

Int. Cl. G11b 5/60, 21/20

U.S. Cl. 360-122

11 Claims



A magnetic head assembly is disclosed for transducing information upon a relatively moving magnetic recording surface while flying thereover and that starts and stops in contact with the recording surface. The assembly comprises a magnetic slider body including three downwardly depending longitudinal rails that are laterally spaced apart, the bottom surfaces of the two outside rails forming an air bearing surface, and a magnetic core longitudinally aligned with the center rail so as to define a transducing gap. The transducing gap is located at the roll axis of the assembly such that the air bearing developed during relative movement maintains the gap at a substantially constant distance from the recording surface even during rolling motion of the assembly.

**DESIGNS**

JULY 9, 1974

232,007

**BRASSIERE**

Jack J. Locascio, Bayonne, N.J., assignor to International Playtex Corporation

Filed May 14, 1973, Ser. No. 359,933

Term of patent 14 years

Int. Cl. D2-01

U.S. Cl. D2-24



232,008

**SHOE**

Tatsuo Fukuo, 3, 3-Ban-2-chome, Shin-Minami Fukushima, Tokushima, Japan

Filed Oct. 27, 1972, Ser. No. 301,459

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-268



232,009

**COMBINED DESK AND STORAGE UNIT**

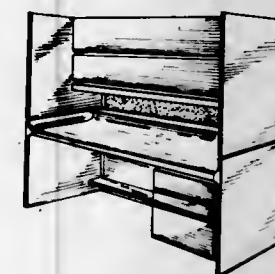
Fred A. Schmitt, Nutley, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,958

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D6-162



232,010

**MUG**

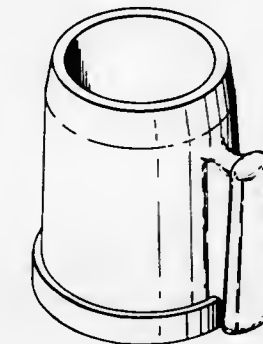
Dieter Steinmann, Glendale, N.Y., assignor to European Design Corporation, Glendale, N.Y.

Filed Nov. 20, 1972, Ser. No. 308,219

Term of patent 14 years

Int. Cl. D7-01

U.S. Cl. D7-9



232,011

**ICE BUCKET**

Louis J. Denton, 3218 Albright Court, Indianapolis, Ind. 46268

Filed Jan. 26, 1973, Ser. No. 327,598

Term of patent 14 years

Int. Cl. D7-01

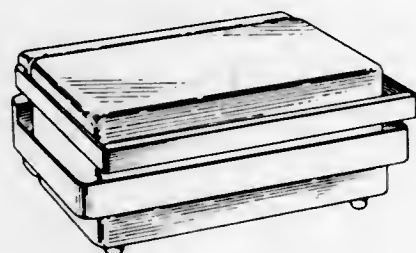
U.S. Cl. D7-78





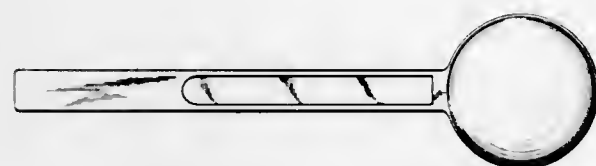
**232,012**  
**GRILLING APPARATUS**  
 William M. Bardeau, 44 Princess Margaret Blvd.,  
 Islington, Ontario, Canada  
 Filed Sept. 5, 1972, Ser. No. 286,472  
 Claims priority, application Canada May 1, 1972  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D7—88



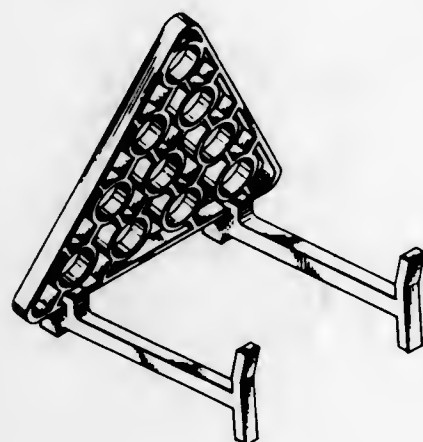
**232,013**  
**SALAD SERVER**  
 Gunnar Cyren, Gavle, Sweden, assignor to Dansk  
 Designs Ltd., Mount Kisco, N.Y.  
 Filed Nov. 1, 1972, Ser. No. 302,969  
 Term of patent 14 years  
 Int. Cl. D7—03

U.S. Cl. D7—104



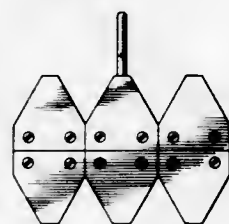
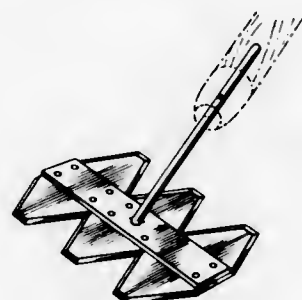
**232,014**  
**FIREPLACE GRATE**  
 Gerald A. Coleman, Rte. 1, Box 546,  
 Enumclaw, Wash. 98022  
 Filed Nov. 29, 1972, Ser. No. 310,362  
 Term of patent 14 years  
 Int. Cl. D7—08

U.S. Cl. D7—207



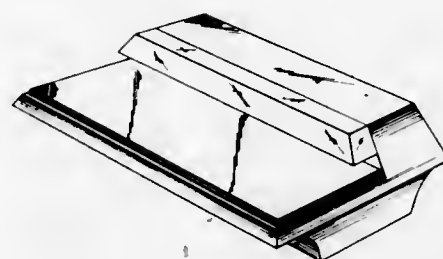
**232,015**  
**BLADE FOR A GARDEN HOE**  
 Daniel S. Pontius, 14227 Syracuse St.,  
 Whittier, Calif. 90604  
 Filed Sept. 8, 1972, Ser. No. 287,260  
 Term of patent 14 years  
 Int. Cl. D8—01

U.S. Cl. D8—11



**232,016**  
**AUTOMATIC LETTER OPENER**  
 William Macowski, Caldwell, N.J., assignor to  
 Ketcham & McDougall, Inc., Roseland, N.J.  
 Filed May 19, 1972, Ser. No. 255,313  
 Term of patent 14 years  
 Int. Cl. D18—04

U.S. Cl. D8—61



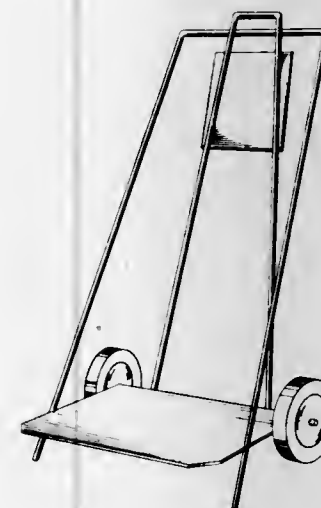
**232,017**  
**FOLDABLE POURING RECEPTACLE**  
 Donald H. Fosher, 352 Diplomat Lane,  
 Chesterfield, Mo. 63017  
 Filed July 14, 1972, Ser. No. 271,721  
 Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—175



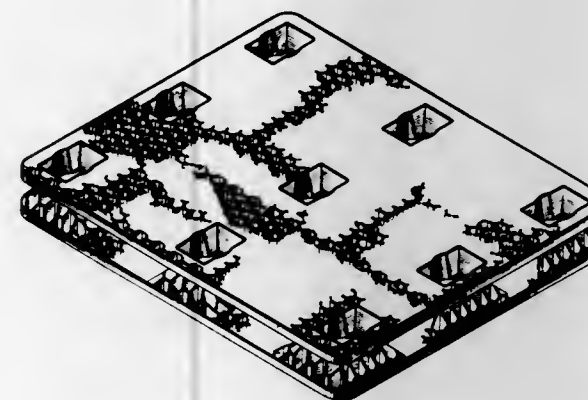
**232,018**  
**NEWSPAPER CARRIER HANDCART**  
 Charles E. Anderson, Jr., 806 Maple Crest Drive,  
 Baltimore, Md. 21211  
 Filed Jan. 9, 1973, Ser. No. 322,898  
 Term of patent 14 years  
 Int. Cl. D12—02

U.S. Cl. D12—34



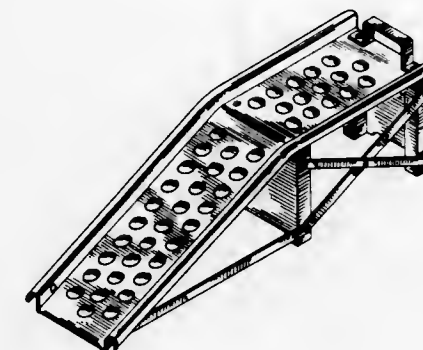
**232,019**  
**PLASTIC PALLET**  
 Houston Rehrig, Los Angeles, and Bud Edward Sanders,  
 Monterey Park, Calif., assignors to Premiere Leasing  
 Corporation, Los Angeles, Calif.  
 Continuation-in-part of abandoned design application Ser.  
 No. 134,535, Apr. 15, 1971. This application Oct. 1,  
 1971, Ser. No. 185,929  
 Term of patent 14 years  
 Int. Cl. D9—99

U.S. Cl. D12—53



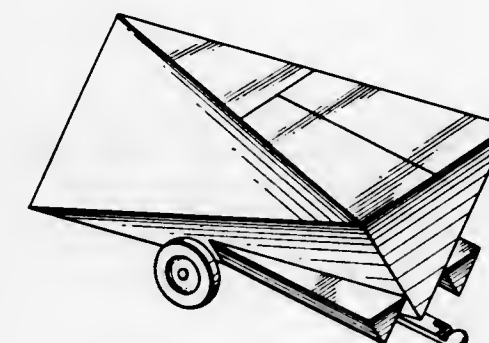
**232,020**  
**PORTABLE VEHICLE RAMP**  
 Joseph Borsuk, Huntingdon Valley, Pa., assignor to  
 Foxcraft Products Corporation  
 Filed Feb. 5, 1973, Ser. No. 329,623  
 Term of patent 14 years  
 Int. Cl. D12—05

U.S. Cl. D12—53



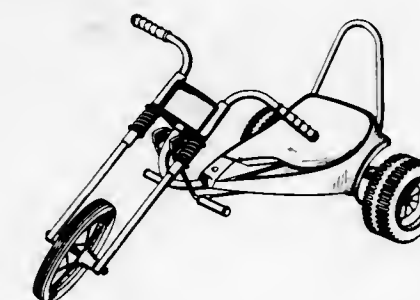
**232,021**  
**COMBINED HOUSEBOAT AND TRAILER**  
 Paul F. Stahlheber, 3500 Miami Ave.,  
 St. Louis, Mo. 63118  
 Filed May 24, 1972, Ser. No. 256,625  
 Term of patent 14 years  
 Int. Cl. D12—10

U.S. Cl. D12—102



**232,022**  
**FOOT-OPERATED JUVENILE VEHICLE**  
 Joseph C. Tieri, Minneapolis, Minn., assignor to Leisure  
 Dynamics, Inc., Minneapolis, Minn.  
 Filed Apr. 13, 1973, Ser. No. 350,731  
 Term of patent 14 years  
 Int. Cl. D12—11

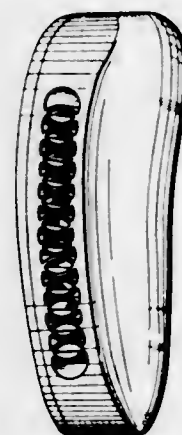
U.S. Cl. D12—112





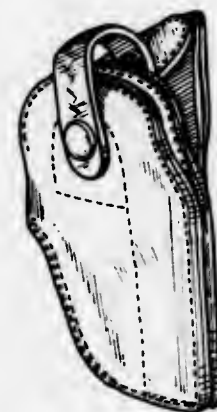
**232,023**  
**BUTT-PLATE FOR GUNS**  
 Carlo Piccini, Brescia, Italy, assignor to  
 S.p.A. Luigi Franchi, Brescia, Italy  
 Filed Jan. 11, 1973, Ser. No. 322,821  
 Claims priority, application Italy July 12, 1972  
 Term of patent 7 years  
 Int. Cl. D22—05

U.S. Cl. D22—9



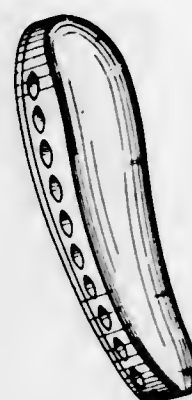
**232,025**  
**GUN HOLSTER**  
 Frederick Elwood Hershman, 790 Newton Way,  
 Costa Mesa, Calif. 92626  
 Filed May 11, 1973, Ser. No. 359,301  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D22—13



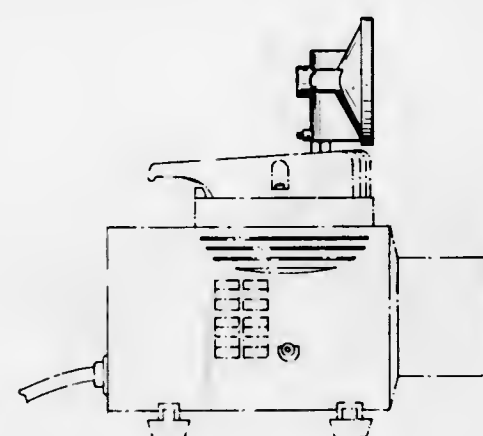
**232,024**  
**BUTT-PLATE FOR GUNS**  
 Carlo Piccini, Brescia, Italy, assignor to  
 S.p.A. Luigi Franchi, Brescia, Italy  
 Filed Jan. 11, 1973, Ser. No. 322,822  
 Claims priority, application Italy July 12, 1972  
 Term of patent 7 years  
 Int. Cl. D22—05

U.S. Cl. D22—9



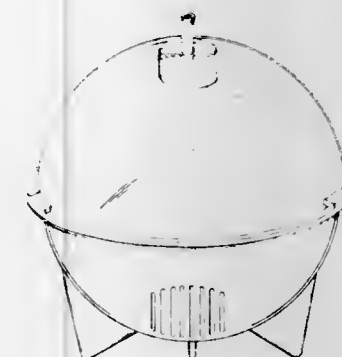
**232,026**  
**HIGH-FREQUENCY PEST CONTROL DEVICE**  
**OR THE LIKE**  
 Arthur J. Drooge, Sheboygan, Wis., assignor to  
 Ultrason-Southern, Inc., Washington, D.C.  
 Filed Dec. 29, 1972, Ser. No. 319,441  
 Term of patent 14 years  
 Int. Cl. D22—06

U.S. Cl. D22—99



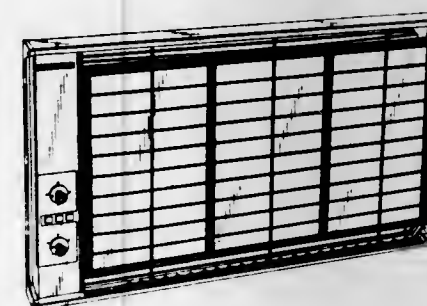
**232,027**  
**BALL HOUSING FOR AN AQUARIUM FILTER**  
 Monte L. Levin, New York, N.Y., assignor to  
 Metaframe Corporation, Maywood, N.J.  
 Filed Apr. 24, 1972, Ser. No. 247,230  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—4



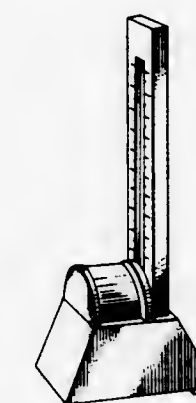
**232,028**  
**ELECTRIC HEATER**  
 Francisco Beldarrain, Cordovilla-Pamplona, Spain, as-  
 signor to Orbaiceta, S.A., Cordovilla-Pamplona, Spain  
 Filed Dec. 18, 1972, Ser. No. 315,849  
 Claims priority, application Spain Aug. 21, 1972  
 Term of patent 7 years  
 Int. Cl. D23—03

U.S. Cl. D23—110



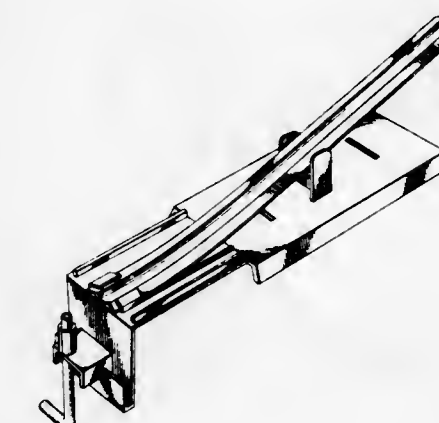
**232,030**  
**EDUCATIONAL AID FOR DEMONSTRATING**  
**PRINCIPLES IN PHYSICS**  
 John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey,  
 N.J., assignors to Xerox Corporation, Stamford, Conn.  
 Filed Nov. 22, 1972, Ser. No. 308,863  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



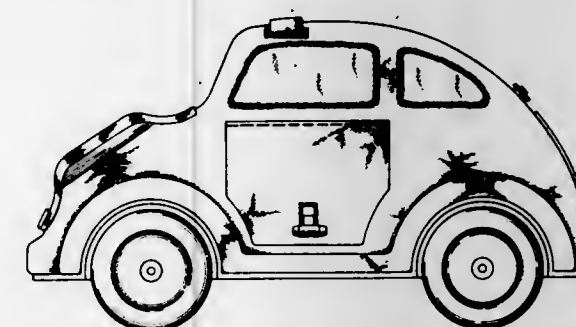
**232,031**  
**COLLISION DEMONSTRATION TEACHING AID**  
 John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey,  
 N.J., assignors to Xerox Corporation, Stamford, Conn.  
 Filed Nov. 22, 1972, Ser. No. 308,865  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



**232,029**  
**EDUCATIONAL TOY VEHICLE**  
 Marvin I. Glass, Chicago, Howard J. Morrison, Highland  
 Park, and Bette M. Kaellin, Chicago, Ill., assignors to  
 Marvin Glass & Associates, Chicago, Ill.  
 Filed Feb. 17, 1972, Ser. No. 227,311  
 Term of patent 14 years  
 Int. Cl. D21—01

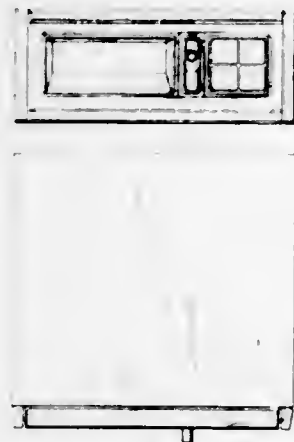
U.S. Cl. D25—1 R





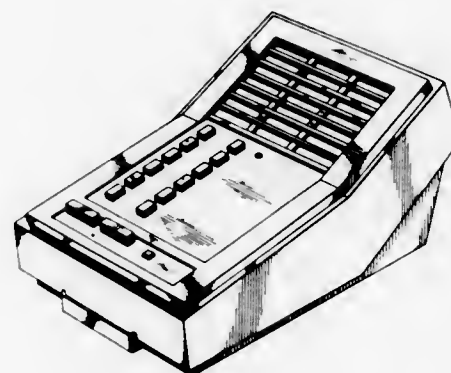
**232,032**  
**EIGHT TRACK TAPE PLAYER**  
 Richard H. Seager, Manlius, N.Y., assignor to  
 General Electric Company  
 Filed Apr. 7, 1972, Ser. No. 242,278  
 Term of patent 14 years  
 Int. Cl. D14—01, 03

U.S. Cl. D26—14 B



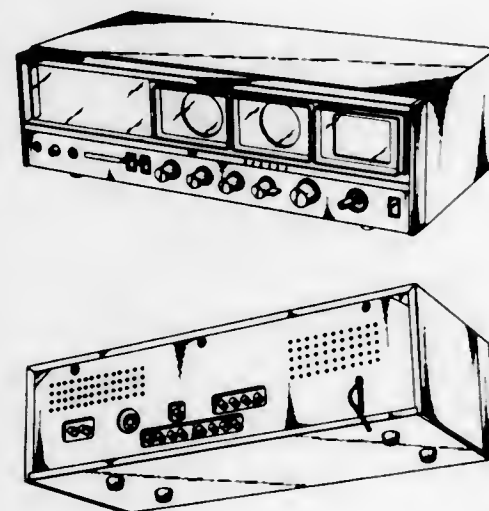
**232,034**  
**INTERCOM STATION**  
 L. Robert Shoyas, Racine, Wis., assignor to Webster  
 Electric Company, Inc., Racine, Wis.  
 Filed Aug. 25, 1972, Ser. No. 283,800  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D26—14 M



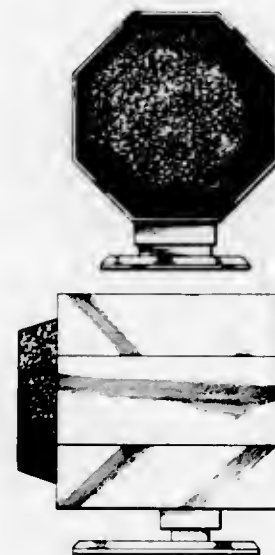
**232,033**  
**AMPLIFIER**  
 Ken Kawamura, Osaka, Japan, assignor to Matsushita  
 Electric Industrial Co., Ltd., Osaka, Japan  
 Filed June 23, 1972, Ser. No. 265,912  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D26—14 L



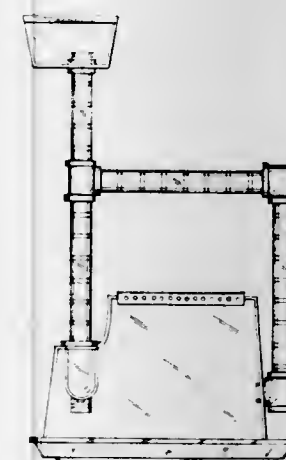
**232,035**  
**LOUDSPEAKER**  
 Barney Rigney, Jr., Los Angeles, Calif., assignor to  
 Sound West, Inc., Van Nuys, Calif.  
 Filed Oct. 27, 1972, Ser. No. 301,586  
 Term of patent 14 years  
 Int. Cl. D14—01

U.S. Cl. D26—14 G



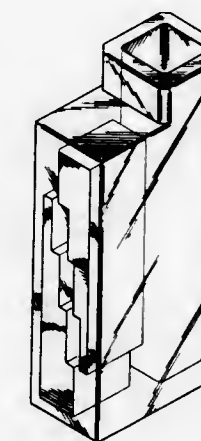
**232,036**  
**ANIMAL HABITAT**  
 Allan H. Willinger, New Rochelle, and Albert J. Dinner-  
 stein, Brooklyn, N.Y., assignors to Metaframe Corpo-  
 ration, Maywood, N.J.  
 Filed June 28, 1972, Ser. No. 267,149  
 Term of patent 14 years  
 Int. Cl. D30—06

U.S. Cl. D30—42



**232,038**  
**TWO-COLOR COMPARATOR**  
 Clifford C. Hach and Max B. Kloster, Ames, Iowa, as-  
 signors to Hach Chemical Company, Ames, Iowa  
 Filed Mar. 1, 1972, Ser. No. 231,063  
 Term of patent 14 years  
 Int. Cl. D24—02

U.S. Cl. D32—2



**232,037**  
**COLOR COMPARATOR**  
 Clifford C. Hach and Max B. Kloster, Ames, Iowa, as-  
 signors to Hach Chemical Company, Ames, Iowa  
 Filed Feb. 28, 1972, Ser. No. 230,189  
 Term of patent 14 years  
 Int. Cl. D24—02

U.S. Cl. D32—2



**232,039**  
**STUFFED TOY**  
 William G. Pendill, Hinsdale, Ill., assignor to Nutrition  
 Dynamics, Inc., Hinsdale, Ill.  
 Filed Mar. 15, 1973, Ser. No. 341,350  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—4 R





**232,040**  
**STUFFED TOY**

William G. Pendill, Hinsdale, Ill., assignor to Nutrition Dynamics, Inc., Hinsdale, Ill.  
Filed Mar. 15, 1973, Ser. No. 341,351  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-4 R



**232,042**  
**STUFFED TOY**

William G. Pendill, Hinsdale, Ill., assignor to Nutrition Dynamics, Inc., Hinsdale, Ill.  
Filed Mar. 15, 1973, Ser. No. 341,353  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-4 R



**232,041**  
**STUFFED TOY**

William G. Pendill, Hinsdale, Ill., assignor to Nutrition Dynamics, Inc., Hinsdale, Ill.  
Filed Mar. 15, 1973, Ser. No. 341,352  
Term of patent 14 years  
Int. Cl. D21-01

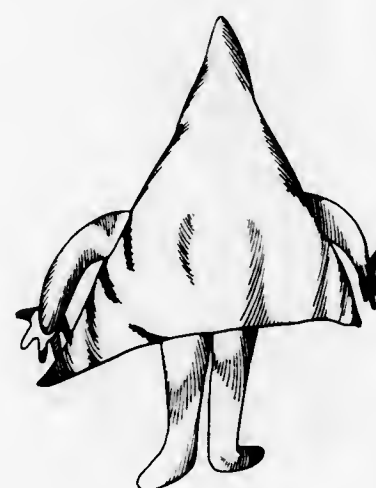
U.S. Cl. D34-4 R



**232,043**  
**STUFFED TOY**

William G. Pendill, Hinsdale, Ill., assignor to Nutrition Dynamics, Inc., Hinsdale, Ill.  
Filed Mar. 15, 1973, Ser. No. 341,354  
Term of patent 14 years  
Int. Cl. D21-01

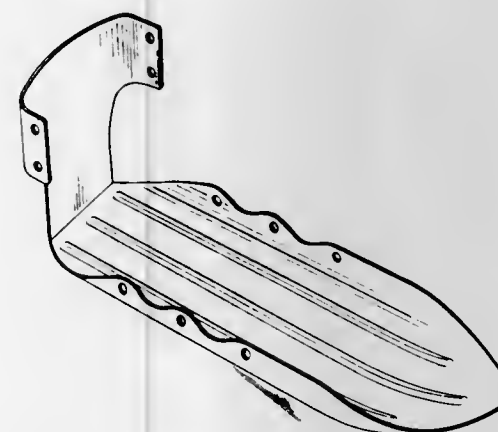
U.S. Cl. D34-4 R



**232,044**  
**SNOW SKATE**

Robert Michael King, Downsview, Ontario, Canada, assignor to Tel-Pro Products Limited, Toronto, Ontario, Canada  
Filed Jan. 9, 1973, Ser. No. 322,118  
Term of patent 14 years  
Int. Cl. D21-02

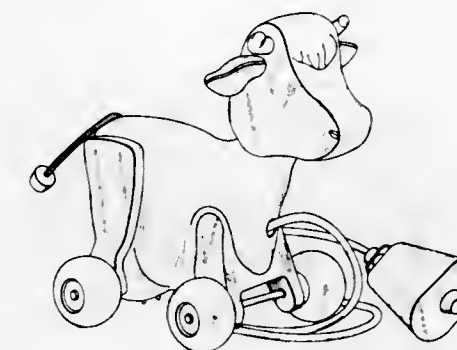
U.S. Cl. D34-14 D



**232,046**  
**TOY COW**

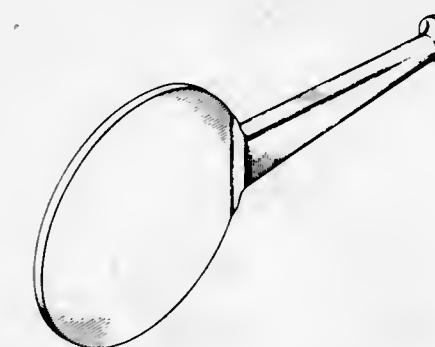
Ralph W. Crawford, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.  
Filed Jan. 2, 1973, Ser. No. 320,296  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-15 D



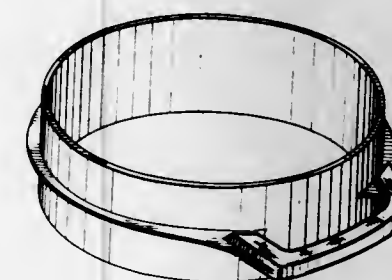
**232,047**  
**GAME PADDLE**  
Nabil F. Girgis, 2206 College Ave., Apt. 6, Costa Mesa, Calif. 92627  
Filed Mar. 6, 1972, Ser. No. 232,338  
Term of patent 7 years  
Int. Cl. D21-01

U.S. Cl. D34-5 SP



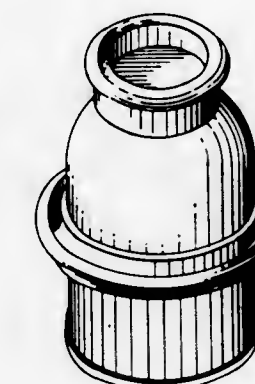
**232,045**  
**WHIRLING BALL RUNWAY TOY**  
Richard D. Petrillo, Merrick, N.Y., assignor to Rite-Way Products Corp., Freeport, N.Y.  
Filed Oct. 12, 1972, Ser. No. 296,768  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-15 K



**232,048**  
**MILK CAN PLANTER**  
William A. Bamesberger, P.O. Box 1442, Auburn, Calif. 95603  
Filed Apr. 17, 1973, Ser. No. 351,857  
Term of patent 14 years  
Int. Cl. D11-02; D9-02

U.S. Cl. D35-3 B





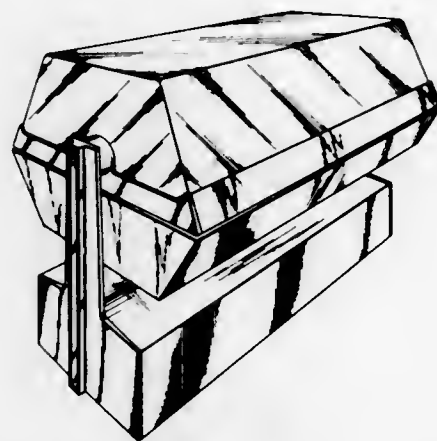
232,049

**ADJUSTABLE LIGHTING FIXTURE**

Albert Harvey Lahm, Lorain, John Paul Stuart White, Vermillion, and James Tatsuo Asaki, Elyria, Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 334,020  
Term of patent 14 years  
Int. Cl. D26—03, 05

U.S. Cl. D48—31



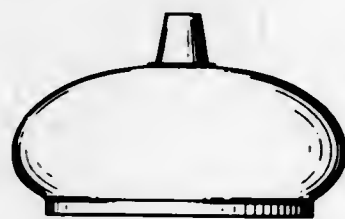
232,050

**LIGHT FIXTURE**

Fred M. Gore, Dallas, and Ralph H. McFarlin, Pasadena, Tex., assignors to Esquire, Inc., New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,154  
Term of patent 14 years  
Int. Cl. D26—03

U.S. Cl. D48—31



232,051

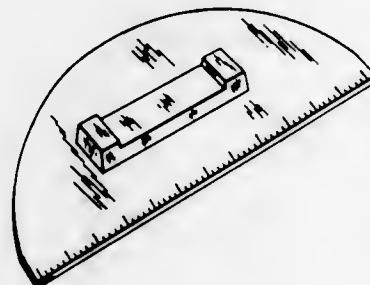
**DRAFTING INSTRUMENT**

Peter S. Hoagland, 18769 Saratoga, Lathrup Village, Mich. 48076

Continuation-in-part of design application Ser. No. 160,234, July 6, 1971. This application Dec. 15, 1971, Ser. No. 208,511

Term of patent 14 years  
Int. Cl. D19—06

U.S. Cl. D52—6 A



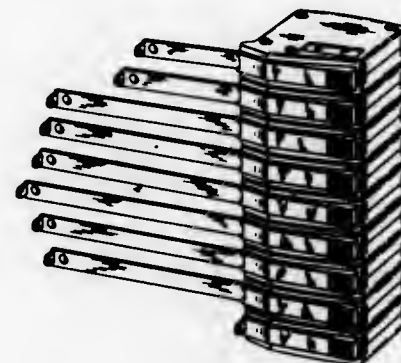
232,052

**MULTIPLE TAPE MEASURE**

Michel Quenot, Zone Industrielle Trepillot, F-25 Besancon, France

Filed Jan. 5, 1972, Ser. No. 215,708  
Claims priority, application France July 12, 1971  
Term of patent 14 years  
Int. Cl. D10—04

U.S. Cl. D52—6 A



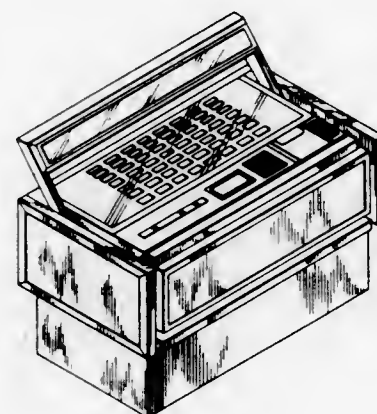
232,053

**PHONOGRAPH CABINET**

Robert A. O'Neill and Michael C. Wilson, Glen Ellyn, Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Aug. 10, 1972, Ser. No. 279,311  
Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D56—4 R



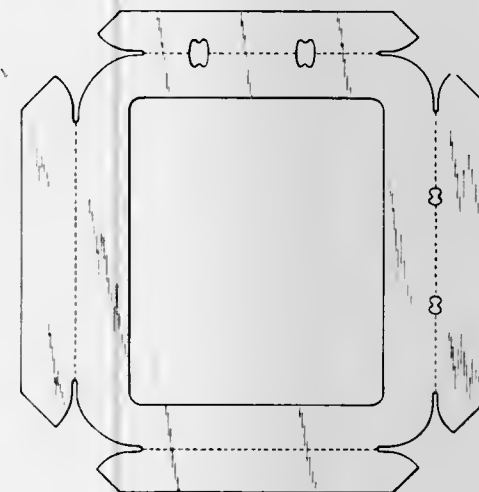
232,054

**BLANK FOR A TRANSPARENCY MOUNT**

Ralph David Morris, London, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1972, Ser. No. 228,479  
Claims priority, application Great Britain Aug. 31, 1971  
Term of patent 14 years  
Int. Cl. D16—99

U.S. Cl. D61—1 S



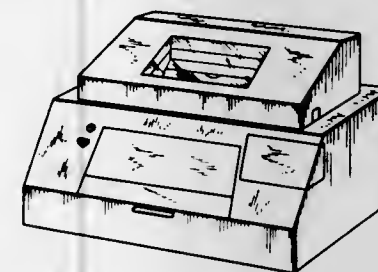
232,055

**CABINET FOR A TELEPRINTER OR THE LIKE**

Berndt Ebbe Frick, 9 Herrgardsvagen, 13500 Tyreso, Sweden

Filed Apr. 24, 1972, Ser. No. 247,238  
Claims priority, application Sweden Nov. 24, 1971  
Term of patent 14 years  
Int. Cl. D18—99

U.S. Cl. D64—11 R



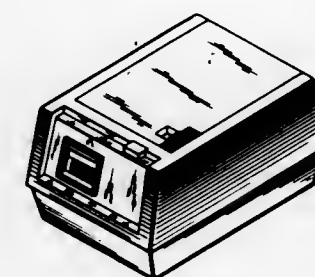
232,056

**TAPE DISPENSER**

Akio Kondo, Yokohama, Japan, assignor to Kabushiki Kaisha Uchida Yoko (also known as Uchida Yoko Co., Ltd.), Tokyo-to, Japan

Filed Dec. 29, 1972, Ser. No. 319,179  
Claims priority, application Japan Oct. 11, 1972  
Term of patent 14 years  
Int. Cl. D19—02

U.S. Cl. D74—1 B



232,057

**HANDBAG**

Frederick Lewis Parks, 6748 Renoir Drive 70806, and Henry Oscar Gaudet, 1737 Bellfort Drive 70815, both of Baton Rouge, La.

Continuation-in-part of abandoned design application Ser. No. 170,406, Aug. 9, 1971. This application Nov. 13, 1972, Ser. No. 305,978

Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—3 C





# LIST OF PATENTEEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- Aday, Roy W., Jr. Fluid sample flow cell. 3,822,947, Cl. 356-246.000.
- Adducci, Anthony J.; and Schwalm, Arthur W., to Cardiac Pacemakers, Inc. Metal-enclosed cardiac pacer with solid-state power source. 3,822,707, Cl. 128-419.00p.
- Ade, Willy. Car coupling means with means for transmitting push-pull strains to the car body. 3,822,501, Cl. 46-221.000.
- Adelizzi, Richard S., to Westinghouse Electric Corporation. Disc retainer device. 3,822,953, Cl. 403-356.000.
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- Albertson, Noel F. 3a,4,5,9b Tetrahydro-3,5-ethanonaphth [2,1-d] oxazol-2(3H)-ones. 3,823,149, Cl. 260-293.550.
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- Allan, John L. H.; and Field, Nathan D., to GAF Corporation. Method of chemical embossing. 3,823,214, Cl. 264-52.000.
- Allen, John K., to Standard Oil Company. Antimony trihalide catalysis of urethane foams prepared from carboxy-containing adduct polyols. 3,823,097, Cl. 260-2.5ab.
- Allen, John K., to Standard Oil Company. Compounds containing an imide linkage. 3,823,158, Cl. 260-326.00n.
- Allen, Joseph C.; Fontaine, Marc F.; Brown, Alfred; and Tate, Jack F., to Texaco Inc. Petroleum recovery process. 3,822,748, Cl. 166-269.000.
- Allen, Kenneth C.; and Boshinski, Edwin E., to Hobart Manufacturing Company, The. Sum of cross products multiplication and rounding. 3,823,311, Cl. 235-160.000.
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- Aly, Kenneth M.; and Kjorlien, Alton S. Wheel centering device. 3,822,478, Cl. 33-191.000.
- Amagami, Keizo; Mori, Hazime; Kobayashi, Takao; Kiuchi, Mitsuyuki; and Ogino, Yoshio, to Matsushita Electric Industrial Company, Limited. Induction heating coil arrangement in induction heating equipment. 3,823,296, Cl. 219-10.770.
- Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., to Owens-Illinois Inc. Machine for producing a plastic-covered glass container. 3,822,459, Cl. 29-208.00b.
- American Air Filter Company, Inc.: *See—*  
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- Mutchler, Paul A., 3,822,991.
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- Amin, Rajnikant Babubhai, to Du Pont de Nemours, E. I., and Company. Silver capacitor metallizations containing copper polynary oxides. 3,823,093, Cl. 252-514.000.
- Amos, Homer C., to Brunswick Corporation. Method for producing a three dimensional lattice. 3,822,463, Cl. 29-433.000.
- Anaconda Company, The: *See—*  
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- Anaconda Wire and Cable Company: *See—*  
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- Anderson, Benjamin M.; deceased (by Anderson, Madalyn R.; executrix); and Smithers, James P., to Armour and Company, Machine for closing filled bags under vacuum. 3,822,525, Cl. 53-112.00b.
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- Anderson, Madalyn R.: *See—*  
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- Anderson, Sherman D. Metal detecting apparatus having improved ground-effect. 3,823,365, Cl. 324-3.000.
- Andoniev, Dergei Mikhailovich; Alexandrov, Nikolai Nikitovich; Klochnev, Nikolai Ivanovich; Kovalevich, Evgeny Vladimirovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Kulikov, Vasily Ivanovich; and Filipiev, Vladimirovich. Method for anufacturing cooling members for cooling systems of metallurgical furnaces. 3,822,736, Cl. 164-100.000.
- Andre, Elie; and Mahieu, Marc, to U.S. Philips Corporation. Method of manufacturing semiconductor body. 3,823,043, Cl. 148-171.000.
- Andreaggi, Joseph R.; Graf, Robert J.; and Relis, Matthew J., said Andreaggi assor. of 1/2 to said Graf, Robert J. Visual and magnetic recording systems. 3,823,405, Cl. 346-74.0mp.
- Andreasson, Jan Erik: *See—*  
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- Andreev, Vladimir Prokhorovich: *See—*  
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- Ansgariusson, Rolf. Sectional concrete road curbs for use as borders for instance between roadways and sidewalks. 3,822,954, Cl. 404-7.000.
- Antoniou, Anthony A., to Anvan Industries, Inc. Building structure. 3,822,519, Cl. 52-79.000.
- Anvan Industries, Inc.: *See—*  
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- Aoki, Shuzo: *See—*



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- Berenbaum, Morris Benjamin; and Sogn, Allen Walter, to Allied Chemical Corporation, Preparation and uses of N-(ω-aminoalkyl)-2-aminoethane sulfonic acids as cationic dyeable additives to polyamides, 3,823,120, Cl. 260-78.00r.
- Berg, Edward A.; and Chen, Frank T., to Data Transmission Company, Synchronous data transmission network, 3,823,401, Cl. 343-204.000.
- Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim GmbH, Novel nitrofurans compounds and pharmaceutical compositions, 3,823,137, Cl. 260-240.100.
- Berger, Horst H.; and Wiedmann, Siegfried K., to International Business Machines Corporation, Multi layered vertical transistor having reach-through isolating contacts, 3,823,353, Cl. 357-40.000.
- Berglund, Harold A.; and Thomas, David F., to Waterous Company, Ice cream pump, 3,822,964, Cl. 417-44.000.
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- Bernard, Georges: See—  
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- Bernhardt, Walter; and Paule, Willy, to Bosch, Robert, GmbH, Tractor-trailer electrical connection system for wheel brake antilock-equipped tractors, 3,822,920, Cl. 303-20.000.
- Bettge, Hans, to Siemens Aktiengesellschaft, Vacuum switch, 3,823,287, Cl. 200-144.00b.
- Bevan, Christopher Graham: See—  
O'Sullivan, Eugene Francis; Seymour-Walker, Kay John; Webb, David John Tudor; Bevan, Christopher Graham; Ross, Keith; and Works, Darnall, 3,822,979.
- Bianchi, Vittorio Achille, Press with a working table provided with an inflatable cushion, 3,822,627, Cl. 83-529.000.
- Bickoff, Emanuel M.; and Kohler, George O., to United States of America, Agriculture, Preparation of edible protein from leafy green crops such as alfalfa, 3,823,128, Cl. 260-112.00r.
- Bidwell, Arthur W., Magnoda Products, Inc., Aluminum barrier support post, 3,822,863, Cl. 256-13.100.
- Bien, Hans-Samuel: See—  
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- Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, 3,823,168.
- Bienert, Horst, to Webasto-Werk W. Baier KG, Cable drive and guide for automobile sliding roofs, 3,822,912, Cl. 296-137.00g.
- Bio-Rad Laboratories: See—  
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- Bir, Mirev Leizerovich: See—  
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- Birkhead, Lennox, Jr.; and Olsen, Alden W., to Vitek Research Corporation, Method of fusing together particulate, thermoplastic material on substrate, 3,823,209, Cl. 264-25.000.
- Bissot, Thomas Charles, to Du Pont de Nemours, E. I., and Company, Aqueous ethylene terpolymer hydrosol dispersions, 3,823,108, Cl. 260-27.00r.
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- Bjorklund, Knut Bertil, Process of separating human cancer antigen proteins by gel filtration, 3,823,126, Cl. 260-112.00r.
- Bjorkman, Harry K., to Energy Development Associates, Secondary battery comprising means for forming halogen hydrate solid bubble shells, 3,823,036, Cl. 136-6.00f.
- Black, Billy B., Tire compressing and handling apparatus, 3,822,526, Cl. 53-124.00d.
- Blair, Robert H., to Resistance Welder Corporation, Seam welding method, 3,823,300, Cl. 219-83.000.
- Blake, William W.: See—  
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- Bleyer, Albert: See—  
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- Bodesheim, Ferdinand; Radlmann, Eduard; Kohler, Armin; Gutschik, Ernst; and Nischk, Gunther, to Bayer Aktiengesellschaft, Antistatically finished acrylonitrile polymers, 3,823,123, Cl. 260-85.50r.
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- Bohm, Heinz-Dieter; Ruggen, Werner; Krellmann, Herbert; and Schluckebier, Wilhelm, to Maschinenfabrik Stromag G.m.b.H., Flexible shaft coupling, 3,822,568, Cl. 64-11.00r.
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- Bolling, Fritz; Mayer, Armin; Parikh, Mavendra; and Toussaint, Friedrich, to Stahlwerke Bochum Aktiengesellschaft, Process for the decarbonization of steel, 3,823,042, Cl. 148-112.000.
- Bolsey, Emil J., Image motion and change transducers and systems controlled thereby, 3,823,261, Cl. 178-6.800.
- Bondi, Herman H., Prefabricated modular abutment assembly for supporting concrete forms of varying heights, 3,822,854, Cl. 249-33.000.
- Bondy, Clemens; and Tallack, Ian Christopher, to Doverstrand Ltd., Solid foams and their preparation, 3,823,104, Cl. 260-2.50l.
- Bonner, John J., to Fischer & Porter Co., Equalization mechanism for differential pressure meter, 3,822,596, Cl. 73-407.000.
- Booth, John Frederick, to Hepworth Iron Company Limited, The, Manufacture of hollow clayware articles, 3,822,988, Cl. 432-5.000.
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- Borneman, Edmond H.; and Galvagni, John L., to Electronic Laboratories International, Inc., Diode rectifier socketed electrical devices and diode rectifiers therefor, 3,823,339, Cl. 315-69.000.
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- Bornzin, James H., to International Harvester Company, Drive shaft coupler, 3,822,951, Cl. 403-316.000.
- Borum, Marcus P., to General Electric Company, Pneumatic analogue decompression instrument, 3,822,601, Cl. 73-432.00r.
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- Bowman-Shaw, George Neville, to Lancer Boss Limited, Side loaders, 3,822,804, Cl. 214-670.000.
- Box, E. O., Jr.; and Farha, Floyd, Jr., to Phillips Petroleum Company, Polluted water purification, 3,823,088, Cl. 210-63.000.
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- Bramhill, Percy W., Apparatus for making cigarettes, 3,822,710, Cl. 131-70.000.
- Brandenburg, Klaus; and Kuhlmoegen, Joachim, to U.S. Philip's Corporation, Multicylinder thermodynamic reciprocating machine in



which the fuel supply to burner devices is controlled by means of temperature-sensitive elements. 3,822,550, Cl. 60-24.000.

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Bregar, George W.: to Korte Engineering Corporation. Fluid operated web break detector assembly with peripheral flange for microswitch operator. 3,823,282, Cl. 200-61.180.

Brentham, Jerry D. Exercising device. 3,822,599, Cl. 73-379.000.

Bridgestone Tire Company Limited: See—  
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Brouwer, Nicolaas L.; and Smucker, David E.: to Aluminum Company of America. Sonic agitation of molten metal. 3,822,820, Cl. 228-1.000.

Brower, Frank M.; Phillips, Barbara H.; Matzek, Norman E.; and Musinski, Arthur L.: to Dow Chemical Company. The. Preparation of aluminum hydride compositions. 3,823,226, Cl. 423-645.000.

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Hungerford, Daniel Comstock. 3,822,665.

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Bump, David W.: See—  
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Buntyn, Tom C. Combination multiple purpose campers folding cot and portable pack frame. 3,822,422, Cl. 5-114.000.

Burdick, Robert E.; and Wolf, Baxter K.: to Rolari Systems, Inc. Rotary air cushion transporter. 3,822,652, Cl. 108-139.000.

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Butler, Richard A., Jr.; Hansen, Jack T.; Rump, August R.; and Arendt, Ruby R., to Butler Automatic, Inc. Web handling apparatus. 3,822,838, Cl. 242-75.440.

Buyken, Frank E.; and Foster, Robert C. Lock for form-ties. 3,822,859, Cl. 249-219.00w.

Buzbee, Lloyd R.; and Lake, Robert D., to Koppers Company, Inc. Thermoset polyester resin particles. 3,823,202, Cl. 260-861.000.

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Cairns, Elton J.; Chilenskas, Albert A.; and Shimotake, Hiroshi, to United States of America, Atomic Energy Commission. Implantable battery. 3,823,037, Cl. 136-6.00f.

Cairns, Hugh; and Johnson, Peter Bennett, to Fisons Limited. Pharmaceutically active compounds. 3,823,165, Cl. 260-345.200.

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Caron Compactor Co.: See—  
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Caron, Fred Joseph; and Caron, James Oliver, to Caron Compactor Co. Earth compaction pads. 3,822,957, Cl. 404-121.000.

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Caron, Fred Joseph; and Caron, James Oliver. 3,822,957.

Carpenter, Keith; Heywood, Basil Jason; Parnell, Edgar William; Metivier, Jean; and Boesch, Roger, to May & Baker Limited. Herbicidal compositions and their use. 3,823,008, Cl. 71-103.000.

Carrell, Ross Michael, to RCA Corporation. Rotatable paraboloidal reservoir useful in an ink jet printer. 3,823,409, Cl. 346-140.000.

Carter, Stephen D., to Pack pack frame for supporting a tent. 3,822,813, Cl. 224-25.00a.

Caruso, Jerome C. Multiple key assembly for calculators and the like. 3,823,309, Cl. 235-145.00r.

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Cecchetti, Claudio, to Arco Falc srl. Game board with retractable ball return. 3,822,886, Cl. 273-125.00r.

Celeonovic, Stevan. ROLPA S.a.r.l. Method of fixing a cylindrical object having a central hole, and support therefor. 3,822,837, Cl. Centre European de Recherches Mauvernay C.E.R.M.: See—  
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Chadima, George E., Jr.; and Bruce, Robert A., to Norand Corporation. Data collection and utilization system. 3,823,388, Cl. 340-172.500.

Chadwick, Brian. Insulated smokestack conduits. 3,822,636, Cl. 98-60.000.

Chahroudi, Kamal Najib. Rotary piston engine. 3,822,971, Cl. 418-36.000.

Chamberlin, Coleman R. File folder paper fastener. 3,822,950, Cl. 402-15.000.

Chambers, Arthur E., to Carbide Corporation. Semi-conductor and heat sink fin assembly. 3,823,351, Cl. 317-234.00r.

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Chang, Wen-Hsuan; Dowbenko, Rostyslaw; and Anderson, Carl C., to PPG Industries, Inc. Polymers of phosphorus-containing monomers. 3,823,124, Cl. 260-89.70r.

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Chubb, Wingfield L. Method of constructing door and window structures. 3,822,462, Cl. 29-416.000.

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Clark, John Colin; and Underwood, William George Elphinstone, to Glaxo Laboratories Limited.  $\Delta^4$ -Carboxy-3-oxobutyl cephalosporins. 3,823,140, Cl. 260-243.00c.

Clark, Norman Owen. Method of modifying clay particles. 3,822,827, Cl. 241-3.000.

Clarke, Donald Bernard, to Lucas, Joseph, (Electrical) Limited. Friction welding apparatus. 3,822,821, Cl. 228-2.000.

Cleary, James M. Instrument for measuring maximum expiratory flow rate. 3,822,699, Cl. 128-2.080.

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Cloyd, Harold S., to Nasco Plastics, Incorporated. Adaptor for hypodermic syringe. 3,822,701, Cl. 128-221.000.

Coats, Jesse C. Lumber cam lifting mechanism. 3,822,778, Cl. 198-103.000.

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Colombo, Roberto, to S.p.A. Lavorazione Materie Plastiche L.M.P. Manufacturing laminates of expanded thermoplastic resins. 3,823,047, Cl. 156-322.000.

Colombo, Roberto, to Lavorazione Materie Plastiche L.M.P. S.p.A. Synthetic resin laminate and its manufacturing process. 3,823,211, Cl. 264-47.000.

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Straitz, John F., III. 3,822,985.

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Cramwinckel, Arnaud; and Reintjes, Rudolf Carlo, to Bitumarin N.V. Method of laying wide asphaltic open mesh reinforced strips. 3,822,556, Cl. 61-38.000.  
Crawley, Thomas B. Removable reusable labels. 3,822,492, Cl. 40-2.000.  
Crawley, Thomas B. Removable reusable labels. 3,822,402, Cl. 40-2.000.  
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Croasdale, Fred; and Evans, Raymond Victor, to Platt International Limited. Open end spinning apparatus. 3,822,541, Cl. 57-58.890.  
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Crook, Alan; and Lumsden, Norman, to British Domestic Appliances Limited. Switching mechanism. 3,823,329, Cl. 307-141.00r.  
Crosby, Millard W. Refrigeration apparatus, including defrosting means. 3,822,562, Cl. 62-196.000.  
Crowell, John A.; and Bull, Alan D., to Du Pont de Nemours, E. I., and Company. Apparatus for controlling addition of replenishment solution to a photographic processor. 3,822,723, Cl. 137-624.150.  
Crowl, Jimmie Ray. Portable sawing device. 3,822,471, Cl. 30-92.000.  
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D'Alelio, Gaetano F. Unsaturated ester of halogenated alkenes. 3,823,183, Cl. 260-485.00h.  
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Dandliker, Rene; and Iten, Paul D., to Aktiengesellschaft Brown, Boveri & Cie. Method and apparatus for the presentation of frequency. 3,823,374, Cl. 324-79.00r.  
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Davis, Robert E. Hot air sealing apparatus. 3,823,306, Cl. 219-373.000.  
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de l'Eprevier, Ludovic Grandin; and Brecy, Andre Achille, to Societe Industrielle Honeywell Bull. Control circuit for chopped feeding. 3,823,360, Cl. 321-18.000.  
De Monsy, Richard L.; and Hankins, Norman K., to Hexcel Corporation. Method and apparatus for constructing insulated cable pressure blocks. 3,823,250, Cl. 174-23.00r.  
De Pradenne, Henri Vayson; and Marcadargent, Serge, to Societe Generale de Constructions Electriques et Mecaniques (Alstom). Electrical insulation compound, particularly for high power high tension coils to be used in rotating electrical machinery, and insulation material utilizing said composition. 3,823,200, Cl. 260-831.000.  
De Vos, John B. Toy building block suitable for a pad, raft or the like. 3,822,499, Cl. 46-26.000.  
De Wald, Horace A., to Lobbestael, Sandra J. Pyrazolodiazepine compounds and methods for their production. 3,823,157, Cl. 260-310.00r.  
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Yakovson, Yakov Savelievich; Sysin, Alexandr Yakovievich; Leonov, Vyacheslav Stepanovich; Ignatovich, Vladimir Alexeevich; Popov-Ilin, Boris Petrovich; Skachkov, Alexandr Nikolaevich; Skudina, Natalia Alexandrovna; Forichev, Sergei Gavrilovich; Degtyarev, Gavril Artemovich; Bir, Mirev Leizerovich; Kovanov, Nikolai Ivanovich; Melnikov, Jury Sergeevich; and Voskoboinikova, Lidia Mikhailovna, 3,822,418.  
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De Vos, John B. Compartmented net target and play field. 3,822,883, Cl. 273-95h.

- Dhaka, Vir A.; and Kozik, Andrew F., to International Business Machines Corporation. Interconnection metallurgy system for semiconductor devices. 3,823,349, Cl. 317-234.00r.  
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Dunkers, Karl Ragnar; and Johansson, Jarl Harald, to Johnson Construction Company. Sewage flocculating and sedimentation tank unit. 3,822,788, Cl. 210-200.000.  
Dupre, Herman K. Snow making apparatus and system. 3,822,825, Cl. 239-14.000.  
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Ellegast, Konrad; Schnegg, Robert; Essig, Karl August; and Wieden, Horst, to Bayer Aktiengesellschaft. Apparatus for producing crimped filaments from synthetic polymers. 3,822,450, Cl. 28-1,300.  
Emelyanenko, Iuliy Georgievich: See—  
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Andreev, Vladimir Prokhorovich; Boiko, Georgiy Alexandrovich; Emelyanenko, Iuliy Georgievich; Sobolev, Iury Vasilievich; Shavrin, Adolf Ivanovich; Dolbenko, Evgeniy Tikhonovich; Chernykh, Viktor Vasilievich; and Dykan, Vitaliy Grigorievich, 3,823,242.  
Emery Industries, Inc.: See—  
Schlossman, Irwin S., 3,823,185.  
Emmons, George Harvey. Detachable support tray for ladders. 3,822,847, Cl. 248-210,000.  
Endres, Leland S.; Gehlhoof, Leo F.; and Zimmerman, Dallas D., to Minnesota Mining and Manufacturing Company. Aldehyde condensation products of fluoroliphatc phenols in skin protective compositions. 3,823,230, Cl. 424-82,000.  
Energy Conversion Devices, Inc.: See—  
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Envirotron, Inc.: See—  
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Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,823,004.  
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Evans, Eugene, Jr. Refuse collector. 3,822,802, Cl. 214-518,000.  
Evans, Raymond H., to Calumite Company. The. Method of producing blast furnace slag products. 3,822,799, Cl. 214-152,000.  
Evans, Raymond Victor: See—  
Croasdale, Fred; and Evans, Raymond Victor, 3,822,541.  
Evans, William B., to Improved Machinery Inc. Control apparatus and methods for molding. 3,822,867, Cl. 259-191,000.  
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Evertz, Egon; and Seybold, Rolf, said Seybold assor. to said Evertz, Egon. Long-arm grinding machine. 3,822,509, Cl. 51-40,000.

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Faisandier, Jacques. Hydraulic servo mechanism. 3,822,634, Cl. 91-384,000.  
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Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; and Chernyavsky, Anatoly Stepanovich, 3,822,579.  
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Feng, Chung Liao. Drawstring with clips. 3,822,445, Cl. 24-266,000.  
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Fischer, Joerg, to Bell & Howell Company. Apparatus for stripping film from a reel. 3,822,843, Cl. 242-192,000.  
Fisher, Gene A.; Janssen, Donovan M.; and Stedman, David, to International Business Machines Corporation. Rotary magnetic head apparatus having an air-bearing supported head wheel. 3,823,415, Cl. 360-102,000.  
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Fox, Roland Thomas Victor; Hadfield, John Roger; and Doyle, Peter, to Imperial Chemical Industries Limited. Anti-bacterial process using tetramisole. 3,823,239, Cl. 424-270,000.  
Frahm, Gerd Rainer; Meisel, Franz; and Heint, Ulrich, to NGZ Geldzuhlmaschinen-ges. mbH & Co. and Fertigungs K.G. Coin delivery machine. 3,822,713, Cl. 133-2,000.  
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Hammond, Philip D.; and Franco, Nicholas B., 3,823,174.  
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Frayer, Paul D.; and Lutzmann, H. Harald, to Molecular Design Incorporated. Composite barrier film and method of making the same. 3,823,061, Cl. 161-254,000.  
Frederick, Leonard L. Jet sheet and circular pile with water hammer assist. 3,822,557, Cl. 61-53,000.  
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Frishman, Daniel. Method and apparatus for electrifying pile fabrics. 3,822,447, Cl. 26-2,000.  
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Frost, Charles C.; and Weis, Siegfried K., to Frost, C. L. & Sons, Inc. Method of making rotatable member assembly. 3,822,457, Cl. 29-159,000.  
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- Gazzola, Ivaldo; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,822,644.
- Gazzola, Ivaldo; deceased (by Gazzola, Eles; and Gazzola, Lanfranco; heirs); D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., to American Bank Note Company. Apparatus for maintaining registry between the plates of a multiple plate cylinder press and sheets supplied thereto. 3,822,644, Cl. 101-242,000.
- Gazzola, Lanfranco: See—  
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- Geerloff, Jan Korevaar: See—  
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- Gegauf, Fritz, Aktiengesellschaft Bernina-Nahmaschinenfabrik: See—  
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- General Computer Service, Inc.: See—  
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- General Corporation, The: See—  
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- General Electric Company: See—  
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- General Zipper Corporation: See—  
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- George, John Barrett, to RCA Corporation. Television automatic gain control circuitry providing for compatible control of VHF tuner and UHF tuner. 3,823,379, Cl. 325-405,000.
- George, Samuel H. Adjustable backrest for a seat for cycles. 3,822,917, Cl. 297-195,000.
- Geotel, Inc.: See—  
Muehlberger, Erich, 3,823,302.
- Germany, Michael John, to Lucas Electrical Company Limited, The. Lamp assemblies. 3,823,314, Cl. 240-41,600.
- Germunson, Gary G.; and Schopp, Fredrick R., to Yakima Wire Works, Inc. Container handling apparatus. 3,822,527, Cl. 53-189,000.
- Gernand, Martin O.: See—  
Sebenik, Roger F.; and Gernand, Martin O., 3,823,011.
- Getz, Edward J.; and Barbieri, Thomas, to Westinghouse Electric Corporation. Sleeve container for lamp bulbs or the like, and resulting package. 3,822,785, Cl. 206-422,000.
- Geurtsen, Friedrich H.; and Wochner, Fred J., to Dennison Manufacturing Company. Method of molding a turret. 3,823,218, Cl. 264-162,000.
- Ghelfi, Salvatore. Incinerating furnace for fluid and sludged refuse. 3,822,653, Cl. 110-7,000.
- Ghelfi, Salvatore. Burner for burning various liquid and gaseous combustibles or fuels. 3,822,654, Cl. 110-7,000.
- Gidaspow, Dimitri; Lyczkowski, Robert W.; and Baker, Bernard S., to Institute of Gas Technology. Continuous bleed fuel cells. 3,823,038, Cl. 136-86,000.
- Gilbert, Barrie, to Tektronix, Inc. Current steering network. 3,823,386, Cl. 340-172,000.
- Gildone, Anthony M.: See—  
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- Gillemot, George W.: See—  
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- Gillette, Robert H. Honing tool. 3,822,515, Cl. 51-204,000.
- Gilliatt, Charles L., to Raytheon Company. Dielectric heating apparatus. 3,823,293, Cl. 219-10,410.
- Gilson, John L.; and Strachan, Gail L., to Dick, A. B., Company. Water emulsion paste stencil ink. 3,823,020, Cl. 106-30,000.
- Ginsburgh, Irwin: See—  
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- Giordano, Carmelo; Esposito, Renato; and Randazzo, Giacomino, to Baxter Laboratories, Inc. Removal of nitrogenous waste products with polyaldehydes. 3,823,233, Cl. 424-180,000.
- Gist-Brocades N.V.: See—  
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- Giuffre, George Joseph: See—  
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- Glacier Industries, Inc.: See—  
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- Glaxo Laboratories Limited: See—  
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- GMF Inc.: See—  
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- Gogarty, William B., to Marathon Oil Company. Use of viscoelastic fluids for mobility control. 3,822,746, Cl. 166-252,000.
- Gogliano, Joseph A., to Grace, W. R. & Co. Process for forming a strippable coating. 3,823,024, Cl. 117-6,000.
- Golan, Kenneth F., to Caterpillar Tractor Company. Speed sensitive control system for slipping clutch. 3,822,770, Cl. 192-103,000.
- Golborn, Peter; and Duffy, James J., to Hooker Chemical Corporation. N-Phosphonomethyl amides. 3,823,206, Cl. 260-932,000.
- Goldberg, Carl. Model airplane propeller spinner. 3,822,963, Cl. 416-245,000.
- Goldberg, Kenneth M. Credit card verifier. 3,823,308, Cl. 235-61,700.
- Goldfischer, Lester I., to Singer Company, The. Velocimeter. 3,822,940, Cl. 356-28,000.
- Goldshy, Arthur R., to Texaco Inc. Removal of tertiary olefins from hydrocarbon compositions containing secondary olefins. 3,823,198, Cl. 260-677,000.
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- Gouirand, Rene, to Mercadante, Joseph. Air suspension with tapered air bag. 3,822,908, Cl. 293-68,000.
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- Grace, W. R., and Co.: See—  
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- Grafstein, Daniel: See—  
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- Grahn, Per Goran, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas engine heater heads. 3,822,553, Cl. 60-517,000.
- Grant, Norman H.; Alburn, Harvey E.; and Fenichel, Richard L., to American Home Products Corporation. N-aminoacyl-substituted insulins. 3,823,125, Cl. 260-112,700.
- Gray, Richard T., to General Electric Company. Aerodynamically adjustable pantograph. 3,823,278, Cl. 191-66,000.
- Greefkes, Johannes Anton; and Geerloff, Jan Korevaar, to U.S. Philips Corporation. Transmitter for the transmission of analogue signals by pulse code. 3,823,376, Cl. 325-141,000.
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- Grimmer, Klaus Jurgen. Unbalanced vibrator for an oscillating conveyor or a vibrating screen. 3,822,604, Cl. 74-87,000.
- Grindeland, Gordon L. Apparatus for removing foreign particles from a lithographic press. 3,822,642, Cl. 101-425,000.
- Groves, Thomas Conrad. Hydraulic timing device. 3,822,544, Cl. 58-2,000.
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- Hanson, Donald N.; and Bell, Alexis T., to University of California, The Regents of the. Method and apparatus for measuring the total surface area concentration of particles entrained in a gas. 3,823,372, Cl. 324-71,000.
- Happy Shokai Co., Ltd.: See—  
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- Hardt, Jean, to Aluminium Suisse S.A. Redrawing apparatus. 3,822,576, Cl. 72-348,000.
- Hargett, Lawrence, to Philmont Manufacturing Company. Quilted fabric and method of producing the same. 3,823,052, Cl. 156-220,000.
- Harris, David W.; and O'Connor, Chadwell. Water cooled skin kiln for waste disposal. 3,822,651, Cl. 110-10,000.
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- Hartman Metal Fabricators, Inc.: See—  
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- Hastings Manufacturing Company: See—  
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- Hauck, Franz; and Poppel, Joachim, to Bosch, Robert, G.m.b.H. Automotive engine exhaust gas composition sensing apparatus. 3,822,581, Cl. 73-23,000.
- Havas, Pal Geza, to U.S. Philips Corporation. Arrangement provided with at least two combustion flash bulbs. 3,823,344, Cl. 317-80,000.
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- Hedman, John Gunnar. Anchor. 3,822,664, Cl. 114-208,000.
- Hehl, Karl. Injection unit for an injection molding machine. 3,822,975, Cl. 425-107,000.
- Heidrich, Paul F.; Kuhn, Lawrence; and Lean, Eric G., to International Business Machines Corporation. Electronically tunable optical filter using acoustic waves. 3,822,929, Cl. 350-161,000.
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- Heller, Watter D.; and Blake, William W., to Caterpillar Tractor Company. Planetary power steer cross drive transmission and control system with lubrication passages in planet carriers. 3,822,765, Cl. 184-6,000.
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- La Marche, Robert Ernest; and May, Carl Jerome, Jr., to Bell Telephone Laboratories, Incorporated. Common control digital echo suppressor. 3,823,275, Cl. 179-170.200.
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- Lavorazione Materie Plastiche L.M.P. S.p.A.: See—
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- Le Peuvedic, Jean-Pierre; and Tinchon, Jacques, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine Tour Aquitaine. Sensing device to measure the speed of rotation of drilling turbines. 3,822,589, Cl. 73-151.000.
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- Lindblad, Oskar. Safety belt arrangement for individuals. 3,822,760, Cl. 180-82.000.
- Lindelow, Bjorn T. Device for rotatable support of rolls comprising a web of cloth or similar. 3,822,733, Cl. 160-120.000.
- Lindsey, L. E.; and Sammons, Herbert F. Lindsey Manufacturing Company Conventional conductor stringing assembly for power line use. 3,822,862, Cl. 254-196.000.
- Lippitsch, Josef, to Waagner-Biro Aktiengesellschaft. Tubular heat exchanger with stress-relieving structure. 3,822,741, Cl. 165-83.000.
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- Low, Alvin, Jr. Portable utility system. 3,822,566, Cl. 62-435.000.
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- Maley, William B., to Techlite, Inc. Display apparatus. 3,822,493, Cl. 40-31.000.
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- Manchester, William E.; and Huggill, Douglas B., to Northrop Corporation. Ceramic die press system. 3,823,303, Cl. 219-153.000.
- Mansson, Sven E.; Brooks, Robert A.; and Bebeck, Paul J., to Magnetic Analysis Corporation. Calibration and balance system in pulse eddy current testing apparatus. 3,823,368, Cl. 324-40.000.
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- Marshall, Karl. Apparatus for treating and purifying sewage, particularly sewage contaminated with detergents. 3,822,786, Cl. 210-108.000.
- Martin, Richard E.; Gildone, Anthony M.; and Frankfurt, Sandor, to GMF Inc. Beverage tapping device. 3,822,716, Cl. 137-212.000.
- Martin, Virgil B., to Gehl Company. Front mounted harvester. 3,822,534, Cl. 56-13.900.
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Gilliatt, Charles L.: 3,823,293.

Pratt, Albert R.: 3,822,776.

RCA Corporation: *See—*

Carrell, Ross Michael: 3,823,409.

Feryszka, Rubin; and Preisig, Joseph Otto: 3,823,332.

George, John Barrett: 3,823,379.

Hafel, Peter Eduard: 3,823,264.

Shrader, Terry M.: 3,822,453.

Recktenwald, James N. Control valve for a catalytic heater. 3,822,824, Cl. 236-102.000.

Reddy, Junuthula, to Bendix Corporation, The. Electric fuel pump control circuit for intermittent injection electronic fuel control systems. 3,822,677, Cl. 123-32.0ea.

Reed, Clovis H. Wire and cable insulation removing device. 3,822,615, Cl. 81-9.510.

Reed, Eva. Simultaneous hair drying and styling. 3,822,484, Cl. 34-99.000.

Reed, Gordon Howard: *See—*

Hodgson, Philip; Munson, Robert Thomas; and Reed, Gordon Howard: 3,823,414.

Reedy, James D.: *See—*

Johnson, Morris A.; Reedy, James D.; and Yang, Kang: 3,823,194.

Reese, William E.: *See—*

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Regie Nationale des Usines Renault: *See—*

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Rehder, Robert H.: *See—*

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Reijonen, Yrjo Johannes; and Reijonen, Veli Elias: 3,822,744.

Reijonen, Yrjo Johannes; and Reijonen, Veli Elias. Straining tube for pipe well. 3,822,744, Cl. 166-235.000.

Reimlinger, Hans Karl; Shanahan, Robert W.; and Vandewalle, Jan Joseph Maurice, to Mallinckrodt Chemical Works. S-triazolo-(3,4-a)-isoquinolines in reducing inflammation. 3,823,238, Cl. 424-258.000.

Reintjes, Rudolf Carlo: *See—*

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Reisman, Abraham J., to Monsanto Company. Stabilized polyvinyl acetal interlayers. 3,823,113, Cl. 260-45.80n.

Relis, Matthew J.: *See—*

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Resistance Welder Corporation: *See—*

Blair, Robert H.: 3,823,300.

Revere Copper and Brass Incorporated: *See—*

Robinson, John W.; Howard, John W.; Hahn, Robert E.; and Hemming, Donald C.: 3,822,993.

Rey, Paul R., to United Aircraft Corporation. Battery peaking unit for fuel cell power plants. 3,823,358, Cl. 320-3.000.

Reynolds International, Inc.: *See—*

Beeler, Leland Stanford: 3,823,078.

Beeler, Leland Stanford: 3,823,079.

Reynolds Metals Company: *See—*

Hinrichs, Donald R.: 3,822,977.

Rhine, Samuel: *See—*

Showalter, Merle Robert; and Rhine, Samuel: 3,822,680.

Rhone-Poulenc S.A.: *See—*

Sauli, Michel: 3,823,240.

Ricci, Vero: *See—*

Shorin, Joseph E.; and Ricci, Vero: 3,822,812.

Richter, Ernest. Pendular piston rotary explosion engine. 3,822,676, Cl. 123-8.410.

Richter, Warren F.: *See—*

Jones, Alun R.; and Richter, Warren F.: 3,823,323.

Rieger, Werner; and Dalferth, Hans Horst. Chain couplers. 3,822,549, Cl. 59-85.000.

Rigney, Edward T.; Edgerton, Bradford W.; and Benson, Richard A., to Trans-Sonics, Inc. Remote condition indicator for load-lifting device. 3,823,395, Cl. 340-267.00c.

Riley, Terence James: *See—*

Pruniaux, Bernard Roger; Riley, Terence James; Ryder, Robert Morgan; and Waggener, Herbert Atkin: 3,823,352.

Rindfleisch, Volker: *See—*

Willasch, Dieter; Schiewe, Bernd; and Rindfleisch, Volker: 3,823,322.

Rinehuls, Richard A., to Seary Manufacturing Co. Apparatus for automatically mounting transparencies in slidemounts. 3,822,460, Cl. 29-211.00d.

Ringle, Louis A.; and Brown, Jack M., Jr., to Franklin Mint, Inc., The. Coin display device. 3,822,782, Cl. 206-083.

Ritzerfeld, Gerhard. Thermocopying apparatus. 3,823,317, Cl. 250-318.000.

Rively, Clair M.: *See—*

Petro, James; and Rively, Clair M.: 3,822,455.

Rivenaes, Ivar, to Ivar Rivenaes A/S. Trawl arrangements. 3,822,497, Cl. 43-9.000.

Ro, Roland Shih-Yuan, to Du Pont de Nemours, E. I., and Company. Nickel complexes for curing polychloroprenes. 3,823,173, Cl. 260-439.00r.

Roat Plastics, Inc.: *See—*

Smith, Robert L.: 3,823,254.

Roberts, Harry W., to Pylon Manufacturing Corporation. Method for making universal blade construction. 3,822,577, Cl. 72-379.000.

Roberts, Karl H.; and Haver, Sanford A., to Colgate-Palmolive Company. Powdered toilet paper. 3,823,057, Cl. 161-112.000.

Robertson, William: *See—*

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Robinson, Daniel E.; and Schmidt, Robert A., Jr., to General Cable Corporation. Optical scanning of electrical cable shields. 3,822,945, Cl. 356-159.000.

Robinson, John W.; Howard, John W.; Hahn, Robert E.; and Hemming, Donald C., to Revere Copper and Brass Incorporated. Production of chrome tanning composition from waste chromium-copper pickling liquor. 3,822,993, Cl. 8-94.270.

Robinson, Prentice I.: *See—*

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Roche, John M.; and Sawyer, Rene C., Jr., to Perkin-Elmer Corporation, The. Scanning monochromators. 3,822,941, Cl. 356-100.000.

Roche, William F.: *See—*

Stern, George; and Roche, William F.: 3,823,067.

Rochette, George Omer. Automatic bars. 3,822,729, Cl. 141-92.000.

Rodac Pneumatic Tools: *See—*

Sjostrand, Gerald D.: 3,822,518.

Rohr Industries, Inc.: *See—*

Hill, Charles C.; and Ross, James A.: 3,822,647.

Rohrberg, Roderick G.; and Brubaker, Dale R., to United States of America, Air Force. Cassette-type tube welder. 3,823,298, Cl. 219-60.00a.

Rohweder, Theodore Richard: *See—*

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Rolari Systems, Inc.: *See—*

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Rolefson, Jerome F. Position locating device. 3,822,480, Cl. 33-280.000.

Roller mill of the edge runner type: *See—*

Brundiek, Horst; and Werner, Ludwig: 3,822,829.

Romanelli, Antonio. Multiple valve assembly. 3,822,722, Cl. 137-608.000.

Roschin, Valentin Fedorovich: *See—*

Krupin, Alexandr Vasilievich; Roschin, Valentin Fedorovich; Alekhin, Leonid Petrovich; Izotov, Valery Mikhailovich; Burov, Oleg Alexandrovich; Gavrilov, Viktor Mikhailovich; Chekanov, Alexandr Emolaevich; Lepin, Viktor Petrovich; and Vinogradov, Fedor Terntievich: 3,822,574.

Rose, Fred K.: *See—*

Metcalfe, Arthur G.; and Rose, Fred K.: 3,823,299.

Rosenberg, Isobel K. Animal toilet. 3,822,671, Cl. 119-1.000.

Rosenberger, Chester A., Jr., to FMC Corporation. Mechanism conveyor system with primary and auxiliary code mechanisms. 3,822,646, Cl. 104-88.000.

Rosenkranz, Barbara: *See—*

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Rosenkranz, Wilhelm: *See—*

Schulte, Friedrich Wilhelm; Diels, Manfred; and Rosenkranz, Wilhelm: 3,822,458.

Ross, James A.: *See—*

Hill, Charles C.; and Ross, James A.: 3,822,647.

Ross, Keith: *See—*

O'Sullivan, Eugene Francis; Seymour-Walker, Kay John; Webb, David John Tudor; Bevan, Christopher Graham; Ross, Keith; and Works, Darnall: 3,822,979.

Rotarides, Adam; and Bruderer, Werner, to Concast AG. Apparatus for guiding an oscillating continuous casting mold at a continuous casting installation with curved path of travel of the strand. 3,822,738, Cl. 164-260.000.

Rothwell, Eric; and Smalley, Graham, to Allied Colloids Limited. Polysaccharide based flocculants. 3,823,100, Cl. 260-6.000.

Routley, Michael J.: *See—*

Keane, Patrick J.; Moor, Alan B.; and Routley, Michael J.: 3,823,377.

Roy, Alejo V.; and Brower, Mary E., to Worthington Biochemical Corporation. Prostatic acid phosphatase determination. 3,823,071, Cl. 195-103.50r.

Rudkin-Wiley Corporation: *See—*

Wiley, Nathaniel C., Jr.: 3,822,910.

Rudolph, Dietmar H., 20% interest to Lee, Raymond, Organization. Telephone locking device. 3,823,277, Cl. 179-189.00r.

Rudolph, Werner: *See—*

Messmer, Hubert; Monnerjahn, Walter; and Rudolph, Werner: 3,823,384.

Ruggen, Werner: *See—*

Bohm, Heinz-Dieter; Ruggen, Werner; Krellmann, Herbert; and Schluckebier, Wilhelm: 3,822,568.

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Butler, Richard A., Jr.; Hansen, Jack T.; Rump, August R.; and Arendt, Ruby R.: 3,822,838.

Rushmere, John Derek, to Du Pont de Nemours, E. I., and Company. Zinc electroplating additive. 3,823,076, Cl. 204-55.00r.

Russell, Robert J.; Young, William; and Nuss, Barry D., to Kenco Corporation. Envelope opening apparatus and method. 3,822,523, Cl. 53-3.000.

Ryan, John W.: *See—*

Ryan, John W.; and Shapero, Wallace H. (said Shapero assor. to said), 3,823,089.

Ryan, John W.; and Shapero, Wallace H., said Shapero assor. to said Ryan, John W. Heat storage composition. 3,823,089, Cl. 252-70.000.

Rychen, Niklaus, to Nordalpina-Anstalt. Boiler for heating non-boiling heat transfer liquids. 3,822,675, Cl. 122-250.

Ryden, Joseph, Jr.: *See—*

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Ryder, Robert Morgan: *See—*

Pruniaux, Bernard Roger; Riley, Terence James; Ryder, Robert Morgan; and Waggener, Herbert Atkin: 3,823,352.

Rynkowski, Gerald Alexander, to Schiller Industries, Inc. Dimensional measuring apparatus using optical scan especially for hardness testing. 3,822,946, Cl. 356-160.000.

Ryobi Co., Ltd.: *See—*

Takenaka, Yukimasa: 3,822,438.

Saint-Gobain Industries: *See—*

Val, Marcel Marie Antoine: 3,822,764.

Saito, Noriaki, to Nippon Electric Company, Limited. Speech path test system for time-division switching equipment. 3,823,269, Cl. 179-15.0bf.

Salsburg, Frederic S.; and Loomer, Weston R., to Hartman Metal Fabricators, Inc. Load squaring device for pallets. 3,822,795, Cl. 214-6.00s.

Salvi Antoine: *See—*

Cordelle, Michel; Crescini, Jean; Glenat, Henri; and Salvi Antoine: 3,823,364.

Salway, Peter Hugh, to Lucas, Joseph, (Industries) Limited. Control systems for vehicles. 3,822,684, Cl. 123-102.000.

Samejima, Masayoshi; Sugimoto, Isao; Suzuki, Akira; Koida, Yoshiyuki; Hirata, Goichi; and Tsukamoto, Goro, to Green Cross Corporation, The and Tanage Seiyaku Co., Ltd. Stable emulsion of fluorocarbon particles. 3,823,091, Cl. 252-312.000.

Sammons, Herbert F.: *See—*

Lindsey, L. E.; and Sammons, Herbert F.: 3,822,862.

Sanctuary, Robert E., to Worcester Controls Corporation. Changeable speed and torque valve actuator. 3,822,612, Cl. 74-849.000.

Sanders, John H., to Dow Badische Company. Electrically-conductive textile fiber. 3,823,035, Cl. 117-226.000.

Sandoz-Wander, Inc.: *See—*

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Sandvik Aktiebolag: *See—*

Johansson, Ernst Lennar; and Lumen, Karl Lennart Gosta: 3,822,952.

Sanghavi, Pravin A.: *See—*

Philofsky, Harold M.; and Sanghavi, Pravin A.: 3,823,334.



- Sapper, Jorg. to Brown Boveri & Company Limited. Starting device for a synchronous machine. 3,823,357, Cl. 318-183.000.
- Sato, Akira: *See—*  
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Nakamura, Hiroto; Doi, Ken-ichi; Sato, Akira; and Suzuki, Yushin, 3,823,336.
- Sato, Masamichi; Takahashi, Isoji; Komaki, Takao; and Honjo, Satoru. to Fuji Photo Film Co., Ltd. Liquid development apparatus for electrophotography. 3,822,670, Cl. 118-637.000.
- Sauer, Winfried: *See—*  
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- Sauli, Michel, to Rhone-Poulenc S.A. Fungicidal hydatantoin derivatives. 3,823,240, Cl. 424-273.000.
- Saunders, Dennis L.: *See—*  
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- Saunders, Peter Reginald: *See—*  
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- Sawyer, Rene C., Jr.: *See—*  
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- Scales, John Tracey. Inflatable support appliance. 3,822,425, Cl. 5-348.000.
- Schmidt Maschinenbau GmbH: *See—*  
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- Scheffels, Wilhelm; and Hoffmann, Ruprecht, to Steigerwald Strahltechnik GmbH. Electrode arrangement serving to accelerate a charge carrier beam in a vacuum. 3,823,335, Cl. 315-15.000.
- Scheinflug, Hans: *See—*  
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- Schiller Industries, Inc.: *See—*  
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- Schluckebier, Wilhelm: *See—*  
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- Schlumberger Technology Corporation: *See—*  
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- Schmedemann, Walter, to U.S. Philips Corporation. Tilttable X-ray examination table. 3,822,875, Cl. 269-323.000.
- Schmid, Anthony P., to Owens-Illinois, Inc. Conducting element having bundled substantially parallel crystalline conductors and process for manufacture. 3,823,252, Cl. 174-68.500.
- Schmidt, Kenneth A., to Culligan International Company. Pretreatment for reverse osmosis process. 3,823,086, Cl. 210-23.000.
- Schmidt, Paul: *See—*  
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- Schmidt, Robert A., Jr.: *See—*  
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- Schmidt, Thomas A/S: *See—*  
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- Schmitt, Karl; and Hoffmann, Irmgard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, N-(Benzoyl)-N'-(piperazin-1-yl)alkyl ureas. 3,823,144, Cl. 260-268.000.
- Schnegg, Robert: *See—*  
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- Schrader, Gerhard; Eue, Ludwig; Hack, Helmut; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. Herbicides. 3,823,004, Cl. 71-87.000.
- Schradeck, Richard H.: *See—*  
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- Schradeck, Richard H.; and Lehti, Taisto A., said Lehti, Taisto A. assor to said Schradeck, Richard H. Roadside warning device. 3,822,668, Cl. 116-63.000.
- Schrag, Adam. Emergency brake lever position indicator. 3,822,669, Cl. 116-114.000.
- Schröder, Johann, to U.S. Philips Corporation. Arrangement for regulating supply of heat from a heat accumulating device. 3,823,305, Cl. 219-365.000.
- Schroeder, Wilburn C. Hydrogenation of coal. 3,823,084, Cl. 208-10.000.
- Schroer, Walter: *See—*  
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- Schuh, Theodore R., and Mauerer, Frank A., to Nalco Chemical Company. Synthetic rubbers. 3,823,122, Cl. 260-85.100.
- Schulte, Friedrich Wilhelm; Diels, Manfred; and Rosenkranz, Wilhelm; deceased (by Rosenkranz, Barbara; heir), to Fuchs, Otto. Method of making wheels. 3,822,458, Cl. 29-159.010.
- Schulz, Gerald L.; and Mansur, Raymond T., to United States of America, Army. Ultrasonic cleaning and welding apparatus. 3,823,055, Cl. 156-580.000.
- Schumacher, Frank A.: *See—*  
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- Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Feldle, Kurt, to SKF Industrial Trading and Developing Company. Journal means for mounting rotary drums. 3,822,605, Cl. 74-230.300.
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- Scott, O. M., & Sons Company, The: *See—*  
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- Scott, Sam C. Inflatable form breaker for molded construction. 3,822,861, Cl. 254-93.000.
- Screen, Stafford Thomas, to British Castors Limited. Castors. 3,822,437, Cl. 16-45.000.
- Seaberg, Paul A.; and Heyes, Lester P., to Staley, A. E., Manufacturing Company. Phosphatides. 3,823,170, Cl. 260-403.000.
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- Sealy, Incorporated: *See—*  
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- Sebenik, Roger F.; and Gernand, Martin O., to Esso Research and Engineering Company. Promoted iron ore reduction process. 3,823,011, Cl. 75-26.000.
- Sebulke, Johannes, to DEMAG Aktiengesellschaft. Cone friction brake. 3,822,768, Cl. 188-70.000.
- See-saw with foot operated linkage: *See—*  
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- Sell, Abdul Harry, to Darf Corporation. Apparatus for harvesting grapes. 3,822,537, Cl. 56-330.000.
- Sellstedt, John H.; and Bell, Stanley C., to American Home Products Corporation. 5,6,7,8-Tetrahydro-2,5 (and 4,5)-dioxol-1-henzopyrans. 3,823,164, Cl. 260-343.200.
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- Shaltis, Robert J.; and Wolter, David, to Hastings Manufacturing Company. Fluid filter device. 3,822,787, Cl. 210-132.000.
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- Iyanenko, July Georgievich; Sobolev, Jury Vasilievich; Shavrin, Adolf Ivanovich; Dolbenko, Evgeny Tikhonovich; Chernykh, Viktor Vasilievich; and Dykan, Vitaly Grigorievich, 3,823,242.
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- Shelley, Shelley W. Apparatus for producing modular boxlike units. 3,822,853, Cl. 249-27.000.
- Sheppard, Richard H. Power steering gear assembly. 3,822,759, Cl. Sherman Car Wash Equipment Co.: *See—*  
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- Sherwood, Noble, to Textron, Inc. Rotary valve engine. 3,822,682, Cl. 123-73.000.
- Shii, Hikaru; and Oda, Eisuke, to Furukawa Electric Co., Ltd., The. Method of manufacturing oriented product of synthetic crystalline polymer. 3,823,210, Cl. 264-41.000.
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- Shoji, Akira; Toda, Takao; Tanaka, Kano; and Hirashima, Takashi, to Canon Kabushiki Kaisha. Film cutting device. 3,822,624, Cl. 83-208.000.
- Shore, Paul L., to Tapecaster TCM, Inc. Tape cartridge. 3,822,835, Cl. 242-55.19a.
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- Shorin, Joseph E.; and Ricci, Vero, to Aggogle Inc. Pouring attachment for paint cans. 3,822,812, Cl. 222-570.000.
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- Shrader, Terry M., to RCA Corporation. Method of making cathode ray tube internal shields. 3,822,453, Cl. 29-25.140.
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- Sick, Erwin, Optik-Elektronik: *See—*  
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- Siegel, William A.; Aufjes, Herman C., Jr.; and Marx, Herman, to Fischer & Porter Co. Integral orifice assembly for head meters. 3,822,592, Cl. 73-211.000.
- Siemens Aktiengesellschaft: *See—*  
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- Siemianowski, Roman. Automatic control system for limiting ice formation in gutters and downspouts. 3,823,304, Cl. 219-213.000.
- Silver, Marvin: *See—*  
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- Silverstein, Bernard F. Loss-prevention wallet clamp and chain device. 3,822,446, Cl. 24-3.000.
- Simon, Donald J.; and Fitzmayer, Louis H., to General Electric Company. Electronic oven with mode exciter and tuning probes. 3,823,295, Cl. 219-10.550.
- Simone, Pasquale; and Schneider, Julius S., to Medi-Spec Corporation. Medical light and combating of hyperbilirubinemia. 3,822,706, Cl. 128-396.000.
- Simonton, Robert D.; and Axe, Albert A., to Crescent Manufacturing Company. Automatic grinding machine. 3,822,510, Cl. 51-96.000.
- Simpson, John H.: *See—*  
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- Simpson, Robert. Ship's hull. 3,822,661, Cl. 114-56.000.
- Singer Company, The: *See—*  
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- Singer Company, The, mesne: *See—*  
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- Sinha, Ram Ratan Prasad, to Westinghouse Electric Corporation. Transformer tester for indicating shorted conditions in power transformers. 3,823,369, Cl. 324-51.000.
- Sitler, Donald D.: *See—*  
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- Sjostrand, Gerald D., to Rodac Pneumatic Tools. Sanding shoe and clip therefor. 3,822,518, Cl. 51-386.000.
- Skachkov, Alexandr Nikolaevich: *See—*  
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Slack, Ramon Allan. Boat trailer. 3,822,899, Cl. 280-414.000.

Small, Kathryn; and Vranko, Thomas. Fabric weave. 3,822,727, Cl. 139-383.000.

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Smejtek, Pavel: *See—*  
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Smith, Lowell R., to Monsanto Company. Preparation of 1,1,2,3-tetrachloropropene from 1,2,3-trichloropropane. 3,823,195, Cl. 260-654.000.

Smith, Richard F., to GAF Corporation. Preparation of other adducts of N-vinyl-2-pyrrolidone. 3,823,160, Cl. 260-326.500.

Smith, Robert L., to Roart Plastics, Inc. Cable splice housing. 3,823,254, Cl. 174-92.000.

Smith, Walter E. Slide bar apparatus for guitar. 3,822,629, Cl. 84-314.000.

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- Speigel, Kenneth, to GTE Sylvania Incorporated. Method of fabricating a color cathode ray tube. 3,822,454, Cl. 29-25.130.
- Speigel, Kenneth, to GTE Sylvania Incorporated. Process for removing coating from a cathode ray tube mask member. 3,823,080, Cl. 204-141.500.
- Spence, William George. Individual vehicle wheel drive and suspension assembly. 3,822,757, Cl. 180-43.00a.
- Sperings, Ferdinand Hubert Franciscus Gerardus. Hall-voltage device. 3,823,333, Cl. 310-11.000.
- Spitschka, Ernst; and Ische, Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thiophenyl-substituted quinophthalone dispersion dyestuffs. 3,823,147, Cl. 260-283.00s.
- Spitz, David A., to Industrial Nucleonic Corporation. Refiner network controller. 3,822,828, Cl. 241-33.000.
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- Sprague, Ernest H., to Olin Corporation. Removal of available chlorine from alkali metal chlorate-chloride solution and production of chlorine dioxide from said solution. 3,823,225, Cl. 423-478.000.
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- Standard Brands Incorporated. See—  
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- Stastny, Fritz; Gaeth, Rudolf; and Trieschmann, Hans-Georg. Production of expanded moldings of olefin polymers. 3,823,213, Cl. 264-51.000.
- Staub, Alfred, to Ciba-Geigy AG. Quaternary anthraquinone dyestuffs. 3,823,169, Cl. 260-378.000.
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- Stauffer Chemical Company. See—  
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- Stedman, David. See—  
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- Steen, Floyd L., to General Electric Company. Commutation directing circuit for fault current limiting static switch. 3,823,343, Cl. 317-20.000.
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- Stekopytov, Alexei Alexeevich; Strekopytova, Tatyana Andreevna; Bogush, Lev Konstantinovich; Kuklin, Georgy Sergeevich; Super-Fainshtein, Naum Aronovich; and Severov, Viktor Sergeevich; deceased (by Efimova, Ljudmila Mikhailovna; Severov, Sergei Ivanovich; and Severova, Zinaida Pavlovna; heirs). Surgical instrument for joining osseous tissues by staples. 3,822,818, Cl. 227-124.000.
- Stephens, John A., to Monsanto Company. Herbicidal method using salts of benzenesulfonfylureas. 3,823,007, Cl. 71-103.000.
- Stephenson, Robert L., to Allied Chemical Corporation. Belt retractor with spring biased auxiliary ratchet wheel. 3,822,840, Cl. 242-99.000.
- Stern, George; and Roche, William F., to United Nuclear Corporation. Shaped nuclear fissionable bodies. 3,823,067, Cl. 176-66.000.
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- Stingl, Hans Alfred, to Toms River Chemical Corporation. Dialkylamino disazo sulfonic acid dyestuffs. 3,823,131, Cl. 260-186.000.
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- Stone, Edward. See—  
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- Stoner, Charles L., to United States of America, Atomic Energy Commission. Protective carrier for semiconductor chips. 3,823,350, Cl. 317-234.00r.
- Stonner, Alfred; Kohling, Rolf; and Debus, Manfred. Device for the removal of individual samples from static bulk material. 3,822,600, Cl. 73-424.000.
- Stowell, Sheldon J., to Tranter Manufacturing, Inc. Plate type heat exchanger and production. 3,822,742, Cl. 165-170.000.
- Strachan, Gail L.. See—  
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- Straitz, John F., III, to Combustion Unlimited Incorporated. Flare gas burner. 3,822,984, Cl. 431-283.000.
- Straitz, John F., III, to Combustion Unlimited Incorporated. Flare stack gas burner. 3,822,985, Cl. 431-284.000.
- Straub, Melvin J.; and Schuett, Thomas L., to Possis Corporation. Packaging machine. 3,823,053, Cl. 156-500.000.
- Strawn, L. C.; and Stanton, Vernon W., Sr. Marina protective wave breaker. 3,822,555, Cl. 61-6.000.
- Strekopytova, Tatyana Andreevna. See—  
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- Strom, Lars C., to Kaiser Industries Corporation. Apparatus and method for fluidizing and handling particulates. 3,822,919, Cl. 302-47.000.
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- Suter, Walter, to Oehler, Wyhlen-Sagertechnik AG. Process and a device for the fine positioning of a vertically movable platform in front of a pallet location. 3,822,766, Cl. 187-29.00r.
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- Swarat, Walter, to Condux-Werk Herbert A. Merges KG. Apparatus for granulating strand or rod-shaped material. 3,823,301, Cl. 219-121.001.
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- Szabo, Karoly; and Ganti, Venkat Rao. Novel m-(3,3-disubstituted-ureido)phenyl ( $\alpha$ -cyanoalkyl)carbamates and to a method for the control of undesirable plant species therewith. 3,823,178, Cl. 260-465.00d.
- Szpitalak, Wesley J., to Continental Can Company, Inc. Apparatus for preventing printing of an empty mandrel. 3,822,639, Cl. 101-40.000.
- Tabalba, Camilo Manansala, to International Standard Electric Corporation. Electronic telephone transmission circuit. 3,823,272, Cl. 179-81.00a.
- Tabard, Jean-Louis, to Societe Genevoise d'Instruments de Physique. Dividing or indexing apparatus. 3,822,959, Cl. 408-89.000.
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- Takayama, Takeshi; Tanita, Akeshi; Hoshina, Saburo; and Ohtaguro, Tadayasu, to General Corporation, The. Door locking system for an electrical apparatus. 3,823,294, Cl. 219-10.550.
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- Talov, Vladislav Vasilievich; and Yatsuk, Vladimir Grigorievich. Control device for a reversible static frequency converter. 3,823,361, Cl. 321-27.00r.
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- Tanie, Horoshi, to Toyo Rubber Industry Co., Ltd., The. Synthetic resin plug for vent hole of mould. 3,822,857, Cl. 249-141.000.
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- Tazaki, Kazuo; and Kobayashi, Toshiro, to Fuji Denki Seizo Kabushiki Kaisha. Treatment of aluminum alloys. 3,823,041, Cl. 148-2.000.
- Teach, Eugene G., to Stauffer Chemical Company. Bis-meta-phenylene ureas and their utility as herbicides. 3,823,188, Cl. 260-553.00c.
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Maley, William B.. 3,822,493.
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- Termohlen, David E.; and Irvine, William G. Method of erecting a multi-level building of curtain wall construction. 3,822,522, Cl. 52-745.000.
- Terzian, Reuben; McKay, Robert S.; and Glass, Marvin I. Toy motorcycle adjustable tethered to a pylon. 3,822,880, Cl. 272-31.00r.
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- Tharaldsen, Nils Fr. Device for the lubrication of tooth flanks of gear wheels. 3,822,607, Cl. 74-468.000.
- Tharp, Nelson B., to Westinghouse Electric Corporation. Antenna deployed from aircraft to contact a body of water for length reduction. 3,823,402, Cl. 343-705.000.
- Tharpe, James B.; Aurich, Christoph W.; and Wallace, Joseph B., to Maremont Corporation. Textile silver unevenness detecting. 3,822,590, Cl. 73-160.000.
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- Thiele, Gary A.. See—  
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- Thigpen, Arnold B., Jr., to Texaco Inc. Method of treating subterranean formations to improve permeability. 3,822,749, Cl. 166-303.000.
- Thoma, Friedrich; and Krusche, Peter, to Krupp, Fried., Gesellschaft mit beschränkter Haftung. Device for mechanically lifting cops on ring spinning and twisting machines. 3,822,540, Cl. 57-52.000.
- Thomas, David F.. See—  
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- Thomas, Richard E., to Dick, A. B., Company. Method for making copy sheets with a concealed image and visual development of same. 3,823,022, Cl. 177-1.700.
- Thome, Paul, to Babcock-Atlantique, S.A. Jacket for an assembly of nuclear reactor fuel elements. 3,823,066, Cl. 176-66.000.
- Thompson, John T.; and Gillemot, George W. Combined shipping and dispensing carton for continuous bonding strip and insulated tubing therefor. 3,822,784, Cl. 206-391.000.
- Thompson, Richard David, to Barker, R. E., & Co., Limited. Material handling equipment. 3,822,803, Cl. 214-620.000.
- Thompson, Robert Clifton. See—  
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- Thompson, William H., to Trans-Clean, Inc., mesne. Vehicle washing apparatus. 3,822,429, Cl. 15-21.00e.
- Thorne-Symmons, Irene, deceased (by Thorne-Symmons, Irene, administratrix). Anti-siphon device. 3,822,717, Cl. 137-218.000.
- Thorne-Symmons, Irene, administratrix. See—  
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- Throner, Guy C., Jr., to FMC Corporation. Method and apparatus for salvaging a sunken. 3,822,660, Cl. 114-50.000.
- Thurk, Gerhard; and Beier, Helmut, to Siemens Aktiengesellschaft. High-voltage circuit breaker equipped with hydraulic drive. 3,823,286, Cl. 200-82.00b.
- Tien, Ping King. See—  
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- Tinchon, Jacques. See—  
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- Tittman, Jay, to Schlumberger Technology Corporation. Porosity determination with mudcake correction. 3,823,319, Cl. 250-265.000.
- Toback, Henry, to General Battery Corporation. Leak tester for batteries. 3,822,585, Cl. 73-49.200.
- Tobias, George S., to Envirotrol, Inc. Elimination of H<sub>2</sub>S from slag quenching. 3,823,010, Cl. 75-24.000.
- Tobin, Robert A. Bird feeder. 3,822,674, Cl. 119-53.000.
- Toda, Takao. See—  
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- Tokico Ltd.. See—  
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- Tokutomi, Seijiro; and Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera shutter controls utilizing light from different sources. 3,823,410, Cl. 354-33.000.
- Tombo, Gerard. Hooking-on profiles for the attachment of wall covering fabrics. 3,822,734, Cl. 160-383.000.
- Tomenceak, Arthur A., to Bullard Company, The. Contour machining. 3,822,618, Cl. 82-18.000.
- Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, to Nippon Gakki Seizo Kabushiki Kaisha. Musical tone wave shape generating apparatus. 3,823,390, Cl. 340-172.500.
- Toms River Chemical Corporation. See—  
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- Torii, Soichi; and Yamamoto, Hideo. Process and apparatus for compensating the yarn tension difference between two yarns on a spindle drive type winding machine. 3,822,832, Cl. 242-45.000.
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- Townsend Engineering Company: *See—*  
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- Townsend, Ray T., to Townsend Engineering Company. Rotary internal combustion engine. 3,822,681, Cl. 123-44.000.
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- Toyoda Koki Kabushiki Kaisha: *See—*  
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- Troje, Gerald J.; Schiavone, Edward L.; and Pinzone, Joseph A. Optical system for panoramic projection. 3,822,936, Cl. 353-99.000.
- Troyer, Richard Lloyd; and Rohweder, Theodore Richard, to Raab, Ronald Buxton and Johns-Manville Corporation. Apparatus for the method of winding strip products. 3,822,836, Cl. 242-66.000.
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- Ukai, Nobuo, to Tsukihoshi Kasei Kabushiki Kaisha; a/k/a Moon-Star Chemical Corporation. Glass bottles coated with multi-protective film layers. 3,823,032, Cl. 117-72.000.
- Ulery, Harris Ellsworth, to Du Pont de Nemours, E. I., and Company. Electrolytic process for preparing dialkyltin compositions. 3,823,077, Cl. 204-59.04m.
- Ulmer, Walter R.; and Rander, Kiran J., to Allergan Pharmaceuticals. Soft contact lens case. 3,822,780, Cl. 206-5.100.
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- Underwood, William George Elphinstone, to Glaxo Laboratories Limited. Cephalosporins having a  $\gamma$ -carbonyl group at position-3. 3,823,139, Cl. 260-243.00c.
- Unema, Norman P., to Laser Alignment Inc. Laser fanning device. 3,823,131, Cl. 240-44.260.
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- Van Brakel, Russel A., to Haverberg Auto Laundry Equipment Co. Inc. Hubcap and lower detail washer for automobiles. 3,822,431, Cl. 15-21.00d.

- van den Bussche, Willem, to U.S. Philips Corporation. Colour television camera. 3,823,260, Cl. 178-5.4st.
- van der Stelt, Cornelis, to Gist-Brocades N.V. and Imidazoline derivatives with diuretic properties. 3,823,155, Cl. 260-309.600.
- van Elk, Cornelis Johannes; and Morrien, Albertus Marinus, to U.S. Philips Corporation. Synchronization system. 3,823,266, Cl. 178-69.50r.
- van Kleef, Alfred L., to Shell Oil Company. Liquid discharge member for liquid-vapor contacting tray. 3,822,869, Cl. 261-114.00r.
- Van Rhee, Verlan H., to Upjohn Company. The. Lactone intermediates. 3,823,138, Cl. 260-240.00r.
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- Vestal, Charles R.; and Zimmerman, Carle C., to Marathon Oil Company. Polysilycyanate-polyisocyanurate process. 3,823,119, Cl. 260-77.5nc.
- Vetrovec, Jan. Reinforced web making machine. 3,823,049, Cl. 156-441.000.
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- Walbridge, Lyman H., to Kidde, Walter, & Company, Inc. Flame monitoring system. 3,822,981, Cl. 431-78.000.
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- Ward, George T., to International Paper Company. Twin-wire paper-making apparatus with stock inlet passageway having straight and parallel walls. 3,823,064, Cl. 162-301.000.
- Ward, John E., Jr.; and Garick, Bordie B., to Owens-Corning Fiberglass Corporation. Method of producing glass reinforced plastic articles. 3,823,219, Cl. 264-331.000.
- Warner, Michael Walter, to International Business Machines Corporation. Flying magnetic transducer assembly having three rails. 3,823,416, Cl. 360-122.000.
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- Wegmueller, Hans; Lutton, Alain; and Keller, Karl Heinz, to Ciba-Geigy AG. Cyano-, hydroxy-, methoxy-, or acetoxy-methyl biphenyl or diphenyl oxide assisted disperse dyeing. 3,822,997, Cl. 8-172.000.
- Wehrman, Roger. Powered lawn rake. 3,822,535, Cl. 56-61.400.
- Wei, Peter H. L., to American Home Products Corporation. 2-Substituted-3a,4,5,6,7,7a-hexahydro-3a-hydroxybenzothiazolium halides. 3,823,153, Cl. 260-306.700.
- Weingarten, Joseph L., to United States of America, Air Force. Air flotation cargo handling system. 3,822,792, Cl. 214-1.0be.
- Weinstein, Miriam. Illuminated book holder. 3,823,312, Cl. 240-6.40b.
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- Weisgerber, Harold W., to Kirk and Blum Manufacturing Co., The. Oil mist recovery apparatus. 3,822,532, Cl. 55-324.000.
- Weiss, Robert, to Sursee-Werke AG. Heating vessels. 3,823,307, Cl. 219-439.000.
- Welch, Johnnie Steven, to General Computer Service, Inc. Data translator and recording system for use with tone generating telephones. 3,823,267, Cl. 179-2.0dp.
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- Whitlock, James T. Chimney draft control device, 3,822,637, Cl. 98-74,000.
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- Wiedmann, Siegfried K.: See—  
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- Wieser, Rudolf, to Maschinenfabrik Andritz Aktiengesellschaft. Hot water pump with removable shaft bearing, 3,822,962, Cl. 415-201,000.
- Wight, Edward M., to Glacier Industries, Inc. Extrusion cutting apparatus, 3,822,623, Cl. 83-171,000.
- Wilcher, David W.: See—  
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- Wiley, Nathaniel C., Jr., to Rudkin-Wiley Corporation. Universal wind deflector support system, 3,822,910, Cl. 296-1,005.
- Willasch, Dieter; Schiewe, Bernd; and Rindfleisch, Volker, to Siemens Aktiengesellschaft. Photographic film handling apparatus for charged-particle beam equipment, 3,823,322, Cl. 250-469,000.
- Willen, Charles, to Willen, Charles & Cie. Tool holder assembly having means for selectively adjusting the position of the work tool, 3,822,619, Cl. 82-36,00r.
- Willen, Charles, to Willen, Charles & Cie. Tool holder assembly having means for selectively adjusting the position of the work tool, 3,822,620, Cl. 82-36,00r.
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- Willson, James R.: See—  
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- Wilson, George A., to I-T-E Imperial Corporation. Draw-out type modular high voltage switchgear and compartment-motorized racking mechanism therefor, 3,823,281, Cl. 200-50,00a.
- Wilson, George A., to I-T-E Imperial Corporation. Vacuum interrupter capacitance discharge and contact grounding system, 3,823,288, Cl. 200-144,00b.
- Wilson, Lowell G.: See—  
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- Wilson, Mark L. Dual shower head attachment device, 3,822,826, Cl. 239-267,000.
- Wilson, Stephen J.; and Howard, Frank C. Fastener driving tool with improved valve, 3,822,819, Cl. 227-130,000.
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- Wirtgen, Reinhard. Machine for cutting or stripping pavement, 3,822,956, Cl. 404-95,000.
- Wisner, Marco; Pohan, Charles; Miller, Kenneth E.; and Hansen, Charles M., to PPG Industries, Inc. Method of forming opaque films, 3,823,027, Cl. 117-93,310.
- Wisniewski, John P.; and Treuhaft, Martin B., to PPG Industries, Inc., mesne. Device for agglomerating and separating particulates from a gas, 3,822,531, Cl. 55-315,000.
- Wittebol, Rudolph Louis, to U.S. Philips Corporation. Data switching system, 3,823,256, Cl. 178-3,000.
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- Wood, Lowell L., to United States of America, Atomic Energy Commission. X-ray laser, 3,823,325, Cl. 250-493,000.
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- Worlton, Dan C.; and Ryden, Joseph, Jr., to Jersey Nuclear Company, mesne. Fuel element end cap for leak detection, 3,823,068, Cl. 176-80,000.
- Worsley, Paul R., Jr.; and Baker, Jerry D., to Valley Burglar & Fire Alarm Company. System for monitoring remotely related buildings, 3,823,391, Cl. 340-213,00r.
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- Wright, Lawrence T.: See—  
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- Wu, Yao Hua; and Lobeck, Walter G., to Mead Johnson & Company. Iminomethylindolines, 3,823,136, Cl. 260-240,00g.
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- Wycoff, Keith H. System for transmitting priority messages and secondary messages, 3,823,375, Cl. 325-57,000.
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- Yada, Tatsuo; Komabayashi, Yoshitomi; and Watanabe, Yoshinori, to Muto Industrial Company Ltd. Drawing instrument, 3,822,474, Cl. 33-76,00r.
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- Yoshino, Miyao, to Kabushikigaisha Nittsu Sogokenyusho. Elastic bar-chaped rack, 3,822,606, Cl. 74-422,000.
- Young, George, to Varian Associates. Microwave down converter employing half wave open circuit resonators with output taken at voltage null of input signal, 3,823,380, Cl. 325-445,000.
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- Zahin, Burton A., to Bio-Rad Laboratories. Determination of thyroid hormone uptake, 3,823,001, Cl. 23-230,00b.
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- Zernike, Frits, to Perkin-Elmer Corporation. The. Phase matched optical wave generator for integrated optical circuits, 3,822,927, Cl. 350-96,0wg.
- Zilber, Serge, to Clinical Technology Corporation. Electrical spinal cord stimulating device and method for management of pain, 3,822,708, Cl. 128-419,00r.
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- Zirps, Wilhelm, to Bosch, Robert G.m.b.H. Pulsation damping device for use with pressure fluid operated apparatus, 3,822,725, Cl. 138-28,000.
- Zivica, Robert F., to Select Market Inc. Wall plaque and method of fabricating same, 3,822,494, Cl. 40-154,000.



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# CLASSIFICATION OF PATENTS

ISSUED JULY 9, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

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	114	3,822,422		3,822,477	2	3,822,544	691	3,822,610	CLASS 111	3,822,658	184R	3,822,712
	201	3,822,423		3,822,478	23R	3,822,545	753	3,822,611	14	3,822,659	CLASS 132	3,822,713
	344	3,822,424		3,822,479	90R	3,822,546	849	3,822,612	CLASS 112	3,822,660	31	3,822,714
	348R	3,822,425		3,822,480	152B	3,822,547			CLASS 113	3,822,661	2	3,822,715
	354	3,822,426		3,822,481	27	3,822,548			258	3,822,662	15PQ	Re.28,067
				3,822,482	85	3,822,549			CLASS 114	3,822,663	6F	3,823,036
				3,822,483	42E	3,822,551			50	3,822,664	86R	3,823,037
				3,822,484	517	3,822,552			56	3,822,665	133	3,823,038
				3,822,485	524	3,822,553			123	3,822,666	162	3,823,039
				3,822,486	655	3,822,554			206R	3,822,667		3,823,040
				3,822,487	CLASS 61	3,822,555			208R	3,822,668	CLASS 137	3,822,714
				3,822,488	6	3,822,556			235R	3,822,669	1	3,822,715
				3,822,489	38	3,822,557			CLASS 116	3,822,670	140	3,822,716
				3,822,490	53	3,822,558			63P	3,822,671	212	3,822,717
				3,822,491	72.1	3,822,559			114R	3,822,672	218	3,822,718
				3,822,492	72.3	3,822,560			125	3,822,673	317	3,822,719
				3,822,493	CLASS 62	3,822,561			CLASS 81	3,822,674	355.26	3,822,720
				3,822,494	140	3,822,562			3.42	3,822,675	525.1	3,822,721
				3,822,495	156	3,822,563			9.51	3,822,676	604	3,822,722
				3,822,496	157	3,822,564			90C	3,822,677	608	3,822,723
				3,822,497	158	3,822,565			CLASS 82	3,822,678	624.15	3,822,724
				3,822,498	159	3,822,566			2.5	3,822,679	625.5	3,822,725
				3,822,499	307	3,822,567			18	3,822,680	CLASS 138	3,822,726
				3,822,500	CLASS 43	3,822,568			36R	3,822,681	28	3,822,727
				3,822,501	9	3,822,569			CLASS 83	3,822,682	383R	3,822,728
				3,822,502	57	3,822,570			23	3,822,683	1	3,822,729
				3,822,503	CLASS 46	3,822,571			100	3,822,684	92	3,822,730
				3,822,504	24	3,822,572			171	3,822,685	CLASS 144	3,822,731
				3,822,505	26	3,822,573			208	3,822,686	33A	3,822,732
				3,822,506	135A	3,822,574			404.4	3,822,687	2	3,822,733
				3,822,507	221	3,822,575			529	3,822,688	112	3,822,734
				3,822,508	241	3,822,576			CLASS 84	3,822,689	171	3,822,735
				3,822,509	244B	3,822,577			1.01	3,822,690	CLASS 148	3,822,736
				3,822,510	CLASS 47	3,822,578			1.04	3,822,691	21	3,822,737
				3,822,511	1.2	3,822,579			1.17	3,822,692	7	3,822,738
				3,822,512	1.3	3,822,580			275	3,822,693	99	3,823,051
				3,822,513	CLASS 49	3,822,581			318	3,822,694	188	3,823,052
				3,822,514	367	3,822,582			319	3,822,695	220	3,823,053
				3,822,515	417	3,822,583			471	3,822,696	322	3,823,054
				3,822,516	CLASS 51	3,822,584			CLASS 90	3,822,697	345	3,823,055
				3,822,517	34R	3,822,585			1.4	3,822,698	441	3,823,056
				3,822,518	40	3,822,586			13R	3,822,699	493	3,823,057
				3,822,519	96	3,822,587			CLASS 91	3,822,700	500	3,823,058
				3,822,520	101R	3,822,588			224	3,822,701	530	3,823,059
				3,822,521	165.81	3,822,589			384	3,822,702	580	3,823,060
				3,822,522	168	3,822,590			410	3,822,703	254	3,823,061
				3,822,523	169	3,822,591			CLASS 96	3,822,704	123	3,823,062
				3,822,524	204	3,822,592			36	3,822,705	120	3,822,733
				3,822,525	326	3,822,593			38.3	3,822,706	383	3,822,734
				3,822,526	386	3,822,594			66.4	3,822,707	67	3,823,056
				3,822,527	394	3,822,595			101	3,822,708	112	3,823,057
				3,822,528	CLASS 52	3,822,596			60	3,822,709	119	3,823,058
				3,822,529	79	3,822,597			74	3,822,710	150	3,823,059
				3,822,530	224	3,822,598			CLASS 100	3,822,711	190	3,823,060
				3,822,531	593	3,822,599			52	3,822,712	254	3,823,061
				3,822,532	745	3,822,600			CLASS 101	3,822,713	123	3,823,062
				3,822,533	CLASS 53	3,822,601			40	3,822,714	212	3,823,063
				3,822,534	3	3,822,602			93C	3,822,715	263	3,823,064
				3,822,535	37	3,822,603			CLASS 102	3,822,716	301	3,823,065
				3,822,536	112B	3,822,604			148	3,822,717	56	3,822,735
				3,822,537	124D	3,822,605			242	3,822,718	100	3,822,736
				3,822,538	159	3,822,606			425	3,822,719	158	3,822,737
				3,822,539	189	3,822,607			CLASS 103	3,822,720	260	3,822,738
				3,822,540	CLASS 55	3,822,608			102	3,822,721		
				3,822,541	1	3,822,609			CLASS 104	3,822,722		
				3,822,542	67	3,822,610			88	3,822,723		
				3,822,543	315	3,822,611			130	3,822,724		
				3,822,544	324	3,822,612			245	3,822,725		
				3,822,545	394	3,822,613			CLASS 105	3,822,726		
				3,822,546	CLASS 56	3,822,614			215C	3,822,727		
				3,822,547	13.9	3,822,615			239	3,822,728		
				3,822,548	16.4	3,822,616			CLASS 106	3,822,729		
				3,822,549	202	3,822,617			15FP	3,822,730		
				3,822,550	330	3,822,618			97	3,822,731		
				3,822,551	CLASS 57	3,822,619			CLASS 107	3,822,732		
				3,822,552	22	3,822,620			139	3,822,733		
				3,822,553	CLASS 58	3,822,621				3,822,734		
				3,822,554		3,822,622				3,822,735		
				3,822,555		3,822,623				3,822,736		
				3,822,556		3,822,624				3,822,737		
				3,822,557		3,822,625				3,822,738		
				3,822,558		3,822,626				3,822,739		
				3,822,559		3,822,627				3,822,740		
				3,822,560		3,822,628				3,822,741		
				3,822,561		3,822,629				3,822,742		
				3,822,562		3,822,630				3,822,743		
				3,822,563		3,822,631				3,822,744		
				3,822,564		3,822,632				3,822,745		
				3,822,565		3,822,633				3,822,746		
				3,822,566		3,822,634				3,822,747		
				3,822,567		3,822,635				3,822,748		
				3,822,568		3,822,636				3,822,749		
				3,822,569		3,822,637				3,822,750		
				3,822,570		3,822,638				3,822,751		
				3,822,571		3,822,639				3,822,752		
				3,822,572		3,822,640				3,822,753		
				3,822,573		3,822,641				3,822,754		
				3,822,574		3,822,642				3,822,755		
				3,822,575		3,822,643				3,822,756		
				3,822,576		3,822,644				3,822,757		
				3,822,577		3,822,645				3,822,758		
				3,822,578		3,822,646				3,822,759		
				3,822,579		3,822,647				3,822,760		
				3,822,580		3,822,648				3,822,761		
				3,822,581		3,822,649				3,822,762		
				3,822,582		3,822,650				3,822,763		
				3,822,583		3,822,651				3,822,764		
				3,822,584		3,822,652				3,822,765		
				3,822,585		3,822,653				3,822,766		
				3,822,586		3,822,654				3,822,767		
				3,822,587		3,822,655				3,822,768		
				3,822,588		3,822,656				3,822,769		



9	CLASS 165	168	3,822,779	130	3,822,819	2.5N	3,823,098	901	3,823,205	241	3,823,331
45	3,822,739	CLASS 200	3,823,280	1	3,822,820	6	3,823,100	932	3,823,206	297	3,823,332
83	3,822,741	38B	3,823,281	2	3,822,821	14	3,823,101	976	3,823,207	CLASS 310	3,823,333
105	3,822,743	50AA	3,823,282	40	3,822,822	17.2	3,823,103	50R	3,822,868	196	3,823,334
170	3,822,742	61.18	3,823,283	16	3,822,823	18N	3,823,105	114R	3,822,869	CLASS 312	3,822,924
235	3,822,744	61.89	3,823,284	16	3,822,823	23.7N	3,823,107	22	3,823,208	111	3,822,925
244R	3,822,745	81H	3,823,285	61.7B	3,823,308	27R	3,823,108	24	Re.28.068	242	3,822,925
252	3,822,746	82B	3,823,286	145R	3,823,309	29.4UA	3,823,106	25	3,823,209	346	3,823,337
259	3,822,747	144B	3,823,287	151.34	3,823,310	29.7T	3,823,110	41	3,823,210	405	3,823,336
269	3,822,748	148B	3,823,288	160	3,823,311	29.7	3,823,111	47	Re.28.070	CLASS 315	3,823,335
303	3,822,749	153SC	3,823,290	102	3,822,824	32.6NR	3,823,112	49	3,823,212	15	3,823,338
309	3,822,750	157	3,823,291	14	3,822,825	45.8N	3,823,113	51	3,823,213	27GD	3,823,338
776	3,822,751	159R	3,823,292	267	3,822,826	45.9R	3,823,114	52	3,823,214	69	3,823,339
106	3,822,752	CLASS 201	3,823,073	14	3,822,825	45.95R	3,823,115	55	3,823,215	CLASS 317	3,823,341
16B	3,823,248	CLASS 204	3,823,074	267	3,822,826	63HA	3,823,116	89	3,823,216	11A	3,823,342
21C	3,823,249	23	3,823,075	6.4B	3,823,312	75N	3,823,117	105	3,823,217	13R	3,823,343
23R	3,823,250	38B	3,823,076	41.6	3,823,314	77.5AQ	3,823,118	162	3,823,218	20	3,823,344
48	3,823,251	55R	3,823,077	44.26	3,823,313	77.5NC	3,823,119	331	3,823,219	80	3,823,345
68.5	3,823,252	59QM	3,823,078	CLASS 240	3,823,312	78R	3,823,120	CLASS 266	3,822,871	98	3,823,346
69	3,823,253	67	3,823,079	41.6	3,823,314	82.1	3,823,121	11	3,822,872	103	3,823,347
92	3,823,254	141.5	3,823,080	CLASS 241	3,822,827	85.5R	3,823,123	33R	3,822,873	230	3,823,348
113R	3,823,255	151	3,823,081	3	3,822,828	89.7R	3,823,124	CLASS 267	3,822,870	234R	3,823,349
84	3,822,753	195W	3,823,082	33	3,822,828	112R	3,823,126	152	3,822,870	246	3,823,350
39	3,823,065	275	3,823,083	121	3,822,829	112.7	3,823,127	156	3,822,874	323	3,823,351
66	3,823,066	CLASS 206	3,822,782	1.1R	3,822,830	123.5	3,823,128	CLASS 269	3,822,875	246	3,823,355
80	3,823,067	5.1	3,822,780	7.21	3,822,831	141	3,823,129	CLASS 270	3,822,876	39	3,823,356
80	3,823,068	45.14	3,822,781	45	3,822,832	186	3,823,131	1	3,822,877	183	3,823,357
3	3,823,256	223	3,822,783	47.12	3,822,833	210R	3,823,132	56	3,822,878	CLASS 320	3,823,358
5.2D	3,823,258	391	3,822,784	54R	3,822,834	231A	3,823,133	68A	3,822,878	3	3,823,358
5.2R	3,823,257	422	3,822,785	55.19A	3,822,835	239BA	3,823,134	CLASS 272	3,822,879	11	3,823,359
5.4ST	3,823,260	CLASS 208	3,823,084	66	3,822,836	240G	3,823,136	8R	3,822,879	18	3,823,360
5.6	3,823,259	10	3,823,085	72.1	3,822,837	240R	3,823,138	31R	3,822,880	27MS	3,823,362
6.6R	3,823,262	216	3,823,086	75.44	3,822,838	240.1	3,823,137	54	3,822,881	27R	3,823,361
6.8	3,823,261	CLASS 210	3,823,000	96	3,822,839	243C	3,823,139	81	Re.28.066	CLASS 321	3,823,359
7.2	3,823,263	22	3,823,001	99	3,822,840	250A	3,823,140	CLASS 273	3,822,882	33	3,823,363
7.5R	3,823,264	115	3,822,841	115	3,822,842	251R	3,823,142	49	3,822,882	CLASS 322	3,823,364
34	3,823,265	129.72	3,822,843	192	3,822,843	260	3,823,143	95H	3,822,883	CLASS 324	3,823,365
69.5R	3,823,266	CLASS 244	3,822,844	145	3,822,844	268PH	3,823,144	106.5R	3,822,884	3	3,823,366
2DP	3,823,267	CLASS 248	3,822,845	147	3,822,845	268PL	3,823,145	110	3,822,885	28R	3,823,367
15BF	3,823,269	210	3,822,846	210	3,822,846	2835	3,823,147	125R	3,822,886	29.5	3,823,368
15BT	3,823,268	CLASS 211	3,822,790	279	3,822,847	284	3,823,146	127D	3,822,887	40	3,823,369
18EA	3,823,270	60T	3,822,791	354S	3,822,848	289R	3,823,148	CLASS 274	3,822,888	51	3,823,370
81A	3,823,272	CLASS 212	3,822,791	372	3,822,850	293.54	3,823,150	10R	3,822,889	54	3,823,371
81B	3,823,273	49	3,822,791	418	3,822,851	293.55	3,823,149	CLASS 277	3,822,890	71R	3,823,372
86	3,823,271	CLASS 214	3,822,792	450	3,822,852	294.8C	3,823,151	65	3,822,890	73R	3,823,373
100.1DR	3,823,274	1BE	3,822,792	CLASS 249	3,822,853	306.7	3,823,153	CLASS 280	3,822,891	79R	3,823,374
100.3B	3,823,276	IP	Re.28.071	27	3,822,853	309.2	3,823,154	11.35T	3,822,892	CLASS 325	3,823,375
170.2	3,823,275	6H	3,822,793	33	3,822,854	309.6	3,823,155	47.11	3,822,892	57	3,823,376
189R	3,823,277	6S	3,822,795	79	3,822,855	310A	3,823,156	124R	3,822,893	141	3,823,377
1R	3,822,754	17DB	3,822,796	105	3,822,856	310R	3,823,157	150AB	3,822,895	143	3,823,378
5R	3,822,755	59A	3,822,794	141	3,822,857	326N	3,823,158	154.5R	3,822,897	155	3,823,379
14R	3,822,756	83.3	3,822,797	194	3,822,858	326.5FL	3,823,159	402	3,822,898	445	3,823,380
43A	3,822,757	85	3,822,798	217	3,822,859	332.2C	3,823,161	414R	3,822,899	196M	3,823,381
70R	3,822,758	152	3,822,799	219W	3,822,859	340.7	3,823,162	507	3,822,900	259R	3,823,392
79.2R	3,822,759	370	3,822,800	214P	3,823,318	343.2R	3,823,164	CLASS 283	3,822,901	CLASS 340	3,823,382
82C	3,822,760	450	3,822,801	222PC	3,823,320	343.3	3,823,163	6	3,822,901	53	3,823,383
121	3,822,761	518	3,822,802	265	3,823,319	345.2	3,823,165	CLASS 285	3,822,902	62	3,823,384
33G	3,822,764	620	3,822,803	283	3,823,315	349	3,823,166	94	3,822,903	84	3,823,385
33K	3,822,763	670	3,822,804	318	3,823,317	372	3,823,167	137R	3,822,903	171R	3,823,386
33	3,822,762	CLASS 215	3,822,805	375	3,823,316	373	3,823,168	CLASS 292	3,822,904	172	3,823,387
CLASS 184	3,822,765	9	3,822,806	442	3,823,321	408	3,823,171	78	3,822,905	172.5	3,823,388
CLASS 187	3,822,766	10.41	3,823,293	469	3,823,322	409	3,823,172	87	3,822,906	CLASS 343	3,823,398
52	3,822,767	10.55	3,823,294	484	3,823,323	439R	3,823,173	251.5	3,822,906	SDP	3,823,399
CLASS 188	3,822,768	10.77	3,823,295	492	3,823,324	453PC	3,823,174	63	3,822,907	14	3,823,400
70R	3,822,769	60A	3,823,296	493	3,823,325	463	3,823,175	68	3,822,908	106R	3,823,401
290	3,822,770	83	3,823,297	568	3,823,326	465D	3,823,178	71R	3,822,909	204	3,823,402
CLASS 191	3,823,279	121L	3,823,301	CLASS 251	3,822,933	468E	3,823,179	CLASS 296	3,822,910	705	3,823,403
66	3,823,278	121P	3,823,302	CLASS 252	3,822,934	468G	3,823,177	IS	3,822,911	708	3,823,404
CLASS 192	3,822,771	153	3,823,303	70	3,823,089	477	3,823,178	66	3,822,912	CLASS 346	3,823,405
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## PATENT OFFICE NOTICES

### Trial Voluntary Protest Program

After reviewing the comments received as a result of the Notice of Proposed Rule Making entitled, "Protests to the Grant of a Patent," dated May 15, 1973, published at 911 O.G. 760, the Patent Office has decided to institute a Trial Voluntary Protest Program limited to 2,000 applications.

The underlying purpose of protest proceedings is to assist the Patent Office by bringing the best prior art and information relevant to the patentability of a patent application to the examiner's attention. Occasionally patents are held invalid by the courts because of prior art or other information which was not available or known to the examiner. Protest proceedings are intended to elicit from the public such prior art or other information not cited by the examiner which bears upon the question of patentability.

Several benefits are expected to accrue from protest proceedings. First, patents would have a more meaningful presumption of validity because of appropriate consideration by the examiner of additional evidence submitted by the public. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Patent Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. Further, the protest proceedings may be helpful in minimizing the more expensive conventional procedure of litigating the question of validity at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent protest proceedings and the strengthening of the patent system for its intended purposes.

Since legislation is pending in Congress which would make opposition or protest proceedings mandatory in all allowed applications, it appears appropriate and desirable to gain some experience at this time with a Trial Voluntary Protest Program. The Patent Office would welcome any comments, from those who elect to participate in the program, relative to their experience concerning the effectiveness, costs, etc.

Since the trial program is voluntary and limited to a selected number of applications, no rule changes are contemplated or considered necessary at this time.

### APPLICATIONS INVOLVED

The 2,000 applications involved in the Trial Voluntary Protest Program will include 135 applications allowed in each of the 14 examining groups excluding Group 220, and 110 applications allowed in Group 220, after July 1, 1974. No other applications will be made part of the trial program. The applications in the trial will be limited to the 1970 filing date series and will exclude all reissue, plant, and design applications. Also, applications which have been involved in proceedings before the Board of Appeals, the Board of Patent Interferences, or the courts will be excluded from the trial program.

### WAIVER OF CONFIDENTIALITY

A form letter will be sent to the applicant of each of the 2,000 applications involved in the trial. The letter will indicate that the application is one of the selected applications and will afford to applicant the opportunity to participate in the program by filing a voluntary waiver of confidentiality thereby making his application available for protest.

### RESPONSE TO REQUEST FOR WAIVER OF CONFIDENTIALITY

The applicant will have two months after the mailing of the form letter concerning waiver of confidentiality to either (1) file the waiver of his right to keep the application confidential, signed by the applicant, assignee of record, or attorney or agent of record, or (2) indicate that he does not desire to participate in the trial program. A response from the applicant to the form letter will be requested. Such response is considered desirable to allow prompt processing of all 2,000 applications selected for the Trial Voluntary Protest Program. No extension of the two month period will be granted.

If the applicant declines to participate in the program, his application will be forwarded to the Patent Issue Division for

mailing of the Notice of Allowance. In these situations no record of the correspondence will be made in the application file. Also, the Patent Office will not keep any records concerning the identity of the particular applications where the opportunity to participate in the program was declined.

If a proper waiver of the right to confidentiality is submitted within two months of the date of the form letter regarding voluntary waiver, the application will be placed in the Trial Voluntary Protest Program.

Following an affirmative response a notice, identifying the application will be published in the OFFICIAL GAZETTE similar to that used for patents. The notice will include necessary identifying information, including the examining group to which the application is assigned, an illustrative figure, a representative claim or claims, and a listing of references cited by the Patent Office.

On the date the notice is published in the OFFICIAL GAZETTE, the application file will also be made available for public inspection for the duration of the protest period in the examining group and the application will be available in printed form similar to a patent. The printed application will include all the figures and the specification, including claims. All printed applications will be classified and placed in the Patent Office search files. Copies of the printed applications will be available to the public at the prices set by statute for patent copies.

### PERIOD FOR FILING PROTEST

Protesters will have a period of three months running from date of publication of the notice in the OFFICIAL GAZETTE in which to file their protest in the Patent Office. Each protest must be filed in duplicate, and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the grounds are based on prior art, the protest should include a copy of the prior art together with an explanation of the relevance of such prior art to the allowed claims. In addition or alternatively, the protester will have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which may affect the patentability of the claimed invention. In cases where prima facie evidence is presented as to prior public use or sale of the invention, the public use proceedings set forth in Rule 292 will be used to provide the protester presenting such evidence with an opportunity to be heard. No extension of the three month period will be granted.

### PROTESTER INVOLVEMENT

A protester may elect to either (1) have his identity kept secret and have no further participation in the proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application.

In both instances the protester must initially identify himself and give his address; however, if he elects to forego future involvement, he may identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be destroyed upon completion of prosecution when the application is forwarded to either Patent Issue Division or the abandoned files.

### CONSIDERATION OF PROTEST

The published allowed application files will be retained during the protest period in the examining groups. The examining groups will receive all protests filed, acknowledge receipt thereof, and make them of record in the application files. At the end of the period for filing protests, three months after publication in the OFFICIAL GAZETTE, those applications in which no protests have been filed will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance, while those applications in which protests have been filed will be referred to the group director for decision as to whether prosecution should be reopened.

If the group director decides that the evidence submitted does not constitute a prima facie showing of non-patentability of any allowed claim, the application will be forwarded to the Patent Issue Division for mailing of the Notice of Allow-

ance. The protesters who elected to participate in subsequent prosecution will be notified that the prosecution has not been reopened, and the applicant will be sent the duplicate copy of all protests. The group director's decision will be final and not subject to petition by any protester.

If the group director decides that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim believed unpatentable. The duplicate copy of all protests will be mailed to the applicant with the Office action. Protesters who elected to participate in later prosecution and submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters who elected to participate in later prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

### RESPONSE TO SUBSEQUENT OFFICE ACTIONS BY THE APPLICANT

As a result of re-examination of the application, the applicant will be permitted to respond, such as by presenting amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters, who submitted evidence on which a rejection in the Office action is based and who elected to participate in later prosecution, to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response, including appeal brief, filed. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

### COMMENT ON APPLICANT'S RESPONSE BY THE PROTESTER

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

### CONCLUSION OF PROSECUTION

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

C. MARSHALL DANN,  
Commissioner of Patents.

May 7, 1974.

### Short Titles for International Trademark Classes

The United States Patent Office will, effective immediately, associate the following word titles with the respective international trademark class numbers:

#### Goods

- 1 Chemicals
- 2 Paints
- 3 Cosmetics and cleaning preparations
- 4 Lubricants and fuels
- 5 Pharmaceuticals
- 6 Metal goods
- 7 Machinery
- 8 Hand tools
- 9 Electrical and scientific apparatus
- 10 Medical apparatus
- 11 Environmental control apparatus
- 12 Vehicles
- 13 Firearms
- 14 Jewelry

- 15 Musical instruments
- 16 Paper goods and printed matter
- 17 Rubber goods
- 18 Leather goods
- 19 Non-metallic building materials
- 20 Furniture and articles not otherwise classified
- 21 Housewares and glass
- 22 Cordage and fibers
- 23 Yarns and threads
- 24 Fabrics
- 25 Clothing
- 26 Fancy goods
- 27 Floor coverings
- 28 Toys and sporting goods
- 29 Meats and processed foods
- 30 Staple foods
- 31 Natural agricultural products
- 32 Light beverages
- 33 Wines and spirits
- 34 Smokers' articles

#### SERVICES

- 35 Advertising and business
- 36 Insurance and financial
- 37 Construction and repair
- 38 Communication
- 39 Transportation and storage
- 40 Material treatment
- 41 Education and entertainment
- 42 Miscellaneous

These short titles are not an official part of the international classification. Their purpose is to provide a means by which the general content of numbered international classes can be quickly identified. Therefore the titles selected consist of short terms which generally correspond to the major content of each class but which are not intended to be more than merely suggestive of the content. Because of their nature these titles will not necessarily disclose the classification of specific items. The titles are not designed to be used for classification but only as information to assist in the identification of numbered classes. For determining classification of particular goods and services and for full disclosure of the contents of international classes, it is necessary to refer to the Alphabetical List of Goods and Services and to the names of international classes and the explanatory notes in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied," published by the World Intellectual Property Organization (WIPO). The full names of international classes appear also in Section 6.1 of the Trademark Rules of Practice.

The short titles are being printed in the OFFICIAL GAZETTE in association with the international class numbers under MARKS PUBLISHED FOR OPPOSITION, Sections 1 and 2, under TRADEMARK REGISTRATIONS ISSUED, PRINCIPAL REGISTER, Section 1, and under SUPPLEMENTAL REGISTER, Sections 1 and 2.

Adoption of the international classification by the United States as its system of classification was announced in the OFFICIAL GAZETTE of June 26, 1973 (911 O.G. TM 210).

Date: June 18, 1974.

RENE D. TEGTMEYER,  
Assistant Commissioner for Trademarks.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,670,293, F. H. Stark, FOOD PRODUCT FLAVORING COMPOSITION AND METHOD OF PREPARATION THEREOF, filed July 18, 1968, D.C., W.D. Wis. (Madison), Doc. 68-C-122, *Stuart M. Stebbings v. Bob White Candy Company and Samuel A. Loniello*. Stipulation and order entered June 30, 1971, dismissing the action.

2,773,119, L. W. Parker, TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS, filed Jan. 18, 1974, D.C., S.D. Fla. (Miami), Doc. 74-70-C-NCR, *Louis W. Parker v. Ford Motor Company, Philco-Ford Corporation and Philco Distributors*.

2,827,065, Rogers, Jr., Bender and Ten Broeck, MANUFACTURE OF FLEXIBLE CELLULAR MATERIAL, filed Dec. 28, 1973, D.C., W.D.N.C. (Charlotte), Doc. C-C-73-298, *The Goodyear Tire & Rubber Company v. Reeves Brothers, Inc.*



2,902,784, S. Deva Ram, ROOM SERVICE INDICATOR, filed Dec. 18, 1973, D.C. Del. (Wilmington), Doc. 4778, *Lily D'Aguilar v. Marriott Corporation*.

2,925,000, R. A. Richardson, SELF RIMMING SINK MOUNTING, filed Apr. 13, 1970, D.C., N.D. Ohio (Cleveland), Doc. C-70-349, *United States of America on relation of George A. Scharmer v. Carrollton Mfg. Co.* Memorandum and order, motion of defendants for summary judgment dismissing plaintiff's complaint against them is granted, Jan. 7, 1974.

3,052,902, Weinstein, Katz, and Weinstein, FUSED PORCELAIN-TO-METAL TEETH, filed Jan. 2, 1974, D.C. Conn. (Bridgeport), Doc. B-74-2, *Brian S. Jones, as receiver for Permadent Products Corp. v. County Dental Porcelain Laboratory*.

3,112,018, C. S. Gehrle, VALANCE, filed Dec. 18, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3187, *Presto Lock Company v. Stebco Products Corporation*.

3,197,081, G. R. Broussard, SEMICONDUCTOR DEVICES WITH HEAVILY DOPED REGION TO PREVENT SURFACE INVERSION; 3,226,613, J. C. Haeulchen, HIGH VOLTAGE SEMICONDUCTOR DEVICE, filed Sept. 21, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2328, *Texas Instruments, Inc. v. Motorola, Inc.* Cause dismissed, Sept. 11, 1972.

3,222,700, G. R. Le Plae, METHOD OF MAKING STRIP STRUCTURES, filed Aug. 4, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1972-ALS, *Essex International, Inc. v. Trim-Lok Inc. and Lear Siegler Inc.* Action is dismissed without prejudice to the right to reopen if settlement is not consummated on or before Feb. 11, 1974, entered Jan. 17, 1974.

3,226,613. (See 3,197,081.)

3,332,485, W. A. Colburn, METHOD FOR PRODUCING PETROLEUM, filed Dec. 1, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2870-R, *Petrecal v. The City of Long Beach and Thums Long Beach*. Claims 1, 5, 7, 9, 11, 12 and 13 are invalid and void; complaint dismissed with prejudice, Jan. 8, 1974.

3,400,572, F. C. Marino, CONTROLLED AMPLITUDE FREQUENCY SHIFT SIGNAL GENERATOR; 3,472,448, Wolf, Marino, Simon and Kummer, RECORDING SYSTEM FOR BUSINESS MACHINES, filed May 21, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1249, *Digtronic Corporation v. Jewel Companies, Inc.* By stipulation case dismissed with prejudice, Dec. 13, 1972.

3,419,576, Edwards and Winterstein, STREAMLINED ANTENNA AND METHOD OF MAKING THE SAME, filed May 18, 1971, D.C. Conn. (New Haven), Doc. 14410, *Tenatronics, Ltd., Inc. v. Yankee Metal Products Corporation*. Consent judgment of infringement entered Dec. 14, 1973.

3,514,074, R. E. Self, HIGH ENERGY LOSS FLUID CONTROL, filed Jan. 15, 1974, D.C., S.D. Iowa (Des Moines), Doc. 74-11-1, *Fisher Controls Company, Inc. v. Control Components, Inc. and Richard E. Self*.

3,542,914, J. M. La Vergne, Jr., METHOD OF HOLLOW ARTICLE CASTING, filed Dec. 10, 1973, D.C., W.D. Wash. (Tacoma), Doc. 218-73C3, *J. M. LaVergne Manufacturing Co., Inc. and Joseph F. LaVergne, Jr. v. Cascade Septic Service, Inc. and Robert Bush and Hans Startveit, doing business as Olympic Machine and Welding Works*.

3,556,301, D. W. Kosterka, PHONOGRAPH RECORD ALBUM PACKAGE, filed Jan. 19, 1971, D.C., S.D.N.Y., Doc. 71-C-2816, *Album Graphics, Inc. v. Ivy Hill Lithograph Corp.* Filed judgment, defendant has judgment against plaintiff dismissing the complaint, Dec. 17, 1973.

3,578,452, K. Parker, DEVELOPING COMPOSITIONS FOR DIAZOTYPE MATERIALS, filed Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c41, *Addressograph Multigraph Corp. v. Sheffield S. Campbell and Campbell Assoc.*

3,580,962, J. B. Havewala, POLE RISER GUARD-BACK-UP PLATE COMBINATION, filed Jan. 18, 1974, D.C. W.D. Okla. (Oklahoma City), Doc. C-74-75-C, *Haskon, Inc. v. Indian Head, Inc.*

3,613,612, C. Kennedy, HIGH STRENGTH TUFTED PILE FABRIC, filed July 28, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16931, *Thiokol Chemical Corporation v. E. T. Barwick and Amoco Fabrics Company*. Plaintiff take nothing and action dismissed, Dec. 27, 1973.

3,641,391, A. R. Badewitz, DEVICE FOR RESTORING CATHODE EMISSION IN CATHODE-RAY TUBE GUNS, filed Dec. 19, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-3016-DWW, *Beitron, Inc. and Appleway Electronics, Inc. v. REM Electronic Instruments, Inc., Ron Simon and Manuel P. Prazeres*.

3,672,909, Nobel and Ostrow, ELECTRO-PEPOSITION OF GOLD AND GOLD ALLOYS, filed Jan. 16, 1974, D.C.N.J. (Newark), Doc. 74-73-C, *Lea-Ronal, Inc. v. Auric Corporation*.

3,693,559, R. H. Allen, POLLUTION CONTROL APPARATUS FOR COMBUSTIVE DISMANTLING, filed June 14, 1973, D.C., S.D. Ind. (Evansville), Doc. EV 73-C-47, *The David J. Joseph Company v. Evans Products Company et al.* Entry of stipulated dismissal without prejudice entered Jan. 7, 1974.

3,699,735, M. G. Smith, SEALING GASKET, filed Jan. 18, 1974, D.C., S.D. Tex. (Houston), Doc. CA 74-H-105, *Helmerich & Panye, Inc. v. Ragsdale Pardoe Properties, Inc.*

3,736,197, Messerschmidt, Heyman and Johnsen II, POWDERLESS ETCHING BATH COMPOSITIONS AND ADDITIVES, filed Dec. 22, 1973, D.C.N.J. (Newark), Doc. 1844-73, *Mona Industries, Inc. v. Philip A. Hunt Chemical Corporation*.

## Certificates of Correction for the Week of July 16, 1974

D. 230,179	3,760,118	3,777,887	3,789,961
P.P. 3,351	3,760,385	3,778,168	3,789,993
Re. 27,528	3,760,640	3,778,264	3,790,032
Re. 27,918	3,760,649	3,778,489	3,790,210
3,443,667	3,760,925	3,778,597	3,790,296
3,496,827	3,761,240	3,778,600	3,790,324
3,529,543	3,761,401	3,778,870	3,790,416
3,551,797	3,762,842	3,779,129	3,790,440
3,574,601	3,762,990	3,779,224	3,790,649
3,599,095	3,763,575	3,779,514	3,790,662
3,613,428	3,764,244	3,779,539	3,791,545
3,619,302	3,764,534	3,779,926	3,791,706
3,632,836	3,765,011	3,779,999	3,791,834
3,645,520	3,765,270	3,780,048	3,791,904
3,649,375	3,766,200	3,780,101	3,792,032
3,652,290	3,766,333	3,780,183	3,792,074
3,670,797	3,766,852	3,780,490	3,792,158
3,672,399	3,767,221	3,781,280	3,792,408
3,674,800	3,767,247	3,781,351	3,792,442
3,674,801	3,767,312	3,781,427	3,792,585
3,676,843	3,767,434	3,781,482	3,792,632
3,678,016	3,767,526	3,781,534	3,792,704
3,688,225	3,767,563	3,781,851	3,793,052
3,692,432	3,767,730	3,782,002	3,793,364
3,699,089	3,767,842	3,782,076	3,793,524
3,700,360	3,767,907	3,782,120	3,793,574
3,702,799	3,768,010	3,782,894	3,794,029
3,705,038	3,768,577	3,782,961	3,794,122
3,706,240	3,768,869	3,782,988	3,794,187
3,708,352	3,769,415	3,783,248	3,794,246
3,708,476	3,769,626	3,783,473	3,794,913
3,714,941	3,770,447	3,783,693	3,795,049
3,720,992	3,770,503	3,783,765	3,795,159
3,721,668	3,770,722	3,783,975	3,795,190
3,723,514	3,770,746	3,784,223	3,795,564
3,723,838	3,770,780	3,784,324	3,795,693
3,725,514	3,770,926	3,784,454	3,795,732
3,725,578	3,770,994	3,784,489	3,795,762
3,726,684	3,771,145	3,784,629	3,795,870
3,726,886	3,771,156	3,784,675	3,795,965
3,728,095	3,771,370	3,784,709	3,795,966
3,728,302	3,771,904	3,784,897	3,796,011
3,729,234	3,772,045	3,785,198	3,796,186
3,736,057	3,772,096	3,785,412	3,796,479
3,737,433	3,772,225	3,785,916	3,796,623
3,738,101	3,772,333	3,785,990	3,796,630
3,739,048	3,772,360	3,785,994	3,796,658
3,741,910	3,772,385	3,786,090	3,796,663
3,744,655	3,772,475	3,786,093	3,796,821
3,745,138	3,772,923	3,786,247	3,796,838
3,745,141	3,772,939	3,786,330	3,796,963
3,745,411	3,772,962	3,786,416	3,796,970
3,746,012	3,773,502	3,786,569	3,797,089
3,746,312	3,773,669	3,786,596	3,797,208
3,746,719	3,773,926	3,786,722	3,797,267
3,747,201	3,774,166	3,787,114	3,797,277
3,747,601	3,774,200	3,787,174	3,797,477
3,749,413	3,774,225	3,787,307	3,797,632
3,749,575	3,774,301	3,787,387	3,797,774
3,752,094	3,774,408	3,787,389	3,798,175
3,753,113	3,775,157	3,787,429	3,798,180
3,753,943	3,775,218	3,787,521	3,798,276
3,754,984	3,775,273	3,787,724	3,798,281
3,755,092	3,775,377	3,787,901	3,798,346
3,755,558	3,775,432	3,788,303	3,798,722
3,757,864	3,775,717	3,788,639	3,799,102
3,758,270	3,776,159	3,788,839	3,799,625
3,758,427	3,776,503	3,788,884	3,799,794
3,758,595	3,776,536	3,789,107	3,799,866
3,758,762	3,776,625	3,789,192	3,799,897
3,758,809	3,777,278	3,789,271	3,799,913
3,759,065	3,777,340	3,789,327	3,799,929
3,759,102	3,777,723	3,789,643	3,799,985
3,759,923	3,777,794	3,789,749	3,801,239
3,759,983	3,777,820	3,789,816	

## Disclaimers

3,600,705.—*Wirojana Tantraporn and Se Puan Yu, Schenectady, and Paul J. Shaver, Scotia, N.Y.* HIGHLY EFFI-

CIENT SUBCRITICALLY DOPED ELECTRON-TRANSFER EFFECT DEVICES. Patent dated Aug. 17, 1971. Disclaimer filed July 23, 1973, by the assignee, *General Electric Company*.

Hereby enters this disclaimer to claims 10, 11 and 21 of said patent.

3,787,270.—*James L. King, Sudbury, Mass.* SPLICING TAPE DISPENSER. Patent dated Jan. 22, 1974. Disclaimer filed Oct. 12, 1973, by the assignee, *King Instrument Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Aug. 21, 1990.

## Service by Publication

Stephen Foris

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on August 4, 1971, of an application for patent entitled "Preservatives for Aqueous Systems," on behalf of Stephen Foris, whose last known address is 231 Lester Road, Toms River, New Jersey 08753. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Milton Manowitz without execution by the said Stephen Foris. Notice of the filing directed to the above noted address has been returned undelivered.

An action to be taken by the said Stephen Foris in connection with the said application must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,  
Acting Assistant Commissioner for Patents.

## National Technical Information Service

GOVERNMENT-OWNED INVENTIONS  
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at \$0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,  
Patent Program Coordinator,  
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION  
Assistant General Counsel for Patents  
Washington, D.C. 20545

Patent 3,763,292. Manufacture of Bonded-Particle Nuclear Fuel Composites. Filed Oct. 1, 1971. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,763,374. Dynamic Multistation Photometer-Fluorometer. Filed Aug. 22, 1972. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,764,469. Carbon-Silicon Coating Alloys for Improved Irradiation Stability. Filed Mar. 24, 1972. Patented Oct. 9, 1973. Not available NTIS.

DEPARTMENT OF THE AIR FORCE AF/JACP  
Washington, D.C. 20314

Patent application 278,491. Method and System for Computing Altitude Over a Target and the Horizontal Range Thereof. Filed July 31, 1973. PC \$4/MF \$1.45.

Patent application 358,791. Microwave High Power Phase Shifter. Filed May 9, 1973. PC \$4/MF \$1.45.

Patent application 360,517. Method and Apparatus for Providing Higher Order Mode Compensation in Horn Antennas. Filed May 15, 1973. PC \$4/MF \$1.45.



Patent application 362,153. Dual Hologram Plate Holder. Filed May 21, 1973. PC \$4.50/MF \$1.45.  
 Patent application 368,837. Gated Detector Synchronization. Filed June 4, 1973. PC \$4/MF \$1.45.  
 Patent application 366,909. Demodulation System for Time Sharing Radiometer. Filed June 4, 1973. PC \$4/MF \$1.45.  
 Patent application 366,915. Special Purpose Computer to Implement Kronecker-Matrix Transformations. Filed June 4, 1973. PC \$4.50/MF \$1.45.  
 Patent application 369,035. Method for Growing Crystals. Filed June 11, 1973. PC \$4/MF \$1.45.  
 Patent application 374,829. Processing Conductive Tapes Into Self Supporting Balls. Filed June 29, 1973. PC \$4/MF \$1.45.  
 Patent application 375,239. Production of Cadmium Electrodes. Filed June 29, 1973. PC \$4/MF \$1.45.  
 Patent application 375,241. Particle Sampling Apparatus. Filed June 29, 1973. PC \$4/MF \$1.45.  
 Patent application 382,384. Portable Pantograph C-Scan Recording Flaw Detecting System. Filed Aug. 28, 1973. PC \$4/MF \$1.45.  
 Patent application 392,396. Pulse Generator. Filed Aug. 28, 1973. PC \$4/MF \$1.45.  
 Patent application 394,892. Chopper Transistor Driver and Feedback Circuit for Regulated DC to DC Power Converters Using Separate Input and Output Grounds. Filed Sept. 9, 1973. PC \$4/MF \$1.45.  
 Patent application 407,377. Combined Vertical and Lateral Identical Location of Accelerometer and Force System. Filed Oct. 17, 1973. PC \$4/MF \$1.45.

## U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch  
 Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 275,988. Method and Composition for Preventing Deterioration of Hides From Freshly Slaughtered Animals. Filed July 28, 1972. PC \$4/MF \$1.45.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
 National Institutes of Health, Chief, Patent Branch  
 Westwood Building, Bethesda, Md. 20014

Patent application 271,051. Process of Viral Diagnosis and Reagent. Filed July 17, 1972. PC \$6/MF \$1.45.

Patent application 451,275. Method and Apparatus for Plating and Counting Aerobic Bacteria. Filed Mar. 14, 1974. PC \$4/MF \$1.45.

Patent 3,636,191. Vaccine Against Viral Hepatitis and Process. Filed Oct. 8, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,799,355. Dialysis Membranes and Manufacture. Filed Dec. 28, 1970. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,799,356. Dialysis Hollow Fiber Membranes and Manufacture. Filed Dec. 28, 1970. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR  
 Branch of Patents, 18th and C Sts. NW.  
 Washington, D.C. 20240

Patent 2,948,629. Impact-Resistant Ceramics From Synthetic Fluoromphiboles and Processes of Making Same. Filed June 14, 1958. Patented Aug. 9, 1960. Not available NTIS.

Patent 3,801,342. Manufacture of Lignite Binder Pitch. Filed Nov. 16, 1970. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,804,259. Filament Wound Reverse Osmosis Tubes. Filed Jan. 23, 1973. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,806,564. Method of Chemically Modifying Asymmetric Membranes. Filed Jan. 26, 1972. Patented Apr. 23, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
 Assistant General Counsel for Patent Matters, NASA—  
 Code GP-2, Washington, D.C. 20546

Patent application 401,920. Ultrasonically Bonded Valve Assembly. Filed Sept. 28, 1973. PC \$4/MF \$1.45.

Patent application 401,921. Prevention of Hydrogen Embrittlement of High Strength Steel. Filed Sept. 28, 1973. PC \$4/MF \$1.45.

Patent application 425,362. Fabrication of Polyphenylquinoxaline Composite Articles by Means of In Situ Polymerization of Monomers. Filed Dec. 17, 1973. PC \$4/MF \$1.45.

Patent application 446,564. Gas Chromatograph Injection System. Filed Feb. 27, 1974. PC \$4/MF \$1.45.

Patent application 448,321. Aromatic Polyimide Preparation. Filed Mar. 5, 1974. PC \$4/MF \$1.45.

Patent application 450,502. Fiber Separating and Cleaning Method and Apparatus. Filed Mar. 12, 1974. PC \$4/MF \$1.45.

Patent application 450,504. Method of Fluxless Brazing and Diffusion Bonding of Aluminum Containing Components. Filed Mar. 12, 1974. PC \$4.25/MF \$1.45.

Patent application 452,761. Controllable High Voltage Source Having Fast Settling Time. Filed Mar. 19, 1974. PC \$4/MF \$1.45.

Patent application 453,115. Multichannel Logarithmic RF Level Detector. Filed Mar. 21, 1974. PC \$4/MF \$1.45.

Patent application 455,163. Asynchronous, Multiplexing, Single Line Transmission and Recovery Data System. Filed Mar. 27, 1974. PC \$4.25/MF \$1.45.

Patent application 455,164. Electric Power Generation System Directly From Laser Power. Filed Mar. 27, 1974. PC \$4/MF \$1.45.

Patent application 457,295. Heat Operated Cryogenic Electrical Generator. Filed Apr. 1, 1974. PS \$4/MF \$1.45.

Patent application 458,484. A Panel for Selectively Absorbing Solar Thermal Energy and the Method for Manufacturing the Panel. Filed Apr. 5, 1974. PC \$4.25/MF \$1.45.

Patent application 459,738. Resonant Waveguide Stark Cell. Filed Apr. 10, 1974. PC \$4/MF \$1.45.

Patent 3,759,747. Method of Making Porous Conductive Supports for Electrodes. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,790,409. Storage Battery Comprising Negative Plates of a Wedge Shaped Configuration. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,795,910. Microwave Power Transmission System Wherein Level of Transmitted Power is Controlled by Reflections From Receiver. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,796,473. Reefing System. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,799,813. Radiation Hardening of MOS Devices by Boron. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,224. Automatic Frequency Control for FM Transmitter. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,237. Gated Compressor, Distortionless Signal Limiter. Patented Mar. 26, 1974. Not available NTIS.

[FR Doc. 74-14330; Filed 6-25-74; 8:45 am]

## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JUNE 22, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-2-73
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	6-11-73
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director.....	11-15-73
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director.....	8-23-73
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..	5-21-73
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	11-14-73
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	1-22-73
Ordnance, Firearms and Ammunition; Radar, Underwater Signaling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Rocket-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	11-1-73
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.....	2-23-73
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	12-10-73
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—C. D. QUARFORTH, Director.....	1-15-73
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director.....	1-2-74
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appendances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	10-16-73
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director.....	11-2-73
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director.....	9-10-73
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director.....	8-28-73
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during July 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1964 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,797,414 to 2,801,413, inclusive  
 Plant Patents..... Numbers 1,612 to 1,625, inclusive



# REISSUES

JULY 16, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,074

## YEAST LEAVENED BREAD DOUGH COMPOSITION AND PROCESS OF MANUFACTURE

Louis J. Smerak, Wayne, and Jason A. Miller, Dover, NJ., assignors to Caravan Products Co., Inc., Passaic, NJ.

No Drawing. Original No. 3,578,462, dated May 11, 1971, Ser. No. 881,609, Dec. 2, 1969, which is a continuation-in-part of application Ser. No. 566,212, July 19, 1966, now Patent No. 3,494,770. Application for reissue Apr. 30, 1973, Ser. No. 356,047

The portion of the term of the patent subsequent to Feb. 10, 1987, has been disclaimed

Int. Cl. A21d 2/02, 2/04, 8/04

U.S. Cl. 426—20

24 Claims

A yeast leavened bread dough containing a composition consisting essentially of about 0.0005 to 0.010 part by weight per 100 parts of flour employed in the dough of an oxidizing agent, about 0.03 to 1.0 part by weight of calcium salt per 100 parts flour employed in the dough, and catalytically active quantities of enzyme selected from the class consisting of fungal amylase and fungal protease, wherein the fungal alpha amylase enzyme is sufficient to provide between 6,000 [3,000] and 150,000 SKB units for 100 pounds of flour employed in the dough and the fungal protease enzyme is sufficient to provide between 3,000 and 500,000 hemoglobin units for 100 pounds of flour employed in the dough.

28,075

## DOUBLE CLAW TOOTH STATOR SYNCHRONOUS AND STEPPING MOTOR WITH INDICATOR

Richard J. Kavanaugh, Bristol, Conn., assignor to North American Phillips Corporation, New York, N.Y.

Original No. 3,508,091, dated Apr. 21, 1970, Ser. No. 693,617, Dec. 26, 1967, which is a continuation-in-part of abandoned application Ser. No. 402,830, Oct. 9, 1964. Application for reissue Oct. 19, 1972, Ser. No. 299,041

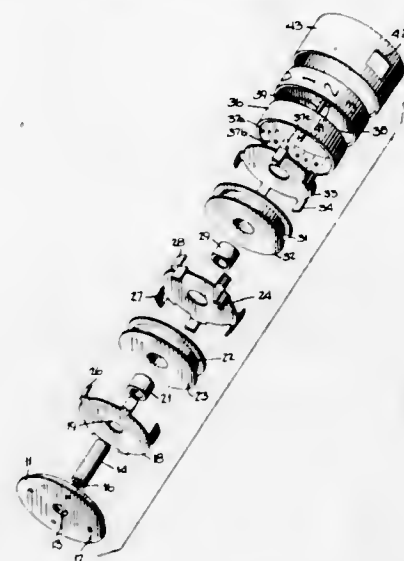
Int. Cl. H02k 37/00

U.S. Cl. 310—49

38 Claims

A synchronous and stepping motor with two stator sections, each having a plurality of interleaved claw tooth stator poles energized by a stator coil so that alternate poles are of opposite polarity. The stator sections are arranged end-to-end along a common axis and the poles of each section are angularly spaced apart by commensurate amounts, the poles of one section being angularly displaced with respect to the poles in the other section. The rotor is permanently magnetized to have magnetic poles angularly spaced apart commensurately with the poles in the stator sections, and the coils are so energized as to produce out-of-phase magnetic fields to rotate the rotors. The phase displacement of the magnetic fields may result from applying out-of-phase alternating currents or properly timed current pulses to the coils of the two stator sections, or it may

result from the shading effect of a conductive coil form in one stator section. An outer cylindrical shell with



indicia is provided on the rotor whereby the indicia may be viewed through an aperture in the cover.

28,076

## VAPOR DEPOSITION APPARATUS INCLUDING AIR MASK

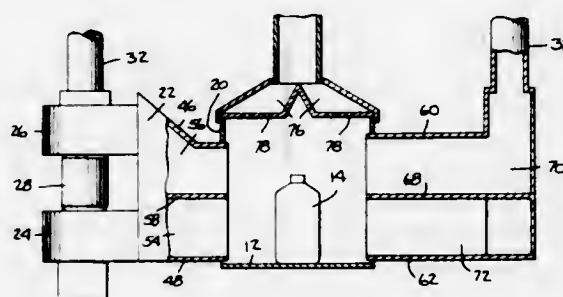
Bengt O. Augustsson, Surte, Sweden, and Russell D. Southwick, Butler, Pa., assignors to Glass Container Manufacturers Institute, Inc., New York, N.Y.

Original No. 3,688,737, dated Sept. 5, 1972, Ser. No. 873,916, Nov. 4, 1969. Application for reissue Aug. 24, 1973, Ser. No. 391,036

Int. Cl. C23c 13/08

U.S. Cl. 118—48

4 Claims



Vapor deposition means in combination with means to deliver an air stream adjacent to the vapor stream whereby to mask predetermined portions of a substrate. Separate exhaust means are opposed to the respective coating and masking streams. Means convey the substrate between the opposed delivery and exhaust means.

JULY 16, 1974

U. S. PATENT OFFICE

437

28,077

## AUTOMATIC MEAT CUTTING MACHINE

Morris Meltzer, 1350 Woodbourne, G-118, Levittown, Pa. 19057, and Donald D. Meyer, 2261 S. Hardwood Ave., Upper Darby, Pa. 19082

Original No. 3,631,908, dated Jan. 4, 1972, Ser. No. 41,472, May 28, 1970. Application for reissue Jan. 15, 1973, Ser. No. 323,819

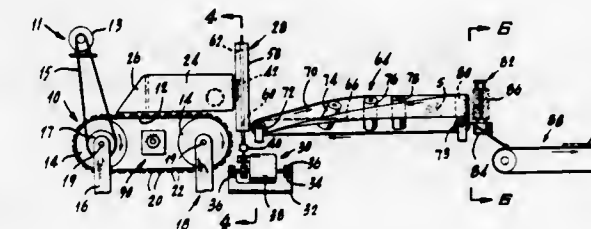
Int. Cl. B26d 4/22

U.S. Cl. 83—101

16 Claims

An automatically operating machine receives pork loins, loins of beef, or other meat products, either boned or boneless, and cuts them into steaks, chops, or the like. Adjustments are provided in the machine such that the thickness of the slices is selectively regulated by varying the speed with which the product is fed to and through

the cutting mechanism. The cut slices are conveyed to a cleaning brush assembly, being brought to a vertical position to be fed therethrough, and are thereafter discharged for packaging and final processing.



tion to be fed therethrough, and are thereafter discharged for packaging and final processing.



# PATENTS

GRANTED JULY 16, 1974

## GENERAL AND MECHANICAL

3,823,417

### PROTECTIVE GARMENT

Bertha L. Cluckey, 5805 N. 16th St. No. 9, Arlington, Va. 22205

Filed Jan. 9, 1973, Ser. No. 322,248

Int. Cl. A41d 1/04

U.S. Cl. 2-91

1 Claim



A protective garment for facilitating protection of the neck and chest of a user against cold weather and the like, wearable under an outer garment, which is easily donned or removed, and does not unduly interfere with appearance or function of other garments or the maneuverability of a user.

3,823,418

### CAMOUFLAGE APPARATUS

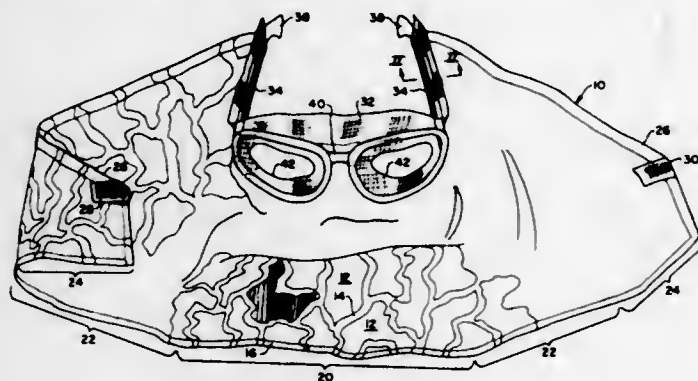
Frank R. Piper, Delmont, Pa., assignor to Penn's Woods Products, Inc., Delmont, Pa.

Filed Jan. 18, 1973, Ser. No. 324,734

Int. Cl. A42b 1/18

U.S. Cl. 2-206

8 Claims



A camouflage apparatus to disguise the face and neck areas of hunters is disclosed in the form of a netting having areas or patches defined by various shades of the color green throughout the netting. The netting includes wing-like end portions which are connected together by a loop and pile clasp system at the back of the user's neck. Pockets sewn into the upper portion of the netting are arranged to receive ear lugs of eyeglasses by which the netting is at least partially supported. Openings in the netting are aligned with the lens area of the glasses. Additional netting material extends upwardly from the lug receiving pockets in the manner that a portion of the netting is used to camouflage the forehead and temple areas of the user's head.

438

3,823,419

### ADJUSTABLE TROUSER-LIKE GARMENT

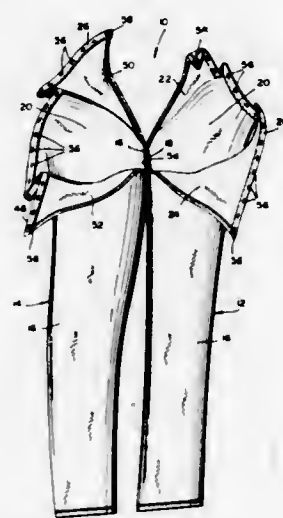
George J. Breitbart, 25 E. 9th St., New York, N.Y. 10003

Filed Feb. 9, 1973, Ser. No. 331,231

Int. Cl. A41d 1/06

U.S. Cl. 2-227

8 Claims



A trouser-like garment consists of two complementary half-sections. The half-sections are permanently joined only at their crotch portion. The parts of the half-sections include flap portions which are adjustably and releasably secured to each other in overlapping position at the front and rear of the waist portion of the garment.

3,823,420

### PATCH POCKET CONSTRUCTION

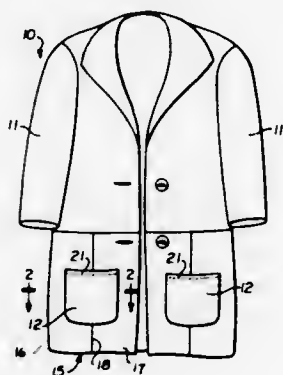
Marcus Breier, Edson St., Amsterdam, N.Y. 12010

Filed May 24, 1973, Ser. No. 363,731

Int. Cl. A41d 27/20

U.S. Cl. 2-247

9 Claims



A construction for patch pockets permitting a reduction in the quantity of relatively costly garment materials required in production of a garment having patch pockets. The garment is formed with a slit extending into the area where the desired patch pocket is to be formed. The relatively costly garment material is cut away in the area underlying the patch pocket, and the patch pocket is positioned to overlie the cut away portion and secured to the garment along with a relatively inexpensive pocket backing material.

JULY 16, 1974

GENERAL AND MECHANICAL

439

3,823,421

### APPAREL BELT

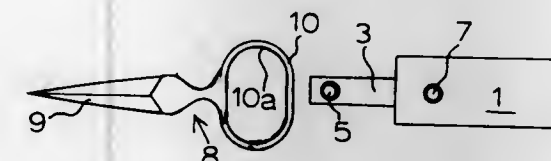
Walter Wells Collins, Atlanta, Ga., assignor to Adventure Products, Inc., Atlanta, Ga.

Filed Aug. 18, 1972, Ser. No. 281,646

Int. Cl. A41f 9/00

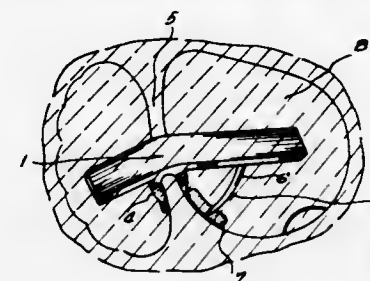
U.S. Cl. 2-321

5 Claims



An apparel belt includes a flexible belt element which is adapted for disposition about the waist of the wearer and which is interconnected at its adjacent end portions by a combination implement and belt connecting device which is disjointably coupled with the adjacent ends of the belt element and which is readily disjointable from both ends of the belt element for use as an implement together with sheath means at one end of said belt element for receiving a part of said combination implement and belt connecting device.

tuse angle from the internal face of which an elastic fixation element is projected, said element having a contour similar to



the bridge of the human ear; the end of a stem being fixed in one of the sides of the laminar part, while the other end of the stem rests in the stapes.

3,823,424

### ARTIFICIAL LEG WITH STABLE LINK-TYPE KNEE JOINT

Denis Ronald William May, London, England, assignor to J. E. Hanger and Company Limited, London, England

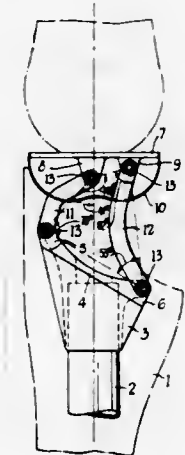
Continuation-in-part of Ser. No. 229,318, Feb. 25, 1972,

abandoned. This application Feb. 28, 1973, Ser. No. 336,759

Int. Cl. A61f 1/04, 1/08

U.S. Cl. 3-22

3 Claims



The invention provides an artificial knee joint comprised by two parts of links joining a stump socket portion to a shin portion in such a manner as to impart stability to the joint over initial flexure from the upright, such stability being derived from an initial rise in the effective center of rotation.

3,823,425

### TOILET TANK DISCHARGE CONTROL FOR SELECTIVELY DISCHARGING VARIABLE AMOUNTS OF WATER

Rudleigh G. Coffman, 769 Tree Ln., El Cerrito, Calif. 94530

Filed May 7, 1973, Ser. No. 358,021

Int. Cl. E03d 1/33, 1/34; F16k 33/00

U.S. Cl. 4-53

20 Claims

A toilet tank assembly including a water reservoir with a water discharge opening communicating with a toilet and having a water level control inlet valve assembly communicating with a water source for supplying water to the water reservoir when the water level in the tank decreases. An operating handle is coupled through an actuating mechanism to a discharge valve assembly which includes a valve member adapted to seat on the discharge opening for closing same. When the operating handle is moved to a first position the discharge valve assembly is moved to a corresponding first position and retaining means are provided for retaining the discharge valve as-

3,823,423

### ARTIFICIAL MALLEUS COLUMELLA FOR THE HUMAN EAR

Eduardo Carlos Campo Mercandino, Montevideo 606, Buenos Aires, Argentina

Filed Feb. 28, 1973, Ser. No. 336,854

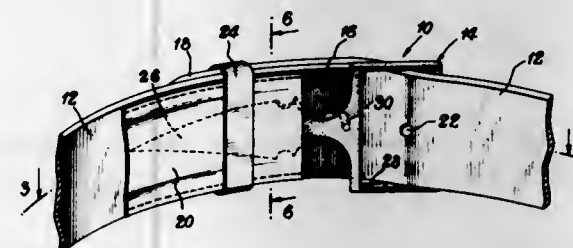
Claims priority, application Argentina, June 13, 1972, 242511

Int. Cl. A61f 1/24

U.S. Cl. 3-1

4 Claims

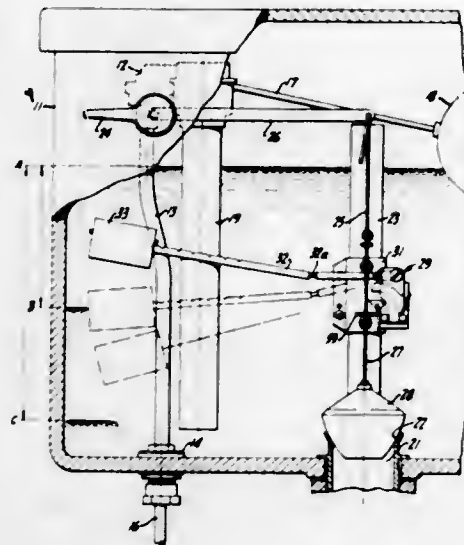
This invention provides an artificial malleus columella for the human ear characterized by the fact that it is constituted by an elongated laminar part which has conformed in it an ob-



A belt having a buckle which may be removed readily and used as a knife. The blade of the knife is curved to conform to the shape of the body so that the belt is comfortable to wear. A pocket is formed in the belt to receive the knife blade to thereby prevent injury to the wearer.



sembly at the first position while a first selected amount of water is discharged from the water reservoir through the water discharge opening but releasing the discharge valve assembly when the water reservoir level has fallen a selected first



amount. When the operating handle is moved to a second position the discharge valve means is moved to a second position which allows a second selected amount of water greater than the first selected amount to be discharged through the discharge opening.

3,823,426

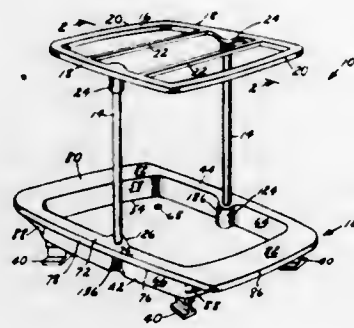
#### RAPID ASSEMBLY COMBINATION SANDBOX AND POOL

Walter Mitchko, 769 Bay Tree Ln., East Northport, N.Y. 94530

Continuation-in-part of Ser. No. 281,539, Aug. 17, 1972, abandoned. This application Oct. 18, 1972, Ser. No. 298,508  
Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172

14 Claims



An improved combination sandbox and pool which can be rapidly assembled or disassembled without the use of screws, nuts and bolts, or other fastening elements. The well of the unit has a drain hole, the well serving the dual purpose of a container of sand or water.

The leg members include a female socket with a wedged channel and oppositely aligned ball-shaped depressions. The male member has a mating wedge and ball-shaped protrusions. The male member is forced into the female member, the resiliency of the walls of the channel allowing the ball lock to provide sufficient stability for use conditions.

The upright sockets have an interior funnel-shaped wall with a lower cutout and a bottom step. Forcing an upright into the socket causes the wall to spread, creating a gripping force. The step limits the downward movement of the upright.

A modified embodiment of the upright includes a cross-sectional T-shaped member having the lower portion of the center leg being wedge-shaped and received within a mating

female receptacle in the upright socket. The walls of the receptacle are slightly resilient and provide a gripping force to engage the upright.

The canopy frame may carry a channel on the end support either on the top or end surface, passing along the entire length of support. The canopy covering is positioned over the channel and a securement member which is T-shaped in cross-section is forced into the channel, the finger engaging the canopy covering, also forcing it into the channel.

3,823,427

#### AEROSOL HYDRAULIC DRAIN OPENER

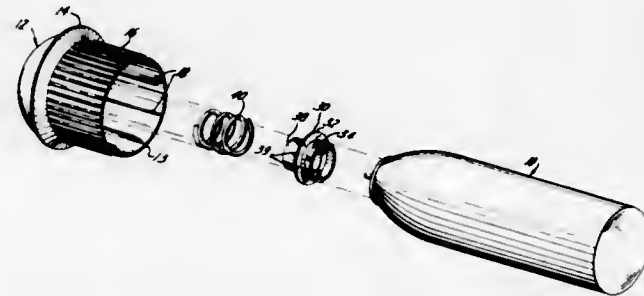
Gilbert H. Pittet, West Paterson, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,858

Int. Cl. B08b 5/00, 9/00; E03d 11/00

U.S. Cl. 4-255

2 Claims



Apparatus for clearing waste stoppage from conduits such as pipes and drains. The device employs the hydraulic ram principle wherein a column of water or other liquid is used as a flexible shaft between the aerosol drain opener and the stoppage or obstruction. The device employed is an aerosol can capable of withstanding at least 72 psig. at 70°F.

3,823,428

#### ADJUSTABLE BED RAILS

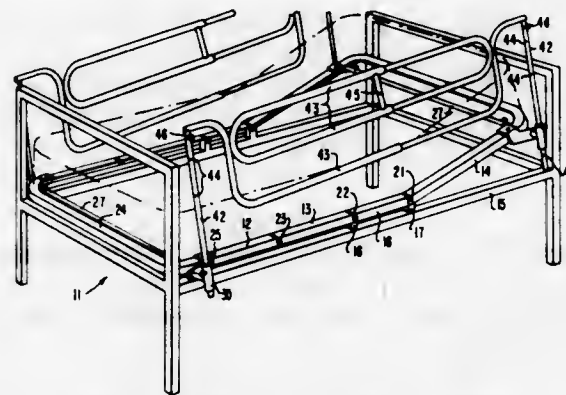
Albert J. Whyte, Springfield, Mass., assignor to Standard International Corporation, Andover, Mass.

Filed Apr. 13, 1972, Ser. No. 243,569

Int. Cl. A47c 21/08

U.S. Cl. 5-331

9 Claims



An adjustable bed rail readily adaptable for beds of any type. A tubular cross brace is mounted to either end of the bed frame and T-couplings are removably and rotatably mounted to the brace. The bed rail is, in turn, adjustably mounted to the couplings on either side of the bed.

3,823,429

#### FRAME SPACER

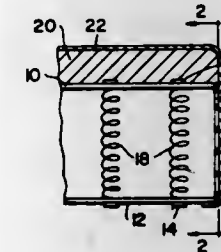
Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed Mar. 23, 1973, Ser. No. 344,246

Int. Cl. A47c 7/22, 7/14

U.S. Cl. 5-345 R

2 Claims



A box-spring type construction formed of an upper frame, a lower frame and interconnecting coil springs, which may be utilized in automobile seats and the like, and having a horizontally elongated netting secured to both the upper and lower frames at the front of the construction. The netting extends vertically between the frames to limit expansion of the springs. The netting is formed of a plurality of thin vertical strands which are joined by a plurality of thin horizontal strands with all the strands being in a first plane. Each strand is formed of a slippery, flexible material having limited resiliency which has been uniaxially stretch oriented in its longitudinal direction to increase tensile strength. The strands form a netting or lattice and the joints of the strands distribute any uneven tensile forces, resulting in an increased tension absorption.

3,823,430

#### TENT STAKE JACK

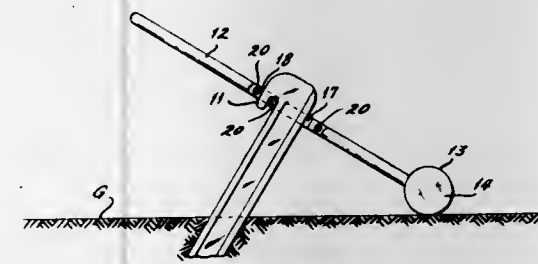
Ivan Eugene Welsh, II, Rutherford, and Ray Flow Heckman, Dyer, both of Tenn., assignors to Brown Group, Inc., St. Louis, Mo.

Filed Feb. 7, 1973, Ser. No. 330,450

Int. Cl. B25f 1/00

U.S. Cl. 7-9

5 Claims



A tent stake tool for setting and pulling tent stakes in which the tool is a combination stake driving mallet and pulling lever, and in which the pulling lever is provided with stake engaging means and the mallet head may be either a fulcrum or handle.

3,823,431

#### CONVERTIBLE TOP FOR BOATS AND THE LIKE

Lester Miller, Topeka, Ind., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Apr. 23, 1973, Ser. No. 353,290

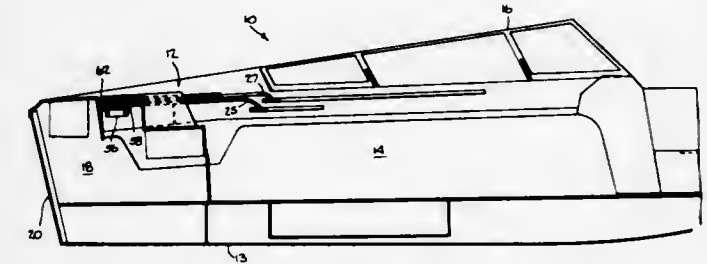
Int. Cl. B63b 17/02

U.S. Cl. 9-1 R

8 Claims

The top includes a pair of inverted generally U-shaped main frame members pivoted at their lower ends to slides mounted along opposite sides of the boat for translational movement in a fore and aft direction. Each frame member carries an auxiliary generally U-shaped frame member, the auxiliary and

main frame members upstanding from the boat in respective fore and aft directions and supporting along their upper ends a flexible convertible top. The stern portion of the boat pivotally mounts an engine housing cover. Below the cover is a ledge which extends transversely between opposite sides of the boat. To store the top, the auxiliary frames are folded onto the main frames and one or both main frames are longitudinally trans-



3,823,432

#### ROTATABLE BUOY FOR MOORING VESSELS

Willem Jan Van Heijst, Monte Carlo, Monaco, assignor to N.V. Industriele Handelscombinatie, Rotterdam, Netherlands

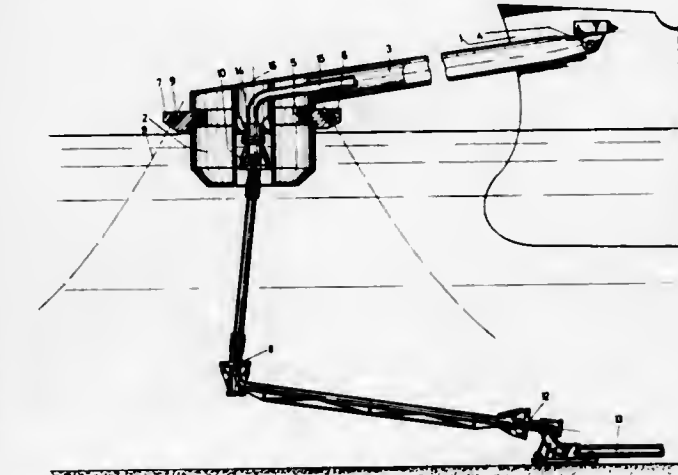
Filed June 1, 1973, Ser. No. 366,243

Claims priority, application Netherlands, June 9, 1972, 7207903

Int. Cl. B63b 21/52

U.S. Cl. 9-8 P

3 Claims



A buoy for mooring vessels such as tankers is encircled by a relatively rotatable ring to which are secured a plurality of anchor chains so that the buoy can rotate about a vertical axis within and relative to the ring. At least one coupling member in the form of a rigid arm is integrally and rigidly secured to the buoy for rotation therewith. The end of the arm remote from the buoy is secured to the moored vessel for relative vertical swinging movement about a horizontal pin. A pipeline on the ocean floor enters the buoy and passes through the arm to the moored vessel.



3,823,433

## SPREADER FOR SHOE STRETCHER

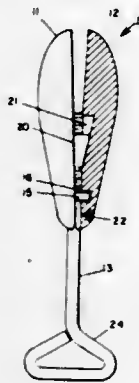
Robert C. Smith, Camden, N.Y., assignor to Rochester Shoe Tree Company, Inc., Rochester, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,476

Int. Cl. A43d 5/00

U.S. Cl. 12—117.2

4 Claims



The inventive spreader applies to a shoe stretcher having a pair of forms that are spreadable by turning a shaft extending between the forms. The spreader includes an anchorage locked between the forms, a boss on the shaft on each side of the anchorage, a cam threaded on the shaft to move axially of the shaft, and cam follower slots in the forms to hold the cam from rotating and tapered relative to the cam to spread the forms as the cam moves axially of the shaft.

3,823,434

## SHOE WARMER

Benno Krell, Zell 115, 6 Frankfurt am Main, Germany

Filed Apr. 23, 1973, Ser. No. 353,912

Int. Cl. A43d 3/00

U.S. Cl. 12—129.4

3 Claims



The embodiment of the invention disclosed herein is directed to a ski boot heater for insertion into the interior of the ski boot. The heater is formed of a hollow, collapsible elastic container adapted to receive a quantity of hot liquid through an opening formed in the top portion of the container. When the ski boot heater is not in use, the container can be rolled up to occupy a relatively small space.

3,823,435

## SWEEPER ASSEMBLY

Keith H. Rhodes, and William J. Schlapman, both of Winnesconne, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 16, 1973, Ser. No. 351,396

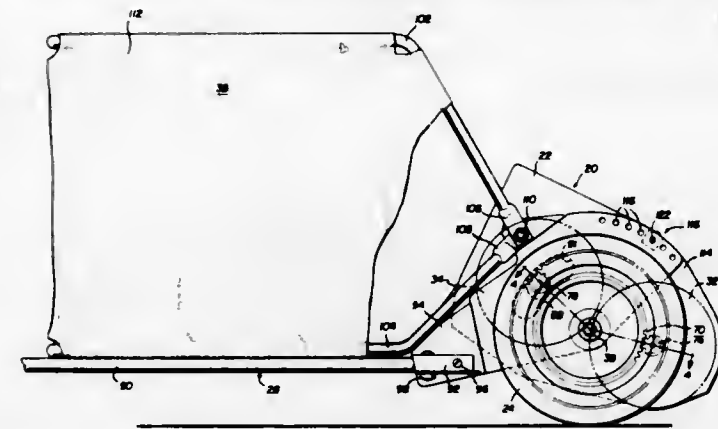
Int. Cl. E01h 1/04

U.S. Cl. 15—79

16 Claims

This disclosure relates to a positive drive sweeper, such as a lawn sweeper, which permits elevation of the ground sweeping brush without disturbing the load in the hopper. The positive drive includes internal and external planetary bears within the

wheel hub which drive the two brushes of the sweeper in opposite directions. The housing is pivotally mounted on the ground engaging wheel axis and the brushes are rotatably con-



nected to the housing, whereby the ground sweeping brush may be raised for hauling by pivoting the housing about the wheel axis, without disturbing the load in the hopper.

3,823,436

## WIPER BLADE MOUNT

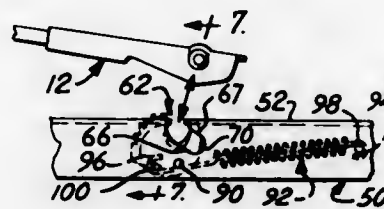
Harry W. Roberts, Merrick, N.Y., assignor to Pylon Manufacturing Corporation, Ft. Lauderdale, Fla.

Filed Mar. 21, 1973, Ser. No. 343,496

Int. Cl. B60s 1/40

U.S. Cl. 15—250.32

10 Claims



A mount for coupling a wiper blade to a movable arm of a windshield wiper system. The mount includes a yoke that is fitted with a slot which makes an acute angle with the upper edge of the yoke. A carriage having two lip members is rotatably mounted inside the yoke. The carriage receives the pin in an open position through the upper edge of the yoke and moves the pin into an inserted position in which the pin is locked in the yoke. An over-center biasing spring biases the carriage in the open position for enabling insertion of the pin and biases the carriage in a closed position in which the pin is locked to the yoke.

3,823,437

## WINDSHIELD WIPER BLADE ASSEMBLY

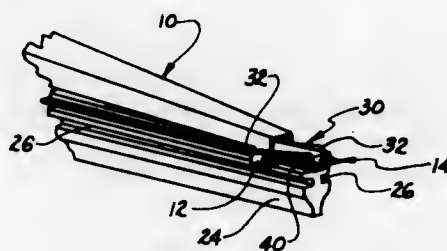
Gary F. Hauke, New Albany, Ohio, assignor to Perma-Blade, Inc., Columbus, Ohio

Filed Aug. 4, 1972, Ser. No. 277,923

Int. Cl. B60s 1/04

U.S. Cl. 15—250.42

1 Claim



An improved windshield wiper blade assembly characterized by a novel blade holder and flexible wiper blade as-

sembly which is removably mounted on the main frame means attached to the wiper element. The assembly is further characterized by a retaining means for removably mounting the flexible wiper blade in the blade holder.

3,823,438

## APPARATUS FOR HANDLING SACKS

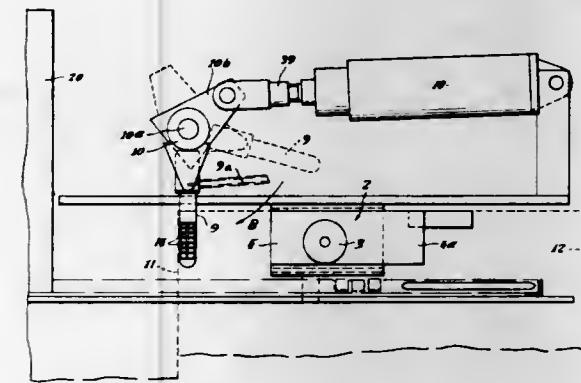
Geoffrey Terence Webber, and James Henry Winchester Thorne, both of Bristol, England, assignors to Whitehall Machinery Limited, Bristol, England

Filed Feb. 3, 1972, Ser. No. 223,248

Int. Cl. A47I 5/34

U.S. Cl. 15—304

8 Claims



Apparatus for cleaning the inner surfaces of mouth portions of sacks prior to closure, e.g., by heat sealing, has suction means to engage the two lips of the mouth portion to part them, and a finger having suction cleaning means on opposite sides which is inserted between the parted lips. The finger and sack are then relatively traversed so that the finger scans a band along each of the said inner surfaces. The means to part the lips may be vacuum heads and there may be a bellows-construction in the vacuum linkage which contracts when the head is applied to the mouth portion, thereby withdrawing the head and causing the lips to part.

3,823,439

## APPARATUS FOR SLIDABLY SUPPORTING CURTAINS AND THE LIKE

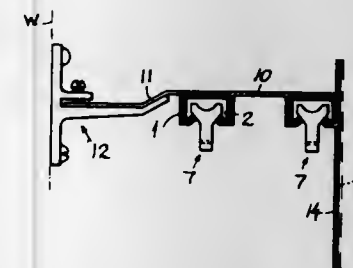
Rolf Selset, Kongleveien 5, Skedsmokorset, Norway

Filed July 13, 1970, Ser. No. 54,127

Int. Cl. A47h 1/04; E05d 13/02

U.S. Cl. 16—94 D

6 Claims



Slide members for supporting a curtain are mounted for slidable movement in a support constituted of inner and outer telescopic members having aligned slots through which pass depending stems of the slide members. Each of the sides of the slots are formed by coplanar edges of the telescopic members and the planes of the opposite sides are inclined to one another and converge downwardly and outside the telescopic members. The inclined edges can be formed by bending por-

tions of the telescopic members at the slots inwardly. The slide members have inclined side surfaces which ride on the edges of the slot.

3,823,440

## HINGE FITTING FOR SEATS WITH ADJUSTABLE BACKREST, ESPECIALLY AUTOMOTIVE VEHICLE SEATS

Gerd Klingelhofer, Remscheid, Germany, assignor to Fritz Keiper, Remscheid-Hasten, Germany

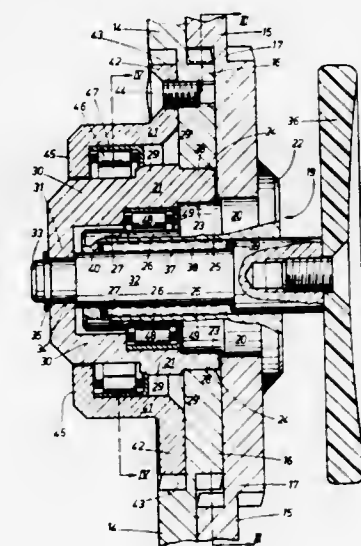
Filed June 6, 1973, Ser. No. 367,423

Claims priority, application Germany, June 7, 1972, 2227680

U.S. Cl. 16—139

Int. Cl. E05d 11/10

18 Claims



A hinge fitting for a seat, especially a motor vehicle seat, having a backrest pivotally adjustable with respect to the seat portion, in which adjusting means connect a hinge member fixed to the backrest and another hinge member fixed to the seat portion for pivotal movement with respect to each other. The adjusting means comprise an internally toothed ring gear connected to one of the hinge members, a spur gear meshing with the ring gear and connected to the other of said hinge members and having an outer diameter smaller by at least the height of one tooth than the root diameter of the gear ring, eccentric means including a pin fixed to one of the gears and an eccentric busing cooperating with the other of the gears and mounted on the pin turnable and axially movable with respect thereto, and means connected to the bushing for moving the same in axial direction between a first position in which the bushing substantially prevents turning of the other gear relative to the pin and therewith to the one gear fixed to the pin, and a second position in which the bushing can turn freely with respect to the pin and permits turning of the gears relative to each other.

3,823,441

## MEAT TENDERIZER

Edward W. Bridge, Jr., c/o Bridge Machine Co., Inc. Kennedy St., Palmyra, N.J. 08065

Filed May 18, 1973, Ser. No. 361,547

Int. Cl. A22c 9/00

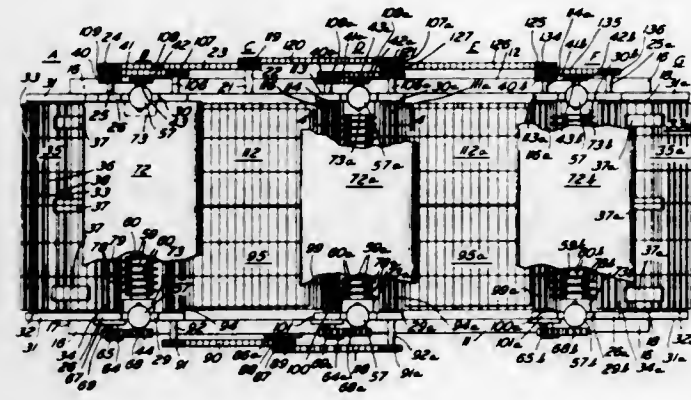
U.S. Cl. 17—26

12 Claims

Meat tenderizer apparatus is provided in which a flat piece of meat to be tenderized is fed between a set of cutter rollers, rotated in flat condition through a predetermined angle, passed between a second set of cutter rollers, rotated in flat



condition through a predetermined angle, passed between a third set of cutter rollers and delivered for use with each set of



cutter rollers cutting or breaking the meat fibers and being adjustable to accommodate different thicknesses of cutlets.

3,823,442

## EASY-ON BANDS FOR ROLLED MEATS

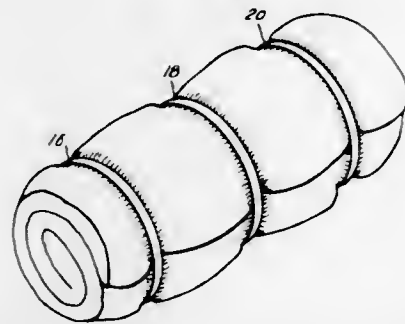
Rose S. Ferrara, 180 Christie St., Leonia, N.J. 07605

Filed Jan. 29, 1973, Ser. No. 327,600

Int. Cl. B65d 63/00

U.S. Cl. 24—16 R

1 Claim



This invention pertains to an improved means to hold rolled meats and rolled stuffed meats in a rolled shape for sale, cooking and subsequent slicing. It comprises an elastic band of a substance which will retain its full elasticity when exposed to oven temperatures up to 600° F or frying temperatures and a covering for said band comprised of standard butcher's thread. These thread covered bands, which come in various sizes, are stretched and placed over the rolled meat or rolled stuffed meat in place of conventional fastening means. These bands may be rinsed or washed and reused.

3,823,443

## PLASTIC CLASP MEANS

Teruo Takabayashi, Kyoto, Japan, assignor to Kohshoh Limited, Kyoto, Japan

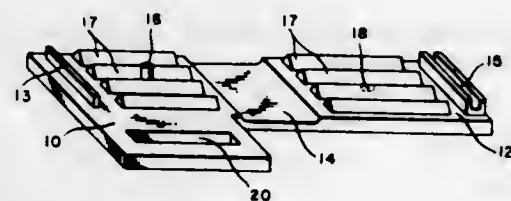
Filed Mar. 2, 1973, Ser. No. 337,691

Claims priority, application Japan, Oct. 11, 1972, 47-117448

Int. Cl. A44b 11/20, 21/00

U.S. Cl. 24—186

3 Claims



The present invention relates to a plastic clasp means comprising a first plate member, a second plate member, a band-

ble hinge member interconnecting said plate members and governing the opening and closing thereof, and a fitting means consisting of at least a couple of male and female fitting elements, said male fitting element being provided on a required position of said first plate member and said female fitting element being provided in said second plate member at a position corresponding to said position of the male fitting element, whereby when said first and second plate members are in the state of "closed," said male fitting element is fitted in said female fitting element.

3,823,444

## PLASTIC BUCKLE OR ADJUSTER

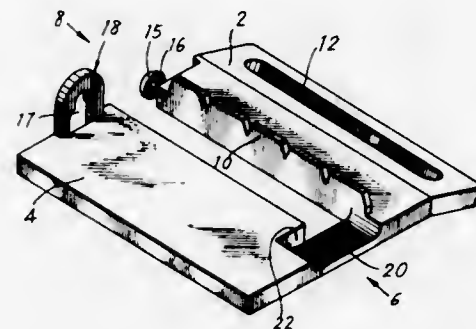
Teruo Takabayashi, Kyoto, Japan, assignor to Kohshoh Limited, Kyoto, Japan

Filed Mar. 13, 1973, Ser. No. 340,726

Int. Cl. A44b 11/12

U.S. Cl. 24—191

16 Claims



In a plastic buckle or adjuster comprising first and second plate members, one of said plate members being provided with a clamp means and a slot, each of hinge means for opening and closing said plate members comprising a laterally projecting journal provided with a generally circular stopper head of a larger diameter than that of said journal and a bearing provided with a bearing hole which is adapted to engage with said journal, and said journal being adapted to fit in the corresponding bearing.

3,823,445

## ADHESIVE SLIDE FASTENER INSTALLATION

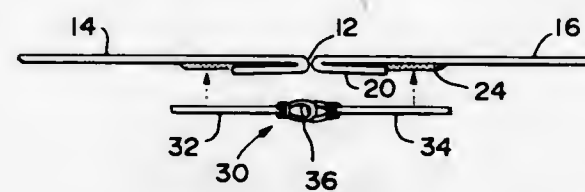
Anna Belle Rivers, Garden City, N.Y., assignor to Textron Inc., Providence, R.I.

Filed July 18, 1972, Ser. No. 272,998

Int. Cl. A44b 19/00

U.S. Cl. 24—205.1 R

7 Claims



A slide fastener installation wherein a pair of fabric sections each has a folded portion and a slide fastener has a pair of carrier tapes, is completed by adhesively bonding each folded portion to its fabric section and each carrier tape to its corresponding folded portion.

3,823,446

## COIL FASTENER SLIDER HAVING LOCKING RIDGE

Karl W. Labecki, Bayside, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,306

Int. Cl. A44b 19/30

U.S. Cl. 24—205.14 R

9 Claims

3,823,448

## MULTI-PURPOSE FLUID YARN TREATING APPARATUS

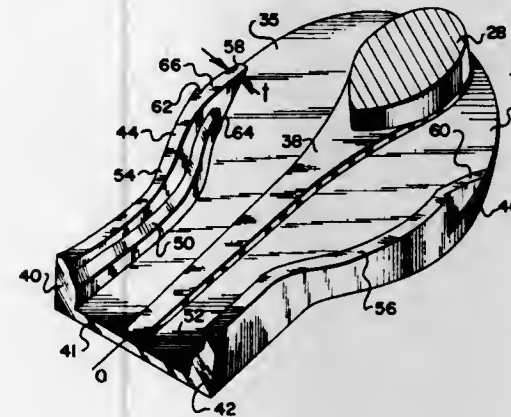
John D. Roberts, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,611

Int. Cl. D02g 1/16

U.S. Cl. 28—1.4

3 Claims



A slider for a coil fastener formed by helically wound plastic strips having control walls formed partway along the sides of the slider to guide the strips. At a termination area of the end of each control wall a locking ridge is formed as an integral part of the slider. Each locking ridge has an inclined surface corresponding to the helical pitch of the strips and a thickness such that when the strips are pulled apart in an extreme disengaging position, the locking ridge will engage between adjacent coils and prevent further movement of the slider.

3,823,447

## INTEGRAL CASKET HANDLE AND BASE WITH CONCEALED HINGE

Bennie R. Johnson, R. R. 3, Connorsville, Ind. 47331

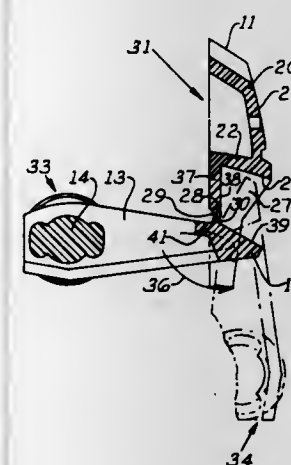
Division of Ser. No. 102,611, Dec. 30, 1970, Pat. No.

3,698,037. This application May 11, 1972, Ser. No. 252,365

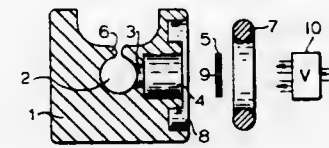
Int. Cl. A61g 17/04

U.S. Cl. 27—2

8 Claims



A casket handle integrally connected to a base by means of a concealed hinge. A flexible wall having laterally extending grooves on either side of the wall is integrally connected to a base securable to a casket. The flexible wall is also integrally connected to a second wall having arms and a carrying bar integrally attached thereto. A curved lip extends outward and downward from the base cooperatively with the second wall concealing the flexible wall when the carrying bar and arm are pivoted forward of the base.



A multi-purpose fluid yarn treating apparatus and process, the apparatus having a yarn processing bore and at least one fluid entry port having a recess designed to accommodate any one of a plurality of inserts. The inserts have the ability to change the direction, diameter, number and cross-section of fluid entry orifices.

3,823,449

## APPARATUS FOR INTERLACING YARNS

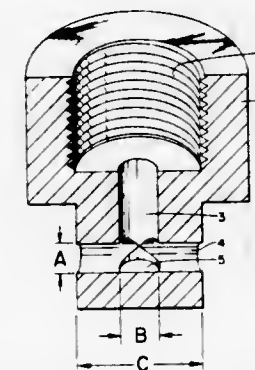
Ernest J. Grisot, Jr., Asheville, N.C., assignor to Akzona Inc., Asheville, N.C.

Filed Dec. 27, 1971, Ser. No. 211,997

Int. Cl. D02g 1/16

U.S. Cl. 28—1.4

9 Claims



Various embodiments of apparatus for interlacing yarn are disclosed wherein use is made of indentations or "dimples" in the yarn channel to create a turbulent reaction, thereby enhancing the turbulent action. Methods of use of the apparatus are also disclosed.

3,823,450

## TEXTURING JET

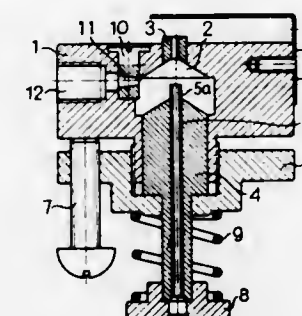
Waclaw Ankudowicz, ul. Zwirki 8 m.7; Stanislaw Karol Kurzyniec, ul. Lutomska 69 m.26, and Tadeusz Jozef Bieganski, ul. Wolborska 1 m.66, all of Lodz, Poland

Filed Apr. 6, 1973, Ser. No. 348,718

Int. Cl. D02g 1/16

U.S. Cl. 28—1.4

7 Claims



A texturing jet designed for yarns being textured by a pneumatic operation in which the jet is self-chargeable with yarn by moving a bolt relative to a texturing chamber. The chamber



includes a variable control pin through which a jet of air is conveyed to the texturing chamber to permit processing yarns made of various raw materials and having different twist orientations so as to obtain any desired texturing effect.

3,823,451

## BEAM SHAFTING APPARATUS

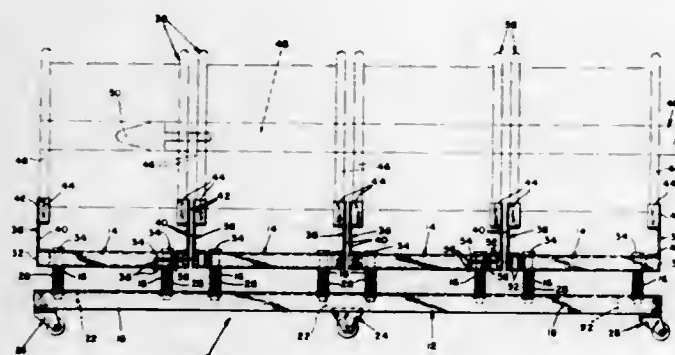
Harold E. Faile, Greensboro, N.C., assignor to Guilford Mills, Inc., Greensboro, N.C.

Filed Jan. 15, 1973, Ser. No. 323,875

Int. Cl. D03j 1/00

U.S. Cl. 28—41

12 Claims



An apparatus for facilitating the positioning of a plurality of yarn beams upon a common support shaft having a tapered nose cone includes a wheeled frame having a plurality of beam-supporting sub-assemblies mounted thereon for displacement relative to the frame and relative to each other for axially aligning yarn beams supported upon the sub-assemblies for receiving the support shaft. Adjacent sub-assemblies may be interlocked for displacement together as a unit when supporting a beam having a length greater than a single sub-assembly.

3,823,452

## METHOD OF FORMING PLEATED FABRIC

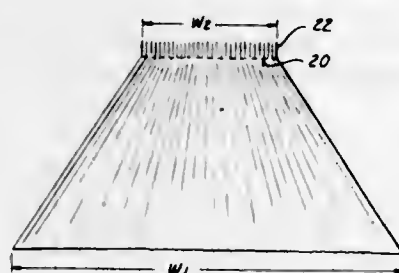
Layton Bruce Harrow, 306 W. 100th St., New York, N.Y. 10025

Filed Dec. 13, 1972, Ser. No. 314,780

Int. Cl. D06c 23/04

U.S. Cl. 28—72 FT

11 Claims



A method of making a pleated decorative fabric in which a length of light and relatively sheer fabric woven from natural fiber yarns first is shirred adjacent to one end thereof in the direction of the fabric weft to reduce the fabric width by a factor of about one third, then is treated to remove the yarn size as by washing in a detergent and rinsing, then is wrung around an axis extending in the direction of the fabric warp and finally is dried to produce the desired pleated fabric.

### 3,823,453 METHOD OF MANUFACTURING AN INDIRECTLY HEATED CATHODE AND CATHODE MANUFACTURED ACCORDING TO THIS METHOD

Antonius Johannes Albertus Van Stratum, and Theodorus Hendrikus Weekers, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

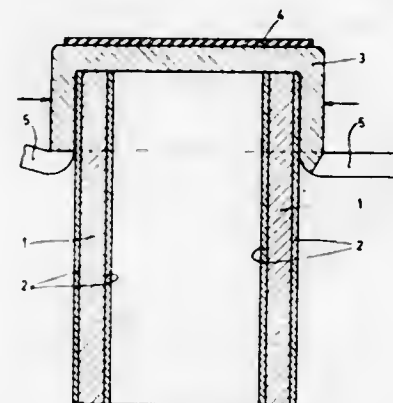
Filed Nov. 29, 1972, Ser. No. 310,347

Claims priority, application Netherlands, Dec. 16, 1971, 7117226

Int. Cl. H01j 9/00

U.S. Cl. 29—25.14

4 Claims



A cathode cap is welded to a metal cylinder over a black sintered metal layer which contains from 60 to 10 percent by weight of metal oxide and which covers the whole cylinder.

3,823,454

## MACHINE FOR PROCESSING FLEXIBLE METALLIC CONDUIT

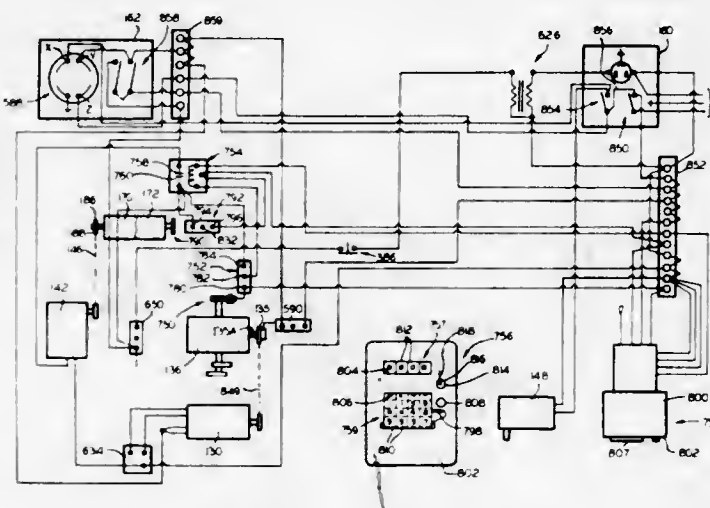
William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest

Filed May 24, 1973, Ser. No. 363,347

Int. Cl. B23p 21/00

U.S. Cl. 29—33 K

4 Claims



Improvements in the machine described in the applicant's U.S. Pat. No. 3,672,015 wherein the conduit roller feeding drive of the machine includes a reset counter arrangement in which the idler roller of the drive operates a toothed rotary cam cooperating with a microswitch follower to send counting pulses to a reset counter that shows the amount of the conduit length to be fed, and that is being fed, through the machine, with the counter providing a visual showing of the footage involved for the conduit, length being formed and automatically is reset to zero after each set of conduit lengths is formed showing the correct instantaneous running footage of the next set of conduit lengths being processed by the machine. The functioning of the roller drive is controlled by a constant

speed cam arrangement operating a second microswitch to start the feeding action, with the counter shutting off the roller drive, and resetting itself when the desired conduit length has been fed through the machine. When, for reasons of roller slippage or the like, the desired conduit length is not fed through the machine during its normal cycle, the cam arrangement involved shuts off the roller drive independently of the counter, and the counter resets itself to again show zero running footage.

3,823,455

## RAIL POLISHING MACHINE

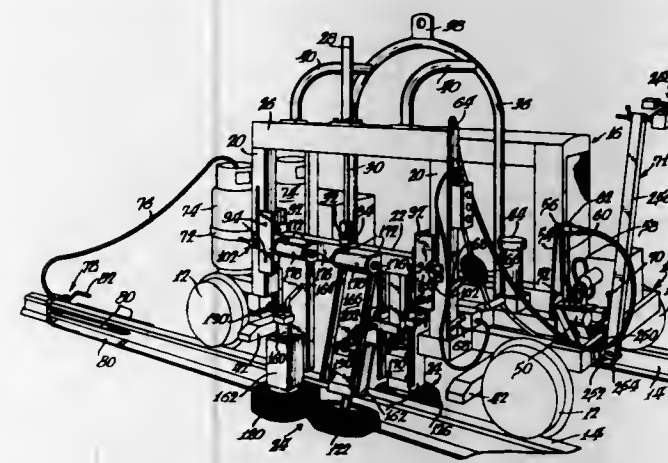
William P. McIlrath, and Frederick W. Holstein, both of Racine, Wis., assignors to Racine Railroad Products, Inc., Racine, Wis.

Filed Nov. 9, 1972, Ser. No. 305,153

Int. Cl. B23p 23/04

U.S. Cl. 29—33 R

10 Claims



Apparatus for preparing the junction of two rails on a railroad right-of-way for application of a bonded rail joint or a welded joint. The apparatus includes a frame mounting flanged wheels for movement along a railroad right-of-way and a vertically movable carrier mounting opposed pairs of rotary abrading devices which are adapted to abrade and clean the underside of the head of the rail, the web and the upper surface of the foot of the rail. A vehicle defined by the frame also includes a source of bottled gas for fueling a burner customarily used in the process of applying bonded rail joints as well as an auxiliary abrading device for use in deburring rail ends, etc.

3,823,456

## METHOD OF MANUFACTURING A ROLLER

Siegfried Schneider, Durrnhaar; Kurt Thate, Munich; Erwin Geyken, Munich; Horst Kempe, Munich, and Stephen Macher, Munich, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed July 2, 1973, Ser. No. 375,850

Claims priority, application Germany, July 1, 1972, 2232424

Int. Cl. B21h 1/14

U.S. Cl. 29—148.4 D

11 Claims



A method of making a roller which is to be used in apparatus for wet treatment of photographic material and which comprises a hollow metallic core and two inserts with coupling

shafts provided therein. A coat of chemically resistant thermoplastic material is applied around and sealingly surrounds the core to protect it from the corrosive action of media used in the wet treatment process. The outer surface of the thus coated roller is thereupon machined to a high-quality finish.

3,823,457

## METHOD OF FABRICATING A HEAT EXCHANGER HAVING TWO SEPARATE PASSAGEWAYS THEREIN

Frans Adrianus Staas; Jan Leedert Melse; Johannes Van Esdonk; Adrianus Petrus Severijns, and Adrianus Pieter Van De Mosselaer, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

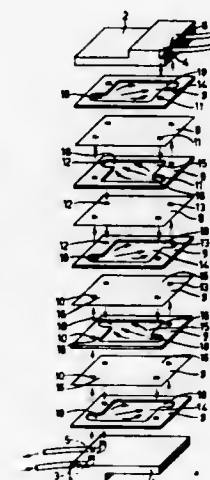
Filed Mar. 5, 1973, Ser. No. 337,953

Claims priority, application Netherlands, Mar. 11, 1972, 7203268

Int. Cl. B21d 53/02; B23p 15/26

U.S. Cl. 29—157.3 D

5 Claims



A method of manufacturing a heat exchanger for exchanging heat between helium flows in a temperature range below 2K, comprising two end plates having inlet and outlet apertures, and a stack of very thin foils arranged between the end plates with passageways that extend transverse to the planes of the foils and separate ducts in the planes of the foils which communicate with the passageways. During manufacture the foils are attached with supports provided between foils, which supports are removed by means of a rinsing liquid after the foils have been soldered to each other.

3,823,458

## METHOD OF MANUFACTURING A SPIRALLY WOUND HEAT EXCHANGER

Etienne Jouet, 19 Rue du Panorama, 95 Montigny-Les-Corbeilles, and Pascal Rebuffe, 18 Rue des Sevrès, Boulogne-Billancourt, both of France

Continuation-in-part of Ser. No. 290,518, Sept. 20, 1972, which is a division of Ser. No. 888,591, Dec. 29, 1969, Pat. No. 3,705,618. This application July 24, 1973, Ser. No. 382,183

Claims priority, application France, Dec. 27, 1968, 68.181215; June 20, 1969, 69.20823; July 8, 1969, 69.23092

Int. Cl. B21d 53/02; B23p 15/26

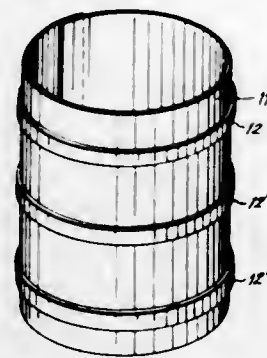
U.S. Cl. 29—157.3 R

5 Claims

A method of manufacturing a heat exchanger of the type having two cylindrical chambers wound in self-enclosing spirals, including enveloping the chambers by an outer jacket,



encompassing the chambers and jacket with binding strips, encasing the thus formed assembly by a hoop, positioning a



lower joint about the jacket, and pouring a moldable packing substance in the annular space between the jacket and inner wall of the hoop.

3,823,459

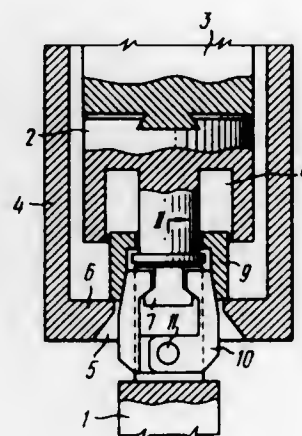
# MECHANISM FOR THE CONNECTION OF A DUMMY BAR WITH ITS HEAD

Nikolai Vladimirovich Molochnikov, Prospekt Mira, 103, kv. 227; Abram Khaimovich Charny, Izmailovsky bulvar, 46/30, kv. 6, and Vladimir Alexandrovich Prokhorov, Kuskovskaya ulitsa, 67, korpus 4, kv. 54, all of Moscow, U.S.S.R.

Filed Apr. 30, 1973, Ser. No. 355,965  
Int. Cl. B23p 19/00

U.S. Cl. 29—200 R

1 Claim



A mechanism for the connection of a dummy bar with its head is intended for continuous metal casting machines having a basket with an opening in its bottom part for the reception of a cut ingot, said opening being sufficient for the passage of the dummy bar.

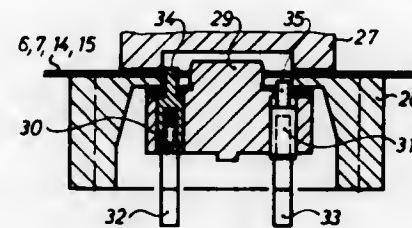
The mechanism for gripping a shank of the dummy bar head has grippers secured on the upper face of said dummy bar and made with chamfers on their upper portion of the outer side surface; besides, there is a ring with a taper portion on the lower part of the inner side surface, which matches the chamfers of the grippers, said ring being set on the abovementioned portion of the outer side surface, while the dummy bar head is provided with a circular groove on the lower face portion, the sizes of said groove corresponding to the sizes of said ring fitting into the groove.

## 3,823,460 APPARATUS FOR THE ALIGNMENT OF BLANKS FOR MOTOR PLATES

Ewald Bergmann, Goppingen, Germany, assignor to L. Schuler GmbH, Goppingen, Germany  
Division of Ser. No. 75,453, Sept. 25, 1970, abandoned. This application Dec. 13, 1972, Ser. No. 314,529  
Int. Cl. H05k 13/00; H02k 15/00

U.S. Cl. 29—203 L

11 Claims



Apparatus for the alignment of blanks for motor plates, which blanks are cut from material having a trapezoidal cross section. The apparatus includes a ring member and a mandrel located in the opening of the ring member. The mandrel is provided with a plurality of registering elements operative in an alternating manner between an operating position and a rest position whereby each blank received by the apparatus is rotated in its plane with respect to a preceding blank so that the blanks, when superimposed, for a stack having a rectangular cross section.

3,823,461

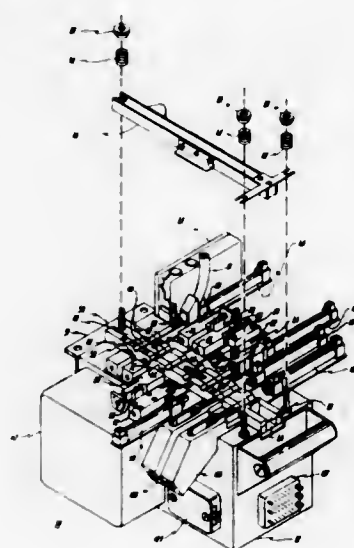
# TRANSPORT ASSEMBLY

Howard J. Squires, Rochester, and Donald C. Rimlinger, Holcomb, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Division of Ser. No. 366,938, June 4, 1973. This application Nov. 16, 1973, Ser. No. 416,538  
Int. Cl. H01r 43/00

U.S. Cl. 29—203 P

6 Claims



A reed switch analyzer for testing the mechanical and electrical characteristics of reed switches employs a unique transport assembly in a test head for advancing the reed switches through various test stations and timer means for synchronizing the operation of the test head with the reed switch manufacturing machine so that the test head is compact and is easily and conveniently added to or removed from the manufacturing machine without interfering with its operation. The test head provides test result signals for separating good switches from the bad ones and for providing feedback information to the machine operator for quality control purposes as the switches are automatically received from the manufacturing machine.

## 3,823,462 EXTRACTOR TOOL

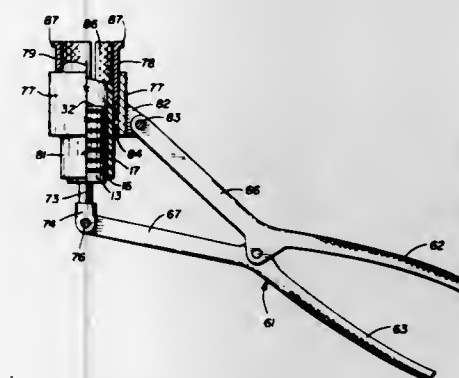
Masami Kanda, 1515 W. 48th Ave., Denver, Colo. 80221

Filed Sept. 11, 1972, Ser. No. 287,949

Int. Cl. B23p 19/02

U.S. Cl. 29—268

3 Claims



A tool to facilitate the extraction of the broken components of a sprinkler system from the interior of conduit pieces used and/or to facilitate the disassembly of such sprinkler systems. The conduit is held while an element exerts a leverage derived force against the sprinkler system component whereby the conduit and component are moved reciprocally apart. Knurled or toothed surfaces are provided on element engaging faces for the efficient transmission of the leverage forces derived from plier or screw elements.

3,823,463

# METAL POWDER EXTRUSION PROCESS

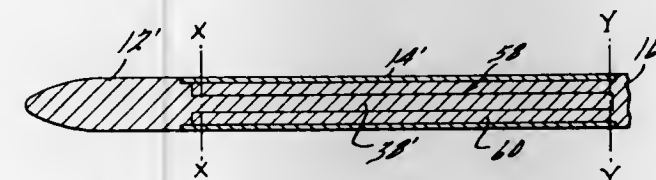
Don M. Weaver, Birmingham; Steven H. Reichman, and Buddy W. Castledine, both of Ann Arbor, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed July 13, 1972, Ser. No. 271,544

Int. Cl. B22f 3/24

U.S. Cl. 29—417

4 Claims



A ductile extrusion container and a process for consolidating metal powder into a dense mass which incorporates one or a plurality of longitudinally extending core elements of a different material embedded therein. The core elements are subsequently removed, such as by machining or leaching, producing a billet having one or a plurality of elongated apertures at preselected locations therethrough.

3,823,464

# METHOD OF SECURING TOGETHER TWO ALUMINUM CONTAINING PARTS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Continuation-in-part of Ser. No. 93,823, Nov. 30, 1970, abandoned. This application Mar. 19, 1973, Ser. No. 342,357  
Claims priority, application France, Dec. 1, 1969, 69.41380

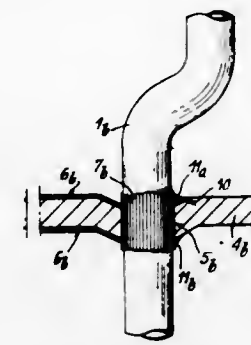
Int. Cl. B23k 31/02

U.S. Cl. 29—470.5

6 Claims

A method of securing two aluminum parts, one within the other, comprising deforming the material of one part in the area to be secured to the other part to create groove spaced

protrusions extending beyond the normal boundary of the engaging area of the other part, pressing said parts together to engage said protrusions with the boundary of the other part with sufficient friction to retain said parts in position, and then



submitting said engaged parts to brazing operation, the protrusions being partly compressed and deformed into the grooves so as to provide passages permitting flow, by capillary action, of liquid brazing alloy thereto.

3,823,465

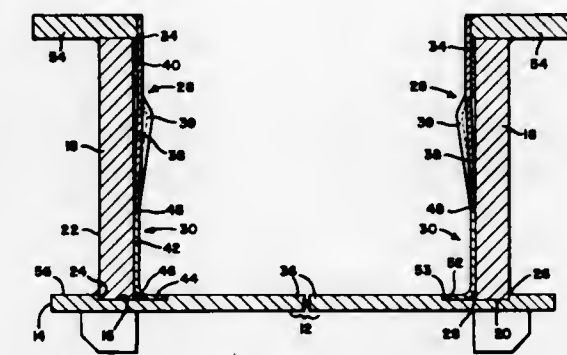
# METHOD OF CONSTRUCTING A COMPOSITE FORM WITH LINER PLATES

Theodore W. Shoe, Fletcher, and Robert E. Smith, Kettering, both of Ohio, assignors to The Flexicore Co., Inc., Dayton, Ohio

Division of Ser. No. 207,189, Dec. 13, 1971, Pat. No. 3,750,998. This application Apr. 2, 1973, Ser. No. 347,151  
Int. Cl. B23k 31/02

U.S. Cl. 29—471.3

7 Claims



A composite slab casting form particularly adapted to resist the transverse deflection forces generated by the weight of concrete in the form. The base or pan of the form is constructed from a relatively thick, flat, plate member having a pair of longitudinally extending notches machined in its upper surface. A pair of relatively thin liner plates are bent about longitudinally extending axes to form base leg portions and side leg portions joined by a smoothly curved connecting section. The liner plates are mounted on the pan with the base leg portions thereof received in the notches. Longitudinally extending voids are defined by the inner ends of the base leg portions and opposing portions of the notches in the pan and these voids are filled with a welding material, which is thereafter ground to provide a smooth flat surface coplanar with the upper surface of the pan and the adjoining surface of the liner plate. In bending the liner plates to provide the base and side leg portions the base leg portions are formed long enough to space the above mentioned welding material far enough away from the connecting section that the welding material can be readily ground with conventional tools without gouging, undercutting or otherwise blemishing the surfaces of the form.



3,823,466

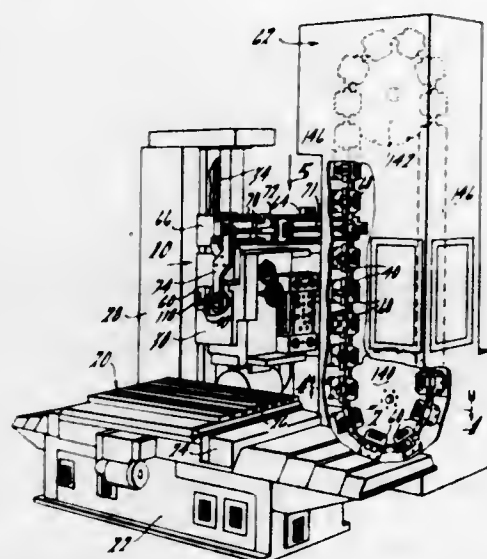
**MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MECHANISM**

Richard A. Jerue, Birmingham, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Division of Ser. No. 30,630, April 22, 1970, Pat. No. 3,689,988. This application Apr. 11, 1972, Ser. No. 242,927 Int. Cl. B23q 3/157

U.S. Cl. 29—568

6 Claims



An automatic tool changing machine tool in which tools are selected from a tool storage device and transported to a position adjacent the drive spindle of the machine. From this position, a selected tool is inserted automatically in the drive spindle of the machine when it is ready to be used. The tools are coupled to pallets or carriers having handles which are engaged by various tool gripping elements in transporting the tool from the storage device to the spindle. The carriers also serve to mount coding for identifying the tool and conveying certain dimensional characteristics of the tool. Each carrier remains with its tool at all times and is only rotationally uncoupled from its tool after the tool has been inserted in the drive spindle.

3,823,467

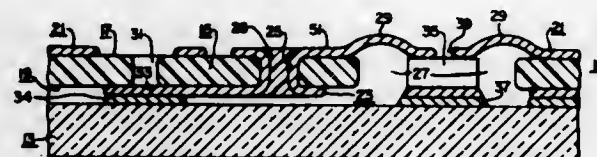
**SOLID-STATE CIRCUIT MODULE**

Maurice B. Shamash, Randallstown; Stephen G. Konsowski, Glen Burnie; Frank A. Lindberg, Baltimore, and Seymour J. Ponemone, Randallstown, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 7, 1972, Ser. No. 269,689 Int. Cl. B01j 17/00

U.S. Cl. 29—580

9 Claims



There is disclosed a solid-state circuit module with the integrated circuits, regardless of what type, mounted back-down on a substrate to improve cooling of the active surfaces. A method of making such a module is also disclosed. The integrated circuits are positioned in openings or windows in a sheet of polyimide having, formed on its surface by printed circuit techniques, appropriate patterns of conductor sections

or strips or lines with certain strips extending cantilever-like from one surface of the sheet over the openings. The terminals of the integrated circuits are connected, typically by ultrasonic bonding, to the ends of the cantilever-like strips. The sheet unit thus formed is mounted on, and its strips are appropriately connected to, a substrate, typically of alumina. The sheet is formed with pads which are diffusion bonded to the substrate, typically by bonding to metal, typically gold. The backs of the integrated circuits are likewise bonded to the substrate.

3,823,468

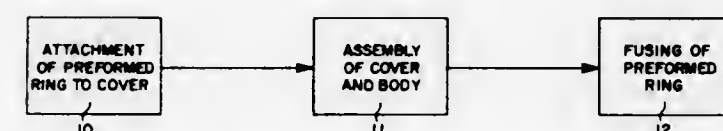
**METHOD OF FABRICATING AN HERMETICALLY SEALED CONTAINER**

Norman Hascoe, 156 Country Ridge Dr., Portchester, N.Y. 10573

Filed May 26, 1972, Ser. No. 257,390 Int. Cl. B01j 17/00; H01l 1/10

U.S. Cl. 29—588

4 Claims



A conductive hermetic sealing cover for a container is fabricated by disposing the cover with a superimposed preformed heat-fusible conductive ring having outer dimensions similar to those of the cover in a shallow cavity of a non-conductive supporting member, the cavity having dimensions only slightly larger than those of the cover to secure registration between the ring and the periphery of the cover. A plurality of pairs of spaced electrodes are resiliently engaged with the ring with substantially equal contact pressures and a separate pulse of current is passed between the electrodes of each pair and through the ring and the cover, thereby producing an effective spot weld between the ring and the cover adjacent each of the electrodes. The term "ring" is used herein and in the appended claims in its generic sense to include a closed loop of conductive material of any configuration corresponding to the periphery of the cover, usually round or rectangular. The cover so fabricated is then applied to seal a container consisting of a body having a cavity therein by assembling the cover on the body with the sealing ring in contact with the body surrounding the cavity and then heating the assembly to a temperature sufficient to fuse the ring to the cover and to the body.

3,823,469

**HIGH HEAT DISSIPATION SOLDER-REFLOW FLIP CHIP TRANSISTOR**

Brian Anthony Hegarty, and Lewis Herbert Trevaill, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

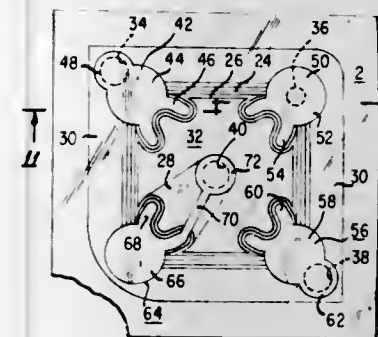
Division of Ser. No. 138,244, April 28, 1971, Pat. No. 3,772,575. This application Aug. 27, 1973, Ser. No. 391,665 Int. Cl. B01j 17/00

U.S. Cl. 29—589

1 Claim

An improved method of flip-chip mounting a semiconductor device, such as a transistor, on a pattern of electrical conductors carried on an insulating substrate, comprising providing the device chip with a glass protective layer and on the glass layer metallized bonding pads adjacent to the corners of the chip. Each of the bonding pads includes a relatively wide portion adapted to contain a relatively high mound of solder, and a second portion of a relatively narrow width capable of holding only a thin layer of solder. The thin solder layers overlie heat-generating P-N junction portions of the device. The conductors on the substrate have solder-wettable portions of larger areas than the bonding pads on the chip. Solder balls

are placed on the wide portions of the bonding pads and melted to reflow the solder. The chip is then placed face down over the conductors on the substrate and the solder is again



reflowed so that the relatively high mounds collapse to the thickness of the thin solder layer portions and the relatively thin solder layer portions are joined directly to the substrate conductors.

3,823,470

**METHOD AND APPARATUS FOR TRIMMING MECHANICAL FILTERS**

Hans Albsmeier, Munich, and Alfhart Gunther, Haar, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin &amp; Munich, Germany

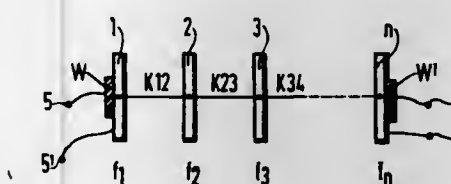
Filed Sept. 24, 1971, Ser. No. 183,404

Claims priority, application Germany, Sept. 30, 1970, 2048125

Int. Cl. G01r 17/00; H03h 9/00

U.S. Cl. 29—593

10 Claims



Mechanical filters composed of mechanical resonators previously individually trimmed to design resonance frequencies, which are coupled to each other in succession by mechanical coupling elements, are subjected to trimming after assembly as determined by measurement of the coupled oscillations of the completed filter. This measurement is carried out under control of a computer appropriately linked by other equipment to the filter transducers. The computer identifies the frequencies of coupled oscillations and their differences from design values, and calculates the variation from design values of one or more elements of the corresponding filter matrix. By these values the computer develops settings for a trimming device for successively trimming elements of the filter such as resonators, or coupling elements, or both. In the most simplified arrangement and method, only variations of the null condition of one matrix element are considered, and the derived corrections are applied in equal parts to each of symmetrically disposed paired coupling elements.

3,823,471

**PLASTIC SAFETY RAZOR**

Ray L. Stone, Hemlock Terrace, P.O. Box 567, Croton Falls, N.Y. 10519

Filed Dec. 5, 1972, Ser. No. 312,297

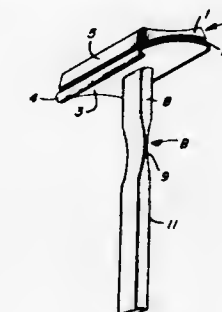
Int. Cl. B26b 21/52, 21/06

U.S. Cl. 30—85

4 Claims

A light, plastic razor except for the metal blade therein comprising a plastic cover, a guard plate, a metal blade between said guard plate and said cover, a guard edge jux-

taped below the blade edge and joined to said guard plate, a handle attached to the bottom surface of the guard plate and rectilinearly extending therefrom along a plane which is essentially perpendicular to the bottom surface, which handle is fragmented into three sequential sections, the first section is a non-flexible, rigid plastic member, the second section, which



is directly joined to said first section and the third section, is a non-stretchable flexible, elongated plastic member having a cross-sectional area, determined perpendicular to its length, which is substantially less than the corresponding cross-sectional area of the first and third sections, and the third section is a non-flexible, rigid plastic member extending from the second section.

3,823,472

**GRASS CATCHER FOR LAWN TRIMMING SHEARS**

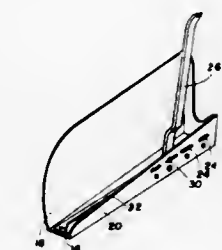
Ronald A. Richards, Victoria, British Columbia, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed June 8, 1973, Ser. No. 368,114

Int. Cl. B26b 13/22

U.S. Cl. 30—131

4 Claims



A device adapted for use with a lawn trimming shears having horizontal shears and an elongated inclined handle. A bottom horizontal elongated plate having a longitudinally extending guide on top is disposed under the shears with the bottom blade along the guide. Vertical parallel side members extend upwards from opposite sides of the plate. One member extends upward only a short distance and has a plurality of horizontally aligned spaced slots. An elongated bar is pivotally secured at its bottom end to the inside of the plate at one or another of the holes. The bar is removably secured to the handle.

3,823,473

**BLADE ATTACHMENT MEANS FOR SABER SAW ASSEMBLY**

Simon J. Hoffman, P.O. Box 748, Saratoga, Calif. 95070 Division of Ser. No. 97,425, Nov. 9, 1970, Pat. No. 3,750,283. This application Apr. 20, 1973, Ser. No. 353,146

Int. Cl. B27b 19/08

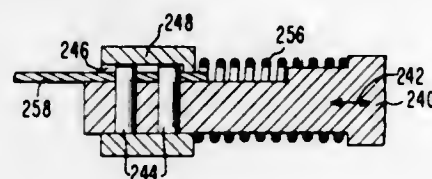
U.S. Cl. 30—338

1 Claim

Means for attaching a saber saw blade to the reciprocating portion of a saber saw assembly, wherein the blade can be releasably secured to the reciprocating portion which has means biased in a manner to hold the blade in such position. A



number of embodiments of the attachment means provide for quick coupling and release of a saber saw blade to the assembly. In one group of embodiments, a blade holding means utilizes a torsion spring and in a second group of embodi-



ments, the attachment means utilizes a compression spring. The support for the attachment means can be provided with any one of a number of improved abutments for engaging a workpiece. The support can be provided with means for moving the blade in a direction away from the kerf in a workpiece.

3,823,474

## CARRYING FRAME FOR POWER SAW

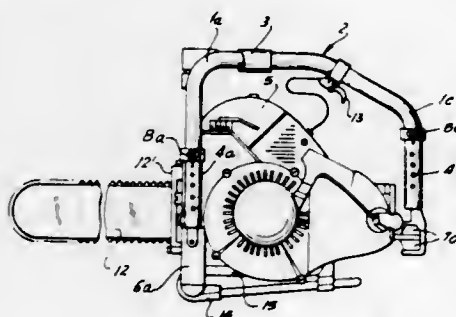
Mihai Ionescu, Brasov, Romania, assignor to Institutul DE Cercetari si Proiectari Pentru Industria Lemnului, Bucharest, Romania

Filed May 2, 1973, Ser. No. 356,352

Int. Cl. B27b 17/02

U.S. Cl. 30-383

10 Claims



A power saw, e.g. for cutting logs, is mounted on a skid-supported base connected at three points (partly by way of the saw motor) to a three-legged carrying frame. The legs of the frame are telescopically received in respective sockets in which they are independently adjustable with the aid of indexing pins and clamping collars.

3,823,475

## DENTIST'S WORKING TOOL

Erich Heubeck, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

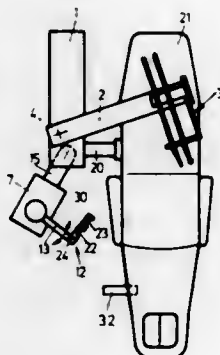
Filed Nov. 24, 1971, Ser. No. 201,781

Claims priority, application Germany, Dec. 8, 1970, 2060278

Int. Cl. A61c 19/02

U.S. Cl. 32-22

11 Claims



A working tool for dentists has a stand located at the side of the patient's chair and having an expectorating base carrying a

cup or funnel for spitting and possibly a mouth spray, as well as a holder for hand carried pieces, such as sprayers and suction hand pieces. The invention is characterized in that the stand has a vertical axis about which the expectorating base swings and that the base also has a vertical axis about which an arm swings. The arm has at its free end a holder for the hand carried pieces.

3,823,476

## SUPPORT STRUCTURE FOR DENTAL MODELS

Robert Clive Hudson, 27, Crimicar Ln., Fulwood, Sheffield, and John Richards, 11, Badger Dr., Woodhouse, Sheffield, both of England

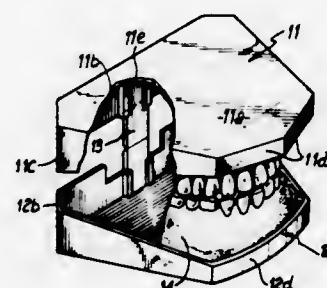
Filed June 4, 1973, Ser. No. 366,345

Claims priority, application Great Britain, June 6, 1972, 26244/72

Int. Cl. A61c 11/00

U.S. Cl. 32-32

7 Claims



A support structure for orthodontic models comprises two trays arranged in opposed disposition and pivotally connected together by a hinge means which permit relative motion of the trays in simulation of the relative movement of upper and lower jaws. The hinge means is separable from at least one of the trays in a manner such that the trays can be separated linearly as well as pivotably. The hinge means is a one-piece, normally rectilinear hinge plate having each opposite end slidably received in rectilinear guide means on the rear wall of each tray.

3,823,477

## DENTAL HYGIENE TOOL

John R. Hedrick, La Crescenta, Calif., assignor to Pevrick Engineering Co., Inc., Sun Valley, Calif.

Filed Feb. 23, 1972, Ser. No. 228,674

Int. Cl. A61c 3/06

U.S. Cl. 32-58

8 Claims



A dental hygiene tool to be connected to a sonic actuator wherein the connection to the actuator comprises an interfitting metallic ring assembly, the rings interfitting in an interfitting manner to establish an extremely tight metal contact to efficiently transmit sonic vibrations.

3,823,478

## DRAFTING DEVICE

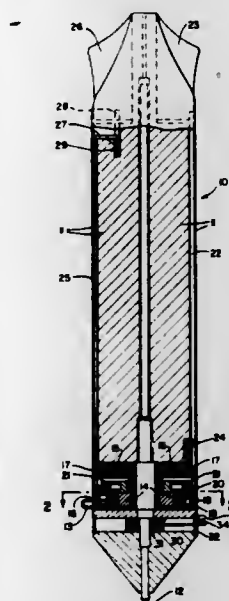
George T. Farnos, 2207 Carroll St., Apt. 1, Oakland, Calif. 94606

Filed Nov. 10, 1972, Ser. No. 305,622

Int. Cl. B431 11/04, 11/06

U.S. Cl. 33-30 E

8 Claims



A drafting device for drawing ellipses, spirals and other complex figures is disclosed. The drafting device has a substantially vertical shaft with a writing point at the lower end thereof, and the apparatus required to draw the complex figures is contained substantially within the vertical shaft. Separate ellipse-forming and spiral-forming strings are draw-able from the interior of the vertical shaft, and can be used in combination with pins or thumb tacks to draw a variety of complex shapes.

3,823,479

## DRAWING INSTRUMENT

Yoshitomi Komabayashi, and Tadayoshi Iwai, both of Tokyo, Japan, assignors to Muto Industrial Company Ltd., Tokyo, Japan

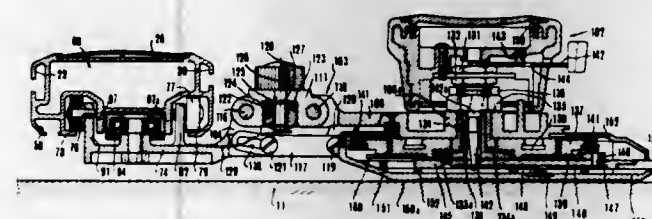
Filed July 21, 1971, Ser. No. 164,767

Claims priority, application Japan, Dec. 28, 1970, 45-135592; Apr. 13, 1971, 46-27959

Int. Cl. B431 13/02

U.S. Cl. 33-76 R

2 Claims



A drawing machine comprising a protractor and a mechanism for effecting angular displacement of ruler means. The instrument further comprises a dial which is attached to a head movable along the X-Y ordinate axis on the drawing board and parallel thereto. The dial is graduated in degrees and minutes of angles for indicating an angular displacement of the ruler means represented by a variation in the relative positions of the protractor and ruler means. The angular displacement of the ruler means is indicated in degrees by the position of an index on the scales of the protractor and/or in minutes by the amount of deflection of a pointer on the dial.

3,823,480

## BATTER BOARDS

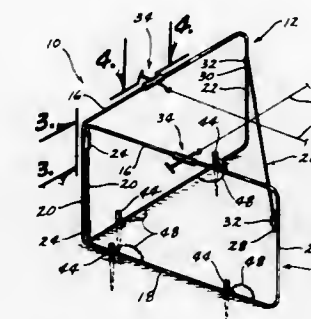
Thomas B. Grundman, 513 Park Ave., Cherokee, Iowa 51012

Filed May 17, 1972, Ser. No. 250,834

Int. Cl. E04g 21/18

U.S. Cl. 33-86

4 Claims



A pair of frames rectangular in shape are formed from circular in cross section material and pivotally interconnected at one end with the opposite ends being held in spaced apart 90° relationship by a brace member. The top frame portion of each frame includes a rotatable and slidable line holder having a hand-adjustable setscrew. A pair of stakes are secured to the bottom frame portions of each frame by flexible chains and include flanges for engaging the bottom frame portions when the stakes are driven into the ground for holding the batter boards in place.

3,823,481

## FRAMING LAYOUT JIG

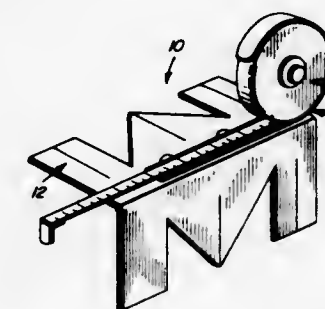
Everett E. Chapin, Latrobe, Calif., assignor to Josephine A. Chapin, Latrobe, Calif., a part interest

Filed Sept. 25, 1972, Ser. No. 291,632

Int. Cl. B431 7/00

U.S. Cl. 33-96

6 Claims



A framing layout jig having a frame provided with measuring indicia and marking surfaces, and a bracket for cooperatively connecting a conventionally marked tape measure to the frame for measuring distances for a framing layout. The frame has a pair of similar leg portions arranged at a right angle with respect to one another so as to fit along the edge of framing plates and the like. The bracket is pivotally mounted on one of these leg portions, and has a portion which retainingly embraces a substantial portion of a periphery of the housing of the tape measure.

3,823,482

## INSPECTION MACHINE HAVING RIGHT ANGLE PROBE UNITS

Frederick S. Schiler, Stow, Ohio, assignor to Portage Machine Company, Akron, Ohio

Filed June 19, 1972, Ser. No. 264,005

Int. Cl. G01b 3/22, 5/00

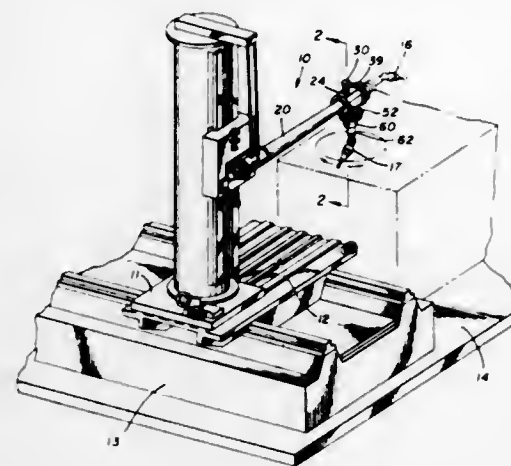
U.S. Cl. 33-169 R

3 Claims

An inspection machine of the type set forth in Applicant's prior U.S. Pat. No. 3,279,079 further characterized by the



provision of a second probing head adapted to perform at the outboard end of the inspection arm at right angles to the first



probing arm whereby at least two surfaces can be checked without moving the work piece. Operation after setting is remote from the point of inspection.

3,823,483

## INSPECTION MACHINE

Christopher Leslie Bartlett, Bristol, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

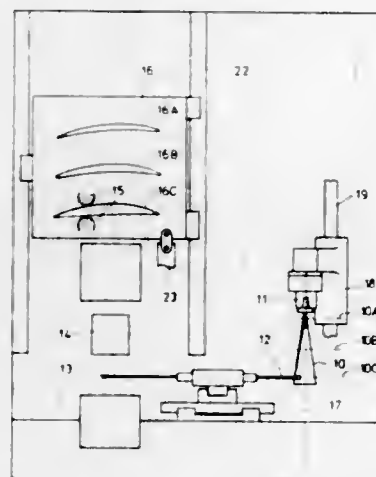
Filed May 15, 1972, Ser. No. 253,402

Claims priority, application Great Britain, May 15, 1971, 15186/71

Int. Cl. G01d 5/32; G01b 5/20

U.S. Cl. 33—174 PA

5 Claims



The disclosure of this invention pertains to an inspection machine for comparing different profiles of a workpiece with profiles of corresponding masters. A probe is supported for movement relative to the workpiece and an image of a pointer connected to the probe is projected by an enlarging optical system on to a viewing screen on which the master profiles are delineated in spaced apart relationship. The screen is movable relative to the optical system to bring the respective masters into register with the image as required.

### 3,823,484 MULTI-PROBE HOLE-LOCATION AND CONCENTRICITY-MEASURING SPINDLE FOR DIAL INDICATOR GAUGE

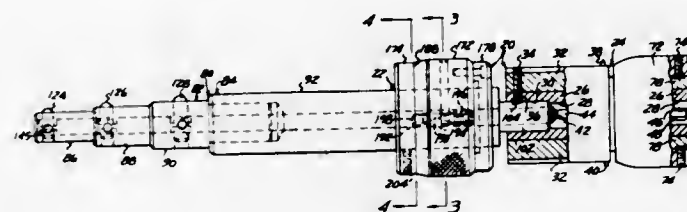
Garf L. Dunn, Farmington, Mich., assignor to Dunn Tool Company, Livonia, Mich.

Filed Aug. 28, 1972, Ser. No. 284,407

Int. Cl. G01b 5/00, 5/24

U.S. Cl. 33—174 Q

2 Claims



An elongated hollow stepped probe-supporting shaft is adapted to be operatively connected to a conventional dial indicator and has four stepped portions of successively increasing diameters, the largest of which is a cylindrical pilot portion adapted to be mounted in a master fixture. The three remaining stepped cylindrical portions of successively increasing diameters are provided with axially-spaced parallel transverse bores containing three reciprocable hole-location probes. Each such probe is notched to provide a motion-transmitting contact edge. The probe-supporting shaft contains an elongated reciprocable and rotatable motion-transmitting rod provided with three circumferentially-spaced cam portions inclined relatively to one another and rotatable to selectively engage the contact edge of each probe in succession while the other two cam portions are temporarily held out of contact with the contact edges of the other two probes.

3,823,485

### PLAY DETECTOR FOR DETECTING PLAY AND INSPECTING THE FASTENING OF PARTS OF STATIONARY MOTORCARS AND TRAILERS

Willy Lambrecht, Destelbergen, Belgium, assignor to Appareil-  
lage Technique et Industriel S.A., Brussels, Belgium

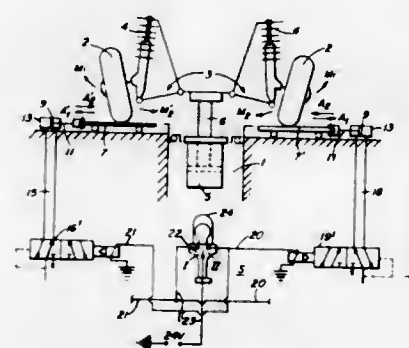
Filed Apr. 21, 1972, Ser. No. 246,263

Claims priority, application Belgium, Sept. 16, 1971, 108239

Int. Cl. G01b 19/28

U.S. Cl. 33—203.14

8 Claims



Checking apparatus is provided to check play and looseners of vehicle parts. Spaced plates are employed to support the wheels of a vehicle which otherwise is supported by a jack. Valves control the operation of piston-cylinder combinations to move the plates transversely and longitudinally of the vehicle.

### 3,823,486 TOROIDAL ELECTROLYTIC SENSOR AND METHOD OF MANUFACTURE

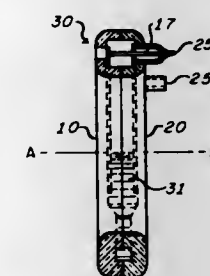
Ghanshyam A. Bhat, Tempe, and Charles G. Buckley, Phoenix, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 247,078

Int. Cl. G01c 9/06, 9/20

U.S. Cl. 33—366

4 Claims



A sealed toroidal sensor is formed from two members each including a channel that defines an inner arcuate chamber having a cross-sectional area with a characteristic dimension along a prescribed section of its arcuate length for a given linear angular range and a reduced cross-sectional area along the remaining section of its arcuate length to provide an improved temperature insensitivity. A first electrode is deposited along the prescribed section in the channel of a first of said members and second and third electrodes are deposited along oppositely disposed arcuate lengths of the prescribed section in the channel of the second of said members. After the two members are joined together forming the toroidal housing, an electrolyte is added to the inner chamber which covers relative portions of the electrodes and varies the impedance of the second and third electrodes with respect to the first electrode in accordance with the angular displacement of the device. A novel method of manufacture of the sensor is also disclosed.

3,823,487

### METHOD FOR DRYING MOISTURE FROM WET SPENT COFFEE GROUNDS

Peter Cherry, Brackley, England, assignor to Cherwell Valley Silos Limited, Oxfordshire, England

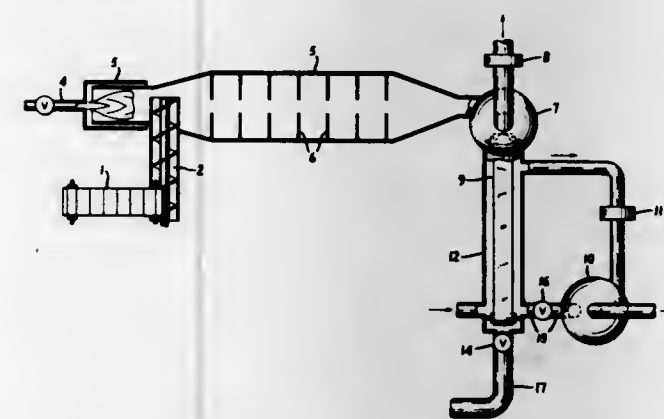
Filed Feb. 22, 1973, Ser. No. 334,592

Claims priority, application Great Britain, Feb. 22, 1972, 8227/72

Int. Cl. F26b 7/04

U.S. Cl. 34—10

5 Claims



A method for drying wet spent coffee grounds to remove moisture therefrom is disclosed. The wet spent coffee grounds are entrained in a hot gas stream passing through a rotary drum drier to remove moisture therefrom and transport them through the drum. Grounds from which moisture has been removed to a desired level pass out of the drum drier with the hot gas stream while grounds containing moisture in excess of the desired level and falling from the stream during transport

through the drum are collected in a compartment therein and conveyed in an unobstructed circular travel course about the hot gas stream for gravity return of such collected grounds to the stream for further moisture removal, the grounds being collected and returned to the stream as often as required to reduce the moisture therein to the desired level. Coffee grounds passing out of the drum with the moisture-laden gas stream are separated from the gas stream and cooled.

3,823,488

### APPARATUS FOR FULL-WIDTH SUSPENSION GUIDANCE OF WEBS OF MATERIAL

Heinz Houben, Monchengladbach; Carl Kramer, Aachen, and Heinrich Stein, Laurensberg near Aachen, all of Germany, assignors to A. Monforts, Monchengladbach, Germany

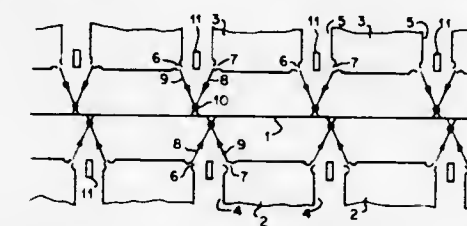
Filed Apr. 28, 1972, Ser. No. 248,382

Claims priority, application Germany, Apr. 28, 1971, 2120805

Int. Cl. F26b 13/20

U.S. Cl. 34—156

18 Claims



Apparatus for full-width suspension guidance of a web of material on a fluid cushion includes a plurality of nozzle boxes located adjacent one another in a direction parallel to a plane, in which a web of material is disposed, the nozzle boxes being formed with respective jet nozzles inclined transversely to direction of travel of the web, and return flow channels for removing fluid blown onto the web from the jet nozzles, the return flow channels being disposed alternately with the nozzle boxes in travel direction of the web, the return flow channels being open gaps defined by respective adjacent nozzle boxes, the inclined jet nozzles being disposed respectively at both sides of each of the return flow channels and being inclined with respect to one another as to direct into regions between the respective return flow channel and the plane of the web inclined jets of fluid from the nozzle boxes at opposite sides of the respective return flow channels which penetrate one another pairwise, interfere one with the other and flow out through the respective return flow channels after being deflected at the web.

3,823,489

### VACUUM LOCK FOR PLASMA TREATMENT OF SUBSTRATES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

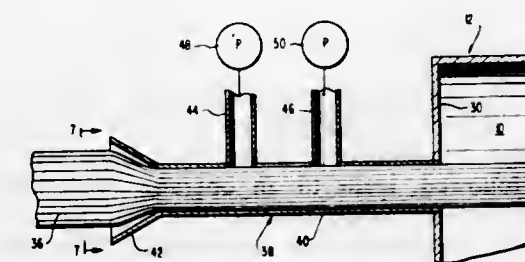
Division of Ser. No. 171,282, Aug. 12, 1971, Pat. No.

3,723,289. This application Sept. 26, 1972, Ser. No. 292,455

Int. Cl. F26b 25/00

U.S. Cl. 34—242

11 Claims



A method and apparatus for efficiently generating a gaseous plasma particularly for the treatment of substrates. A radio



frequency electrical signal is applied to two electrodes disposed exteriorly of an electrically insulative, gas impervious envelope. A central passage extends into the envelope and one electrode is disposed in the central passage. The electrodes are separated at least in part by the envelope and the radio frequency signal applied to the electrodes excites the gas within the envelope to thereby generate a gaseous plasma therein. The gas conditions within the envelope differ from the gas conditions exteriorly thereof and the amplitude of the radio frequency signal is insufficient to generate a plasma outside the chamber defined by the envelope. Since the plasma does not contact the electrodes, efficiency is maximized and the plasma is not contaminated by the electrodes. In addition, the surface areas of the electrodes differ substantially thereby creating a plasma within the envelope which varies in concentration in a predetermined manner, with the concentration being greatest near the center of the envelope. A substrate may therefore be contacted by varying plasma concentration as it passes through the envelope and the outer wall of the envelope is not contaminated by the plasma. A vacuum lock for preventing gas leakage into the envelope is also disclosed.

3,823,490

# ADAPTIVE DIAGNOSTIC AID CONSOLE FOR SYSTEM MAINTENANCE

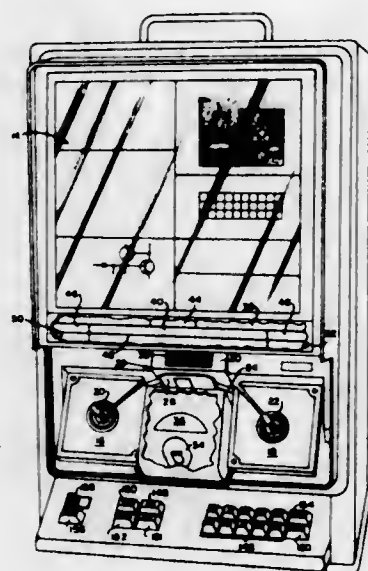
Edward H. Konik, Burlington; Stanley C. Drozd, Marblehead, both of Mass.; Charles W. Small, Derry, N.H.; Robert W. Stuart, Bedford, Mass.; Richard E. Cox, Lynn, Mass., and William R. Dery, Georgetown, Mass., assignors to Dynamics Research Corporation, Wilmington, Mass.

Filed Oct. 20, 1971, Ser. No. 190,701

Int. Cl. G09b 7/00

U.S. Cl. 35—10

6 Claims



An adaptive diagnostic aid console for system maintenance. The console employs a microfilm strip in order to present a visual display of maintenance instructions. Each instruction set, when followed, leads to an operator made decision between predetermined alternatives. The operator indicates the decision to the console which responds by automatically stepping to a corresponding point on the microfilm strip to display a further set of instructions leading to a corresponding decision. System trouble is ultimately spotted by narrowing in on the difficulty with this organized and rapid approach.

3,823,491

# READING AND SPELLING TEACHING AID

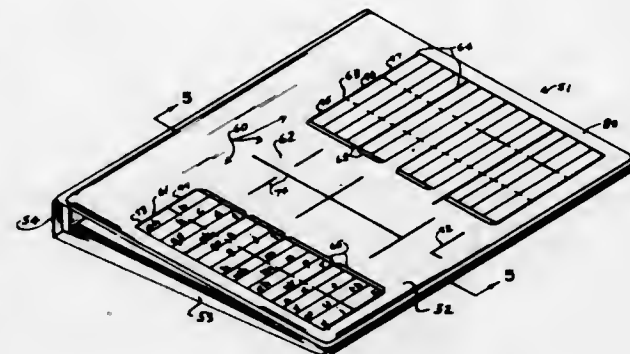
Mary L. Lehmann, 4552 McPherson Ave., St. Louis, Mo. 63108

Filed Oct. 30, 1972, Ser. No. 301,854

Int. Cl. G09b 17/00

U.S. Cl. 35—35 R

8 Claims



A teaching device includes a board having a plurality of phonic representations displayed in columns. The columns generally are tabulations of consonant-vowel-consonant sounds. Forty three sounds including arrangements for 16 vowel sounds are displayed in a variety of spelling configurations. Means are provided for selecting portions of the phonic representations corresponding to a given word. A game method is disclosed which uses the device of this invention to convey information. A player or student selects sounds from those presented to solve a word problem.

3,823,492

# COLOR KEYED EDUCATION APPARATUS

Althea S. Allain, 4232 Tumonville St., New Orleans, La. 70122

Filed July 3, 1972, Ser. No. 268,845

Int. Cl. G09b 1/32, 17/00

U.S. Cl. 35—35 J

5 Claims



A color keyed or coded education system or kit for teaching a sight vocabulary of functional words including: color cards on which the functional words are color keyed by underlining or by color printing of the word itself, the color cards being of three types, word, phrase, and sentence cards; correlated readers whose covers are colored in correlation with the color of the words of the color cards which are included in the particular reader involved; color coded individual progress charts; and color coded tests whose color designation again is correlated with the color of the words of the color cards which are included in the particular test. The correlating colors of the correlating kit are red, orange, yellow, blue, green, purple and brown, the first six of which are repeated in sets in order to use only those colors which children in big city schools are familiar. Seven color discs and crayons identical to the colors used in the kit are included for use in teaching initial color concepts when necessary. All elements of the kit are thus color coded or keyed together.

3,823,493

# FOAM POLYURETHANE BOOT WITH LINING

Michael Brehm, Weinheim, and Peter Rutsch, Unterabsteinach, both of Germany, assignors to Carl Freudenberg, Weinheim, Germany

Continuation-in-part of Ser. No. 832,386, June 11, 1969, abandoned. This application Oct. 29, 1971, Ser. No. 193,673

Int. Cl. A43b

U.S. Cl. 36—2.5 R

7 Claims



Improvement in the formation of footwear, particularly boots, by molding polyurethane foam in the annular space between a last and a boot outer mold. In a preferred aspect, there is provided a fabric on the inside wall of the foam, molded boot. In a most preferred aspect, the fabric is bonded to a plastic film of, for example, polyvinyl chloride, and the film bonded fabric is placed over the last in a mold whereupon polyurethane foam precursor is foamed in the mold and adhered to the film thereby adhering indirectly to the fabric while not penetrating such fabric interstices. In another aspect of this invention, reinforcing means, of steel or reinforced plastic, is molded right into the boot during formation thereon.

3,823,494

# FOOTWEAR WITH HEEL AND TOE POSITIONS REVERSED

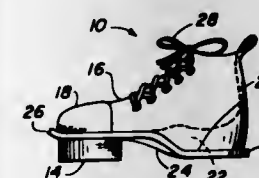
Cecil Siemp, Rt. 1, Box 120-A, Jarrettsville, Md. 21084

Filed Nov. 20, 1973, Ser. No. 417,604

Int. Cl. A43b

U.S. Cl. 36—2.5 R

9 Claims



Footwear having heel and toe positions reversed so that the wearer leaves tracks indicating a travel direction opposite to the actual direction of travel.

3,823,495

# ROTATABLY DRIVEN CUTTER FOR A SUCTION DREDGER

Carl David Robertson, Akersloot, Netherlands, assignor to N.V. Industriële Handelscombinatie Rotterdam, Netherlands

Filed Feb. 1, 1973, Ser. No. 328,604

Claims priority, application Netherlands, Feb. 4, 1972, 7201500

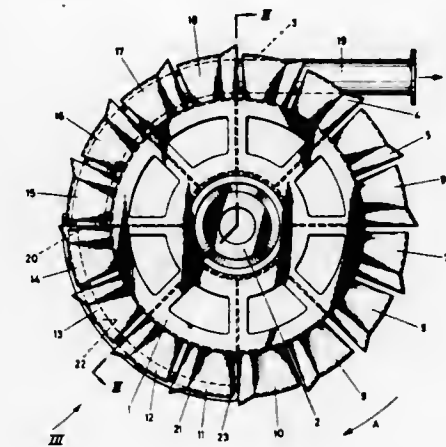
Int. Cl. E02f 3/92

U.S. Cl. 37—66

4 Claims

A rotatably driven cutter for a suction dredger has a rotatable member with two series of axially spaced scoop-shaped cutters disposed in parallel planes and carried by the rotatable member. The suction tube of the dredger extends over the shaft of the rotatable member and terminates downwardly at about the level of the rotation axis of the member and is extended by a guide plate that continues peripherally between

the outer ends of the cutters and terminates below the shaft of the rotatable member. The rotatable member rotates in a direction such that the scoops first encounter the guide plate



3,823,496

# CONNECTION DEVICE FOR DIPPER OR RIPPER TEETH, PARTICULARLY FOR TWO-PIECE TEETH OF A DIPPER

Carlo Querci, and Carlo Zucchini, both of Lovere, Italy, assignors to Italsider S.p.A., Genoa, Italy

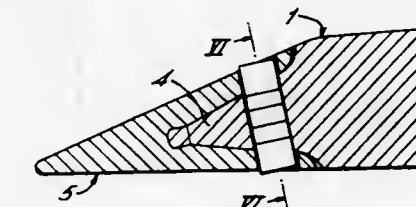
Filed Mar. 16, 1972, Ser. No. 235,359

Claims priority, application Italy, Mar. 18, 1971, 12578/71

Int. Cl. E02f 9/28; E21c 35/18

U.S. Cl. 37—142 A

6 Claims



The present invention includes means, in dipper or ripper teeth and particularly in the two-piece teeth of a dipper, for inhibiting the shoe from separating from the tooth, without any need for another element in the connection element for preventing said connection element from falling out. Further, the connection element may operate on casting surfaces and thus no tool treatment is required for the seat of said connection element.

3,823,497

# STEAM GENERATING AND CONTROL SYSTEM

Alvin I. Solomon, Forest Hills, N.Y., assignor to Durable International, Inc., Astoria, N.Y.

Filed May 2, 1973, Ser. No. 356,326

Int. Cl. D06f 75/06

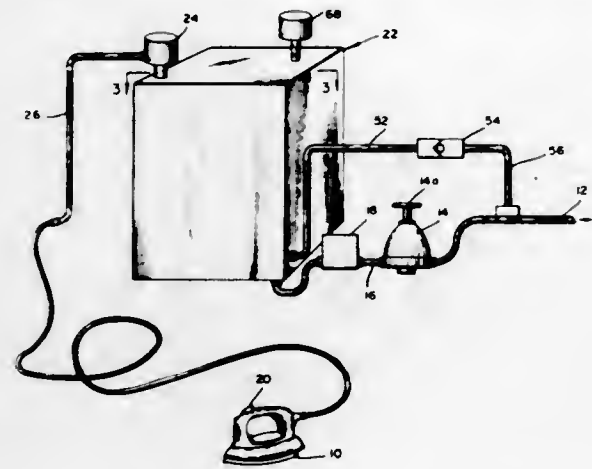
U.S. Cl. 38—77.6

17 Claims

A steam generating and control system for supplying steam to a steam iron in accordance with the steam requirements of the iron. The system includes a water supply pipe through which water is supplied serially to a pressure regulator and a first solenoid valve. The first solenoid valve leads to a steam generating chamber and a second solenoid valve controls the



communication between the steam generating chamber and the steam iron. A microswitch is operatively associated with the iron and upon being actuated opens each of the solenoid



valves to allow water to be directed to the steam generating chamber and the steam formed therein to be transferred to the iron.

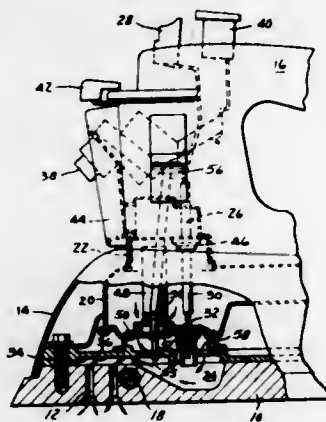
3,823,498

**SELF CLEANING STEAM IRON**

William E. Davidson, Ontario, Calif., assigns to General Electric Company, Bridgeport, Conn.  
Filed Apr. 26, 1973, Ser. No. 354,641  
Int. Cl. D06f 75/06

U.S. Cl. 38—77.83

9 Claims



A self-cleaning steam iron with means to purge the iron of water and steam by providing a substantially large opening in the iron's water tank separate and distinct from the metering orifice through which water is normally dripped to make steam in a flash boiler type iron. The large opening is controlled so that, upon dumping, the water is conducted directly to the boiler in the hot soleplate so that the additional steam suddenly generated substantially cleans the entire tank, steam distribution system, boiler, and steam ports which are forcefully purged of water, steam, loose residues, and entrapped lint.

3,823,499

**ADJUSTABLE FRAME**

Howard E. Gilbert, P.O. Box 294, Deering St., East Setauket, N.Y. 11733

Filed June 16, 1970, Ser. No. 46,638

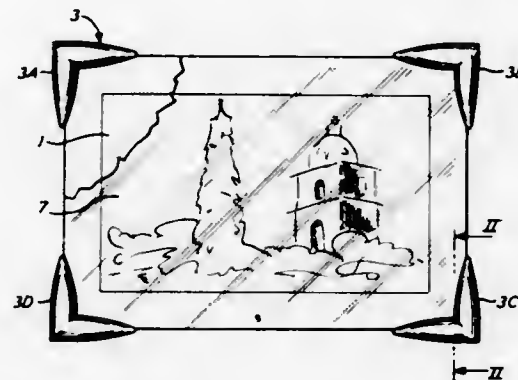
Int. Cl. G09f 1/12

U.S. Cl. 40—155

11 Claims

An adjustable frame comprising corner members, cross braces for connecting said corner members, the cross braces comprising strips which can be cut down or bent back so as to

adjust the cross braces to any desired frame size, a plurality of apertures on each of the cross braces performing a double function, the first function being to provide apertures for connecting the brace to diagonally opposite corner member, the second function being to provide means for anchoring a suspension wire to the frame. Two of the corner members include means for adjustably connecting the cross brace thereto so as to assure that the cross brace is tight. Each of the corner members further include stand receiving means to permit the frame to be supported on end or on its side. The stand is an L-



shaped member capable of being selectively inserted in the stand receiving means so as to permit the frame to be weighted down or anchored to the ground. Each of the corner members may include spring biased means so as to readily accommodate and grasp articles of varying thicknesses. The frame is designed so that the spring clips and cross frame braces lie flush or within the confines of the corner members so as to minimize interference in hanging or storing the framed articles. The frame may be designed without cross braces so that pictures and the like may be viewed from both sides of the frame.

3,823,500

**ADVERTISING AND PROMOTIONAL DISPLAY APPARATUS**

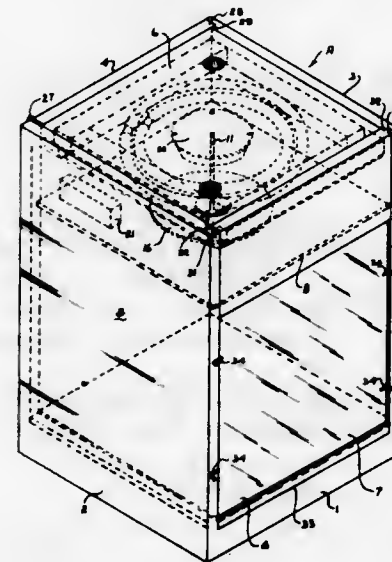
Leonard Spitz, St. Louis, Mo., assignor to Advertisers Display & Exhibits, Inc., St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,169

Int. Cl. G09f 13/12

U.S. Cl. 40—219

14 Claims



In an advertising display apparatus, a compartment is formed having image reflecting surfaces provided on the back, bottom and side walls, while a transparent mirror surface is provided upon the front wall, and in this manner, viewing of

multiple images formed of the device displayed within the apparatus can be achieved. The image reflecting surfaces are cushion mounted to their respective walls, so that during transit, they will not be fractured, and either the front or back wall of the compartment is hingedly or slidably mounted to provide easy access for quick rearrangement of the advertising displays. A translucent surface provides an upwardly disposed space for mounting of the lighting source, and furnishes full illumination of the device being displayed.

3,823,501

**HOOK SETTER APPARATUS**

Samuel M. Bybee, Hewins, Kans.

Filed June 8, 1972, Ser. No. 261,002

Int. Cl. A01k 97/00

U.S. Cl. 43—15

3 Claims



This invention is a hook setter apparatus for fishing purposes operable to be secured to a support structure to elevate the same over a water surface and having means to activate a connected fish hook assembly on movement thereof to automatically hook a fish member. More particularly, this invention is a hook setter apparatus having a housing means, and a connector means operable to 1. support the apparatus on a tree limb or the like and 2. support a fish hook assembly attached to the lower end of the housing means and operable upon movement of the fish hook assembly to actuate the actuator means to provide a spring tension to hook and then to hold a fish member.

3,823,502

**REEL ASSEMBLY**

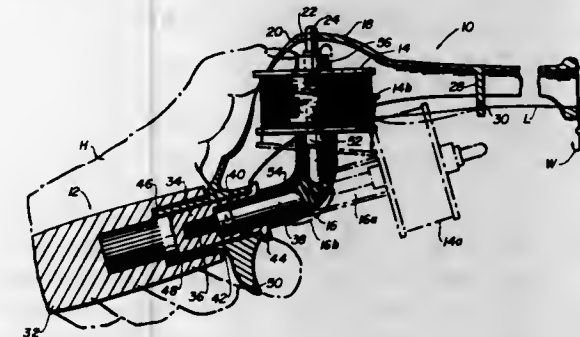
James H. Countryman, Dayton, Ohio, assignor to Roger S. Dybvig, Dayton, Ohio

Filed June 22, 1971, Ser. No. 155,419

Int. Cl. A01k 89/00

U.S. Cl. 43—20

20 Claims



Line is wound onto a spool rotated by twirling the spool. Three models of a small hand held fishing device are illus-

trated utilizing a twirling spool with which the fishing line may be cast with a slinging motion. The spools are connected to handles by flexible connectors permitting the line to be cast in spin cast fashion with the axis of the spool pointing generally toward the direction of the cast. Preparatory to reeling the line in, the spools are moved to positions at an angle to the casting positions before the spools are twirled. Two of the illustrated models are designed to permit the spools to be rotated about their axes instead of twirled. Accordingly, the line can also be reeled in by using the spools as winding drums. In one of these two models, the spool is directly manipulated by the user and pivoted to the reeling position at which it is held by means of a shell-like holder and line guide. In the other of these two models, the spool is remotely engaged by a lever operator and it may be held in its reeling position by engagement of portions of the lever with the shell. The third illustrated model has an annular raceway fixed in relation to the handle against which the spool tracks when the line is reeled in.

3,823,503

**FISHING SINKER**

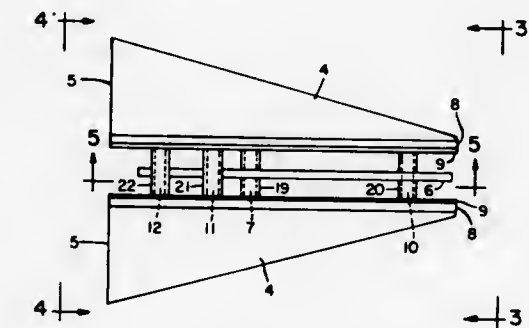
Harry Niles Smith, 64 Ontario St., Corning, N.Y. 14830

Filed July 9, 1973, Ser. No. 377,336

Int. Cl. A01k 95/00

U.S. Cl. 43—43.13

5 Claims



Elongated body members having sled-like leading edges are fixed together in side-by-side relationship. Each of the outside body members is provided with an outwardly directed wing which slants outwardly therefrom in a rearward direction. A keying member is pivotally connected between the body members at a point spaced rearwardly of the centers thereof.

3,823,504

**HUMANE ANIMAL TRAP**

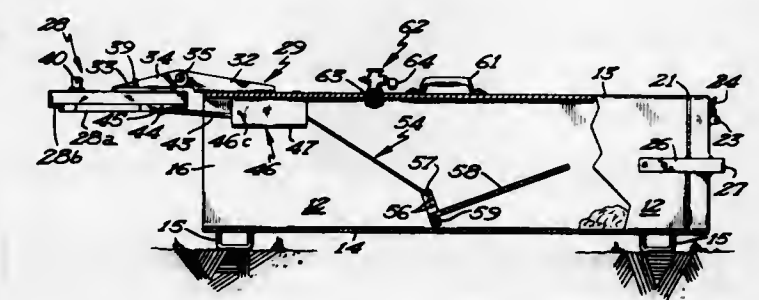
Mathew L. Dosch, Box 251, Ipswich, S. Dak. 57451

Filed Jan. 19, 1973, Ser. No. 324,965

Int. Cl. A01m 23/18

U.S. Cl. 43—61

8 Claims



A humane animal trap comprises an elongate generally rectangular housing formed of impervious material and having a spring urged trap door closing the front end thereof. A releaseable latch retains the trap door in an open or set position and is released by operation of a cam trigger. The trigger is connected to and is operated by a treadle plate. The housing



is provided with a valve which permits a user to introduce a predetermined amount of an anesthetizing fluid, such as chloroform or the like, into the housing for anesthetizing the trapped animal.

3,823,505

## SAFETY CATCH FOR TRAP

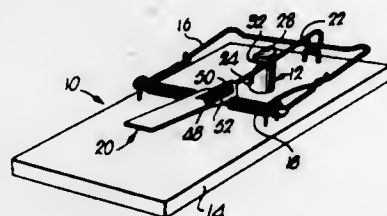
Ronald A. Holt, Lawrence, Kans., assignor to Chali A. Holt; Joan B. Holt and Ivan. N. Holt, all of Lawrence, Kans., part interest to each

Filed Feb. 5, 1973, Ser. No. 329,888

Int. Cl. A01m 23/30

U.S. Cl. 43—81.5

5 Claims



A safety catch for a conventional mousetrap or the like in which a spring-loaded jaw is maintained in an open position by a shiftable latch engageable with the jaw and a bait-holding treadle. The catch is mounted on the base and is selectively shiftable for movement into and out of contact with the latch and includes a notch for receiving and seating the latch when the catch is in contact therewith. The safety catch is so positioned relative to the latch that the latter is clamped and stabilized in a fixed, inoperative condition relative to the treadle as long as the catch is in contact with the latch, the same being held against movement in both vertical and horizontal planes.

3,823,506

## INSECT TRAP WITH SAFETY FEATURES

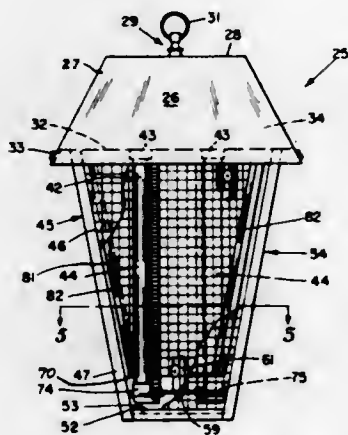
Robert E. Iannini, Milford, N.H., assignor to Rid-O-Ray, Inc., Nashua, N.H.

Filed Feb. 5, 1973, Ser. No. 329,720

Int. Cl. A01n 1/22

U.S. Cl. 43—112

9 Claims



A fluorescent tube, meshed electrode type insect trap has the upper portion of each tube passing through a hole in the lower mounting plate of a hollow cover so that the upper socket, reversed starter and all other components are protected from the elements. The exposed lower part of each tube and the high voltage grids depend below the mounting plate and are encompassed by a non-electrified, fine mesh cage with fine mesh bottom for safety of the user. A flat pair of electrodes may be straddled by a pair of tubes or a pair of cylindrical electrodes may encircle a single tube.

3,823,507

## ROLLING TOY HOOP

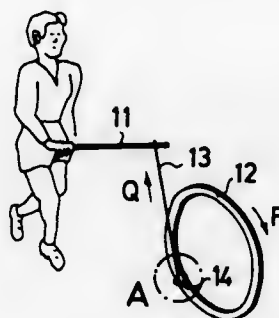
Theodor Berner, Ludwig-Blum-Strasse 2, D-7000 Stuttgart, 60 (Wangen), Germany

Filed Mar. 6, 1973, Ser. No. 338,510

Int. Cl. A63h 33/02

U.S. Cl. 46—220

11 Claims



A toy device wherein a hoop can be rolled and steered along the ground by a cord which is attached to one end of a manually held guide rod. The cord is connected to a coupling ring which is received in one or more transversely extending recesses of the hoop so as to be turnable on but to be held against movement in the circumferential direction of the hoop. By exerting a pull on the cord while the coupling ring travels upwardly and away from the ground, the user can impart to the hoop a driving momentum to thereby accelerate the hoop. The hoop will travel along an arcuate path if the coupling ring is turned to move its point of connection with the cord to the one or the other side of the hoop while the coupling ring is located at the uppermost point of the hoop and if the cord is swung sideways to tilt the hoop.

3,823,508

## PLANT CULTIVATING APPARATUS

Hiraki Takehara, Nigawa-cho 3-chome 13-ban 7-go, 662 Hyogo-ken, Nishinomiya-shi, Japan

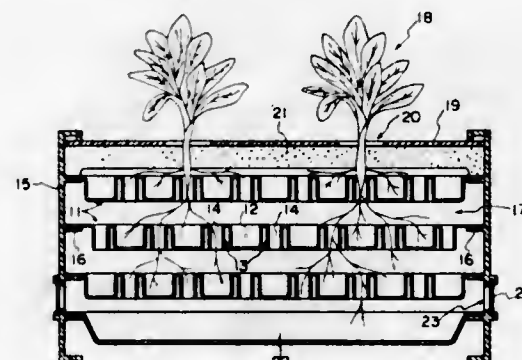
Filed June 30, 1972, Ser. No. 268,170

Claims priority, application Japan, July 1, 1971, 46-48390; Feb. 19, 1972, 47-17493; Mar. 4, 1972, 47-26702

Int. Cl. A01g 9/02

U.S. Cl. 47—1.2

18 Claims



A plant cultivating apparatus comprising a tray member having recessed portions on the upper surface for collecting a liquid fertilizer, recessed portions on the lower surface for ventilation, and openings for establishing communication between the upper and lower surface sides, the tray member being disposed in a root growing space, whereby sufficient amounts of fertilizer and air are fed to the roots of plants being cultivated.

3,823,509

## MACHINE FOR THINNING AND CULTIVATING SEEDLING PLANTS

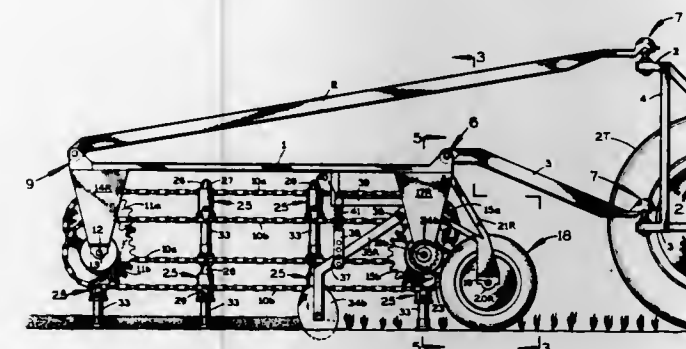
Harold Arve, 25320 S.W. 108 Ave., Homestead, Fla. 33030

Filed July 2, 1973, Ser. No. 375,901

Int. Cl. A01b 41/00

U.S. Cl. 47—1.43

5 Claims



A tractor motivated machine for thinning and cultivating seedling plants in field rows. The transmission of the machine is driven by a tracking wheel for placing each of a plurality of casings over plants at predetermined spacing for a temporary period and permitting a disc plow means on the machine to bury the unwanted intervening plants and protect the desired plants by suction drawing each into a casing by a vacuum supplied thereto by the tractor when the latter is driven astride the row of plants.

3,823,510

## AUTOMATICALLY POSITIONABLE GATE ASSEMBLY

Sergio Panaccione, Rome, Italy, assignor to Sigma-Tau Industries Farmaceutiche Riunite S.p.A., Rome, Italy

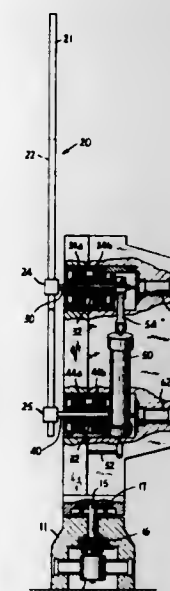
Filed July 24, 1972, Ser. No. 274,421

Claims priority, application Italy, July 22, 1971, 51815/71

Int. Cl. E05d 15/40

U.S. Cl. 49—247

10 Claims



A gate assembly comprises an angularly displaceable support structure disposed along a path to be gated and a gate member is pivotally mounted on the support structure for pivotal raising and lowering movement between a vertical, nonworking position wherein the gate member does not extend across the path and a horizontal, working position wherein the gate member extends across and blocks the path. The gate member is also mounted for linear movement towards and away from the support structure to enable extremely accurate positioning of the gate member. An oscillatory fluid motor effects angular displacement of the support

structure and a set of reciprocatory fluid motors effect raising and lowering of the gate member as well as movement of the gate member towards and away from the support structure. A fluid control circuit automatically actuates the various fluid motors in a predetermined sequence.

3,823,511

## MEASURING DEVICE FOR SURFACES TO BE MACHINED ON MACHINE TOOLS

Christoph W. Gehring, Nellingen, Germany, assignor to Maschinenfabrik Gehring KG, Nellingen, Germany

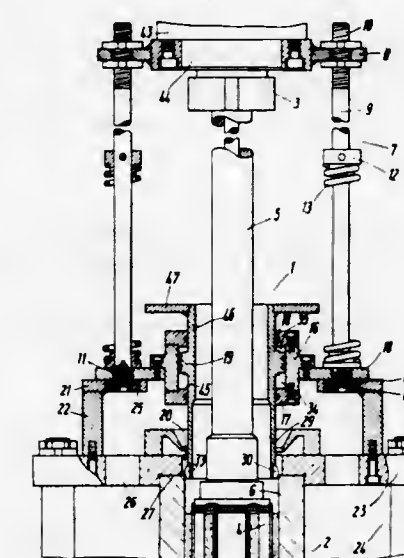
Filed Sept. 15, 1971, Ser. No. 180,618

Claims priority, application Germany, Sept. 19, 1970, 2046358

Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51—34 R

9 Claims



A measuring device for a machine tool, particularly a honing machine, which hones cylindrical surfaces in which the measuring device comprises a body concentric with the surface and have resilient fingers extending axially toward the surface with feeler elements on the free ends. The feeler elements have inclined ramps on the sides facing the surface and are pressed against the workpiece at the end of the surface. When the surface is machined to the proper size, the feeler elements move on to the surface and a switch is actuated to halt the machining operation. The feeler elements are moved axially toward the surface together with the tool and are halted at the surface and are then biased with the predetermined force against the end of the workpiece by a fluid pressure device.

3,823,512

## AUTOMATIC CENTRIFUGAL BARREL FINISHING APPARATUS

Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Manufacturing Company Limited, City of Nagoya, Japan

Filed Mar. 6, 1972, Ser. No. 231,874

Claims priority, application Japan, Mar. 12, 1971, 46-13833

Int. Cl. B24b 31/02

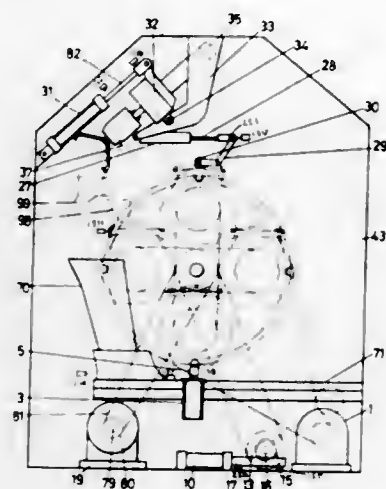
U.S. Cl. 51—164

13 Claims

An automatic centrifugal barrel finishing apparatus is described, in which all processes are operated in due order determined by a sequence program using a sequence con-



troller. The device includes an opening and closing apparatus for the lid, a discharging apparatus for the finished materials, a



charging apparatus for charging unfinished materials and driving motors for the barrels between a pair of turrets.

3,823,513

**MINIATURE BELT GRINDER**

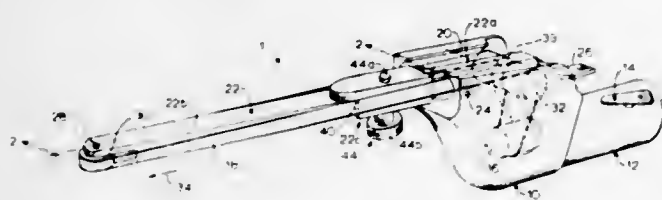
Walter N. Welsch, Tonawanda, N.Y., assignor to Dynabrade, Inc., Tonawanda, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,005

Int. Cl. B24b 23/00

U.S. Cl. 51-170 EB

5 Claims



A hand tool grinder having an endless belt entrained about a non-parallel drive and idler pulleys such that the flights thereof pass over a pair of direction change pulleys. The idler pulley and direction change pulleys are mounted adjacent opposite ends of a compound arm having an adjustment device to effect relative tilting movements of the idler pulley mounting end of the arm for controlling tracking of non-uniformly worn belts.

3,823,514

**HYDRAULIC GRINDING METHOD**

Takeo Tsuchiya, Tokyo, Japan, assignor to Honda Koki Kabushiki Kaisha and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,657

Claims priority, application Japan, Nov. 8, 1971, 46-88916

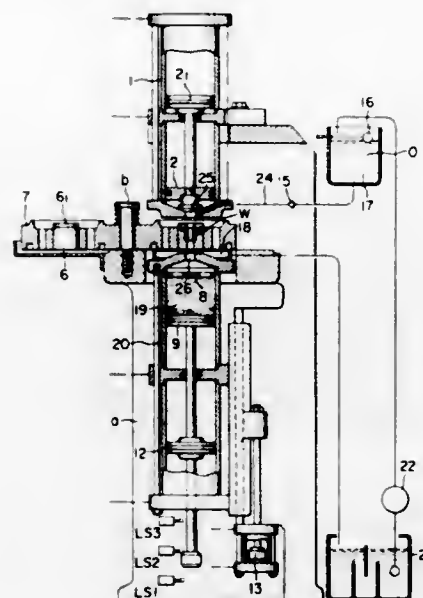
Int. Cl. B24b 1/00

U.S. Cl. 51-281 P

2 Claims

Sharp edges and burrs formed at the open ends of machined holes or at their intersections can now be removed efficiently by the method of the invention, in which a grinding medium composed of viscous oil and abrasive grits such as of alumina is forced through the machined hole alternately in opposite directions. During the grinding process, most of abrasive grits are held in the lower portion of the whole mass of the grinding medium used due to the difference in specific gravity between the two medium components and the upper thinner portion of the mass is forced through the hole alternately ahead of and

following the thicker mass portion. This serves to effectively lubricate the machined hole and thus enables efficient removal of sharp edges and appendant burrs while eliminating



any danger of the abrasive grits or aggregates thereof clogging the hole or marring the wall surface thereof irrespective of the hole diameter.

3,823,515

**METHOD AND MEANS OF GRINDING WITH ELECTROPHORETIC ASSISTANCE**

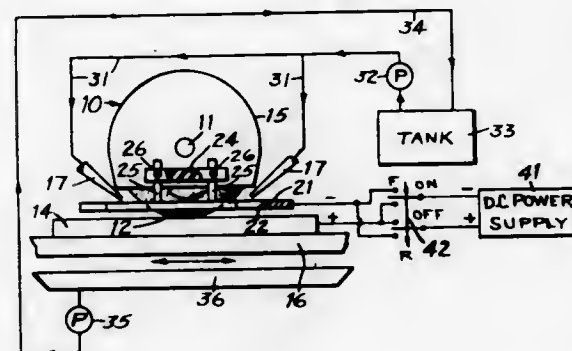
Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 27, 1973, Ser. No. 345,310

Int. Cl. B24b 1/00

U.S. Cl. 51-322

9 Claims



A grinding system in which an electrically conductive workpiece is moved against and relative to a rotating grinding wheel, an electrode spaced from and electrically insulated from the workpiece, means to maintain the space between the workpiece and the electrode filled with an electrically substantially nonconducting coolant fluid containing electrically charged particles of a cutting fluid or other cutting agent, and a direct current power source connected to so charge the workpiece and the electrode that the charged particles of a cutting fluid or other cutting agent migrate to and form a film upon the surface of the workpiece as it passes beneath the grinding wheel.

3,823,516

**MOTION IMPARTING MEMBER INCORPORATING HOLDING MEANS FOR NONWOVEN FIBROUS ABRASIVE PADS**

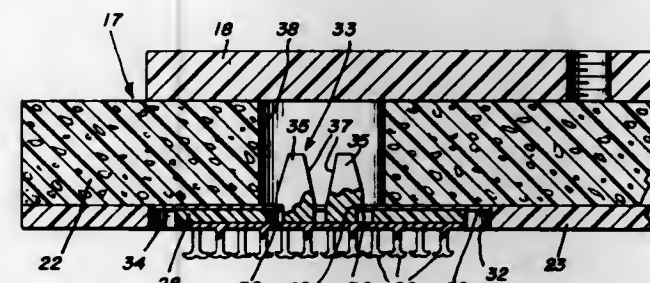
Warren E. Christian, Troy, N.Y., assignor to Norton Company, Troy, N.Y.

Continuation-in-part of Ser. No. 92,485, Nov. 24, 1970, abandoned. This application Dec. 19, 1972, Ser. No. 316,447

Int. Cl. B24d 17/00, 13/14

U.S. Cl. 51-358

25 Claims



Surface finishing means comprising nonwoven fibrous material is held firmly but removably on a member capable of imparting motion to the finishing means by a plurality of discrete, spaced-apart holding means located in the surface of the motion imparting member comprising a plurality of hook-like members on a base member.

3,823,517

**CINEMATOGRAPHIC SYSTEM**

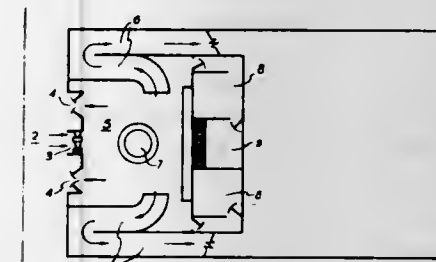
Arturo Castrejon Penaloza, Vicente Guerrero No. 19, Acapulco, Mexico

Filed Feb. 12, 1973, Ser. No. 331,395

Int. Cl. E04h 3/10

U.S. Cl. 52-6

3 Claims



A cinematographic system for a simultaneous projection of different films or movies, comprising two or more exhibition rooms integrally grouped, a common main hall and a common access passageway to the exhibition rooms, a common projection machinery room, a common space for housing electric cables, drainages or similar and an also common space, for air conditioning, heating and the like facilities.

3,823,518

**REINFORCED FIBERGLASS PLASTIC ROOF FOR BOX CARS**

John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Jan. 5, 1973, Ser. No. 321,339

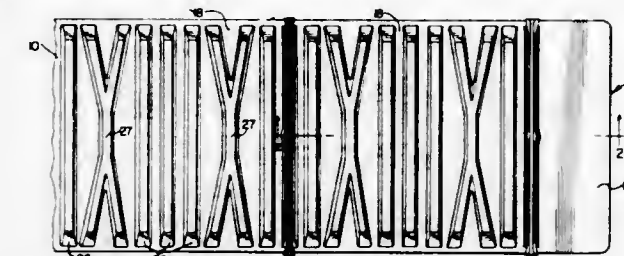
Int. Cl. B61d 17/12; E04d 3/34

U.S. Cl. 52-53

6 Claims

A railway vehicle roof including a plurality of sections made from molded reinforced fiber glass plastic sheets. The molded plastic sheets include a pair of transversely extending and

lengthwise spaced ribs, a pair of spaced X-shaped ribs disposed between the transversely extending ribs, and a plu-



rality of ribs extending between the X-shaped ribs. Upstanding flanges are formed along the transverse edges of the panel. A seam cap fits over adjacent ones of the upstanding flanges.

3,823,519

**AIRCRAFT HANGER**

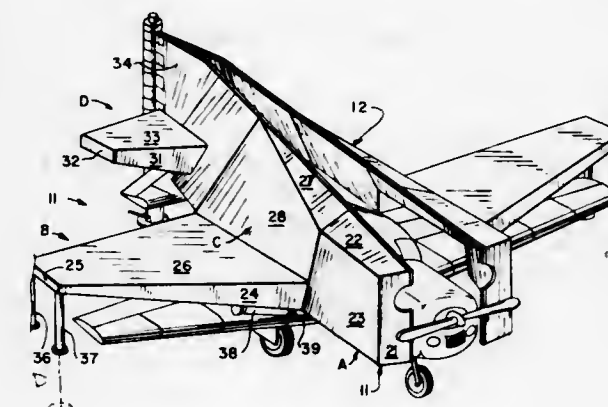
Elmer Cordova, 5805 S. Santa Fe Dr., Denver, Colo. 80120

Filed July 27, 1972, Ser. No. 275,461

Int. Cl. E04b 1/346

U.S. Cl. 52-65

4 Claims



A light weight individual hanger for an aircraft includes two mirror image, symmetrical cover sections made of a light weight framework covered by an outer covering pivotally mounted at the rear about a vertical axis to swing from a closed aircraft covering and to an open aircraft release position. A lift jack at the vertical axis raises the cover sections to the extent necessary for the aircraft to be wheeled forwardly. Support legs depend from each wing cover portion to support the cover sections above the aircraft.

3,823,520

**STEEL STRUCTURE FOR PREFABRICATED BUILDINGS**

Kazuo Ohta, Tokyo, and Seiji Sawada, Kawasaki, both of Japan, assignors to Nippon Steel Corporation and Nihon Architects Engineer & Consultant Inc., both of Tokyo, Japan

Continuation of Ser. No. 18,642, March 11, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,862

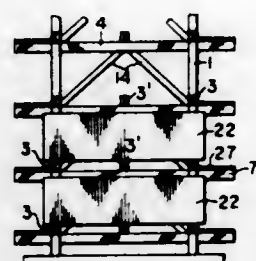
Claims priority, application Japan, Mar. 20, 1969, 44-20849

Int. Cl. E04h 1/04

A steel structure for prefabricated buildings which comprises a multiplicity of column-girder members formed by firmly combining steel columns, steel girders, and corridor board supporting girders and arranged in transversely juxtaposed and vertically connected relationship on a foundation, steel crossbeams connecting said column-girder members so as to define a multiplicity of framed space sections, and corridor boards securely installed at the front and rear of the



column-girder members. The framed space sections can be used for residential, public, traffic and other applications.



Prefabricated building units for living and other purposes can be adequately inserted into the framed space sections and removed therefrom for disassembly, movement, etc.

3,823,521

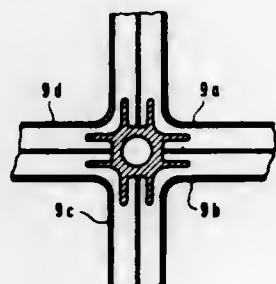
**CONNECTING PART FOR SHAPED STRUCTURAL BODIES MADE FROM SYNTHETIC MATERIAL, ESPECIALLY FOR SHAPED STRUCTURAL BODIES OF FRAME-TYPE MAKE-UP**

Jorgen Heitholt, and Werner Gieb, both of Herford, Germany, assignors to Richard Heinze, Herford, Germany  
Claims priority, application Germany, May 8, 1974, 2122894

Filed May 8, 1972, Ser. No. 251,210  
Int. Cl. E04b 1/48

U.S. Cl. 52-285

3 Claims



A connecting part for shaped structural bodies, especially those formed of a synthetic material. In a preferred embodiment, each connecting part is formed of plastic material in the form of a substantially cylindrical base supporting a plurality of projections each of which extends parallel to the symmetrical axis of the base so that each projection can slide into a corresponding recess in a shaped structural body such as a synthetic building block.

3,823,522

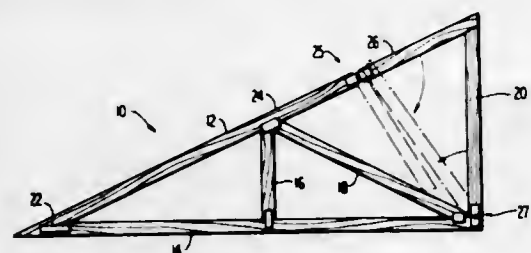
**HINGED CONNECTOR PLATE**

John Calvin Jureit, Coral Gables, Fla., and John Melvin Des Jardins, Columbiaville, Mich., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Nov. 6, 1972, Ser. No. 303,939  
Int. Cl. E04b 1/32, 7/16

U.S. Cl. 52-641

14 Claims



The joint includes a pair of connector plates each having a plurality of teeth struck therefrom for embedment into the

ends of wooden members forming a part of a truss or frame. The teeth are distributed over the major portion of the plates inset from end portions thereof. Openings are provided in the plate end portions. In one form hereof, the metal about the opening in one plate end is extruded through the opening in the end of the other plate whereby the extruded metal forms a bearing surface for pivoting the plates relative to one another. In another form, teeth are struck from marginal portions about the opening of one plate and received through the end opening in the other plate. These teeth are formed over to effect a bearing surface. Bolts or rivets may also be used to pivotally connect the plates one to the other.

3,823,523

**CEILINGS FOR BUILDINGS**

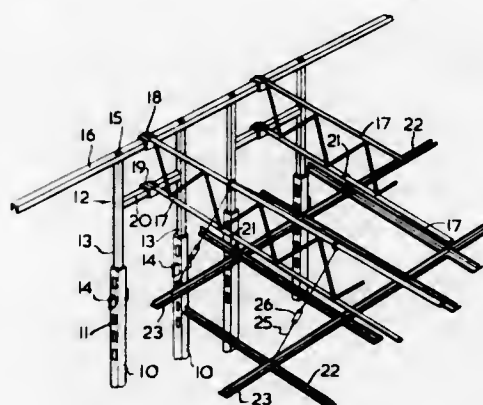
Anthony Russell Wells, Southport, England, assignor to S. Alderson Company Limited, Oxfordshire, England  
Filed Dec. 11, 1972, Ser. No. 313,666

Claims priority, application Great Britain, Dec. 10, 1971, 57397/71

Int. Cl. E04b 1/24

U.S. Cl. 52-648

7 Claims



A ceiling installation for a building comprises an assembly of uprights, which do not form an inherent part of the building structure, beams or girders carried by said uprights and a ceiling supported by said beams or girders. Conveniently the ceiling is suspended from the beams or girders. The uprights may also support wall lining panels and/or partitions for the building. The invention is particularly applicable to false ceilings for shops and offices.

3,823,524

**THERMAL BREAK TYPE ARCHITECTURAL EXTRUSIONS**

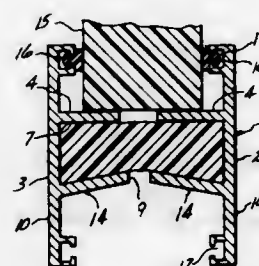
Paul Weinstein, Wallingford, Conn., assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Jan. 12, 1973, Ser. No. 323,149

Int. Cl. E04c 3/29

U.S. Cl. 52-729

20 Claims



Metal extrusions adapted for use in building constructions including a rigid spacer member capable of forming a thermal break. The extrusions comprise spaced apart structural members having a unique web member spanning the space between

the structural members. The web member extends convexly between the structural members thereby providing an ideal surface for use in aligning the extrusions during processing. The extrusions also include flange members which with the structural members and the web member define a cavity within which the rigid spacer member of low thermal conductivity is constrained. A process of forming the extrusions is also claimed.

3,823,525

**FOAM-TIGHTENED EDGE JOINT FOR STRUCTURAL PANELS**

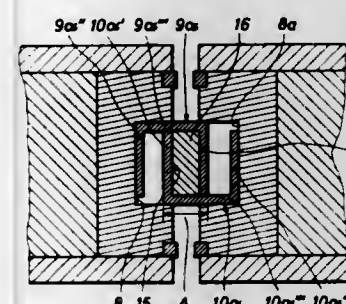
Peer Bruun, Strandvejen 151, 3060 Espergaerde, Denmark  
Filed Apr. 30, 1971, Ser. No. 138,963

Claims priority, application Denmark, May 17, 1970, 2213/70

Int. Cl. F16b 5/01

U.S. Cl. 52-758 D

1 Claim



A joint for connecting two "sandwich" building elements. Each element has a locking rail on one end. The rails are in engagement with each other and have such form that they, when arranged, define one or more locking cavities. The more the rails overlap each other the larger is the cavity or cavities. In the cavity there is arranged an expanded foam body ensuring that the cavity will be as big as possible and will be filled up. This involves that the rails will overlap and cooperate efficiently so that the joint will be very tight.

3,823,526

**FASTENING DEVICE**

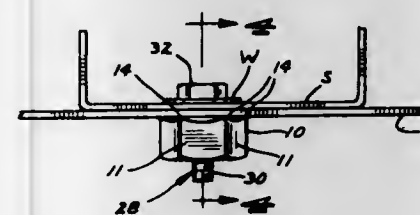
Rolland H. Rose, 2527 Midway Rd., Duluth, Minn. 55810

Filed Sept. 15, 1972, Ser. No. 289,426

Int. Cl. F16b 5/02

U.S. Cl. 52-758 F

3 Claims



A device for fastening two pieces of material together including a threaded base member having a concave recess in one end and at least one projection for engaging a surface of a member to be connected together with a threaded connecting member and a threaded draw-up plug for threaded engagement with the base member and having a flared portion extending therefrom together with means for drawing up the draw-up plug upon the base member to force a portion of a piece of flat stock into the recess and cause the projection to engage the piece of stock with the connecting member threadedly engaged with the draw-up plug.

3,823,527

**APPARATUS FOR COVERING A PALLET LOAD WITH PLASTIC FILM**

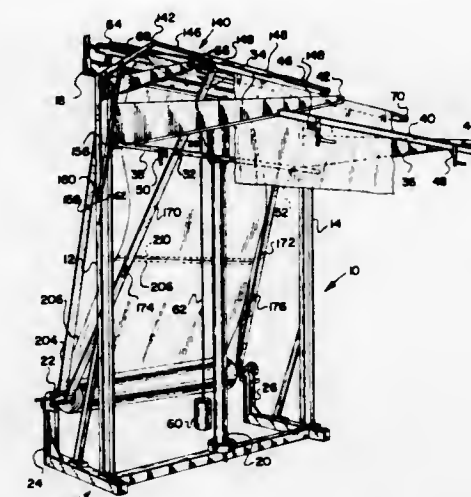
Joseph Burn, Wyckoff, N.J., assignor to J. & H. Company, Paterson, N.J.

Filed Nov. 13, 1972, Ser. No. 306,007

Int. Cl. B65b 43/04

U.S. Cl. 53-183

5 Claims



Apparatus is provided for covering a pallet load with a tubular sheet of wrapping material, such as plastic film, which apparatus includes a frame, a vertically sliding support structure mounted on the frame, a plurality of holding means, such as clamps, for grasping wrapping material, carried by the support structure, each of the holding means being movable between open and closed positions, and operating means for moving the holding means from a closed to an open position, when the holding means reaches a predetermined position with respect to the loaded pallet. In one embodiment, the support structure includes a vertically sliding member having a pair of spaced apart arms secured thereto, a pair of cross members movably secured to said spaced apart arms, and the holding means is movably secured to the cross members. Thus, by adjusting the position of the cross members along the spaced apart arms and adjusting the position of the holding means along the cross members, the apparatus can accommodate substantially any size pallet load.

3,823,528

**DEVICE FOR PACKING IN FOIL A BUNCH OF ELONGATED OBJECTS**

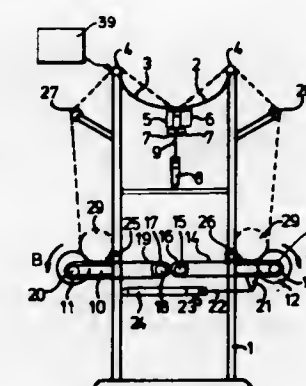
Wilhelmus Henricus Janssen, Scheepvaartweg 3, Roermond, Netherlands

Filed Jan. 19, 1973, Ser. No. 324,961

Int. Cl. B65b 13/04, 11/50, 53/06

U.S. Cl. 53-198 R

17 Claims



A device for packing a bunch of elongated objects, such as flowers, in a tight foil wrapping. The device having two foil



strips feeding to a supporting member from two foil feed rollers. The supporting member receives the foil strips, permits joining of the ends, supports the bunch of objects and then opens, permitting the foil and bunch of objects to sink down. The supporting member then closes and foil rollers rotate in the opposite direction bringing the foil tightly around the bunch of objects, joins the strips together and cuts the wrapped bunch free from the strips.

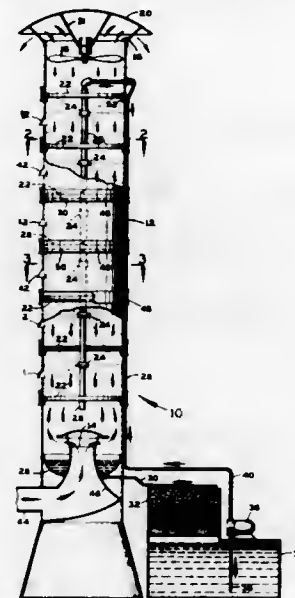
3,823,529

**PROCESS FOR SEPARATING CARBON MONOXIDE**  
Robert D. Hughes, and Edward F. Steigelmann, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.  
Filed Feb. 23, 1973, Ser. No. 335,000  
Int. Cl. B01d 53/22

U.S. Cl. 55-16

6 Claims

There is described the separation of carbon monoxide from gaseous mixtures by the combined use of liquid barrier permeation and metal complexing techniques. The liquid barrier is in contact with a semi-permeable film membrane, and the barrier contains complex-forming metal ions in aqueous solution. The metal ions may be, for example, cuprous or other metal ions, and mixtures of these metal ions, with or without other cations, may be used. The separation of carbon monoxide from lower alkanes, e.g., ethane and methane, or hydrogen is of particular interest.



3,823,530

**METHOD AND APPARATUS FOR SEPARATING AND COLLECTING FINE PARTICLES IN GAS WITH STREAM OF FALLING MOLTEN METAL DROPS**

Tsunee Miyashita, and Leon Michel Chaussy, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

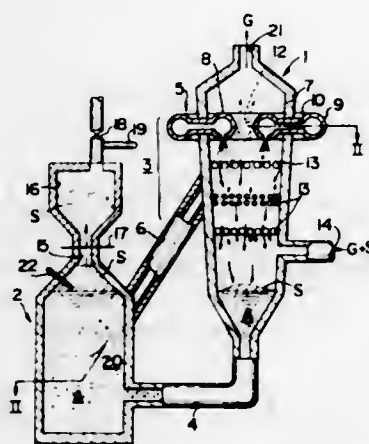
Filed Dec. 18, 1972, Ser. No. 316,003

Claims priority, application Japan, Dec. 24, 1971, 46-01730

Int. Cl. B01d 53/14

U.S. Cl. 55-72

7 Claims



A method and apparatus for separating fine particles such as soot contained in hot gases, in which the gas is passed upward countercurrently to contact with the descending molten metal drops, whereby fine particles contained in the gas are attached to the falling molten metal drops and are thus separated from the gas.

3,823,531

**GAS CLEANER**

James A. Crawley, 925 N. 26th Ave., Hollywood, Fla. 33020  
Filed Aug. 15, 1972, Ser. No. 280,826

Int. Cl. B01d 47/06

U.S. Cl. 55-233

3 Claims

Apparatus for cleaning and quenching a hot gas stream contaminated with solids. The apparatus includes a gas flow duct, a plurality of porous filter elements arranged in series along

the duct between a gas inlet and a gas outlet, and a plurality of liquid discharge heads in the duct for respectively discharging a washing liquid onto each of the filter elements for removal of solids from the gas in passing through the filter elements. A suction blower draws gas contaminated with solids through the duct and the filter elements and forces the gas out through

the gas outlet. The gas washing liquid drains to an external filter and is collected and pumped back to the discharge heads for recirculating the washing liquid. A plurality of inlets are provided in the duct for supplying environmental air into the duct by suction of the blower so that the air can be cleaned by passage through the filter elements.

3,823,532  
**FILTER**

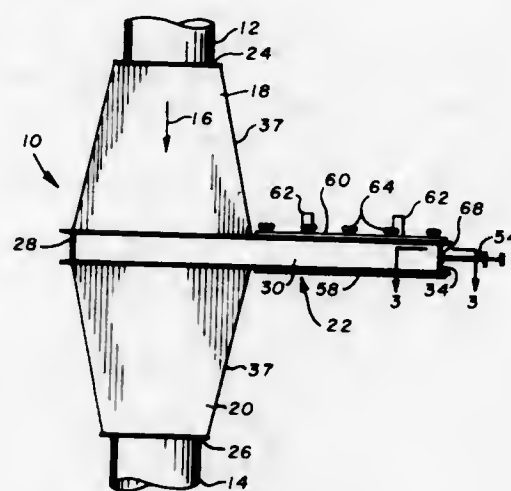
Thomas Henry Cooper, Windsor, and Fred Bowman Heil, Jr., E. Hartland, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 14, 1973, Ser. No. 415,707

Int. Cl. B01d 35/12

U.S. Cl. 55-357

9 Claims



A filter for use in an air or other suitable gas duct system. The filter is mounted in a frame box which in turn is slidably supported in tracks within a rectangular section of the duct. An extension of the rectangular flow passageway provides a chamber into which the frame and filter may be slidably withdrawn from the duct. This chamber is provided with a removable cover to provide access to the filter for removal and replacement thereof. A further embodiment includes a tandem frame assembly and a second chamber for filter removal extending from the opposing side of the flow passageway section.

3,823,533

**AIR FILTER RETAINER**

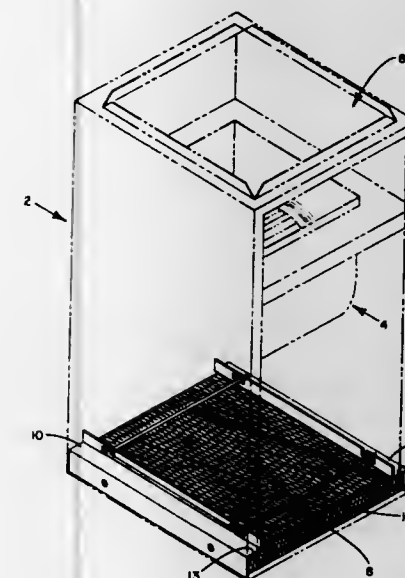
Robert L. Alverson, Indianapolis, and Howard W. Morris, Zionsville, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,517

Int. Cl. B01d 27/08

U.S. Cl. 55-493

3 Claims



A retaining bracket for use in holding filter material in a furnace or the like having a U-shaped rod biased into a pair of L-shaped openings in brackets spanning the filter.

3,823,534

**SICKLE BAR MOWER AND DRIVE THEREFOR**

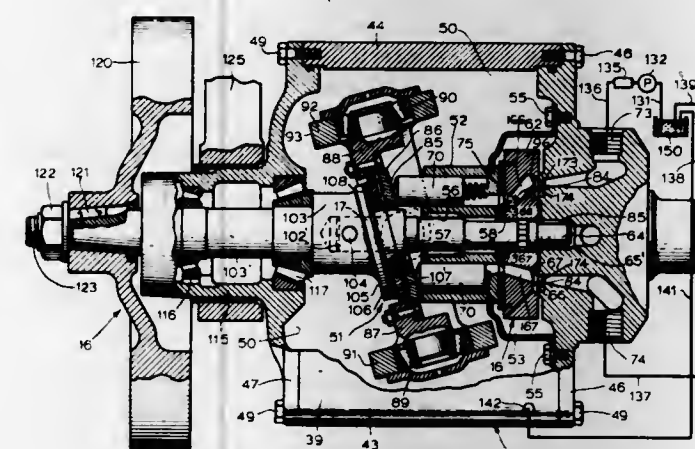
James H. Bornzin, La Grange, and William C. Swanson, Clarendon Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 16, 1973, Ser. No. 333,421

Int. Cl. A01d 55/02

U.S. Cl. 56-296

13 Claims



For a mower of the reciprocating type, a drive which converts rotary motion to an oscillating motion for reciprocating the mower sickle. The drive incorporates a swash plate which is pivoted on a horizontal axis to the upper end of a yoke; the lower end of which is connected through an arm to the sickle. The swash plate is driven by axially extending and retracting pistons of a hydraulic motor. The motor is capable of running the sickle at infinite speeds and the loads generated due to change of direction of the sickle at each end of its stroke are in part modulated by the hydraulic system.

3,823,535

**ROPE SPLICING FID**

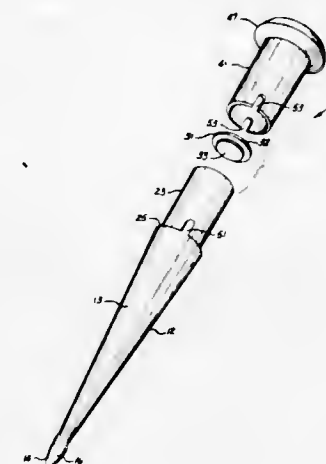
James D. McGrew, 555 Capitol Mall Suite 1015, Elverta, Calif. 95814

Filed Apr. 9, 1973, Ser. No. 349,200

Int. Cl. B65h 69/06

U.S. Cl. 57-23

4 Claims



A fid for splicing rope, or line, as it is often called, comprises three parts. One part is a hollow tapered spike with a spade-shaped point to separate and spread apart the strands of the rope to be spliced. A removable stopper, or closure cap, the second part of the fid, seals the open end of the hollow spike, the hollow, sealed interior chamber affording positive buoyancy to the spike as well as providing a convenient storage receptacle for small articles, such as sailmakers' needles, and the like. The third part of the fid is a detachable tubular handle, or sleeve, which fits on the after end of the spike so that as the spike emerges from the separated and spread-apart rope strands, and is detached from the sleeve, the sleeve remains in place between the opened strands and affords an unobstructed conduit for the introduction of a tuck strand through the opened rope strands.

3,823,536

**METHOD OF TWISTING ELEMENTS TO FORM AN ELECTRICAL CABLE HAVING A TWIST WHOSE DIRECTION ALTERNATES FROM SECTION TO SECTION**

Dieter Vogelsberg, Im Eichengrund 28, 1 Berlin 13, and Gunter Stricker, Falkenseer Chaussee 246, 1 Berlin 20, Germany

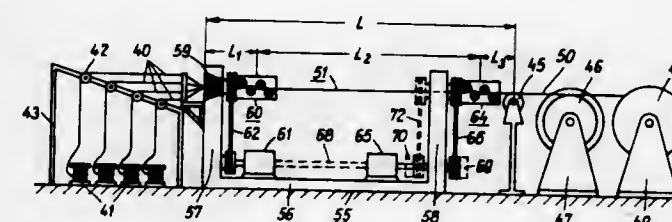
Filed June 21, 1973, Ser. No. 372,340

Claims priority, application Germany, June 22, 1972, 2230972; June 22, 1972, 2230973

Int. Cl. H01b 13/04; D07b 3/02

U.S. Cl. 57-34 AT

10 Claims



A method of twisting cable elements to form a cable unit which has a twist which alternates from section to section in which the cable being twisted is held in a stretched manner between two twisting heads one arranged immediately behind a first twisting point and the second one immediately in front of a second twisting point, the twisting heads being rotated at a speed which can be varied with respect to each other to obtain variations in twist direction.



3,823,537

**AUTOMATIC DOFFING PROCESS AND APPARATUS FOR TEXTILE MACHINES**

Tohru Uraya; Hiroshi Kato, both of Kobe; Hajimu Imai, Kyoto; Burou Suganuma, Kyoto; Masao Uehara, Kyoto, and Yasuaki Samura, Kyoto, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha; Murato Machinery, Ltd., both of Tsutsumidori-chome, Sumida-ku and Kisshoin Ochiaicho, Minami-ku, Kyoto-shi, all of Japan

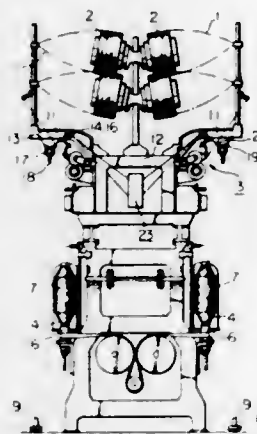
Filed Dec. 27, 1971, Ser. No. 212,093

Claims priority, application Japan, Dec. 28, 1970, 45-126936

U.S. Cl. 57-52

Int. Cl. D01h 9/04, 9/16

12 Claims U.S. Cl. 57-73



On textile machines of the simultaneous doffing and/or donning type, full bobbins on spindles are simultaneously replaced by bare bobbins at stand-by positions in front of the spindles by utilizing the movement of an elongated beam for transportation of bobbins via chucks hung thereto, which beam rests outside the range of movement of a travelling member such as an automatic yarn knoter during the non-working cycle, along preselected courses while positively guiding the bobbins by a pilot mechanism away from any contact with surrounding machine parts.

3,823,538

**RECIPROCATING LIFTING MECHANISM FOR THE GRIPPER-RAIL IN AN AUTOMATIC SPOOL CHANGE INSTALLATION OF SPINNING, TWISTING AND THE LIKE TYPE MACHINES**

Wolfgang Igel, Ebersbach, Germany, assignor to Zinser-Textilmaschinen GmbH, Ebersbach, Germany

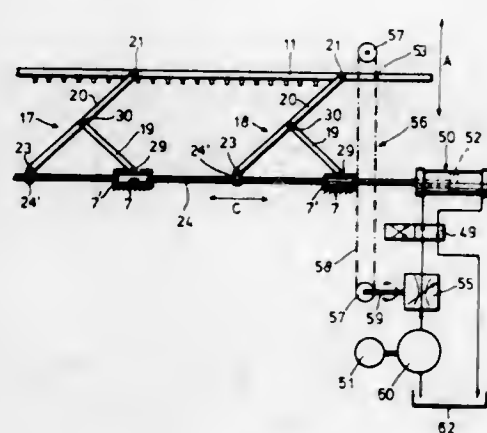
Filed Apr. 17, 1973, Ser. No. 351,976

Claims priority, application Germany, Apr. 17, 1972, 22185804

U.S. Cl. 57-52

Int. Cl. D01h 9/04

13 Claims



An improved reciprocating lifting mechanism for raising and lowering a gripper-rail within an automatic spool changing installation for spinning, twisting and the like type

machines which includes at least two substantially identical, equal-sided rectilinear guidance linkage systems, a driving mechanism for moving the gripper-rail through the linkage systems, and structure for the automatic predetermined variation of the regulating velocity of the driving mechanism during the lifting strokes of the gripper-rail.

3,823,539

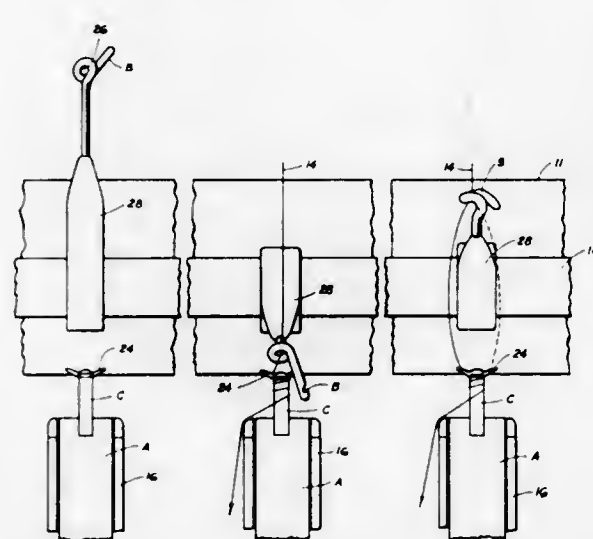
**YARN SPINNING APPARATUS**

Douglas G. Hart, 117 Knollwood Ln., Greenville, S.C. 29607

Filed Jan. 2, 1973, Ser. No. 320,281

Int. Cl. D01h 7/18, 13/04

11 Claims U.S. Cl. 57-73



A yarn spinning or twisting machine including a rotary spindle having a bobbin thereon for accumulating yarn. A yarn engaging tip is carried by the spindle for engaging the yarn during the spinning or twisting operation to reduce tension in the yarn while also inserting false twist in the yarn below the nip of the front rollers. A yarn guide is provided for directing the yarn to the tip carried on the spindle. The yarn guide is manipulated to various positions during doffing, threading-up, and running of the yarn.

3,823,540

**BRAKE FOR SPINNING AND TWISTING SPINDLES**

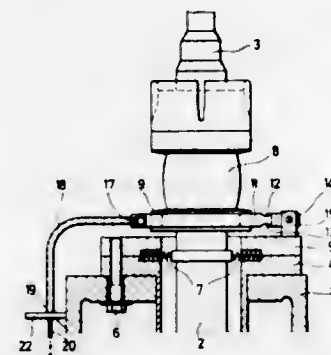
Gerhard Mandl, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Sept. 13, 1972, Ser. No. 288,481

Int. Cl. D01h 7/22

U.S. Cl. 57-88

6 Claims



The clamping shoe is resiliently connected to the housing to move radially on the spindle upon braking of the elastically supported spindle by means of the brake elements on the shoe. The resilient connection can be formed by reduced portions in the arms of the shoe or by a spring member or one or more springs between the shoe and the housing.

3,823,541

**EFFECT VOLUMINOUS YARN**

Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiaceta, Paris, France

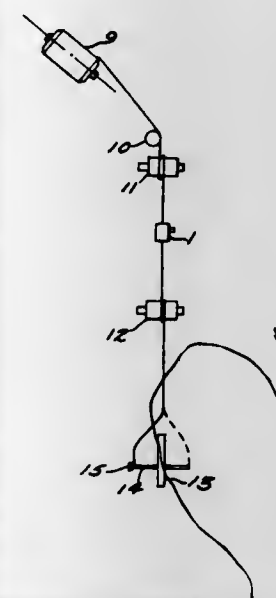
Filed Oct. 20, 1971, Ser. No. 191,115

Claims priority, application France, Oct. 22, 1970, 70.38478; Oct. 22, 1970, 70.38479; Dec. 9, 1970, 70.44628

Int. Cl. D02g 3/24, 3/34

U.S. Cl. 57-144

11 Claims



A high bulk multifilament textured yarn is disclosed, and process and nozzle for manufacturing same. The yarn has alternating compact zones and open zones with the specific volume of the open zones being at least twice that of the compact zones, the open zones being substantially of oblong form with at least a portion of the filaments thereof being distributed in a random manner in the interior of said open zones and entangled therein. The yarn is produced by passing at least one effect yarn through a turbulence chamber under substantially no tension, with the yarn being fed substantially axially to said turbulence chamber by way of a cylindrical conduit having a smaller cross-sectional area than said turbulence chamber. The yarn of this invention may be used to make woven or knitted goods and is suitable for use in hosiery.

3,823,542

**METHOD OF MAKING COMPACT CONDUCTOR**

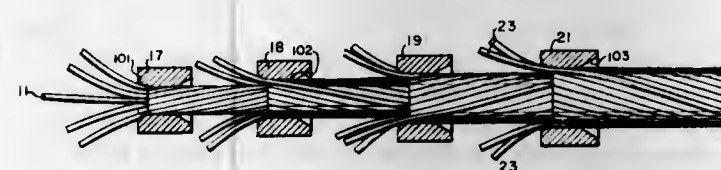
Denver L. Pemberton, Fairmount, Ind., assignor to The Anaconda Company, New York, N.Y.

Division of Ser. No. 244,083, April 14, 1972, Pat. No. 3,760,093. This application May 24, 1973, Ser. No. 363,683

Int. Cl. D02j 1/00

U.S. Cl. 57-161

2 Claims



Improved electrical conductor is formed by compacting concentric conductors which have outside wires with gages at least equal to the gages of the inside wires. Such a conductor with 37 or more wires may have the outer layer only made up of square wires.

3,823,543

**METHOD OF MAKING SPUN MULTI-WIRE ARTICLES**

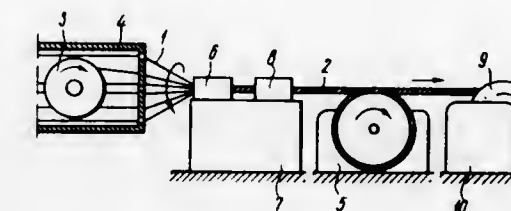
Mikhail Fedorovich Glushko, prospekt Shevchenko, 15/5, kv.17; Viktor Klimentievich Skalatsky, prospekt Gagarina, 2, kv.21; Emmanuil Filippovich Anastasiadi, ulitsa Schepkina, 17, kv.2, and Jury Lvovich Davydov, ulitsa K. Libknekhta, 43, kv. 19, all of Odessa, U.S.S.R.

Filed Feb. 29, 1972, Ser. No. 230,321

Int. Cl. D07b 3/00

U.S. Cl. 57-166

3 Claims



The method includes the steps of twisting at least some of the wires making up the article, so as to reduce these wires to the plastic-flow state; spinning all said wires of the article together and subsequently subjecting these wires to plastic-flow compression in the spun condition of the wires, by drawing them through a compressing device.

3,823,544

**INTEGRATED DIURNAL TIDE AND TIME CLOCK**

Arthur L. Torrence, Newtown, Conn., assignor to Mechtronics Corporation, Stamford, Conn.

Filed May 14, 1973, Ser. No. 360,297

Int. Cl. G04b 19/26, 19/02

U.S. Cl. 58-3

5 Claims



An integrated diurnal tide and time clock is provided which includes dials showing both the time of high and low tide and also hours. It is operable by a means of a single, synchronous clock motor; and the pointers for the two dials are interconnected by a ratio-providing bead chain gear and tensioner that substantially eliminates normal gearing errors. An economical, but accurate, dual clock results.



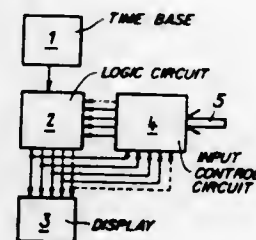
### 3,823,545 ELECTRONIC WATCH

Eric Andrew Vittoz, Cernier-Neuchatal, and Claude Fonjallaz, Cormondreche-Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland  
Filed Oct. 12, 1971, Ser. No. 187,961

Claims priority, application Switzerland, Oct. 20, 1970, 15464/70

Int. Cl. G04c 3/00; G04b 19/30, 27/00  
U.S. Cl. 58—23 R

3 Claims



An electronic watch, which includes a time base, a logic circuit and an electronic display, comprises a data input device including at least one manual control member for transferring data, e.g. a numerical value or a numerically coded instruction, into the logic circuit by means of a logic transfer circuit.

For example, any of 60 different data of any kind may be introduced into the logic circuit by means of a single push button. A number between 0 and 59 is attributed to each of these data. Any of these data is introduced by pushing the button where the corresponding number is displayed by the seconds display.

Alternatively, a number indicated on a separate display by means of a separate counter can be selectively transferred into any part of the time counter to thereby set the time. The number indicated can be transferred into any digit of a register part of an auxiliary calculator included in the logic circuits to thereby introduce the number to be processed. Alternatively, an indication of a first unit of time (e.g. seconds) can be transferred to replace and thereby correct an indication of a second unit of time (e.g. hours), a supplementary impulse generator selectively accelerating the sequential indication of seconds.

### 3,823,546

#### CRYSTAL-CONTROLLED DIGITAL CLOCK

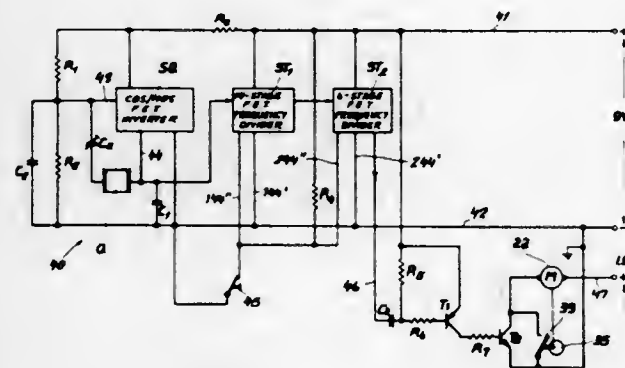
Bernd Gortz, Erlangen near Nurnberg, and Wolfgang Fehrenbacher, St. Georgen, both of Germany, assignors to Kundo Kieninger & Oberfell, St. Georgen, Germany  
Filed Mar. 16, 1972, Ser. No. 235,196

Claims priority, application Germany, Mar. 16, 1971, 2112691; Mar. 6, 1972, 2210700

Int. Cl. G04b 1/00

U.S. Cl. 58—23 R

23 Claims



A clock with coaxial digit wheels for one-minute, ten-minute and hour indications has a drive motor intermittently energized by an electronic switch constituting the final stage of a 20-stage binary frequency divider which is stepped, at a

frequency of  $2^{20}/60$  Hz, by a crystal-controlled oscillator. The latter consists essentially of a dual-FET inverter of MOS type connected across a quartz crystal, similar inverters being used for the several stages of the frequency divider. A holding button or key may be manually operated to apply a zero-setting potential to all the stages for arresting the clock until the actual time matches its reading. The motor, with associated homing contacts, and its battery-operated driving circuit may be mounted as a detachable unit on the clock housing.

### 3,823,547

#### RESET TIMER

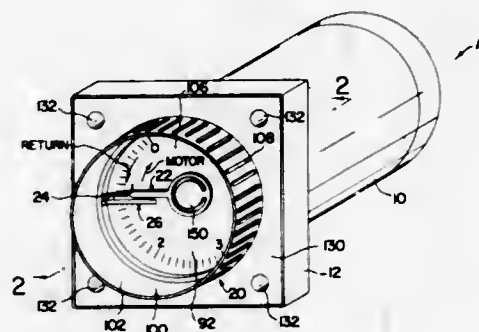
Harold D. Hulterstrum, and Frederick E. Morey, III, both of Baraboo, Wis., assignors to Gulf Western Industries, Inc., New York, N.Y.

Filed Feb. 7, 1973, Ser. No. 330,329

Int. Cl. G04b 29/00

U.S. Cl. 58—39.5

4 Claims



In a timer comprising a dial, a progress pointer rotatably mounted about an axis generally perpendicular to the dial, a first manually adjustable stop means for limiting movement of the progress pointer in a first direction, spring means for driving the pointer in the first direction, and selectively actuatable means for driving the pointer in a second direction opposite to the first direction, there is provided an improvement in the manually adjustable stop means. This improvement is a generally circular element having a periphery and a mounting element having a periphery, whereby the peripheries combine to form a generally cylindrical joint concentric with the axis. The circular element carries an abutment means for limiting movement of the pointer and the peripheral joint is spaced outwardly a substantial distance from the axis so that the dial and pointer may be easily viewed without obstruction. In addition, there is provided an improved progress counter having a means adjacent its hub for absorbing energy during impact of the pointer with the movable abutment.

### 3,823,548

#### UNIVERSAL TIME PROVIDING CLOCK

Morris Riba, 2881 W. 12th St., Brooklyn, N.Y. 11224

Filed Oct. 16, 1972, Ser. No. 298,066

Int. Cl. G04b 45/04

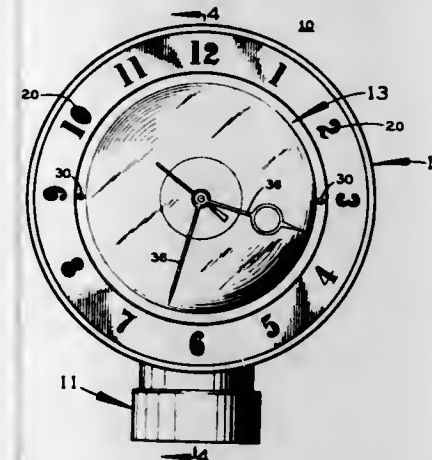
U.S. Cl. 58—44

7 Claims

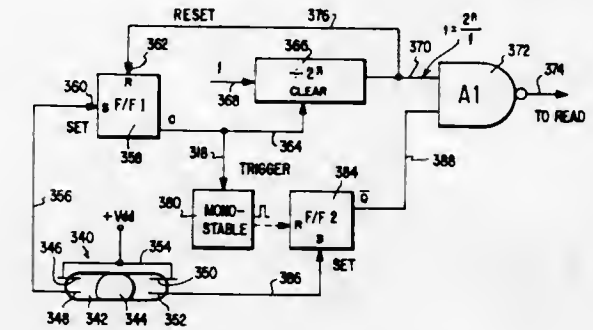
A universal time providing clock includes a rotatably mounted support annulus which has hour designating numerals on opposite faces, and a clock body is rotatably supported in the annulus. The clock body includes a front face with clock hands driven by a clock motor located within the clock body. On the rear face of the clock body there are mounted a pair of concentric hemispherical shells which are rotatable about a central axis perpendicular to the clock face and the inner and outer shell peripheries drive embrace rotatable rollers so that rotation of the outer shell rotates the inner shell in an opposite direction. The outer shell is transparent and is regularly divided into twelve numbered time zone segments and the inner shell is provided with time zone

designating indicia. Centrally rotatably mounted on the outer shell is a disc carrying regularly spaced numbers from 1 to 12

watch is a switch for actuating the display in response to a predetermined movement of the wearer's arm so that move-



ment of the other hand or arm is not required and the other hand is left free for carrying packages or other uses.



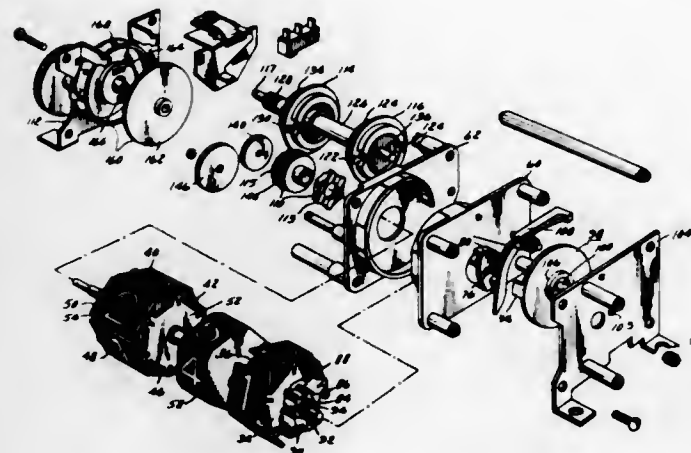


### 3,823,552 DIGITAL CLOCK

Robert L. Boyles, Wayland, Mass., assignor to General Electric Company, Bridgeport, Conn.  
Filed Mar. 8, 1973, Ser. No. 339,213  
Int. Cl. G04b 19/02

U.S. Cl. 58—125 C

10 Claims



A digital clock wherein minutes, tens of minutes, and hours display indicators are rotated by a motor in order to bring successive numerals into position behind a viewing window 82. Geneva gears 113 and 115 are grouped at the left of the numerals for driving an hours drum 56 and a tens of minutes numeral drum 58, and the drums are uniquely supported with respect to each other so that they may be driven by a motor 8 which is located at the right of the numerals.

### 3,823,553

#### GAS TURBINE WITH REMOVABLE SELF CONTAINED POWER TURBINE MODULE

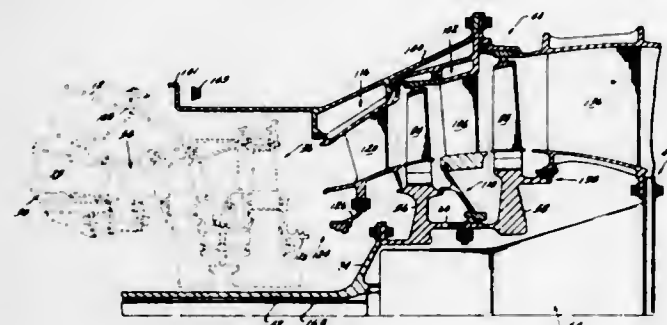
James Smith, Topsfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 26, 1972, Ser. No. 318,280

Int. Cl. F02c 3/10

U.S. Cl. 60—39.16 R

8 Claims



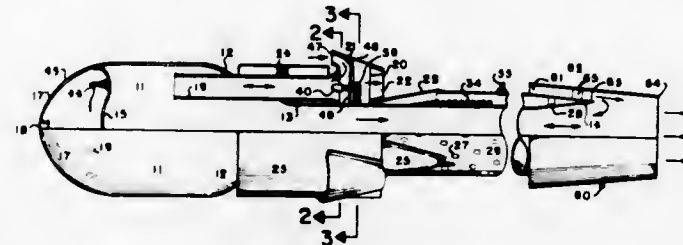
An aircraft gas turbine engine includes a power turbine module having a self-contained turbine, frame, bearings, sump and drive shaft all housed within a casing which is releasably connected to the engine such that the entire module including turbine, frame, bearings, sump and drive shaft may be readily removed and replaced by simply disconnecting the module casing from the engine. The entire operation may be accomplished without having to remove the engine from its associated aircraft.

### 3,823,554 HIGH SPEED VALVELESS RESONANT PULSE JET ENGINE

John Alden Melenric, 409 East Ln., Kerrville, Tex. 78028  
Filed Feb. 20, 1973, Ser. No. 333,867  
Int. Cl. F02k 7/04

U.S. Cl. 60—249

10 Claims



A valveless resonant pulse jet engine particularly adapted to power target vehicles or pilotless aircraft at speeds of Mach 0.5 to Mach 1. This invention is an improved high-speed adaptation of my U.S. Pat. No. 3,517,510. The device of this invention continues to utilize a substantially cylindrical combustion chamber, a reduction cone and an exhaust tube, a multiplicity of reverse flow air fuel inlet tubes projecting through the reduction cone into the combustion chamber. Annular reverse flow vanes surround the bell mouth of the air inlet tubes thereby increasing static pressure at the air inlet as forward speed of the vehicle increases. An exhaust tube diffuser is employed in a similar fashion to assist the pulsating reverse flow of ambient air into the exhaust tube to increase thrust at high forward speeds.

### 3,823,555

#### INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION FOR EXHAUST EMISSION CONTROL

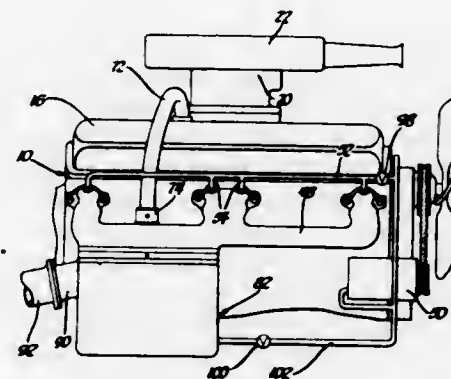
Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 247,569, April 26, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,567

Int. Cl. F02b 75/10; F01n 3/14

U.S. Cl. 60—274

7 Claims



A V-8 internal combustion engine with an inlet manifold disposed between the banks of cylinders and a pair of exhaust manifolds disposed outboard of the banks of cylinders has a converter unit containing reducing and oxidizing catalyst beds coupled to each exhaust manifold. During a warm-up mode, exhaust gases from both banks of cylinders pass through a heat exchange region beneath the inlet manifold and then enter the converter units and pass through the catalyst beds. Air injected at the exhaust ports during the warm-up mode supports oxidation of hydrocarbons and carbon monoxide, and the hot exhaust gases promote evaporation of fuel in the inlet manifold and heat the catalyst beds. After the warm-up mode, a converter mode is entered in which exhaust gases are

discharged from the exhaust manifolds directly into the converter units and pass through the catalyst beds. A reducing atmosphere provided in the first catalyst bed during the converter mode supports dissociation of oxides of nitrogen, and air injected between the catalyst beds provides an oxidizing atmosphere to support oxidation of hydrocarbons and carbon monoxide in the second catalyst bed. At high speeds or temperatures, a reactor mode is entered in which air injected at the exhaust ports supports oxidation of hydrocarbons and carbon monoxide in the exhaust manifolds and the exhaust gases then are discharged from the exhaust manifolds directly to the exhaust pipes to protect the catalyst beds.

### 3,823,556

#### CHANGE-OVER VALVE ASSEMBLY FOR A GAS PASSAGEWAY

Kenji Goto, and Kiyohiko Mizuno, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi-ken, Japan

Continuation of Ser. No. 253,268, May 15, 1972, abandoned.

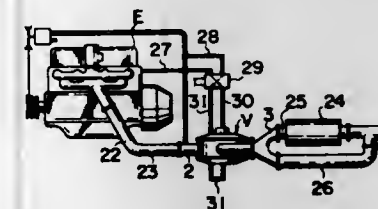
This application Aug. 2, 1973, Ser. No. 385,043

Claims priority, application Japan, May 19, 1971, 46-40429

Int. Cl. F01n 3/14; F02b 75/10

U.S. Cl. 60—288

3 Claims



This invention relates to a change-over valve assembly for a gas passageway.

Said valve assembly comprises a pair of openings formed in a valve casing in positions symmetrical with each other for selectively causing a gas inlet duct to communicate with one of two gas outlet ducts, a plurality of valve bodies firmly secured to opposite ends of a stem so that each may open and close one of said pair of openings, two diaphragm means disposed near opposite sides of the valve casing in positions symmetrical with each other and each comprising a diaphragm and having one of said valve bodies firmly secured to a middle portion of the respective diaphragm, a two-way valve adapted to cause two diaphragm chambers of said two diaphragm means to communicate with a negative pressure source and a positive pressure source respectively, and a plurality of enlarged gas passage portions each formed between one of said pair of openings and the diaphragm of each said diaphragm means.

Said plurality of valve bodies are spaced apart from each other a distance greater than the distance between said pair of openings.

Said two diaphragm chambers each is defined by an outer cover of the valve casing and the respective diaphragm.

### 3,823,557

#### FLUID MOTOR

Norman L. Van Wagenen, 378 E. Truman Ave., Salt Lake City, Utah, and Ara Norman Lamph, 540 N. 200 East, Bountiful, Utah

Continuation-in-part of Ser. No. 740,414, May 23, 1968,

which is a division of Ser. No. 607,428, Jan. 5, 1967, Pat. No. 3,420,059. This application Sept. 7, 1971, Ser. No. 178,028

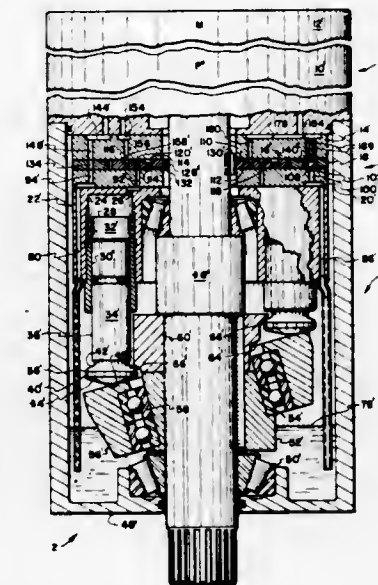
Int. Cl. F16h 39/10

U.S. Cl. 60—325

25 Claims

A fluid motor comprising a generally disc-shaped valve formed with a plurality of grooves and keyed for rotation with

the output shaft to control distribution of fluid to and from a plurality of drive cylinders carrying pistons which drive a wobble plate to rotate the output shaft. A novel lock ring is dis-



closed for retaining the pistons in engagement with the wobble plate, together with a novel pump supply and lubrication system.

### 3,823,558

#### HYDROSTATIC TRANSMISSION

Egon Tittmann, Leonberg, and Werner Romeisch, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

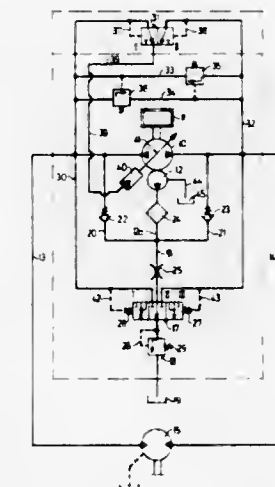
Filed Mar. 15, 1973, Ser. No. 341,609

Claims priority, application Germany, Mar. 17, 1972, 2218472

Int. Cl. F15b 21/04

U.S. Cl. 60—329

10 Claims



A driven main pump drives a hydraulic motor through high pressure and low pressure conduits, while a feed pump supplies pressure fluid through a check valve to the low pressure conduit. A control conduit connects the feed pump with a pressure maintaining valve opening into a low pressure container, and includes a shiftable control valve operated by fluid from the high pressure conduit, but connecting in all positions the feed pump with the pressure maintaining valve. In the control conduit portion between the control valve and the feed pump, a throttle is provided whose pressure differential is greater than the pressure differential of the check valve between the feed pump and the low pressure conduit.



3,823,559

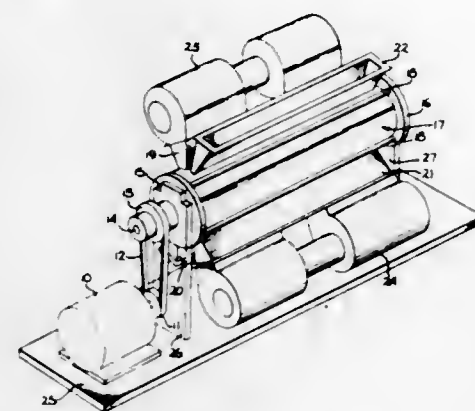
## HEAT EXCHANGING APPARATUS

Claude H. Foret, 10015 Culver Blvd., Culver City, Calif. 90230

Continuation-in-part of Ser. No. 316,663, Dec. 20, 1972, abandoned. This application May 29, 1973, Ser. No. 364,680

Int. Cl. F03g 7/06

U.S. Cl. 60—508



A flexible vane rotor eccentrically rotates within a stator cavity to operate as a compressor and expander of a sealed working gas. The rotation of the eccentrically mounted rotor having circumferentially secured flexible vanes alternately compresses and expands the internally sealed working gas to cause a heat transfer to and from the respective portions of the apparatus.

3,823,560

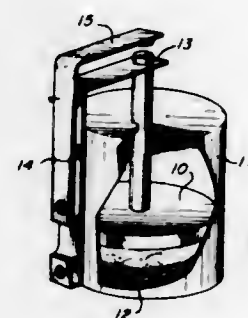
## METHOD AND APPARATUS FOR OBTAINING ENERGY FROM TEMPERATURE CHANGES

Ralph H. Hansen, Short Hills, N.J., assignor to J. P. Stevens &amp; Co., Inc., New York, N.Y.

Filed Aug. 7, 1969, Ser. No. 848,276

Int. Cl. F03g 7/06

U.S. Cl. 60—527



This invention relates to the conversion of temperature changes into energy. In the present invention, there is confined within a sealed chamber a temperature responsive composition comprising a gas and a solvent, which in the liquid state, dissolves a greater amount of the gas than when said solvent is in the solid state. The amount of gas in said composition is greater than the amount of gas which can be dissolved by the solvent in the chamber when said solvent is in the solid state. Converting the solvent from a liquid to a solid, thus results in the expulsion of gas from the solvent, thereby increasing the pressure within said chamber, while converting the solvent from a solid to a liquid results in gas being dissolved by the solvent, causing a decrease in the pressure within said chamber. Useful energy is obtained from these pressure changes. Preferably, there is associated with said chamber at least one element which is either physically moved or which generates an electric current in response to pressure

changes within said chamber. Such physical movements or electric currents can be used for many purposes, such as the control of temperature sensitive switches and valves.

3,823,561

## HYDRAULIC DRIVING UNIT FOR WINDSHIELD WIPERS IN MOTOR VEHICLES

Bruno Zoppi, Milan, Italy, assignor to Fabbria Italiana Magneti Marelli S.p.A., Milan, Italy

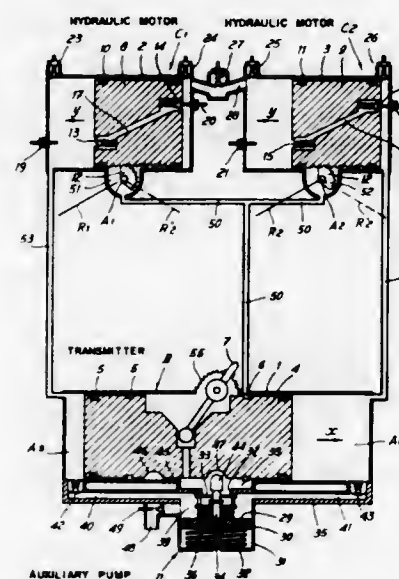
Filed May 9, 1972, Ser. No. 251,769

Claims priority, application Italy, May 11, 1971, 24342/71

Int. Cl. F15b 7/00

U.S. Cl. 60—592

9 Claims



6 Claims

A hydraulic driving unit for windshield wipers comprising a transmitter having a double-acting piston with chambers at opposite ends thereof adapted to convey to corresponding chambers of two series connected motors, quantities of liquid which are greater than the quantities of liquid in the corresponding chambers of the motors. Each motor is connected by a rack and pinion device to a respective windshield wiper. The pistons in the motors are provided with passageways connecting the opposite end chambers and valves are contained in the passageways for being respectively opened to control the flow of excess liquid from one chamber to the other when the pistons have reached their end of stroke positions. An auxiliary pump is connected to the transmitter for circulation of a leakage liquid from the transmitter or from the motors back to the chambers of the transmitter.

3,823,562

## PROCESS OF PRODUCTION OF PILES, PILE PACKS, AND SUBTERRANEAN PILE WALLS

Milan Bacmanak, Bratislava, Czechoslovakia, assignor to Vyzkumny Ustav Inzinierskych Stavieb, Bratislava, Czechoslovakia

Filed Oct. 12, 1972, Ser. No. 296,803

Claims priority, application Czechoslovakia, Oct. 26, 1971, 7503-71

Int. Cl. E02d 5/18, 5/38, 1/100

U.S. Cl. 61—35

4 Claims

Piles or subterranean pile walls are produced by using a pack of parallel tubes, composed of filling tubes closed at the bottom and of collecting tubes open at the bottom, which pack of tubes is driven into the earth, the filling tubes displac-

ing the earth to the side and later being filled with concrete. The collecting tubes collect a part of the earth, thereby



enabling its removal, the amount of removed earth being adjusted by pressure air acting on top of the earth cores in the collecting tubes.

3,823,563

## SPUD TANK FOR OFFSHORE DRILLING UNIT

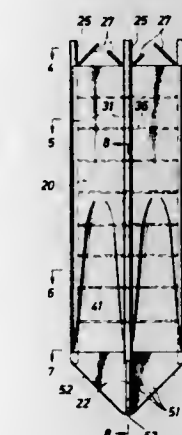
Peter M. Lovie, Houston, Tex., assignor to Engineering Technology Analysts, Inc., Houston, Tex.

Filed Sept. 5, 1972, Ser. No. 286,162

Int. Cl. E02b 17/00; E02d 5/72

U.S. Cl. 61—46.5

20 Claims



A spud tank for attachment to at least one of the legs of an offshore drilling unit having a work platform and a plurality of legs depending therefrom for supporting the drilling unit on the floor of a body of water. The spud tank may comprise an elongated body section and a tip section depending downwardly from the body section. The uppermost portion of the body section may be provided with a polygonal cross section, the lowermost portion having a substantially star-shaped cross section of a relatively smaller area. The sides of the polygonal cross section may be connected to the sides of the star-shaped cross section by nonplanar walls. The tip section may comprise a plurality of radial blade members, the outer edges of which are tapered downwardly and inwardly from the points of the star-shaped body cross section, converging together in a pointed tip.

3,823,564

## METHOD AND APPARATUS FOR TRANSPORTING AND LAUNCHING AN OFFSHORE TOWER

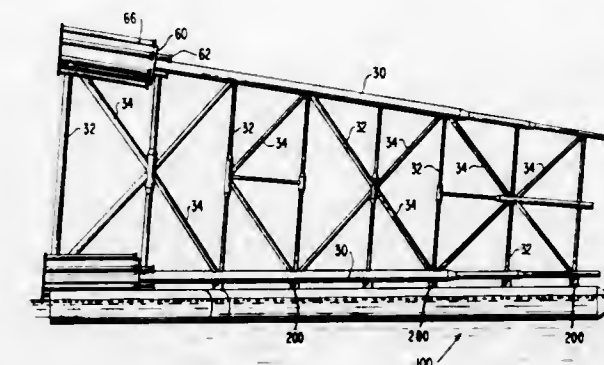
Jesse W. Crout, Albert M. Koehler, and Larry K. Shaw, all of Houston, Tex., assignors to Brown &amp; Root, Inc., Houston, Tex.

Filed Feb. 27, 1973, Ser. No. 336,276

Int. Cl. E02b 17/02; B63b 35/40

U.S. Cl. 61—46.5

30 Claims



A method and apparatus for transporting and launching an offshore tower. The apparatus according to the invention comprises a watertight buoyancy means for supporting an offshore tower in a generally horizontal transporting posture substantially above the surface of the body of water and subsequently controllably righting the offshore tower onto the bed of the body of water at a preselected marine site. The buoyancy means is connected along the lateral extent of the offshore tower by a plurality of spaced connecting assemblies. The watertight buoyancy means is interiorly compartmented with bulkheads to facilitate buoyancy control and righting of the offshore tower within the body of water. The lowermost connecting assembly between the offshore tower and the buoyancy means consists of at least one pivotal assembly so that the buoyancy means may be controllably pivoted away from the offshore tower following a righting operation.

One specific embodiment of the transport and launch apparatus includes first and second tubular, selectively variable, buoyancy members. Each buoyancy member includes a unitary tubular section and a bifurcated tubular section connected to one end thereof. Clamping assemblies are provided along the lateral extent of the first and second tubular buoyancy members for releasably connecting the buoyancy members to the lateral face of an offshore tower. The bifurcated tubular sections may each be provided with transversely extending bridges for supporting pivotal connection assemblies for pivotally connecting a base portion of the transport and launch apparatus to a base portion of the offshore tower.

The method of transporting and launching an offshore tower according to the invention comprises the steps of floating an offshore tower to a preselected marine site upon a tubular buoyancy means, controllably righting the offshore tower within a body of water, lowering the offshore tower onto the water bed and releasing the tubular buoyancy means from a lateral surface of the offshore tower by pivoting the buoyancy means away from the offshore tower about a pivotal connection at the base of the offshore tower. The tubular buoyancy means is then refloated and transported back to an offshore tower fabrication yard for subsequent reuse.

3,823,565

## METHOD AND APPARATUS FOR LAYING THERMOPLASTIC PIPE

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed June 29, 1973, Ser. No. 374,845

Int. Cl. F16l 1/00; E04b 1/16

U.S. Cl. 61—72.1

18 Claims

An elongated pipe formed of a normally rigid thermoplastic synthetic organic resin is packaged in a collapsed lay flat con-



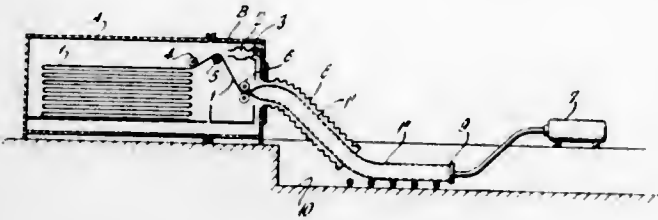
dition and in a multilayer state in a heat insulated receptacle having a discharge opening. A chamber is separably coupled to and communicates with the receptacle and houses an air heater, a blower for circulating the hot air through the receptacle and a pair of squeeze rolls for withdrawing and discharging

**3,823,567**  
**THERMOELECTRIC-VACUUM SHIPPING CONTAINER**  
Louis J. Corini, Philadelphia, Pa., assignor to Melbro Corporation, Philadelphia, Pa.

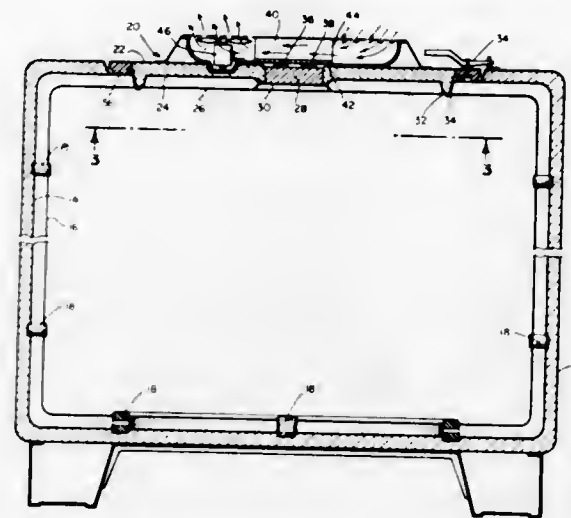
Filed Apr. 5, 1973, Ser. No. 348,183  
Int. Cl. F25b 21/02

U.S. Cl. 62-3

1 Claim



ing heated softened pipe from the receptacle. The pipe is led by a guide tube into a trench where the pipe is to be laid and an air compressor is connected to the distal end of the pipe to expand the softened discharged pipe, and the laid pipe is cooled to harden it to a rigid state.



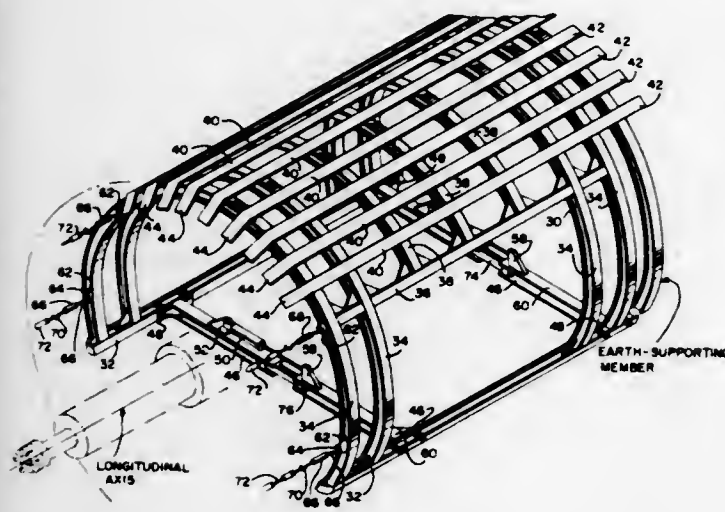
A container has an inner shell vacuum insulated from an insulated outer shell. A removable cap is provided with thermoelectric temperature control means actuated by a circuit which provides for reverse polarity for reversing heat flow. The thermoelectric means controls the temperature within the inner shell by making up the small heat transfer through the vacuum container construction.

**3,823,566**  
**EARTH-SUPPORTING APPARATUS AND METHOD**  
Howard J. Handewith, Seattle, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 18, 1972, Ser. No. 316,043  
Int. Cl. E01g 3/00

U.S. Cl. 61-85

6 Claims



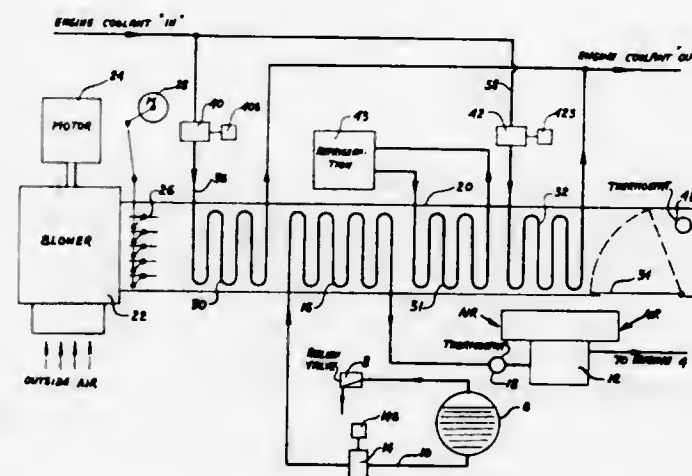
The apparatus comprises an open, circular frame, which is resiliently expansible and contractible, arranged for towing in accompaniment with a tunnel (or the like). Hydraulic cylinders coupled across telescopic transverse struts of the frame are operative to expand or contract the frame. The method, capable of practice by the apparatus, comprises the expansion of an open frame into engagement with the soft or friable earth of an earth bore overhead and the installation and fixing of an earth-supporting member therewithin. Thereafter, the frame is moved out, and the member is fastened to the bore overhead.

**3,823,568**  
**METHOD AND APPARATUS FOR AIR CONDITIONING VEHICLES**  
Tadeusz M. Bijasiewicz, 123 Keifer Dr.; Howard S. Orr, 2080 Outlook Dr., both of Upper St. Clair Township, Pa. 15241, and Donald E. Vierling, 1016 Cochran Rd., Mt. Lebanon Township, Allegheny County, Pa. 15243

Filed Aug. 29, 1973, Ser. No. 392,800  
Int. Cl. F25b 19/00

U.S. Cl. 62-7

9 Claims



In land and water vehicles using cryogenic fuels the liquified fuel is heated and vaporized in an air conduit leading to the

passenger compartment of the vehicle. This is done by controlling the volume and temperature of the air delivered to that section of the air conduit containing the fuel. The evaporation of the fuel cools the air which is then fed into the passenger compartment to cool the compartment. In winter the air can be heated by the engine coolant to a degree sufficient to heat the passenger compartment.

**3,823,569**  
**CIRCULATION SYSTEM FOR LOW-TEMPERATURE FLUIDS**

Alfons Sellmaier, deceased, late of Munich, Germany (by Anne-Rose Sellmaier, heir-at-law and legal guardian); Andreas Michael Sellmaier, Munich, Germany (heir-at-law); Alban Noppel, Munich, and Gunter Sippel, Hohenschäftlarn, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

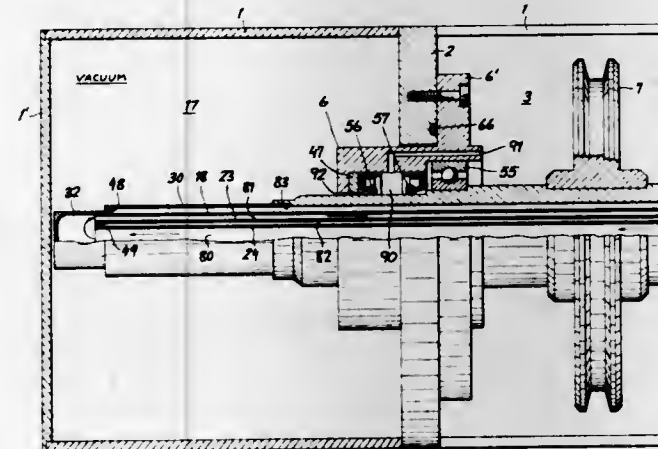
Filed Nov. 13, 1972, Ser. No. 306,356

Claims priority, application Germany, Dec. 27, 1971, 2164823

Int. Cl. F17c 7/02

U.S. Cl. 62-55

10 Claims



A low-temperature fluid, delivered by a stationary cooling plant to a rotating load, passes to and from the load by way of two coaxial ducts which are thermally shielded from each other and from the outside by vacuum spaces, these ducts and spaces being formed by four jointly rotating coaxially nested tubes. The return duct lies between the inner and the outer tube pair, the latter pair terminating at an outlet between two ball bearings respectively supporting the outer and the inner tube pair; the bearings are located in stationary journal boxes containing annular seals which elastically engage the outer tube of the respective pair, these seals being located in chambers maintained at near-ambient temperature by heat transfer through the metallic wall of the box. Between these journal boxes the tubes are surrounded by an outer jacket forming another vacuum space around them; the seal chamber of each box communicates with one of the fluid-circulating ducts through a narrow annular clearance formed between the outermost rotating tube and an enveloping fixed tube, this clearance being sandwiched between vacuum spaces and long enough to develop a low temperature gradient therealong. The pairs of rotating tubes are interconnected at one end by corrugated expansion joints allowing relative dimensional changes due to temperature variations.

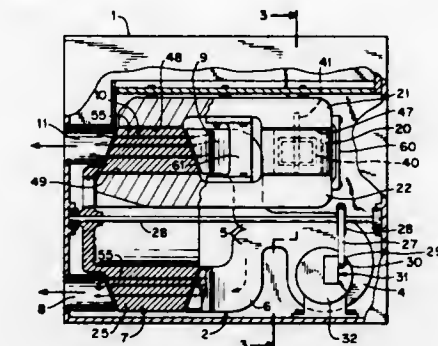
**3,823,570**  
**HEAT PUMP**

Henry W. Wallace, 60 Oxford Dr., Freeport, N.Y. 11520  
Filed Feb. 16, 1973, Ser. No. 333,206

Int. Cl. F25d

U.S. Cl. 62-56

11 Claims



Method and apparatus for utilizing for the purpose of heat flow by means of controlled temperature change a field energy, other than electric, magnetic or gravitational field energies, capable of reducing the specific heat properties of a broad class of substances.

**3,823,571**  
**MACHINE FOR DISPENSING A SEMI-FROZEN CARBONATED BEVERAGE INCLUDING A SYSTEM FOR AUTOMATICALLY CONTROLLING THE QUALITY OF THE BEVERAGE THROUGH TIMED MODES**

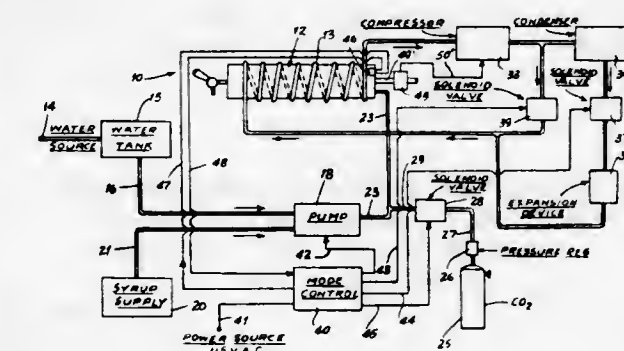
Dudley C. Smith; Jasper E. Hurley, both of Dallas, and John D. Harris, Garland, all of Tex., assignors to John E. Mitchell Company, Dallas, Tex.

Filed July 18, 1973, Ser. No. 380,150

Int. Cl. F25c 7/00

U.S. Cl. 62-136

10 Claims



This invention relates to a machine for dispensing a semi-frozen carbonated beverage, and particularly such a machine including a system for automatically controlling the quality of the beverage through various timed modes. The machine includes a cooling chamber, means for delivering liquid ingredient to the chamber, means for delivering carbon dioxide gas to the chamber, and refrigeration means for maintaining the liquid ingredient in the chamber to within a prescribed viscosity and temperature range. The temperature and viscosity of the liquid ingredient and the pressure within the chamber are maintained within prescribed ranges during a first operating mode of the machine to produce a semi-frozen carbonated beverage upon dispensing the ingredients from the chamber. The automatic mode control of the machine controls the refrigeration means and liquid and gas delivering means such that during a first operating mode, said viscosity, temperature, and pressure ranges are maintained and delivery of both liquid and gas ingredients is allowed to the chamber, during a second



operating mode the liquid ingredient within the chamber is defrosted, and during a period of time between first operating modes the delivery of gas is allowed to the chamber and the supply of liquid ingredient to the chamber is shut off.

3,823,572

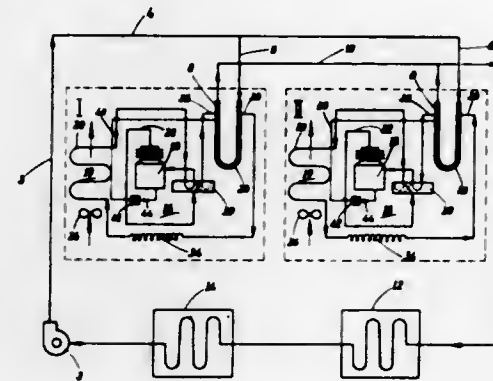
**FREEZE PROTECTION DEVICE IN HEAT PUMP SYSTEM**  
Thomas L. Cochran, Jr., Davenport, Iowa, assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Aug. 15, 1973, Ser. No. 388,421

Int. Cl. F25b 13/00

U.S. Cl. 62-160

7 Claims



A water source heat pump system having a plurality of zone air conditioning units, each unit adapted for selectively heating or cooling a zone independent of other units, each air conditioning unit having an air-to-refrigerant heat exchanger, a water-to-refrigerant heat exchanger of the type having a water contact coil disposed within a housing, a refrigerant compressor, and refrigerant control means operable to selectively cause the air-to-refrigerant exchanger to act as a refrigerant evaporator or condenser and the water-to-refrigerant heat exchanger to act as a refrigerant condenser or evaporator, the water-to-refrigerant heat exchanger and the air-to-refrigerant heat exchanger utilizing thermostat control means to control the operation of the air conditioning unit so as to prevent freezing of water in the water-to-refrigerant heat exchanger during the heating cycle and prevent frosting or freezing of condensate on the air side of the air-to-refrigerant exchanger during the cooling cycle.

3,823,573

**AUTOMOTIVE AIR CONDITIONING APPARATUS**

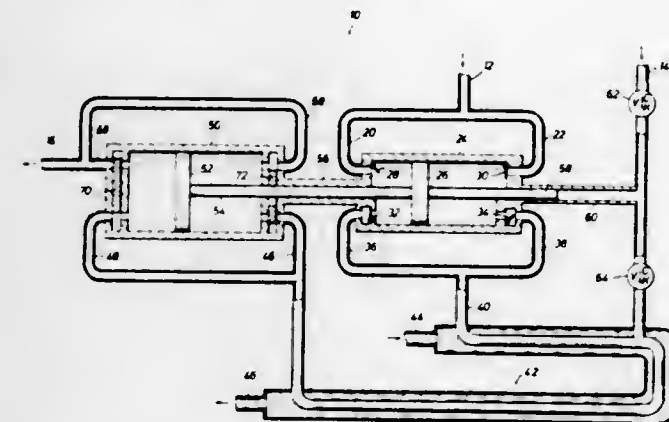
Verl C. Cassidy, Rt. 1, Box 15, Bourg, La. 70343

Filed Mar. 16, 1973, Ser. No. 342,189

Int. Cl. F25b 27/02

U.S. Cl. 62-238

8 Claims



For use in an automotive air conditioning apparatus, a compressor device which functions with a typical condenser and evaporator wherein the gas from the evaporator is introduced

to a double acting piston and cylinder arrangement exhausted by a check valved conduit which then delivers the refrigerant gas at an elevated pressure to a water jacket heat exchanger. Preferably, the heat exchanger utilized water in the cooling system of the vehicle. The refrigerant is then delivered to a double acting fluid pump motor which is connected to the first pump. The refrigerant which has been raised in enthalpy is introduced to the fluid pump motor which is connected by means of a piston rod to the pump previously mentioned. After energy is taken from the refrigerant by the fluid pump motor, it is then supplied by a conduit to a typical condenser for cooling to the liquid state for transfer to the evaporator to repeat the cooling cycle.

3,823,574

**APPARATUS FOR OPENING EXHAUST AND VENT PORTS OF AN AIR CONDITIONING UNIT**

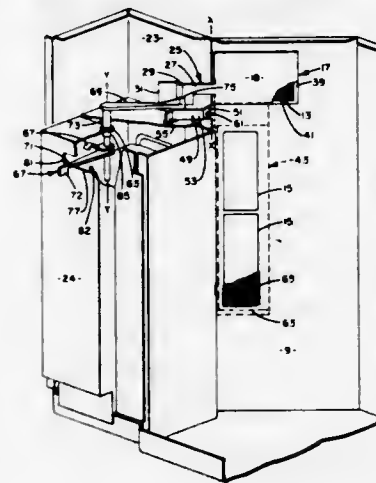
Theodore S. Bolton, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 2, 1973, Ser. No. 356,658

Int. Cl. F25d 23/12

U.S. Cl. 62-262

8 Claims



Apparatus for selectively opening the exhaust and vent ports in a wall between the condenser and evaporator sections of an air conditioning unit, the apparatus comprising hinged doors biased to port closing positions and an operating lever having an actuating arm extending from a rotatable shaft for selectively exerting torque on tabs extending from the doors to open the selected one of the doors.

3,823,575

**CRYOGENIC APPARATUS**

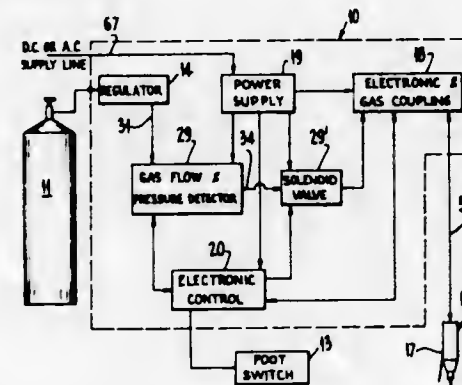
Jean-Marie Parel, Miami, Fla., assignor to The University of Melbourne, Parkville, Victoria, Australia

Filed June 7, 1971, Ser. No. 150,284

Int. Cl. F25b 19/00

U.S. Cl. 62-514

12 Claims



A cryogenic apparatus is disclosed for use in biological sciences having automated controls and using the Joule-

Thomson effect. A supply of gas flows to a control unit which includes a solenoid gas valve. If the gas pressure and flow rate are within acceptable limits, the valve will permit flow from the control unit to a probe to effect cooling of the probe by the Joule-Thomson effect.

3,823,576

**UNIVERSAL JOINT FOR VEHICLE STEERING COLUMN**

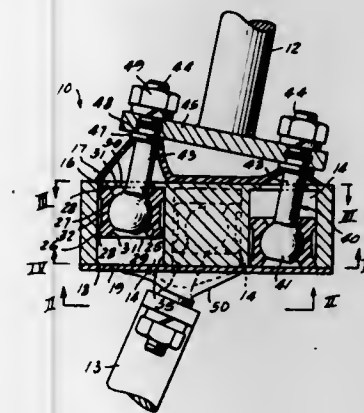
John B. Colletti, Grosse Point Park, and Leonard J. Zukowski, Sterling Heights, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 22, 1972, Ser. No. 282,767

Int. Cl. F16d 3/00

U.S. Cl. 64-8

6 Claims



A Universal joint connection including a housing with four circular bores extending thereinto, the bores being formed at the corners of a square, the bores being closed at both ends by walls. Diagonally opposed bores having slots through one end wall on each side of the device, the bores having spool bearings therein, the bearings receiving ball ends of ball-ended studs, the shanks of which project through the slots whereby two studs project from each side of the unit. The shanks being attached to driving and driven column shafts.

3,823,577

**FLEXIBLE COUPLING**

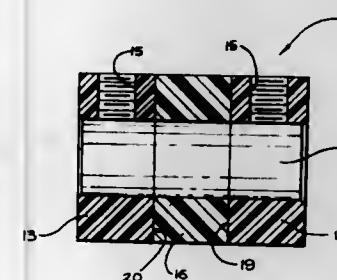
Thomas R. Smith, Newton, Iowa, assignor to Pyramid, Inc., Newton, Iowa

Division of Ser. No. 113,259, Feb. 8, 1971, abandoned. This application Apr. 17, 1973, Ser. No. 352,041

Int. Cl. F16d 3/17

U.S. Cl. 64-11 R

2 Claims



A flexible coupling including a flexible polyurethane elastomer central member bonded to the face of rigid driving and driven hubs formed, in one embodiment, of a polycarbonate material and a method of making the flexible coupling.

3,823,578

**DRIVE MEANS FOR DOUBLE CYLINDER CIRCULAR KNITTING MACHINE**

Gustav Voda, Trebic, Czechoslovakia, assignor to Elitex Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

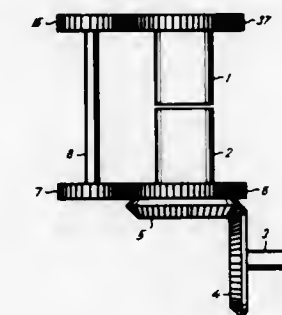
Filed June 20, 1972, Ser. No. 264,463

Claims priority, application Czechoslovakia, June 21, 1971, 4574-71

Int. Cl. D04b 9/10

U.S. Cl. 66-14

7 Claims



A knitting machine having a pair of rotatable needle cylinders aligned along a common axis. Means are provided for rotating one of the cylinders and transmitting the rotation to the other. The transmission means being disconnectable to selectively interrupt the rotation of the second cylinder while the first cylinder continues to rotate.

3,823,579

**PATTERN CONTROL MECHANISM FOR CIRCULAR KNITTING MACHINES**

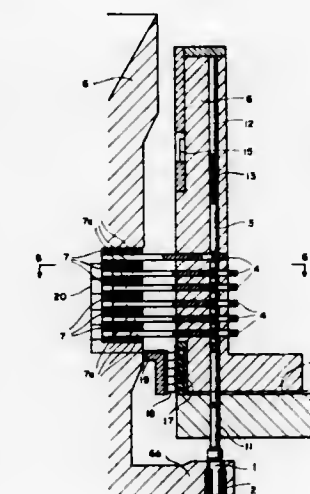
Alfred Schindele, Karlstr. 36, Harthausen; Heinz Glausinger, Zuckerbergstr. 161, Stuttgart, and Jorg Helmert, Wallmersstr. 28, Stuttgart-Unterturkheim, all of Germany

Continuation-in-part of Ser. No. 63,257, Aug. 12, 1970, abandoned. This application Nov. 22, 1972, Ser. No. 308,751 Claims priority, application Germany, Aug. 16, 1969, 1941639

Int. Cl. D04b 15/78

U.S. Cl. 66-50 R

7 Claims



A pattern control mechanism for circular knitting machines having a rotating cylinder in which there are operatively arranged a plurality of knitting needles and jacks. The plurality of knitting needles and jacks form a plurality of knitting systems. A pattern mechanism is operatively mounted in the stationary cam cylinder which coacts with the rotating cylinder supporting the needles and jacks. Each pattern arrangement comprises a plurality of pattern sliders which are arranged in a stack. The individual pattern sliders are sequentially actuated by means of an electromagnetic control



mechanism. The control mechanism is mounted in the rotating cylinder. The pattern sliders can be locked in position by a control rod. The control mechanism comprises pushers which are actuated by a magnet, said pushers coacting in accordance with a predetermined pattern with the pattern sliders.

3,823,580

# LATCHING MECHANISM FOR KNITTING MACHINE CARRIAGE

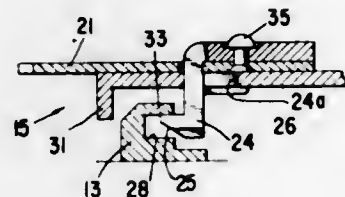
John C. Cariddi, Saddle Brook, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 24, 1973, Ser. No. 363,463

Int. Cl. D04b 7/00

U.S. Cl. 66—60

6 Claims



A latching mechanism for the carriage of a knitting machine that is slidable along slide rails on the bed of the machine and pivotable about one of said slide rails. A latch plate is slidably mounted in the carriage and has associated therewith a depending latch dog. The latch dog is provided with an inclined surface which is cooperable with a surface on a second slide rail so as to permit sliding movement of said latch dog on said second slide rail against the force of a spring until registration of a flange on the latch dog with a cooperating recess in said second slide rail occurs and the latch dog thereby snaps into nested latched position within said second slide rail thereby locking the carriage to the slide rails. The carriage is so formed that when it rests upon the second slide rail the weight distribution thereof causes said sliding of the latch dog to take place against the spring bias until the latch dog snaps into nested latched position.

3,823,581

# KNITTING MACHINE NEEDLE HOLDER

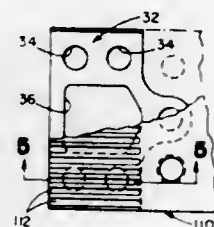
Carmine M. Russo, 177 Forest Ave., Paramus, N.J. 07110

Filed Feb. 2, 1973, Ser. No. 329,098

Int. Cl. D04b 15/00, 35/00

U.S. Cl. 66—86 R

2 Claims



A knitting machine needle assembly, and elements thereof, with first and second needle clamping members, one of said members being longitudinally grooved to accept a multiplicity of needles and the other of said members carrying a transverse protuberance to secure needles carried in the grooves of the other against movement out of the bight of the members, each of the needles including a groove of a shape to cooperate with said protuberance.

3,823,582

# AN ASSEMBLY FOR BOTH ROTATABLY DRIVING THE SUCTION DRAW-OFF TUBE AND OPERATING THE SLITTER MECHANISM OF A CIRCULAR KNITTING MACHINE

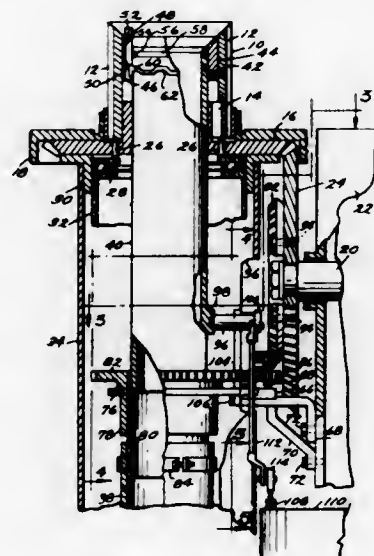
Vaughn H. Butler, Harriman, Tenn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed June 28, 1972, Ser. No. 267,215

Int. Cl. D04b 35/34, 15/92

U.S. Cl. 66—147

4 Claims



The present invention provides a simple assembly easily installable on a specific type of circular knitting machine, with substantially no modification thereof; for actuating a vertically-reciprocable non-rotating fabric-receiving slitter control tube disposed within the needle cylinder of the machine for operating a slitter mechanism at the upper end of the cylinder. The assembly also rotatably drives a fabric-receiving suction draw-off or accumulator tube coaxially aligned beneath the control tube in synchronism with the needle cylinder for preventing twisting of long lengths of tubular fabrics knitted on the machine.

3,823,583

# TUBULAR WASHING MACHINE

John Emil Stroberg; Nils Birger Thunblom, all of Ronneby, and Lars-Goran Henriksson, Ronneby, both of Sweden, assignors to Aktiebolaget CTC, Gothenburg, Sweden

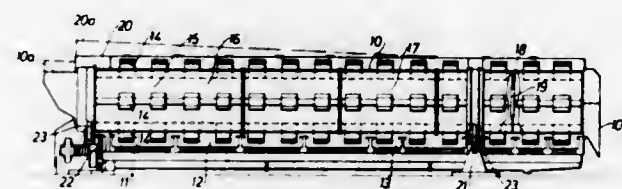
Filed Aug. 22, 1972, Ser. No. 282,799

Claims priority, application Sweden, Aug. 23, 1971, 10680/71

Int. Cl. D06f 37/08

U.S. Cl. 68—58

6 Claims



A washing machine comprising an elongated rotating tube having several, separate treatment sections and means positioned behind one or more treatment sections for restricting the flow area of the tube so as to obtain a more uniform distribution of the washing goods in the preceding sections.

3,823,584

# JOINT COMBINATION ACTUATED AND KEY ACTUATED PADLOCK

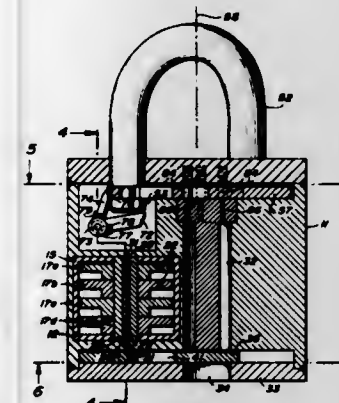
Robert E. Gill, Belvidere, N.J., assignor to Harry A. Snyder, Easton, Pa., a part interest

Filed Aug. 6, 1973, Ser. No. 385,709

Int. Cl. E05b 67/22

U.S. Cl. 70—21

7 Claims



A principal feature of the joint combination-actuated and key-actuated padlock disclosed is that a customer can select a plurality (such as four) of a group (such as 10) of combination disks for use in the lock. The lock is sold basically in two parts: First, the main casing, including the shackle and key-operated mechanism, having a cut-away portion. Second, a group of 10 combination disks together with a housing and spring pin means for the assembly thereof. The customer selects any four of the 10 disks to provide his own unique permutation. The customer inserts the four disks into the housing, together with the spring pin, and inserts the assembled housing into the cut-away portion of the main casing. The spring pin means engage within suitable detents within the cut-away portion, thereby retaining the assembled housing in the padlock casing. Once performed, the housing cannot be simply removed, but is permanently engaged therewithin.

By setting the proper combination with the selected disks, a reciprocating member can be disengaged from a first slidable plate which covers the keyhole of the padlock. After the combination is set, and the plate moved to uncover the keyhole, the customer can insert the key into the lock.

A second slidable plate engages both the toe and heel ends of the padlock shackle in the manner of a bolt. The second slidable plate is activated by the insertion of a key into the keyhole, which operates against tumblers oriented in openings in the slidable plate.

Other features include a unique configuration of two arms and a torsion spring, which, when operated upon by the toe end of the shackle, causes the second slidable plate to be urged against the shackle, so that, upon closing of the shackle, the slidable plate engages therewith and locks same.

3,823,585

# UNIVERSAL KEY LOCK, PRIVACY LATCH AND DOORKNOB

Carroll V. Spon, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Nov. 10, 1972, Ser. No. 305,437

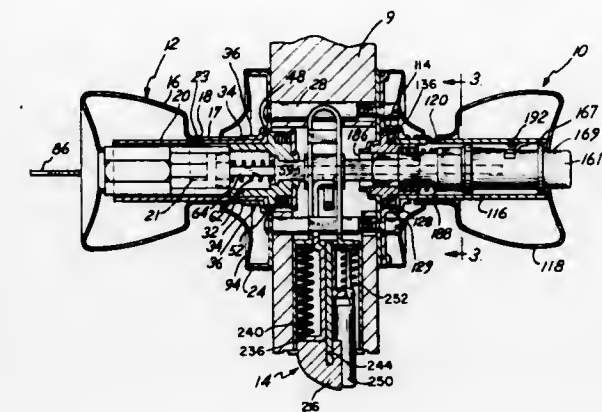
Int. Cl. E05b 55/04

U.S. Cl. 70—146

20 Claims

An improved door latch set which may be converted from a basic latch set into a privacy latch set or into a key lock latch set. The set includes a latch assembly, an inside doorknob assembly and an outside doorknob assembly. The doorknob assemblies are interconnected by a spindle which fits through a cam of the latch assembly. Rotation of the doorknob drives the cam which, in turn, moves the bolt of the latch assembly

into or out of engagement with a strike. The inside doorknob assembly may include a push button lock mechanism which locks the latch set upon depression of the push button. The locked latch set may be released by twisting the inside doorknob.



nob or by a key mechanism associated with the outside doorknob. That is, rotation of the key mechanism drives a latching bar connected with the push button mechanism and effects release of the push button mechanism.

3,823,586

# DELAYED OPENING SAFE DOORS

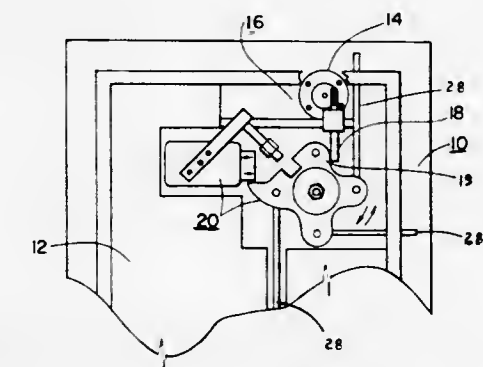
Leland J. Melancon, 5243 Canal Blvd., Harvey, La. 70124

Filed Nov. 7, 1972, Ser. No. 304,444

Int. Cl. E05b 15/00

U.S. Cl. 70—268

2 Claims



A safe door with part of its insulation cut away adjacent its locking mechanism, which includes dialing and locking portions, to define an interior recess. A timer is mounted in the recess with its winding handle extending through the metal exterior of the safe door. An associated locking bar is slidably mounted in said recess intermediate said timer and locking mechanism and adapted to be slidably operable by winding said timer to independently immobilize the locking portion of said locking mechanism for a period of time after the winding handle is released from winding.

3,823,587

# KEY HOLDER

Pierre Tcherdakoff, Neuilly sur Seine, France, assignor to S.A. Arthus Bertrand, Paris, France

Filed Oct. 13, 1972, Ser. No. 297,329

Claims priority, application France, Oct. 13, 1971, 71.36834

Int. Cl. A47g 29/10

U.S. Cl. 70—456 R

8 Claims

The invention is a key-ring made up of a contiguous turn coil spring and of a base to which it releasably is mounted in



the form of a U. Each end of the spring has an end member fixed thereto which comprises a neck portion and a spherical



head may passage, this aperture being followed by two seats allowing sliding movement therein of the neck portions but preventing withdrawal of the head.

3,823,588

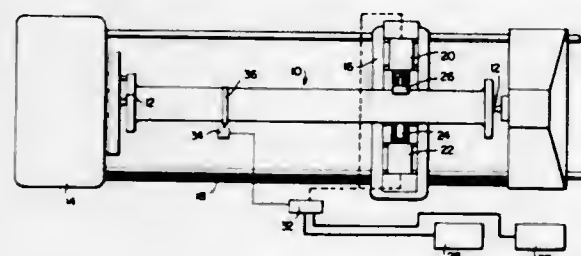
**METHOD AND SYSTEM FOR STRAIGHTENING LARGE DIAMETER SHAFTS BY SELECTIVE COLD ROLLING**  
John E. Ancarrow, Jr., and Roy L. Harrington, both of Newport News, Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Oct. 19, 1972, Ser. No. 298,978

Int. Cl. B21d 3/02

U.S. Cl. 72-7

9 Claims



A method and system for straightening large diameter shafts by selective cold rolling by pressing a smaller roller against the shaft with alternating loads as the shaft is slowly rotated.

3,823,589

**INDUCTOR FOR MAGNETIC PULSE PRESSURE SHAPING OF METALS**

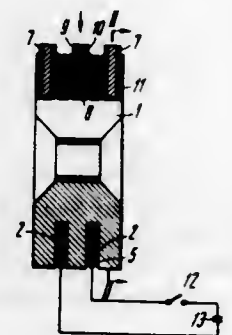
Alexandr Tikhonovich, ulitsa Dneprovskaya, 19, kv. 7, Mez-huev, Kharkov; Lev Timofeevich, poselick Pokatilovka, ulitsa Ulyanovskaya, 35, Khlmenko, Kharkov, and Alfred Lvovich, ulitsa Dzerzhinskaya, 32, kv. 15, Shlyakht, Kharkov, all of U.S.S.R.

Filed June 1, 1973, Ser. No. 366,213

Int. Cl. B21d 26/14

U.S. Cl. 72-56

2 Claims



An inductor for magnetic pulse pressure shaping of metals comprises a concentrator having a radial slot and an axial

opening for placing a part to be shaped therein; recesses made at the concentrator outer surface with a working winding disposed therein; radial openings made in the concentrator body in the plane of said radial slot at both sides of each recess and to the recess depth; and current conducting inserts mounted in said radial openings, said inserts being insulated from the concentrator and bridging said radial slot, and each current conducting insert mounted between the recesses consisting of two current conducting sections insulated from each other to their depth by a lining.

3,823,590

**HELICAL COIL FORMING MACHINE**

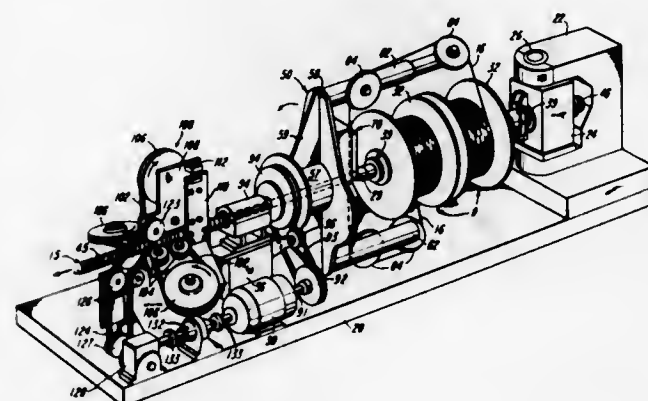
Ernest U. Lang, Niles, Mich., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 21, 1973, Ser. No. 343,617

Int. Cl. B21d 11/00

U.S. Cl. 72-66

10 Claims



A pair of large wire supply rolls are rotatably supported by a cantilevered tubular shaft, and corresponding wires extend from the rolls to a coil forming rotor which is also supported by a cantilevered tubular shaft aligned axially with the roll support shaft. Wire is withdrawn from the wire supply rolls by rotation of the rotor which includes precisely driven wheels for feeding the wires through corresponding sets of casting rollers to form a continuous double helix nonrotating coil. A non-rotating mandrel projects through the roll support shaft for supporting the helical coil as it is being formed and progresses axially between a set of endless belts which feed the continuous coil from the coil forming rotor and control the pitch of the wire turns of the coil. A disc brake system is mounted on the roll support shaft for braking the rotation of the wire supply rolls to control the tension in the wires, and the roll support shaft is pivotable in a horizontal direction to facilitate loading of new wire supply rolls into the machine. The machine is also adapted to be used with only one wire supply roll when only a single helix nonrotating continuous coil is required.

3,823,591

**METHOD AND APPARATUS FOR PRODUCING DISH-SHAPED ARTICLES**

Paul Schroder, Hamm, and Gunter Poltkotter, Ahlen, both of Germany, assignors to Leifeld & Co., Ahlen, Germany

Filed Nov. 8, 1972, Ser. No. 304,615

Claims priority, application Germany, Nov. 15, 1971, 2156551

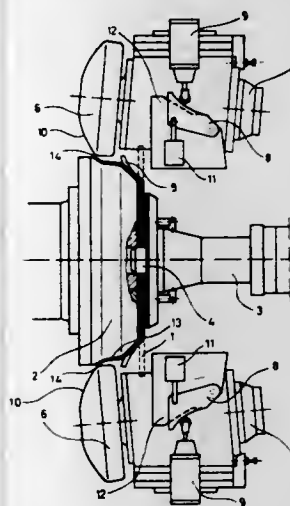
Int. Cl. B21d 22/16, 22/18

U.S. Cl. 72-85

7 Claims

A method and apparatus are disclosed for forming dish-shaped articles from a circular blank by spinning operations. Spinning rollers having large radius shoulders are guided by template control means along a first path to spin the blank to form a curved intermediate shape at a first high speed operation. The intermediate shape is then subjected to a draw spin

operation with a smaller radius shoulder guided by a second template control means along a second path distinct from the



first path. The speed of operation for the second path is controlled to uniform deformation energy for the second run.

3,823,592

**ROLL-FORMING MACHINE**

Dan L. Colbath, P.O. Box 1003, Sherman, Tex. 75090

Continuation-in-part of Ser. No. 181,838, Sept. 20, 1971, Pat.

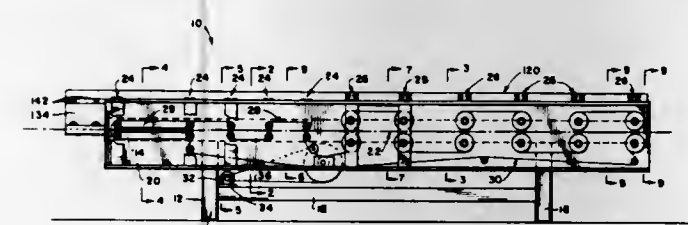
No. 3,748,884. This application Apr. 30, 1973, Ser. No.

355,673

Int. Cl. B21d 5/08

U.S. Cl. 72-181

8 Claims



A roll-forming machine includes a plurality of forming members which are mounted at spaced points on an elongate, rigid spine. This permits conversion of the machine from one roll-forming configuration to another by removing the spine and the roll-forming members attached thereto and then installing a different spine-forming member assembly in the roll-forming machine. In one embodiment of the invention the forming members comprise non-driven material engaging rollers and the roll-forming machine further includes a plurality of roll-stands each comprising non-forming driving rollers for moving material through the roll-forming machine. In another embodiment of the invention the forming members comprise combination driving and forming rollers and couplers are provided for forming driving connections to the rollers. In a third embodiment the rigid spine supports non-driven forming rollers and idler rollers which cooperate with driving rollers to move material through the roll-forming machine.

3,823,593

**METHOD OF ROLLING METAL SHEET ARTICLES BETWEEN THE DRIVEN ROLLS OF THE ROLL MILL**

Vladimir Nikolaevich Vydrin, ulitsa Svobody, 139, kv. 7, and Leonid Matveevich Ageev, ploshad MOPRa, 2, kv. 33, both of Chelyabinsk, U.S.S.R.

Division of Ser. No. 836,851, June 26, 1969, Pat. No.

3,709,017. This application Apr. 18, 1972, Ser. No. 245,250

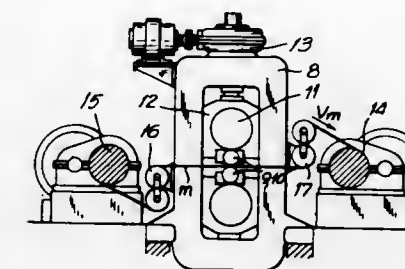
Int. Cl. B21b 1/28, 39/08

U.S. Cl. 72-205

11 Claims

The present invention relates to a method of rolling metal sheet articles between cooperating driving and driven rolls of

rolling mills, the rolls being rotated in opposite directions at different peripheral speeds. A stretching strain is applied to the delivery section of the article, and the process is effected with the ratio between the peripheral speeds of the rolls being not less than the reduction of the article being rolled, and with



the rate of travel of the delivery end of the article being equal to the peripheral speed of the driving roll that is rotated at a greater speed. The invention also discloses mills for effecting the present method, which are provided with means for insuring the required ratios between the peripheral speeds of the rolls.

3,823,594

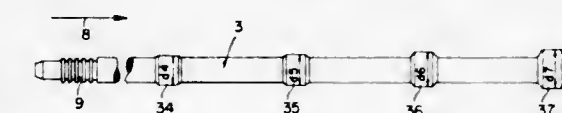
**ROLLING OF TUBULAR BLOOMS TO PRODUCE TUBES**  
Walter Vom Dorp, Rheydt, and Hans Eversberg, Monchengladbach, both of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Sept. 6, 1973, Ser. No. 394,910

Int. Cl. B21b 17/10

U.S. Cl. 72-209

6 Claims



According to the present disclosure there is provided a method and means for rolling tubular blooms to form tubes, in which at tubular bloom is passed during a plurality of working passes over a corresponding plurality of consecutive plugs arranged on a tension-loaded plug mandrel, said working passes being followed by a consecutive smoothing pass, wherein said working and smoothing passes are carried out in a continuous operation, in sequence, during which operation the external diameter of the tubular bloom is maintained substantially constant, the internal diameter of the bloom being enlarged during at least two of said working passes, and during said operation at least one smoothing pass being employed in the course of which an enlargement of the internal diameter takes place.

3,823,595

**WORKPIECE POSITIONER AND EJECTOR**

Jess Frank Sorenson, Yucaipa, Calif., assignor to Sorenson Engineering Inc., Yucaipa, Calif.

Division of Ser. No. 93,579, Nov. 30, 1970, Pat. No. 3,684,392.

This application July 31, 1972, Ser. No. 276,521

Int. Cl. B21d 43/00

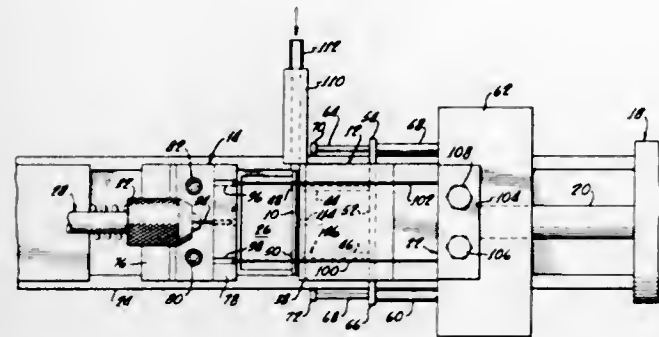
U.S. Cl. 72-312

2 Claims

A workpiece positioner and ejector for use in secondary operation machines and the like in which the workpiece is carried by a support block on positioners which are freely slidable



in the support block to a backing block which is mounted for resistive movement along with the support block is disclosed. As the support block approaches the backing block, the positioner is retracted into the support block such that the workpiece is then clamped between the support block and the backing block and, so clamped, is moved into contact with a



tool at which position the tool performs a modifying operation on the workpiece. One or more resilient fingers exerts a force on the workpiece such that when the support block is moved away from the tool and the backing block, the workpiece is ejected. The support block is moved in one continuous motion toward the tool and in another continuous motion from the tool to its initial position.

3,823,596

## METHOD OF PRODUCING LOCK KEY BLANKS

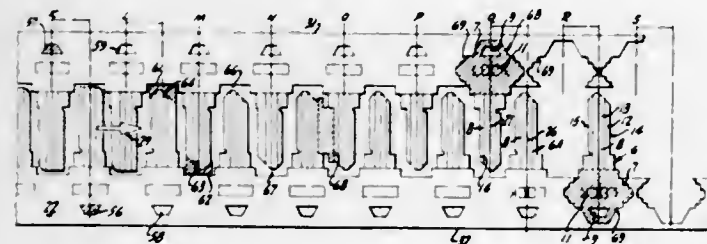
George Elder, Woodside, and Hans F. Lehnhoff, Moraga, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Jan. 26, 1973, Ser. No. 326,827

Int. Cl. G01F 23/02

U.S. Cl. 72-324

4 Claims



Lock key blanks are produced from an elongated strip of key material having a width at least as great as the length of a transversely extending key pair arranged with their shanks overlapping longitudinally of the strip and arranged with their bows alternately disposed adjacent opposite edges of the strip. Production is accomplished by performing simultaneously in time and successively in the length of the strip certain forming and cutting operations shaping and removing from the strip different areas defining fractional parts of the boundaries of the key pair, also performing operations coining and grooving the potential key pair, and finally performing cutting operations severing the boundaries of portions remaining integral with the strip to free fully formed, separate key pair blanks from the strip.

3,823,597

## SWAGING TOOL DIE EXTENDER

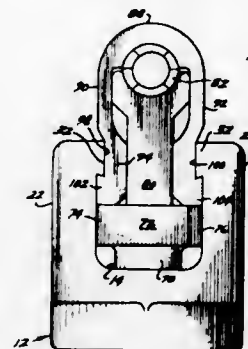
Francis J. Hanback, Palos Verdes, and Norman F. Robinson, Manhattan Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 2, 1973, Ser. No. 375,694

Int. Cl. B21d 37/00

U.S. Cl. 72-402

6 Claims



A horseshoe shaped swaging tool die extender adapted to fit onto an existing piston driven power system used for attaching fittings to fluid system pipes by external swaging. This die extender permits the swaging of fittings on closely spaced pipes.

3,823,598

## SEGMENTAL DIES

Michael Walter Freeman, 401 David Whitney Bldg., Detroit, Mich. 48226

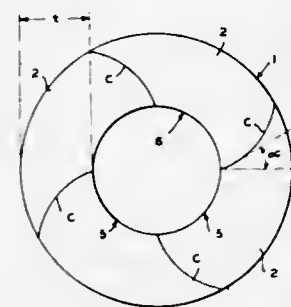
Continuation of Ser. No. 722,778, April 19, 1968, abandoned.

This application Aug. 23, 1972, Ser. No. 282,895

Int. Cl. B21c 3/04

U.S. Cl. 72-467

9 Claims



A die nib is determined by a mathematically defined segment-shaped portion or die nib segment, a multiplicity of which are assembled together to form the die nib proper, each segment contacting its adjoining segment along a mathematically determined curvilinear transverse face whereby work stresses control the distribution of cohesive pressures along the interfaces of the segments, the segment-shaped portions having workpiece engaging walls forming a die opening of the shape desired for shaping the work material, the curvilinear transverse faces being illustrated by a wide variety of forms.

3,823,599

## TEST APPARATUS FOR THE EVALUATION OF ROLLING LUBRICANTS

Donald C. Litz, Churchill Boro, and Francis E. O'Brien, Monroeville Boro, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1972, Ser. No. 313,224

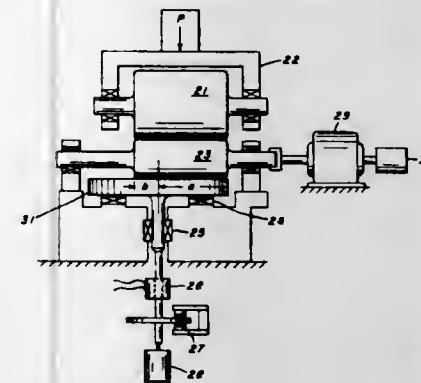
Int. Cl. G01n 19/02

U.S. Cl. 73-10

4 Claims

A test apparatus for the evaluation of the lubricity of rolling oils and the interaction of such oils with a variety of metal alloys employed in the construction of rolls. The axis of a driven work roll is placed on a radial line of a disc. The lubricant

under test is applied to the region of frictional contact between the roll and the disc. The resultant speed of the disc is controlled by applying a torque to the disc. With a roll of given



length, and a known load applied by the roll to the disc, the coefficient of friction is determined by measuring the torque on the disc. This coefficient can thus be evaluated for various degrees of slipping velocity of a roll.

3,823,600

## PNEUMATIC LINEAR ACCELERATOR

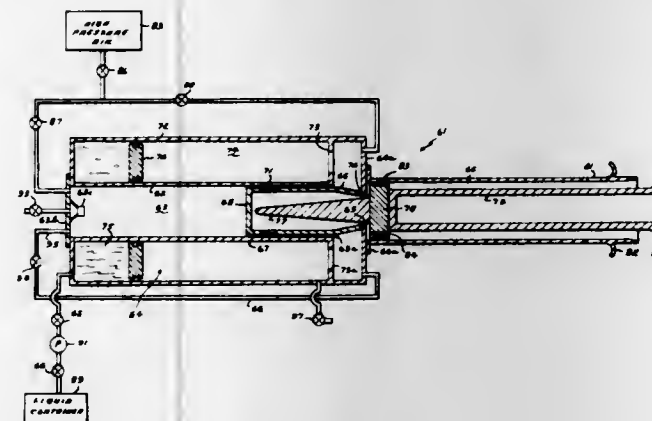
Walter M. Wolff, Enon, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,901

Int. Cl. G01n 3/30

U.S. Cl. 73-12

9 Claims



A pneumatically-operated, linear accelerator including a control chamber having an open end; one or more load chambers surrounding the control chamber; and a drive chamber having an end wall with an inner opening in communication with the control and load chambers, a drive piston on one side of and blocking the inner opening and incorporating a metering pin extending through the opening, and a push rod in contact with the drive piston and extending through an outer end opening in an opposite end wall of the drive cylinder for integral attachment to a test vehicle. A hollow control piston, mounted in overlapping relation in the control chamber and encompassing the projecting metering pin, incorporates an orifice end that extends to, and is held in sealed relation against the drive cylinder-communicating inner opening by the introduction of compressed air, at equal pressure, into both the control and load chambers. The accelerator is fired, and the drive piston, push rod and attached test vehicle accelerated to the test velocity by the activation of a fast acting valve to relieve the pressure in the control chamber and thus enable the compressed air in the load chambers to move the control piston away from its sealed position and thereby enter the communicating inner opening for action directly against the drive piston.

3,823,601

## ANTI-EVASION SYSTEM FOR A BREATH ALCOHOL TESTER

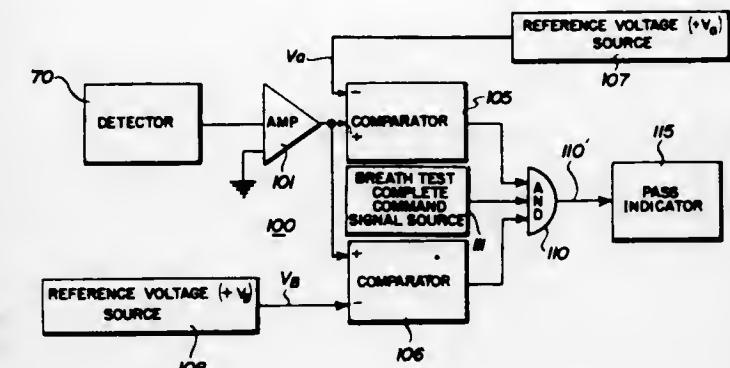
Joseph P. Hoppesch, Schaumburg, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 26, 1972, Ser. No. 318,051

Int. Cl. G01n 31/00

U.S. Cl. 73-23

4 Claims



A system for discouraging evasion of a breath tester (especially those testers designed to be used by an unsupervised or under-supervised subject) employing the effect that the response of certain detector elements (e.g., catalytic and semiconductor alcohol detecting elements) to non-alcoholic breath differs from the response or other produced for air substitutable gases. Means employing the differing responses to cause a "pass" only if the output is in a "window" between substantially the non-alcoholic breath signal and the signal level produced by breath having a predetermined alcohol concentration (e.g., 0.1 percent blood alcohol concentration) are disclosed.

3,823,602

## SAMPLING DEVICE

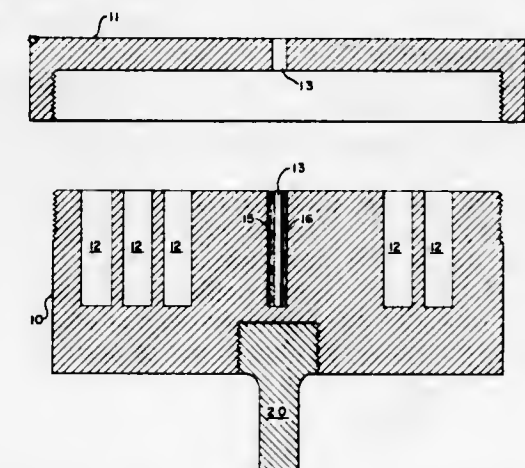
Paul L. Anderson, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 20, 1972, Ser. No. 307,772

Int. Cl. G01n 15/00

U.S. Cl. 73-28

9 Claims



An improved centrifuge sampling device for the capture and size segregation of particles less than 2 microns in diameter from a fluid containing same. The device comprises a rotating body and cap which define a spirally shaped conduit having from 1.5 to about 2.5 convolutions. The particulate-laden fluid as sampled is split by the sampler into a large stream and a small stream. The large stream is directed to the beginning of the spiral conduit where entrained particles are removed by centrifugal forces. The smaller stream is introduced into the larger stream contained in the spiral conduit when substantially all particulate matter has been removed from the larger stream and the flow has been rendered laminar.



3,823,603

## ULTRASONIC INSPECTION APPARATUS

John W. Couture, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

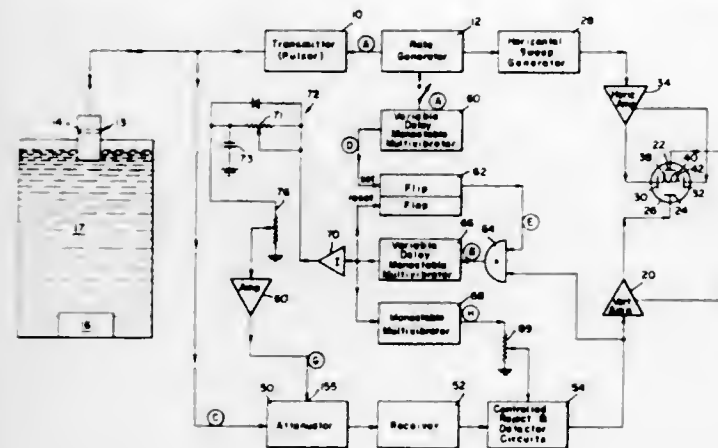
Continuation of Ser. No. 813,553, April 4, 1969, abandoned.

This application Sept. 7, 1971, Ser. No. 178,485

Int. Cl. G01n 29/04

U.S. Cl. 73-67.9

2 Claims



An ultrasonic nondestructive test system as described which includes signal attenuation means. The system includes a transducer, a transmitter and a receiver for displaying on a cathode ray tube defects or other discontinuities in the workpiece. An attenuator circuit is coupled before the receiver and is gated on and off at predetermined times and especially if a receiver has been adjusted to a high gain for detection of small defects beneath the surface of the workpiece. After the receiver receives part of its initial interface return signal, portions of the initial interface signal are abruptly attenuated by gating the attenuator.

3,823,604

## METHOD OF AND APPARATUS FOR DETECTING SURFACE FORM IRREGULARITIES

James Morris Burch; Raymond John Wilton, both of Teddington; Colin David Reid, and Michael Richard Wall, both of Aldermaston, all of England, assignors to Holotron Corporation, Columbus, Ohio

Continuation of Ser. No. 557,452, June 14, 1966, abandoned.

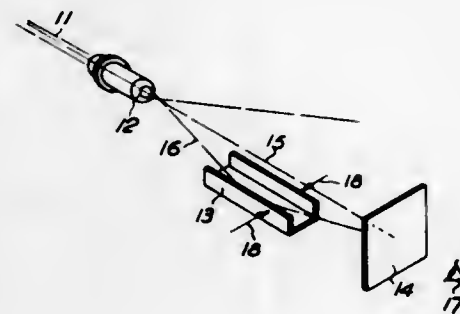
This application Aug. 4, 1972, Ser. No. 278,049

Claims priority, application Great Britain, June 15, 1965, 25269/65

Int. Cl. G01n 1/18

U.S. Cl. 73-71.3

27 Claims



Method of and apparatus for detecting surface form irregularities by means of the pattern of interference fringes produced when a three-dimensional image of a reference surface form is superimposed upon a surface form having such irregularity.

3,823,605

## METHOD AND APPARATUS FOR TESTING TUBES DURING SIZING BY A MECHANICAL EXPANDER

Helmut Schmitz, Wittlaer, and Detlef Ramdohr, Krefeld-Traar, both of Germany, assignors to Mannesmannrohr-Werke Aktiengesellschaft, Düsseldorf, Germany

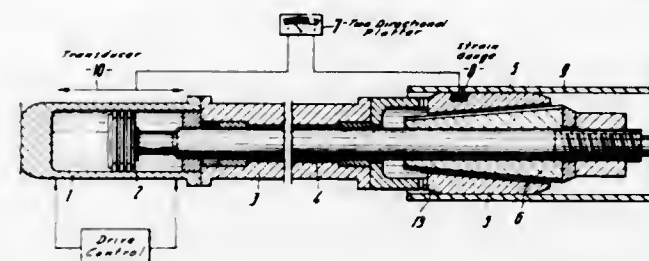
Filed Dec. 7, 1972, Ser. No. 311,708

Claims priority, application Germany, Dec. 10, 1971, 2162029

Int. Cl. G01b 5/30

U.S. Cl. 73-89

7 Claims



The grade of tubing is checked during tube expansion for sizing in that the axial displacement of a wedge action, segment spreading expanding tool is plotted against strain gauged deformation of one of the radially spread segments.

3,823,606

## MEASURING INTERNAL COMBUSTION MOTOR CYLINDER COMPRESSION

Albert Maringer, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

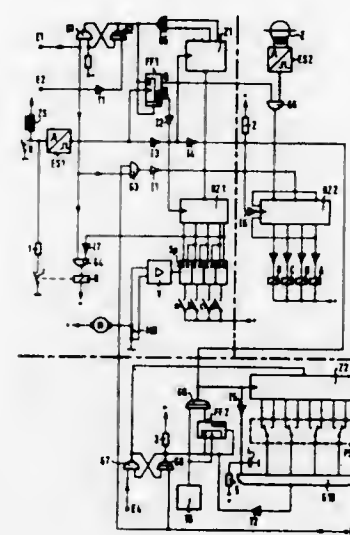
Filed Feb. 15, 1973, Ser. No. 332,657

Claims priority, application Germany, Feb. 18, 1972, 2207789

Int. Cl. G01m 15/00

U.S. Cl. 73-115

6 Claims



To obtain an electrical measurement of the compression of an internal-combustion reciprocating-piston engine via the current taken by an electric starter, during a first cycle of electrical ignition sequences successive peak values of the starter current are stored in adjacent cells of an analog memory in the rhythm of the closing flanks of the distributor breaker point output pulses with the ignition coil short-circuited. During a second cycle of ignition sequences with the ignition coil in the circuit, the first ignition pulse of a given cylinder is then fed into the first stage of a ring counter having a number of stages corresponding to the number of cylinders of the engine and assigned in reverse order to the cells of an analog memory, and is shifted along in the rhythm of the closing flanks to the end of a third cycle of ignition sequences. Starting with the stage of

3,823,609

## STRING TENSIONING MECHANISM

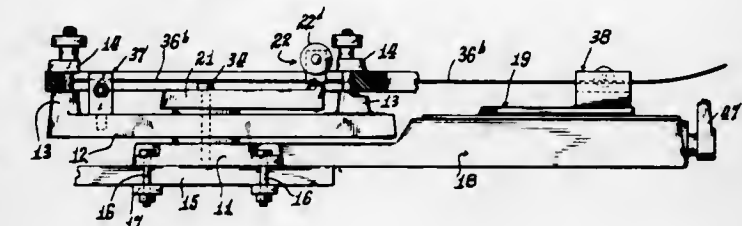
Frank H. Miyagawa; Daniel D. Kipnis, both of Chicago, and Thomas C. Mills, Bartlett, all of Ill., assignors to Tremont Research Co., Inc., Chicago, Ill.

Filed Jan. 15, 1973, Ser. No. 323,900

Int. Cl. G011 5/06

U.S. Cl. 73-145

10 Claims



The invention relates to racket stringing apparatus including novel means for tensioning the strings thereof during stringing of a racket frame and determining the degree of tension applied.

3,823,610

## BLUFF BODY FLOWMETER UTILIZING A MOVEABLE SHUTTER BALL RESPONSIVE TO VORTEX SHEDDING

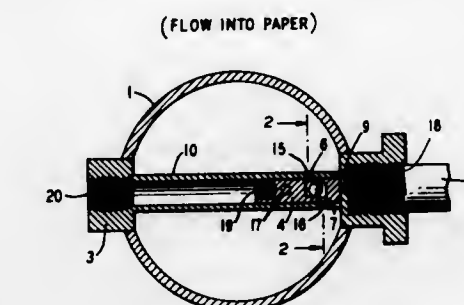
Theodore John Fussell, Jr., Bridgewater Twp., Somerset Cty., N.J., assignor to Eastech, Inc., South Plainfield, N.J.

Filed Jan. 5, 1973, Ser. No. 321,532

Int. Cl. G01f 1/00; G01p 5/10

U.S. Cl. 73-194 B

14 Claims



A bluff body flowmeter is disclosed which includes a bluff body having a base surface facing fluid flow, a pair of converging downstream surfaces, a pair of orifices proximate the downstream surfaces, a cylindrically shaped chamber within the body in communication with the pair of orifices via separate channels, a shuttle ball free to move a relatively short distance within said chamber along the long axis of said bluff body in response to vortex induced pressure changes at the orifices, and means responsive to the movement of the ball for producing electric signals related to volumetric flowrate.

3,823,611

## VANE ANEMOMETERS

Maurice G. Rudow, and Warren D. Klawans, both of Baltimore, Md., assignors to Davis Instrument Manufacturing Co., Inc., Baltimore, Md.

Filed Feb. 28, 1973, Ser. No. 336,521

Int. Cl. G01f 1/02

U.S. Cl. 73-231 R

3 Claims

A torque transducer is disclosed on the slotted indicator sleeve type which converts torque on a shaft to lateral movement of such magnitude that a measurable output signal can be produced to determine the torque on a shaft. This invention is also adapted to be coupled to the shaft without altering the shaft in any way and it can be adapted to connect to the shaft without disconnecting the shaft.

the ring counter marked after the end of the third cycle of ignition sequences, the peak values of the starter current stored in the analog memory are called up serially via a relay selector by means of timing pulses of a timing generator which are fed to the ring counter via a switching network which is programmed according to the ignition sequence applicable to the engine.

3,823,607

## HEAVY-DUTY TORQUE COUPLING

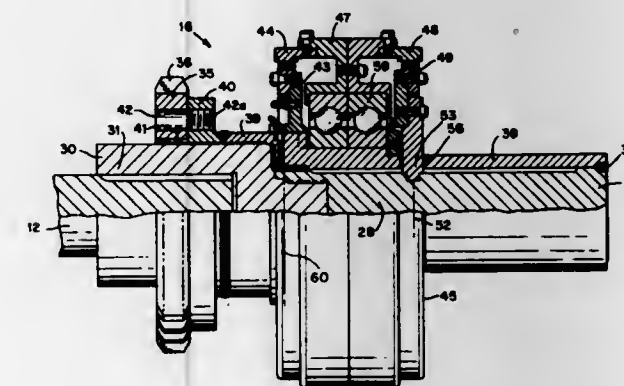
Herbert A. Rundell, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,638

Int. Cl. G011 3/10

U.S. Cl. 73-136 A

6 Claims



A heavy-duty coupling unit that incorporates a sensitive torque-measuring device. It has provision for being mounted on the end of a torque-load transmitting shaft, and it has a folded-back structure so as to accommodate a gear or the like for a laterally coupled drive.

3,823,608

## TORQUE TRANSDUCER

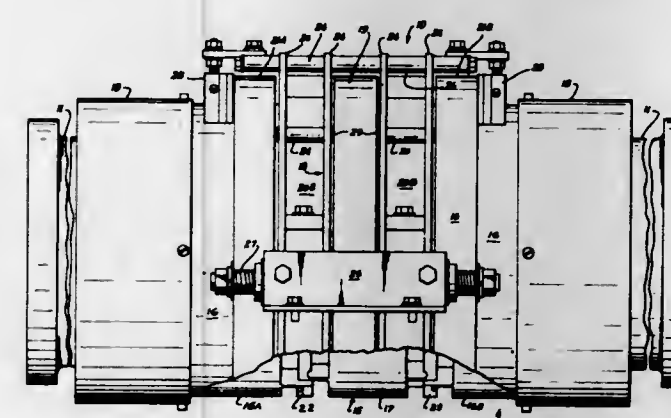
Pontie J. Pantermuehl, Sequim, and George F. Munsch, San Antonio, both of Tex., assignors to Southern Gas Association, Dallas, Tex.

Filed Oct. 25, 1972, Ser. No. 300,438

Int. Cl. G011 3/10

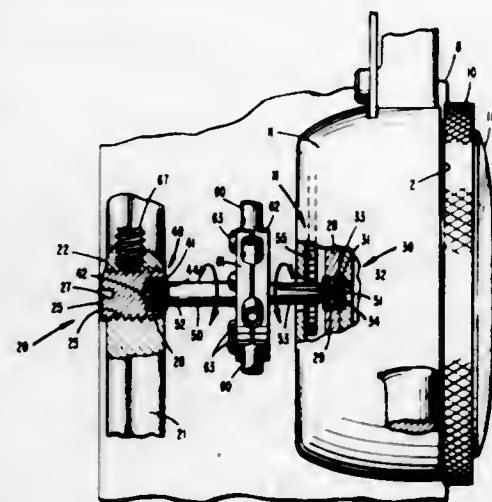
U.S. Cl. 73-136 A

16 Claims





assemblies at the hub of the spider and in the clockwork register mechanism support the opposite needle ends of the im-



3,823,612

## TRIP MECHANISMS

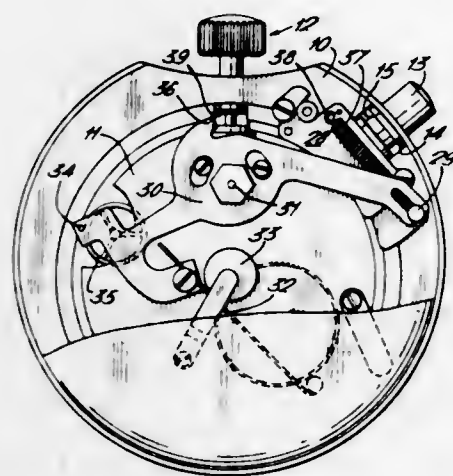
Cecil Leslie Boulton, near Swansea, Wales, assignor to Smiths Industries Limited, London, England

Filed Aug. 10, 1972, Ser. No. 279,400

Claims priority, application Great Britain, Aug. 20, 1971, 39088/71

Int. Cl. F16h 21/44

U.S. Cl. 74-100



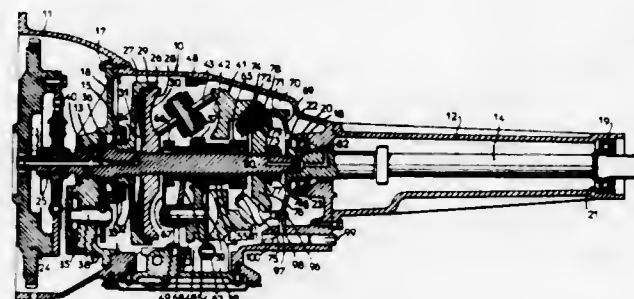
A trip mechanism for a stop-watch has a pivotally mounted operating lever movable between two operative positions to inhibit or enable movement of the hands of the watch. An engagement member engageable with the operating lever to switch it between its two positions, is in the form of a unitary plunger having a bifurcated end so as to provide two parts each for engaging a distinct one of two elements, or notches, of the lever in accordance with the position of the lever when the mechanism is operated. A spring is coupled to the lever and acts to bias the lever in the manner of an over-centre toggle into its two operative positions. The plunger extends from its bifurcated end into abutment with the interior of a hollow push-button cap, and is acted upon by a spring to maintain this abutment and at the same time spring bias the push-button into the rest position. Depression of the push-button displaces the plunger longitudinally towards the lever so as to bring about the appropriate engagement of the bifurcated end with the lever notches.

3,823,613  
VARIABLE RATIO TRACTION DRIVE  
Randle Leslie Abbott, Tamworth, England, assignor to GKN Transmission Limited, Birmingham, England  
Filed Dec. 8, 1972, Ser. No. 313,567  
Claims priority, application Great Britain, Dec. 8, 1971, 56892/71

Int. Cl. F16h 15/38, 37/06

U.S. Cl. 74-200

3 Claims



The specification discloses a traction drive of separately variable form comprising first and second discs having toroidal surfaces with first rollers between the surfaces whose inclination can be varied to vary the ratio of the drive. Two races are rigidly connected to the first and second discs and there are second rollers between the races. The second rollers are either frusto conical or of barrel shape. The rotary axes of the second roller lie on an imaginary conical surface having at its axis the rotary axis of the disc. The rotation of the second disc is derived solely from its engagement with the first and second rollers.

3,823,614

## ENDLESS BELT ALIGNING SYSTEM

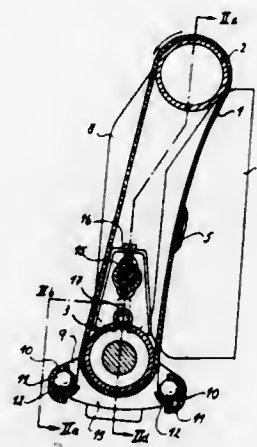
Ermenegildo Fava, and Ermanno Sibilla, both of Milan, Italy, assignors to Océ-vander Grinten N.V., Venlo, Netherlands  
Filed Nov. 20, 1972, Ser. No. 308,056

Claims priority, application Netherlands, Nov. 22, 1971, 7116046

Int. Cl. F16h 7/18

U.S. Cl. 74-241

6 Claims



An endless belt trained between a driving roller and a guiding roller, such e.g. as a wide rubber belt having a flight thereof bearing against and serving to transport photoprinting sheets over a perforated wall of a tank holding a gaseous developing medium, is maintained in alignment by mounting the belt guiding roller, through rigid members rigidly connected with its bearing supports, on oppositely inclined guide tracks, such as ball tracks each holding one or two bearing balls, which are rigidly supported by structures at the opposite ends of the guiding roller. The guide tracks support parts of the roller mounting members for sliding movement in limited paths so inclined that their linear projections intersect at a

point located away from the axis of the guiding roller on or near to a line connecting the mid-points of the axes of the two rollers. The mounting members present flanges at opposite sides of the belt path, each engageable by an edge of the belt for corrective displacement of the guiding roller if the belt travels too far sideways. Rigid arms provided as the structures supporting the guide tracks can be swung about the axis of the driving roller for movement of the belt and guiding roller assembly away from working position, and can be adjusted in length to provide the required belt tension.

3,823,615

## SAMPLER FOR BULK GRAPES

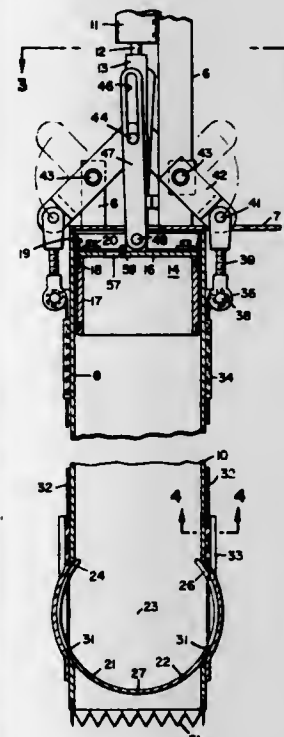
Michael O'Brien, Davis, and Clinton L. West, Yuba City, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 19, 1973, Ser. No. 352,437

Int. Cl. G01n 1/12

U.S. Cl. 73-425.2

12 Claims



A sampler for grapes held in bulk and having juice therewith includes a frame on which a sampling cylinder is mounted. At the lower end of the sampling cylinder is a gate mechanism arranged to be opened and closed. A piston is movable in the cylinder so as to pull a vacuum within the cylinder. The piston is connected to the gate mechanism through a lost motion linkage so that when the sampler is plunged into the bulk grapes a sample of the bulk grapes along with their juice is obtained. The loaded sampler is movable to a point for inspection. After discharge the mechanism can be reused for a subsequent sampling.

3,823,616

## HAND GRIP CONTROL ASSEMBLY

Henry J. Houseman, Fairless Hills, and Louis C. Roll, Philadelphia, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,960

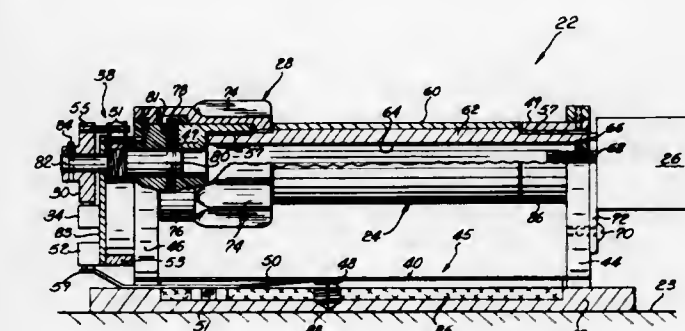
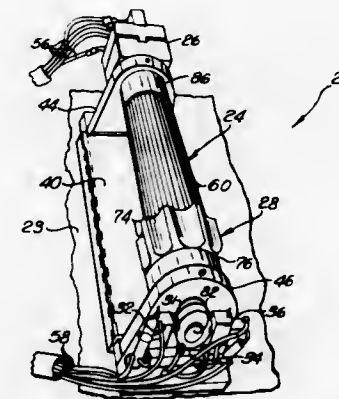
Int. Cl. G05g 5/00

U.S. Cl. 74-471

15 Claims

A hand grip control assembly is constructed to provide at least three independent control signals in response to predetermined manipulations of a single hand when supported by the control assembly. The control assembly has a base to which a spaced pair of support members are rigidly affixed.

Between these support members a first and a second rotating member is mounted. The first member provides a main hand support which the hand may grasp and rotate to actuate a first control signal. The second member is mounted proximately to and in line with the first member to allow the thumb of the hand grasping the first member to also rotate the second member and actuate a second control signal. The third



member is movably mounted to the base to allow the fingers of the hand grasping the first member to also depress the third member and actuate a third control signal. The control assembly is mountable on a control panel of an industrial truck to allow the truck operator to actuate at least three truck functions while simultaneously supporting himself by grasping the control assembly with his hand.

3,823,617

## STEERING SYSTEM

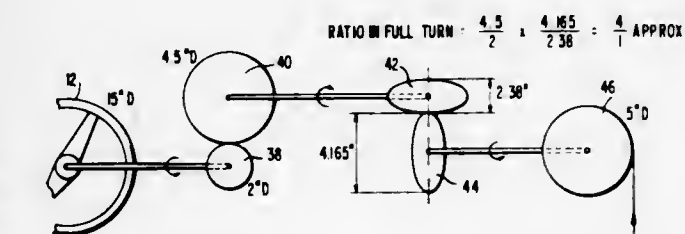
Arthur W. Infanger, Cayuga, and Alan W. Brownlie, Skaneateles, both of N.Y., assignors to Aqua Marine Manufacturing Limited, Ontario, Canada

Filed Apr. 28, 1972, Ser. No. 248,503

Int. Cl. B63h 25/10; B62d 1/20; F16h 35/02

U.S. Cl. 74-498

9 Claims



A steering system particularly suitable for watercraft wherein the input is non-linearly related to the output so that when the watercraft is running on a straight course the steering is very sensitive operating at a low ratio input to output and when the watercraft is in full turn, the steering is much less sensitive operating at a high ratio input to output.



Preferably, the system employs oval gears for transmitting speed from the input which may be the steering wheel or similar control member to the output which may be the rudder or an outboard motor of the craft.

3,823,618

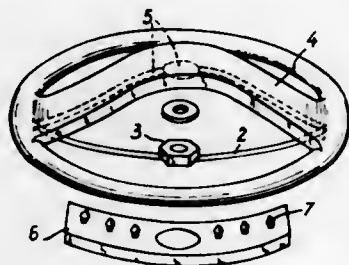
**STEERING WHEELS FOR AUTOMOBILE VEHICLES**  
Robert Broyer, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Mar. 19, 1973, Ser. No. 342,503

Claims priority, application France, Mar. 28, 1972, 72.10869

Int. Cl. B62d 1/06

U.S. Cl. 74—552



A steering-wheel for an automobile vehicle constituted by a pre-formed assembly of a rim, and arms for coupling the rim to a steering column, fixed to the rim in which the pre-formed assembly is entirely over-moulded by a coating of synthetic material such as a polyurethane foam forming a skin and giving the coating a homogeneous appearance without discontinuity between the rim and said arms, the coating of said arms being such as to be temporarily detachable by lifting away from said arms in order to provide access to the mounting on said steering column.

3,823,619

**MULTI-PLATE VIBRATION DAMPER**

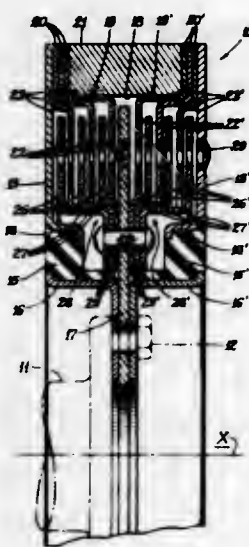
Daniel B. Shotwell, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 27, 1972, Ser. No. 301,590

Int. Cl. F16f 15/12

U.S. Cl. 74—574

11 Claims



A vibration damper comprises a housing having an annular weight secured between radially disposed side plates. An outer set of annular, cup-shaped shear inducing members comprise outer flanges secured between the weight and the side plates and inner shear discs projecting radially inwardly into an annular chamber formed in the housing. An inner set of similar shear inducing members have their inner flanges secured to a centrally disposed plate, attached to the housing, and their

outer shear discs interleaved with the inner shear discs of the outer set of shear inducing members to provide clearances therebetween. The housing is at least partially filled with a damping fluid, such as a highly viscous silicone fluid, which enters the clearances during damper operation.

3,823,620

**AUTOMATICALLY AND CONTINUOUSLY VARIABLE TRANSMISSION**

Rene Leon Bricout, Notre Dame de Breuil-79, Aigonnay, France

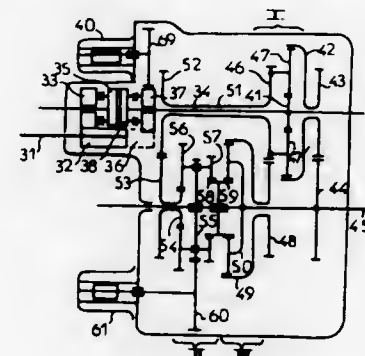
Filed May 19, 1972, Ser. No. 254,867

Claims priority, application France, May 21, 1971, 71.18392; Nov. 16, 1971, 71.40867; Mar. 15, 1972, 72.08991; May 4, 1972, 72.15870

Int. Cl. F16h 37/06, 37/10

U.S. Cl. 74—675

13 Claims



The invention relates to an automatically and continuously variable transmission for changing the velocity of a driven shaft relative to the velocity of a drive shaft. The transmission includes three epicyclic trains, namely an input train, a control train and an intermediate train. The input train includes an element driven by the drive shaft and another element connected to the driven shaft. The control train is a high ratio train including a planetary gear system, the planet-carrier of which is driven by an electric motor of variable velocity and low power, of the order of 1 percent of the power to be transmitted from the drive shaft to the driven shaft. A first sun-wheel of the planetary gear system is connected to the third element of the input train and a second-sun-wheel is connected to an element of the intermediate train, the two remaining elements of which are respectively connected to the input train and to either of the drive or the driven shafts.

The control motor provides a constant reaction torque and consists of a double squirrel-cage, asynchronous electric motor, the stator of which is supplied by an alternator driven by the transmission so as to produce a field rotating permanently in the same direction.

The control motor is so constructed as to have a torque of between 1 percent and 3 percent of the maximum transmitted torque, the ratio of the epicyclic train which drives it being selected accordingly.

3,823,621

**VEHICLE AUTOMATIC TRANSMISSION CONTROL SYSTEM**

Seitoku Kubo; Teruo Akashi, and Chirio Hayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 22, 1971, Ser. No. 210,826

Claims priority, application Japan, Dec. 27, 1970, 45-126234

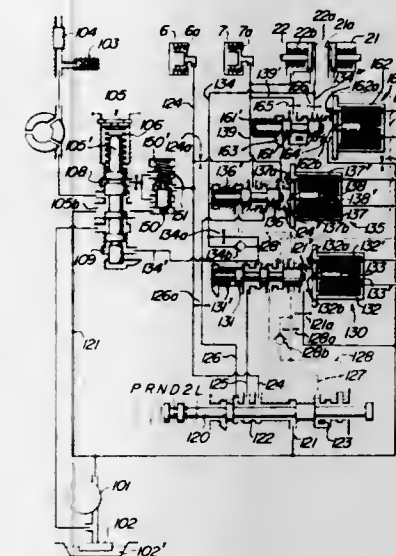
Int. Cl. F16h 47/04, 5/48; F16k 31/06

U.S. Cl. 74—752 A

10 Claims

A control system for an automatic transmission for an automotive vehicle comprising a combination of a hydraulic control section and an electrical control section. The hydrau-

lic control section includes a servo capacity control valve connected to a plurality of hydraulic servos for controlling fluid pressure supplied to the hydraulic servos during a shift from one speed ratio to another by discharging a portion of fluid under pressure from at least one of the hydraulic servos or from an associated fluid passage into a pressure discharge port



through an orifice, and the electrical control section includes means for controlling the operation of the servo capacity control valve depending on the running conditions of the vehicle. The servo capacity control valve and the electrical control means cooperate to delicately control the rate and timing of engagement and disengagement of frictional engaging means for ensuring a smooth shift.

3,823,622

**GEAR TRAIN ARRANGEMENTS**

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

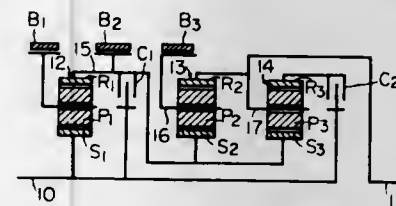
Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,551

Claims priority, application Japan, Apr. 30, 1969, 44-32685

Int. Cl. F16h 57/10

U.S. Cl. 74—759

1 Claim



Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,823,623

**SLITTING ROLL AND METHOD OF FABRICATING SAME**

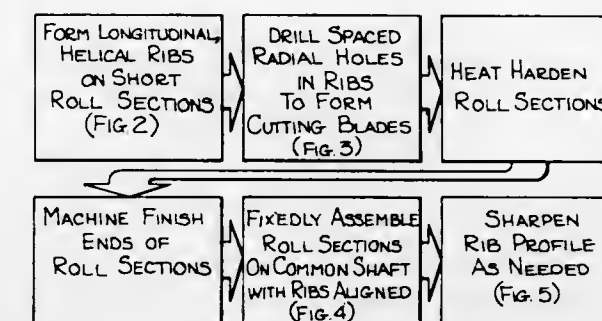
Grover C. Currie, Lenoir, and Brendan L. Doll, Patterson, both of N.C., assignors to Cellu Products Company, Patterson, N.C.

Filed Mar. 22, 1973, Ser. No. 343,677

Int. Cl. B23p 15/40; B26d 4/66

U.S. Cl. 76—101 A

15 Claims



A slitting roll for slitting an advancing sheet of elongate flexible foam material or the like to form a pattern of incisions therein. The roll includes a plurality of ribs of inverted V-shaped profile in the surface thereof, the ribs being disposed along a small helix angle with respect to the axis of the roll. A series of spaced radial apertures are formed in the ribs to define a plurality of spaced cutting blades, and the roll comprises a series of coaxial roll sections fixedly assembled onto a common supporting shaft.

3,823,624

**HAND RATCHET WRENCH FOR TORQUE WRENCH ACTUATION**

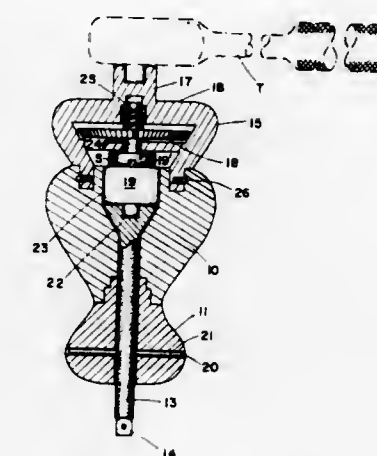
James E. Martin, 11477 Easton St., N.E., Alliance, Ohio 44601

Filed Aug. 31, 1972, Ser. No. 285,246

Int. Cl. B25b 13/00

U.S. Cl. 81—58.1

5 Claims



A hand ratchet wrench with means for applying a torque wrench thereto consists of a principal body member having a configuration conveniently held in a person's hand with a shaft positioned axially thereof and extending outwardly therefrom for engaging a socket in the manner of a socket wrench. A ratchet mechanism is incorporated in the principal body member and a fitting or attachment is provided for the reception of the driving element of a torque wrench whereby motion imparted the shaft either by the hand holding the wrench or the torque wrench is conveniently conveyed to the shaft and any socket thereon.



### 3,823,625 RATCHET-LIKE WRENCH

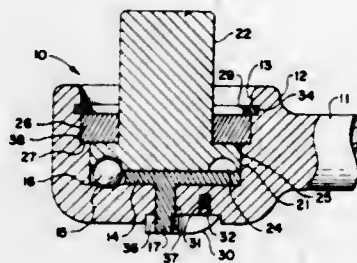
Herman A. Myers, Masontown, Pa., assignor to Innovate, Inc.,  
Masontown, Pa.

Filed Oct. 31, 1973, Ser. No. 411,212

Int. Cl. B25b 13/00

U.S. Cl. 81-59.1

4 Claims



The ratchet-like wrench comprises a handle terminating in a body having an open chamber, a separator positioned in the chamber, a hub member positioned above the separator and a closure member closing off the chamber. The bottom surface of the chamber includes a plurality of spaced recesses arcuately formed and a ball is positioned in each recess. The ball is also accommodated by an annular groove in the hub member. The separator operates between the recesses and a biasing spring is positioned between the separator and the ball in each recess. A selector connected to the separator is adjustable to urge the balls along the arcuate surface so as to force the hub member into engagement with the closure member thereby preventing rotation of the hub.

### 3,823,626 METHOD OF AND APPARATUS FOR MACHINING CURVED SURFACES

John Bakewell, Warwick, England, assignor to GKN Transmission Limited, Birmingham, England

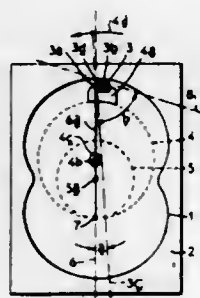
Filed May 30, 1973, Ser. No. 365,192

Claims priority, application Great Britain, May 30, 1972,  
25169/72

Int. Cl. B23b 3/00, 3/28

U.S. Cl. 82-1 C

20 Claims



An apparatus for forming a machined epitrochoidal surface comprising a body structure supporting an orbitally movable carrier constrained to an epitrochoidal orbit determined by the meshing of a stationary base gear and an orbital gear of annular form driven by an eccentric, at least one tool holder being driven by the carrier along an epitrochoidal path while the angular relationship between a working face of the tool and the path along which it is moved is determined by a guide member carried round with the assembly of carrier, driving eccentric, and tool holder and having engagement with this assembly at two locations, the first of which is coaxial with a moving instantaneous centre defined by the point of contact or meshing between the base and orbiting gears, and the other

of which is coaxial with a pivotal axis about which the tool holder can move and which passes through the point of engagement between the working face of the tool and a workpiece, slide and slideway means being provided in association with the guide member at one of these locations to enable the carrier to accommodate the changing distance between said two locations.

### 3,823,627 DEVICE FOR CUTTING AND MACHINING DISC-SHAPED WORKPIECES ON BOTH SIDES THEREOF

Hans Scharfen, Meerbusch, Germany, assignor to Paul For-  
kardt Kommanditgesellschaft, Düsseldorf, Germany

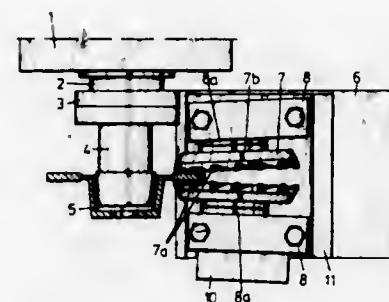
Filed Jan. 23, 1973, Ser. No. 326,112

Claims priority, application Germany, Jan. 28, 1972,  
2204034

Int. Cl. B23b 5/02

U.S. Cl. 82-2 A

11 Claims



A tool device, especially for machining the sides of a disc shaped workpiece in which indexable cutting tool holders are spaced radially from the axis of rotation of the workpiece with each holder supporting a plurality of cutting elements in uniformly circumferentially spaced relation. The cutting elements nearest the workpiece are in cutting position for cutting the workpiece, while the others of the cutting elements can be brought into cutting position successively by indexing of the holders. The holders may be connected to index in unison and jaw clutch elements are provided for locating the holders in each indexed position. Preferably, the holders are indexable on respective axes which diverge toward the axis of rotation of the workpiece.

### 3,823,628 RAW MATERIAL FEEDER SYSTEM

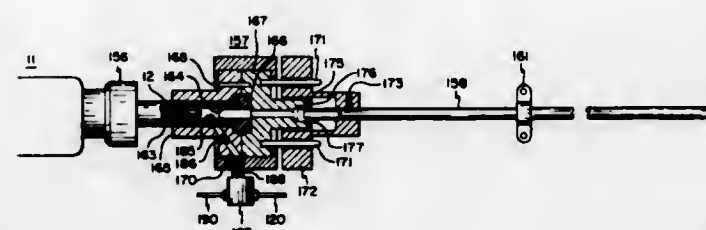
William S. Fortune, 1450 Dearborn St., Panorama City, Calif.  
91402

Continuation-in-part of Ser. No. 168,673, Aug. 3, 1971,  
abandoned. This application Apr. 20, 1973, Ser. No. 352,946

Int. Cl. B23b 13/10

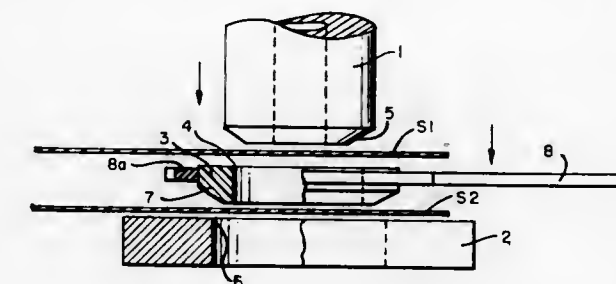
U.S. Cl. 82-2.7

7 Claims



A raw material feeder for automatically feeding flexible stock, such, for example, as tubes or small-diameter rods of metal, plastic, or fiber into an automatically-controlled machine tool such, for example, as an automatic lathe. The

feeder consists of an indexing drum having a plurality of peripherally-disposed, hollow tubes, each for housing one piece of the raw stock. By means of pneumatic pressure, each unit of stock is periodically advanced into the automatic lathe for performing drilling, milling, grinding, and the like operations. When the work piece is finished, another portion of the stock is automatically advanced into the lathe. Indexing is effected also by pneumatic pressure. The drum of the feeder additionally serves as an air container serving as a moisture trap. The capacity of the feeder may be as large as 2,000 feet of quarter-inch stock while having a length of 12 feet. Another embodiment of the feeder has means for rotating a special hollow feeder tube containing a piece of raw stock to be machined and disposed adjacent the lathe. This will speed up the operation of the lathe. An air sensor mechanism is also provided which makes it possible to sense when the last portion of the raw stock has been used up adjacent the machine tool's collet. Alternatively, each of the hollow tubes of the indexing drum may be rotated by a suitable mechanism to reduce the space required for the feeder system.



be used to facilitate removal of the punched out material. In addition to the loosening rings or alternatively in lieu thereof, the punch and die block are provided with air passages to communicate with an air supply to remove the punched out material.

### 3,823,629 DEVICE FOR CUTTING PIECES OF FABRIC FROM FABRIC ROLLS

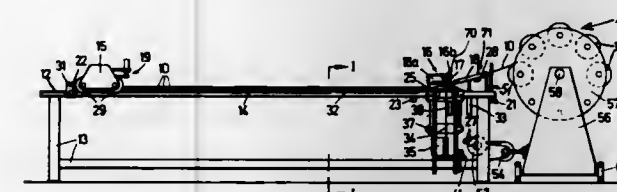
Rolf Bleimund, Bielefeld, Germany, assignor to Herbert Kan-  
negisser Kommanditgesellschaft, Vlotho/Weser, Hol-  
wiesen, Germany

Filed Mar. 2, 1973, Ser. No. 337,504

Int. Cl. B65h 35/04

U.S. Cl. 83-94

26 Claims



An apparatus for cutting lengths of fabric pulled from a selected roll on a rotary magazine. A transverse carriage 15 is movable along the side rails 14 of a table 12 and carries grippers 19 for pulling off a selected length of fabric. A transverse cutter 16 severs the fabric at the end of the pull and the stacked fabric layers 10 are held tightly at one end by a clamp 17. As a length of fabric is being drawn out from a selected roll, side edge drifts are sensed and the magazine is automatically moved in a direction opposite to the drift to compensate therefor and maintain the stacked layers neatly aligned.

### 3,823,630 PUNCH FOR SIMULTANEOUSLY PUNCHING UNEQUAL SIZED HOLES

Heikki Samuli Suominen, Tampere, and Pekka Juhani Pyhalto,  
Siuro, both of Finland, assignors to Amerplast, Tampere,  
Finland

Filed May 24, 1973, Ser. No. 363,780

Int. Cl. B26f 1/02

U.S. Cl. 83-98

10 Claims

Punch apparatus for simultaneously punching concentric but unequal sized holes in two adjacent material sheets. The punch apparatus is made up of three members: a punch, a die block, and an intermediate piece. The intermediate piece coacts with the punch and performs the function of a die block, and the intermediate piece also coacts with the die block to perform the function of a punch. The first material sheet is located intermediate the punch and intermediate piece, and the second sheet of material is located intermediate the intermediate piece and the die block. Downward movement of the punch, in cooperation with the intermediate

piece, punches one hole in the sheet between the punch and intermediate piece. Downward movement of the punch also causes the intermediate piece to move downward and punch a hole in the second sheet of material, concentric with the first hole, but of a different diameter. Flexible loosening rings can

### 3,823,631 APPARATUS FOR STRINGING A THREAD THROUGH A HOLE

Robert Reid Coats, and John Michael Greenway, both of Har-  
rogate, England, assignors to Imperial Chemical Industries  
Limited, London, England

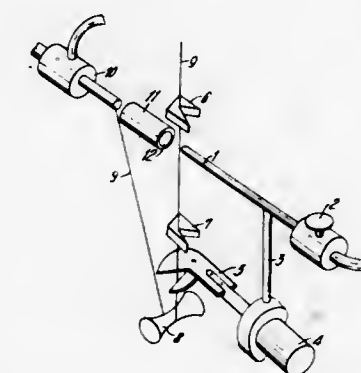
Division of Ser. No. 141,705, May 10, 1971, Pat. No.  
3,741,050. This application Apr. 5, 1973, Ser. No. 348,077

Claims priority, application Great Britain, May 27, 1970,  
25530/70; June 9, 1970, 27840/70

Int. Cl. B65h 29/24

U.S. Cl. 83-100

4 Claims



A tool for threading an advancing strand through an aperture. The advancing strand is initially entrained in a suction gun. A blowing tube which produces a fluid jet is provided to blow a loop of the advancing strand through the aperture. A cutter downstream of the blowing tube cuts the strand and the suction gun again entrains the strand after it is passed through the aperture.

### 3,823,632 APPARATUS FOR CUTTING AND LOCATING FLEXIBLE BED LATHS IN A WOOD BUNDLE

Edwin Robert McDonald, Lions Bay, British Columbia,  
Canada, assignor to AB Hammars Mekaniska Verksstad, Ny-  
land, Sweden

Filed Feb. 15, 1973, Ser. No. 332,688

Claims priority, application Switzerland, Feb. 22, 1972,  
2150/72

Int. Cl. B26d 7/06

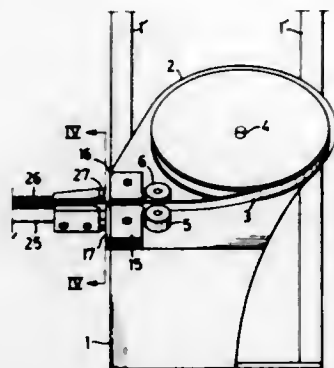
U.S. Cl. 83-150

5 Claims

A method and apparatus for cutting and locating flexible bed laths for bundling layers of wood. Flexible lath is fed from



a roll through a groove along a guiding arm and cut into a desired length by turning of the arm. Turning of the arm is continued so that the groove opens downwardly such that the



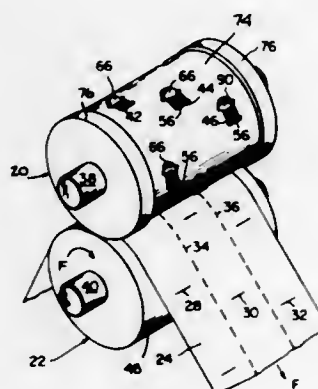
lath drops down onto the wood to be bundled. The arm is then turned back to the initial position for receiving the next length of lath.

3,823,633

**SELF-ADJUSTING PLURAL BLADE CUTTING ROLLER WITH CUSHIONED ANVIL ROLLER**  
William C. Ross, Brooklyn, N.Y., assignor to Consolidated Educational Publishing, Inc., Locust Valley, N.Y.  
Filed June 5, 1972, Ser. No. 259,988  
Int. Cl. B26d 1/56

U.S. Cl. 83-346

25 Claims



A cylindrical cutting roller with plural cutters cooperating with a cylindrical anvil roller, in which the cutting roller has cutters arranged in rows on its cylindrical surface, said cutters having been self aligned with a setting plastic material, and the anvil roller comprising concentric deformable inner and hard outer sleeve elements along its length to cooperate with the rows of cutters on the cutting roller.

3,823,634

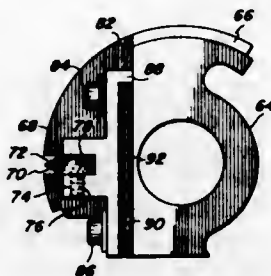
**SPRING LOADED ROTARY KNIFE**  
Trygve R. Rod, Mundelein; Richard J. Ernst, Palatine, and Robert A. Davis, Gages Lake, all of Ill., assignors to Xerox Corporation, Stamford, Conn.  
Filed Mar. 19, 1973, Ser. No. 342,637  
Int. Cl. B23d 25/12

U.S. Cl. 83-346

3 Claims

A rotary knife for use as a label cutter in an article addressing machine. The rotary knife comprises a hub member supported for rotation and having attached thereto a blade holder for removably receiving a cutting blade. The blade

holder is secured to the hub in a cantilevered fashion by means of a plurality of bellville washers whereby parallelism



between the blade and an anvil with which the rotary knife cooperates to both feed and cut label strip material is maintained.

3,823,635

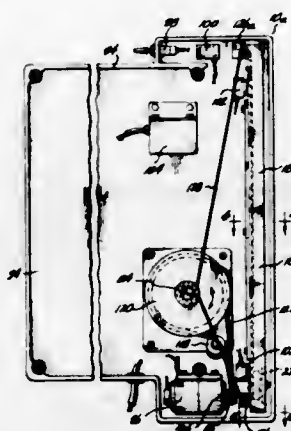
**FLAT STOCK CUTTER**

Richard L. Carlson, 3601 Lemon Tree Ln., Auburn, Wash. 98002

Filed May 25, 1972, Ser. No. 256,908  
Int. Cl. B26d 5/42

U.S. Cl. 83-384

34 Claims



A cutter assembly wherein material to be cut passes underneath a cutter bar, a track extending under the cutter bar holds a slideable carriage, a rotatable cutter wheel mounts to the carriage, resilient means maintains the side of the cutter wheel against the face of the cutter bar, a releasable gripper bar holds the material against the underside of the cutter bar during the cutting cycle, cords attached to the slideable carriage are used to pull the carriage along the track, and means are provided to attach the assembly to a support. A cutter as above mounted in a frame, and having an electric drive motor with controls for moving the carriage is also disclosed.

3,823,636

**PUNCHING APPARATUS**

Ernst M. Spengler, Heusenstamm, Germany, assignor to Roeder & Spengler, Bergen-Enkheim, Germany  
Filed May 12, 1972, Ser. No. 252,588

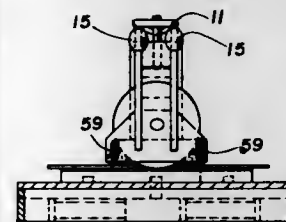
Claims priority, application Germany, May 19, 1971, 7119648; Nov. 16, 1971, 7143171  
Int. Cl. B26d 1/02

U.S. Cl. 83-511

17 Claims

The present roller press has a base, a center post, material supporting means, and roller means arranged in such a manner that the roller means or the material supporting means or both may be journaled about the center post whereby a relative movement between the material supporting means and the roller means is accomplished either by hand operation

or by driving means, which movement follows a circular path around said center axis. The spacing between the supporting



means and the roller means is adjustable to determine the cutting pressure and to accommodate material of different widths.

3,823,637

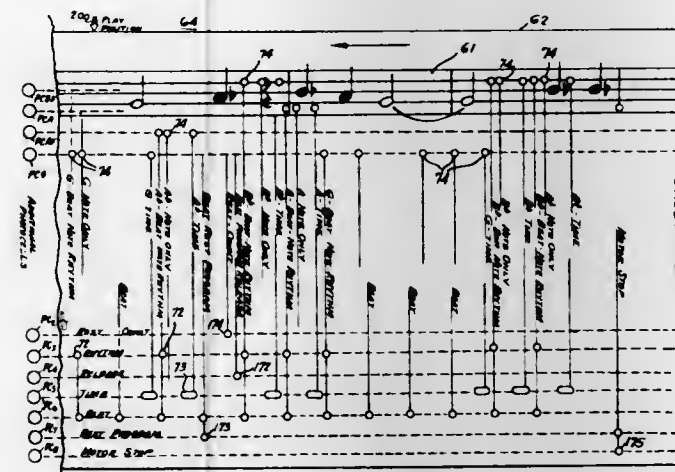
**PROGRAMMED AUDIO-VISUAL TEACHING AID**

Kenneth N. Scott, deceased, Toyah, Tex. (Joe Weldon Scott, administrator)

Filed Jan. 19, 1973, Ser. No. 325,187  
Int. Cl. G09b 15/00

U.S. Cl. 84-470

21 Claims



An audio-visual educational apparatus consisting of a master transmitting station and a number of receiving stations operated by students. In a typical embodiment for teaching music the visual portion of the lesson material, consisting of musical notation, is carried on a film strip provided with appropriately spaced programming clear spots through which light is transmitted onto photocells in the apparatus at the master station. The receiving stations have piano keyboards wherein the keys operate switches which are connected in respective counter circuits for scoring students' responses as to correct time, note and rhythm. The audio lesson material is provided by a magnetic tape player, which also programs the film strip projector and which furnishes audio instructions. An audible beat is provided as an aid to playing on time. The counter circuits are electrically interlocked with the photocells to provide scoring in accordance with proper actuation of the piano key switches. Provision is made for responses to questions of the multiple-choice type. The counters are provided with print-out mechanisms operating in unison with the projector motor. The system may be employed with the lesson material and the programming information transmitted by television.

3,823,638

**PAGE TURNING MECHANISM**

Aldo L. Bombardi, 202 Small Ave., North Caldwell, N.J. 07006

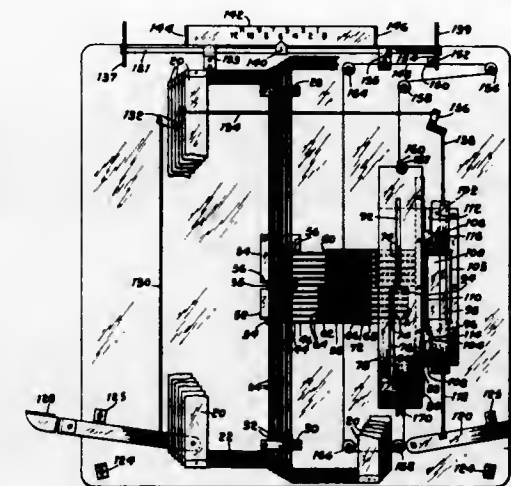
Filed Jan. 10, 1973, Ser. No. 322,420  
Int. Cl. G10g 7/00

U.S. Cl. 84-503

12 Claims

A plurality of pulleys and cables are secured respectively to a plurality of cooperating rotatable vertical wire rods which

have horizontal extensions at each end and vertically disposed clear plastic strips connected between the ends for holding and turning pages. The cables are connected to horizontal slidable bars which are controlled by movement of a vertical cam plate, rack and pawl mechanism in one direction to turn



individual rods and pages from right to left upon each movement of a first lever. A second lever and linkage and oppositely acting pawl, rack and cam turn the rods and page holders in the reverse direction from left to right. A rapid turning mechanism can successively turn all of the rods back and forth while bypassing the lever and pawl mechanism.

3,823,639

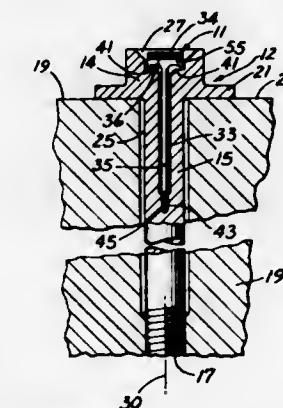
**TENSION INDICATING FASTENER**

Theodore Liber, Chicago, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Nov. 24, 1972, Ser. No. 309,053  
Int. Cl. G01d 21/00

U.S. Cl. 85-62

12 Claims



Fasteners such as mine bolts are provided with tension indicators to directly read tension in the shank of the bolt. The preferred tension indicators comprise an elongated pin disposed in a bore formed in the bolt and connected at the bottom of the bore to the bolt shank to be tensioned thereby. The tension indicator further comprises a cross bar attached to the other end of the pin and extending laterally into engagement with another portion of the bolt, such as the head of the bolt, to be bent upon tensioning of the pin. Preferably, a photoelastic member is attached to the cross bar and bending stresses in the cross bar are manifested in the photoelastic member in the form of photoelastic fringes for reading by a reflection polariscope.



3,823,640

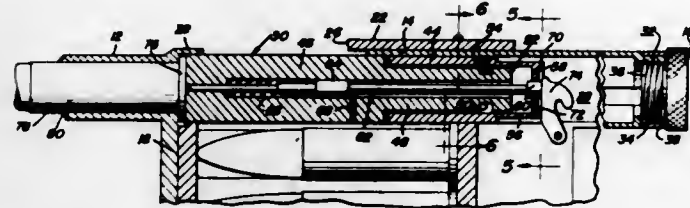
**GAS OPERATED BOLT MECHANISM**

Doyle E. Segrest, Woodville, Tex., assignor to Texas Automatics, Inc., Woodville, Tex.

Filed Oct. 3, 1973, Ser. No. 402,985  
Int. Cl. F41d 5/04, 1/16

U.S. Cl. 89-154

7 Claims



A gas operated bolt carrier imparts reciprocating movement to a bolt body through a locking sleeve angularly displaceable on the bolt to a striker blocking position thereby preventing firing when the bolt is displaced from its battery position. A locking slot formed in the receiver prevents angular movement of the locking sleeve following initial retraction of the bolt from the battery position by the bolt carrier.

3,823,641

**GEAR SHAPING APPARATUS WITH MEANS FOR LIFTING CUTTER WHEEL RELATIVE TO THE WORK PIECE**

Walter Selberlich, Ettlingen/Baden, Germany, assignor to Maschinenfabrik Lorenz AG, Ettlingen/Baden, Germany

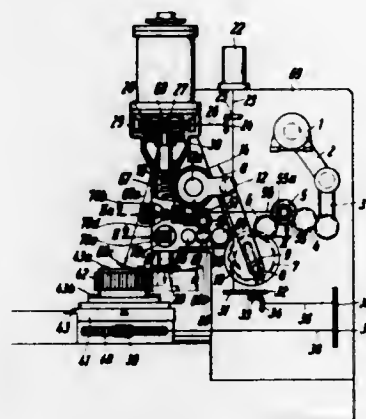
Filed Sept. 27, 1972, Ser. No. 292,800

Claims priority, application Germany, Sept. 30, 1971, 2148801

Int. Cl. B23f 5/16

U.S. Cl. 90-7

16 Claims



In a gear shaping apparatus, an arrangement for moving a cutter wheel spindle relative to the work piece between a cutting stroke path and either of two return stroke paths on either side of the cutting stroke path. Adjacent a pair of contact surfaces movable with the spindle is a cam rotatable synchronously with the axial spindle movement and mounted on an eccentric shaft which is mounted in the machine frame, such that turning of the eccentric shaft brings the cam to one or the other of the contact surfaces to move the spindle either between the cutting stroke path and one return stroke path or between the cutting stroke path and the other return stroke path, respectively. The cam generally moves the spindle to the cutting stroke path and each of a pair of opposed return means such as for example a spring are made operable to move the spindle to one or the other of the return stroke paths, respectively, to lift the cutter wheel relative to the work piece for the return stroke.

3,823,642

**POWER DRAW BOLT**

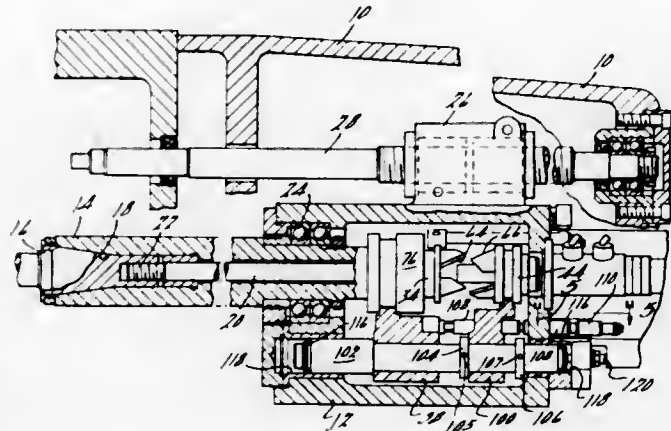
Richard A. Jerue, Birmingham, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Filed Sept. 1, 1972, Ser. No. 285,605

Int. Cl. B23q 3/12

U.S. Cl. 90-11 D

12 Claims



A machine tool drive spindle has a socket in which tools are interchangeably seated for the performance of various metal cutting operations. A draw bolt within the drive spindle is threadable into the rear end of a tool to hold it in the socket. In order to secure a tool in the spindle socket, the draw bolt is first rotated by a hydraulic motor to threadably engage the tool and seat it in the socket. Thereafter, a clutch between the hydraulic motor and the draw bolt is disengaged and a substantial axial pulling force is applied to the draw bolt to hold the tool against its seat with a predetermined clamp load.

3,823,643

**APPARATUS FOR PRODUCING ARCuate GROOVES IN A CYLINDRICAL MEMBER**

Alfred Feucht, Dubendorf, and Vincenzo Guidi, Baden, both of Switzerland, assignors to BBC Aktiengesellschaft Brown, Boveri &amp; Cie, Baden, Switzerland

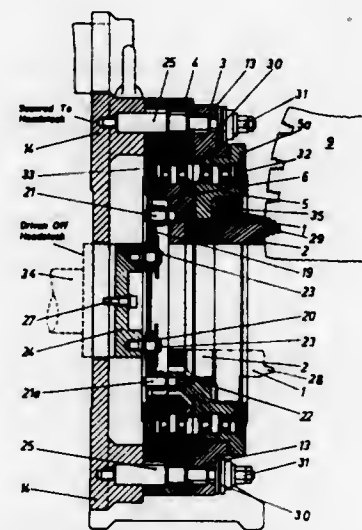
Continuation of Ser. No. 58,801, July 28, 1970, abandoned.

This application Dec. 14, 1972, Ser. No. 315,236

Int. Cl. B23c 3/28

U.S. Cl. 90-15 A

10 Claims



The method of machining a profiled arcuate groove such as on the rotor of a turbo-machine to provide a mounting for the rotor blading comprises the steps of advancing into the groove a cutting head having two rotary cutters the respective cutting edges of which are directed in opposite directions and simultaneously machine the opposite flanks of the groove, gradually

increasing the spacing between the cutting edges as machining of the groove flanks progresses and thereafter decreasing the spacing between the cutting edges in conjunction with extraction of the cutters from the groove.

3,823,644

**SWIVEL HEAD ASSEMBLY FOR FIVE AXIS MACHINE TOOL**

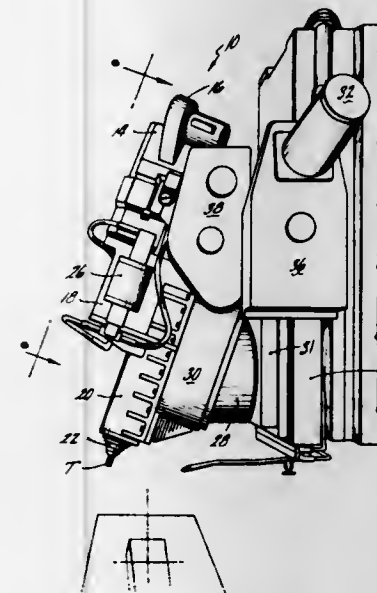
William R. Mello, Westminister, Calif., assignor to Colt Industries Operating Corp., West Hartford, Conn.

Filed Jan. 30, 1973, Ser. No. 328,095

Int. Cl. B23c 1/12, 1/16

U.S. Cl. 90-17

4 Claims



A five axis profiler has swivel head assembly attached to a vertical slide. The swivel head assembly includes a support, a first rotary slide mounted upon the support for rotation about a first axis, a second rotary slide mounted upon the second rotary slide for rotation about a second axis which crosses the first axis intermediate the respective rear and front ends of the first and second rotary slides to define an acute angle, and a spindle head fixedly secured to the second rotary slide. The spindle head may be rotatably positioned by rotating the first rotary slide and may be tilted by simultaneously rotating the first and second rotary slides in opposite directions. Worm gear arrangements are provided for rotating the rotary slides.

3,823,645

**MILLING MACHINE**

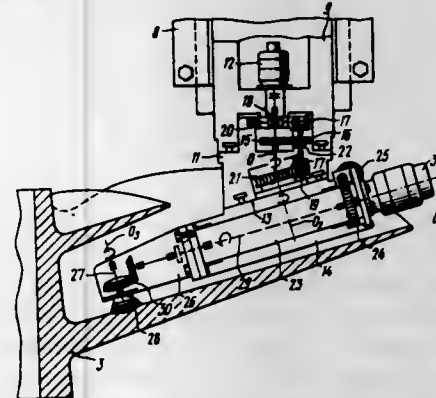
Ivan Alexeevich Sukhov, Pudozhskaya ulitsa 4a, kv. 22; Nikolai Matveevich Sjundjukov, Shkolnaya ulitsa 3, kv. 15, and Igor Nikolaevich Solovlev, ulitsa Stoikosti, 2/11, kv. 227, all of Leningrad, U.S.S.R.

Filed May 23, 1973, Ser. No. 363,049

Int. Cl. B23c 3/18

U.S. Cl. 90-17

7 Claims



A milling machine is designed for machining the curved surfaces of propelling screws and comprises a turntable with the

screw set on it and a fixed gantry along the horizontal guide of which two carriages move to mount bars capable of vertical movement.

The lower end face of each bar gets in contact with a vertical cylindrical insert turnable round its axis.

The lower end face of the insert is made inclined to the horizontal plane.

An overarm is connected to the lower end face of the insert. The longitudinal axis of the overarm is parallel to the lower end face of the insert.

A spindle head with a milling cutter held therein is connected to the overarm coaxially to its longitudinal axis.

The spindle head is capable of turning round the longitudinal axis.

A milling cutter rotation drive is mounted on the overarm.

3,823,646

**SYNCHRONIZING VALVES**

Geoffrey Wadsworth, c/o Fort Dunlop, Erdington, Birmingham B24 9Qt, England

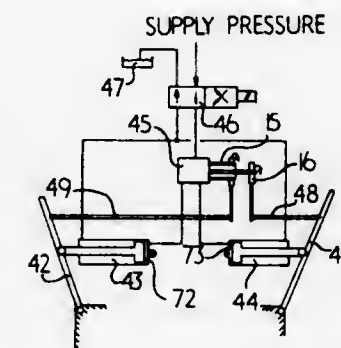
Filed May 17, 1972, Ser. No. 254,097

Claims priority, application Great Britain, May 26, 1971, 17080/71

Int. Cl. F01b 25/04; F15b 1/12

U.S. Cl. 91-171

5 Claims



A synchronizing valve, for controlling the flow of fluid to and from two fluid pressure actuated components so as to synchronizing their movements, in which a housing incorporates two relatively movable members, one member being provided with a cam profile and being arranged to be operatively connected to one fluid pressure actuated component so that movement of the component causes corresponding movement of the member and the other member being provided with a cam follower and similarly being arranged to be operatively connected to the other fluid pressure actuated component. Relative movement of the two members and hence of the cam profile and follower, resulting from non-synchronous movement of the fluid pressure actuated components, is arranged to actuate a flow proportioning valve means positioned within the housing thereby adjusting the flow of fluid to or from the fluid pressure actuated components to re-establish synchronous movement.

3,823,647

**ELECTROMAGNETIC BUCKET POSITIONER FOR HEAVY EQUIPMENT VEHICLES AND THE LIKE**

Trevor G. Campbell, Peoria, and James W. Russey, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 29, 1972, Ser. No. 284,491

Int. Cl. F15b 13/16

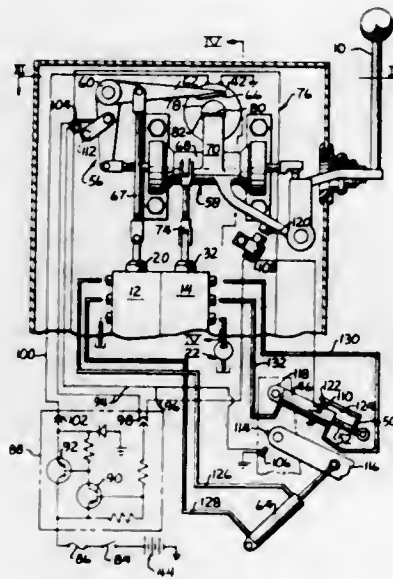
U.S. Cl. 91-358 A

8 Claims

An electromagnetic bucket positioner includes an electromagnet disposed to selectively latch, when energized, a control valve of a bucket positioning system. A normally-open switch is included in the system, and is adapted for closure via selected movement of a manually operable control lever,



thereby energizing the electromagnet to latch the control lever in the select position. A normally-closed switch is disposed in series with the normally-open switch, and is adapted to be opened upon selected translation of the cylinder rod of the associated hydraulic cylinder, to thus interrupt current flow to the electromagnet, to de-energize same and release the control lever. The control valve returns to a



neutral position, stopping the flow of hydraulic fluid to the respective cylinder, to stop further movement, tilt, etc., of the vehicle bucket. An electronic relay circuit may be included to introduce current to the electromagnet when energized via closure of the switches. In the latter embodiment, the relay circuit is de-energized after the electrical circuit is interrupted by opening the respective normally-closed switch.

3,823,648

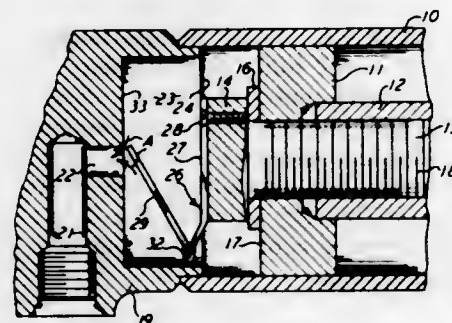
## FLUID CYLINDER UNIT CUSHION STRUCTURE

Evans L. Clarke, Sherrard, Ill., and Joseph T. Kulhavy, Davenport, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 9, 1973, Ser. No. 348,977

Int. Cl. F15b 15/22

U.S. Cl. 91-395



A fluid cylinder unit cushion structure having a cylinder with a piston slidable therein against a stop to present a space between the head end of the cylinder and the piston. The fluid port is in the cylinder head end, and the piston carries a spring type of valve which seats over the fluid port when the piston is in its end limit position at the head end. The spring also has clearance for moving off the fluid port when the piston is in its end limit position and when the fluid pressure is reversed to get flow into the cylinder through the port and thereby return the piston for movement in the opposite direction.

3,823,649  
ROTARY HYDRAULIC DEVICE WITH NUTATING GEAR

Knut Ivar Berg, Ulagatan 32, Motala, Sweden

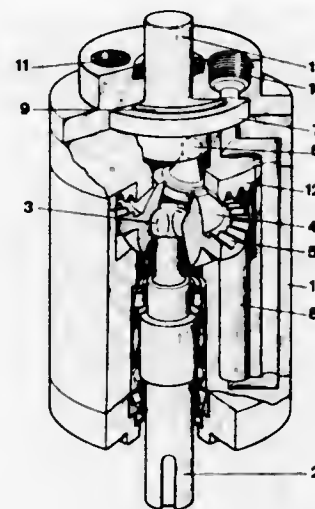
Filed July 26, 1972, Ser. No. 275,272

Claims priority, application Sweden, Aug. 3, 1971, 9909/71

Int. Cl. F01b 3/02, 3/10

U.S. Cl. 91-480

5 Claims



In a reduction gear for a hydraulic motor there is a stationary gear ring in the motor housing. For engagement with this stationary gear ring is a nutating disc having a gear ring on its one side and in its center being coupled to an output shaft. On its other side the nutating disc is engaged by pistons under influence of a hydraulic liquid, which give the nutating disc a wobbling and rotating movement. The last mentioned part of this movement is both transferred to a distributing disc controlling the supply of hydraulic liquid to the pistons and also being transferred to the output shaft, which is driven at a reduced speed in relation to the distributing disc.

3,823,650

## DESTROKING OF HYDROSTATIC DRIVE MOTORS

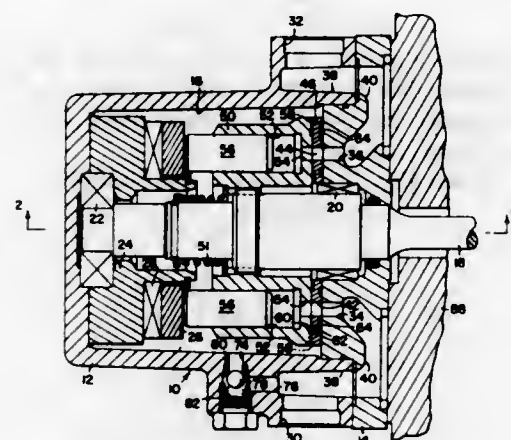
Curtis Phillip Ring, and Billie Gene Hunck, both of Cedar Falls, Iowa, assignors to Deere &amp; Company, Moline, Ill.

Filed Nov. 2, 1972, Ser. No. 303,148

Int. Cl. F01b 13/04

U.S. Cl. 91-497

9 Claims



The cylinder barrel bearing face of an axial piston fluid motor is provided with a plurality of generally radially extending grooves whose inner ends are in communication with a source of low-pressure fluid. During periods when the motor is disconnected from a high-pressure source of fluid and the motor is driven mechanically, the grooves operate as a centrifugal pump which pressurizes the crankcase of the motor to hold the pistons off the cam.

3,823,651

## HYDRAULIC ASSEMBLIES

Martin Bruce Ogilvie, Yardley Wood, England, assignor to Girling Limited, Birmingham, England

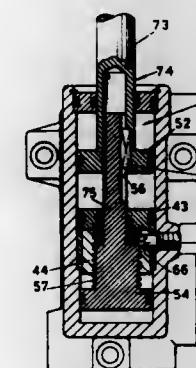
Filed July 26, 1972, Ser. No. 275,350

Claims priority, application Great Britain, Aug. 6, 1971, 37051/71

U.S. Cl. 92-2

Int. Cl. F01b 21/00

5 Claims



A repeater transmission comprises two similar hydraulic assemblies and transmits both linear and rotary movement. In each assembly, there is a first piston immovable on a piston rod and a second piston engaged with the piston rod by a fast-thread arrangement such that axial movement of the second piston along the rod causes the rod to rotate and rotation of the rod causes the second piston to move along the rod.

In a second embodiment, the second piston is engaged non-rotationally with, but slidably on, the rod and is engaged with an internally fast-threaded collar which is non-rotational in the cylinder.

3,823,652

## AIR CONDUIT AND DIFFUSER ASSEMBLY

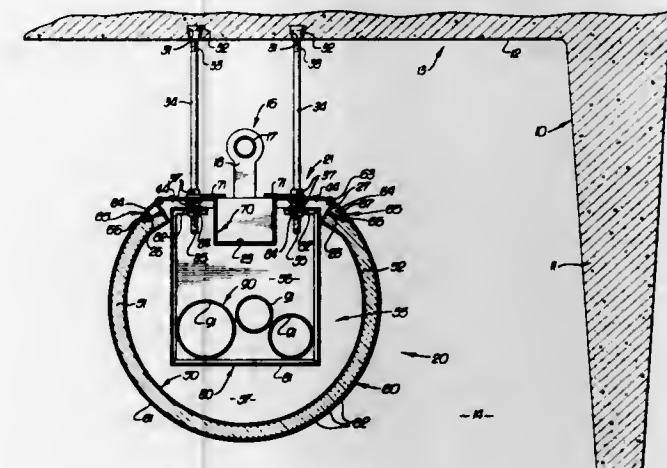
Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Covina, Calif.

Filed Jan. 12, 1970, Ser. No. 2,112

Int. Cl. F24f 13/06

U.S. Cl. 98-40 C

33 Claims



An air conduit and diffuser assembly for use in a room below the room ceiling in full view includes a conduit with a central cavity to conduct air into the room and openings through the conduit to diffuse the air throughout the room, the conduit being attached by rods extending between the ceiling and the upper portion of the conduit. The preferred embodiment includes a cavity in the upper portion for mounting a light fixture or the like, a utility channel in the central cavity to carry utilities into the room, and both metering and diffuser opening in the upper half of the conduit to direct the

flow of air downwardly along the outside of the conduit. An alternative exemplary embodiment has a universal upper portion with the diffuser openings therein which accepts various sizes of lower portions for different central cavity sizes.

3,823,653

## FLUID DISTRIBUTING DEVICE

Yngve Gustav Sigvard Roos, Stockholm, Sweden, assignor to AR-VENTILATION AB, Stockholm, Sweden

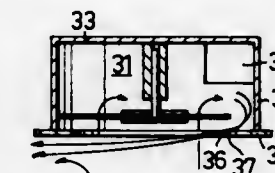
Filed Sept. 28, 1972, Ser. No. 293,158

Claims priority, application Sweden, Oct. 4, 1971, 12489/71

Int. Cl. F24f 13/06

U.S. Cl. 98-40 B

12 Claims



This invention pertains to a device for distributing a fluid, such as air, to a surrounding space in a selected air distribution pattern. The device is of the type with which the medium to be distributed is imparted a circulatory motion upon entering the device, wherewith a sub-pressure zone is created in the centre of the device as the result of air being drawn from the region of said zone by the circulating air mass. An axially and radially adjustable regulating means is arranged in the vicinity of the medium outlet of the device to define a gap through which the medium must pass when leaving the device, the regulating means being so constructed that adjustment thereof causes a change in the resistance of fluid flow through the gap and in the distribution pattern of the medium issuing therethrough.

3,823,654

## VENTILATING SYSTEM FOR SUBWAYS

Franz Swaty, Wien, Austria, assignor to Stadt Wien, Vienna, Austria

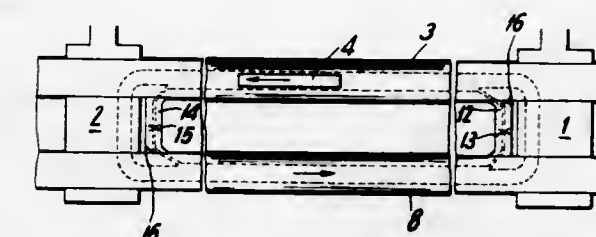
Filed Sept. 13, 1972, Ser. No. 288,697

Claims priority, application Austria, Sept. 16, 1971, 8068/71

Int. Cl. E01g 7/02

U.S. Cl. 98-49

17 Claims



In a subway ventilating system where two stations are connected by a pair of tunnel tubes, a cross-connection is provided between the tubes adjacent each of the stations. The cross-connections are not open to the outside atmosphere. Fans are located in the cross-connections for withdrawing a fractional amount of the air pushed ahead of the train as it moves through one of the tubes and for injecting it through a nozzle into the other tube in the direction toward the station from which the train departed. Due to the injection of a portion of the air into the other tube, the remaining portion of the air pushed ahead of the train is pulled into the other tube and is directed back toward the station from which the train departed. Further, for ventilating the tunnel tube and the station, a ventilating shaft is located in a mid-portion of the tubes intermediate the stations for withdrawing air from the tubes and directing it into the outside atmosphere and for pulling air in from the outside atmosphere and circulating it into the tubes.



3,823,655

## WINE-MAKING APPARATUS

Ronald Anthony Potter, Lenehan Rd., Griffith, New South Wales, Australia (2680)

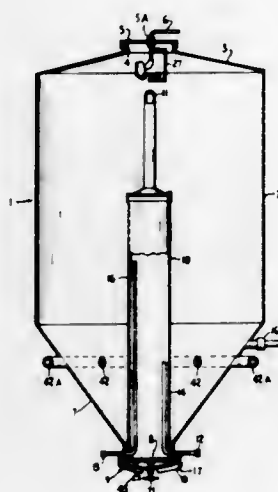
Filed Oct. 26, 1972, Ser. No. 300,994

Claims priority, application Australia, Oct. 28, 1971, 6831/71

Int. Cl. C12c 11/04; C12g 3/00

U.S. Cl. 99—277

14 Claims



Apparatus adapted for use in wine making, and functioning at least partly in the process of making red and white wines, and comprising a vessel including at least a sidewall, a downwardly convergent floor having an opening permitting the removal of the residual grape skins, a door normally closing the opening, means permitting the insertion of raw materials and at least one means permitting the removal of the processed grape juice.

3,823,656

## SINGLE-USE COFFEE FILTERS

Germaine Vander Veken, Vrijheidslaan 171, 1080 Brussels, Belgium

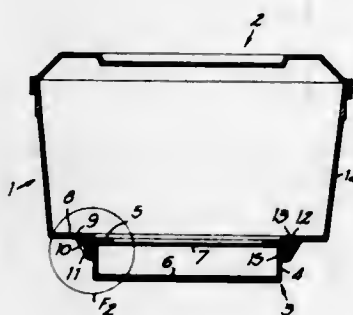
Filed Sept. 18, 1972, Ser. No. 289,933

Claims priority, application Belgium, Apr. 26, 1972, 78264572

Int. Cl. A47j 31/10, 31/06

U.S. Cl. 99—295

13 Claims



A single-use throw-away coffee filter comprising a water receiving filtering body having a bottom which is substantially constituted by a cartridge or capsule containing coffee and a filter element, the improvement comprising means to provide a sealing fit and to prevent relative movement between the filtering body and capsule, especially during the brewing of coffee.

3,823,657

## STEAM PRESSURE COOKER WITH SAFETY DEVICE

Hans Luetolf, Meggen, Switzerland, assignor to Salvis AG, Reussbühl, Switzerland

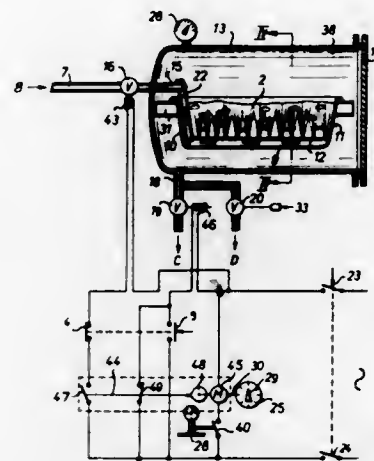
Filed Feb. 13, 1973, Ser. No. 332,110

Claims priority, application Switzerland, Feb. 17, 1972, 2312/72; Austria, Mar. 3, 1972, 1824/72

Int. Cl. A47j 27/09

U.S. Cl. 99—337

6 Claims



In a steam pressure cooker into which externally generated steam is introduced to build up a gauge pressure at which the cooking process is greatly accelerated. Safety means preventing the access door of the pressure vessel from being manually opened when the vessel is still under pressure and the steam admission valve from being opened when the door is not properly secured by the locking engagement of a latch.

3,823,658

## TOASTER-BROILER STACKING UNIT

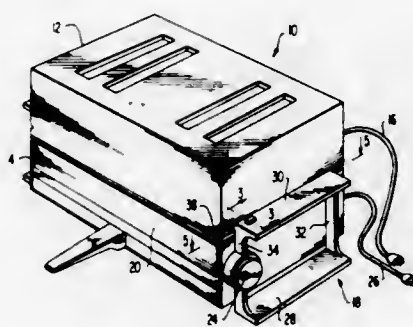
Louis Pinchot, 8101 Southwest 72nd, Miami, Fla. 33143

Filed Oct. 13, 1972, Ser. No. 297,386

Int. Cl. A47j 37/08

U.S. Cl. 99—340

12 Claims



The unit includes a toaster adapted for releasable superposition over a broiler. A stacking frame is secured to and supports the broiler when used separately and the toaster-broiler unit when stacked. The frame is secured at the opposite ends of the broiler and, at each end, includes a lower base and an upper track having an inwardly extending tongue. The opposite ends of the toaster are grooved to receive the tongues upon lateral registration of the tongues and grooves. Each track is provided with a locking device for releasably securing

the toaster to the broiler when stacked thereover. To remove the toaster from the broiler for separate use of one or both of the toaster and broiler, each upper track is provided with a push button. Upon depression of the button, the locking device is released permitting the toaster to slide laterally from the frame and from its stacked position over the broiler.

3,823,659

## APPARATUS FOR PREPARING A NON-PACKAGED EGG PRODUCT

Vladimir Hubka, Winterthur, Switzerland; Henning Rehloff, Greve Strand, and Mogens Myrup Andersen, Copenhagen, both of Denmark, assignors to Institutet for Produktudvikling, Lyngby, Denmark

Continuation-in-part of Ser. No. 160,634, July 8, 1971, abandoned. This application Oct. 19, 1972, Ser. No. 298,912 Claims priority, application Netherlands, July 15, 1970, 703670

Int. Cl. A47j 43/20

U.S. Cl. 99—353

15 Claims



An apparatus for preparing a non-packaged egg product comprising a cylindrical core of coagulated yolk mass surrounded by a shell of coagulated egg white mass. The apparatus comprises a heating chamber and preferably also a cooling chamber located below the heating chamber and mechanically connected thereto. Longitudinally slitted molds of a resilient sheet material are closed around a bottom member thereof and introduced in tubes traversing the heating chamber. A separator tube is inserted in each mold whereupon yolk and egg white mass are supplied to the two compartments of the mold internally and externally of the separator tube, respectively. After a preliminary coagulation the separator tube is withdrawn and after final coagulation the mold is transferred to the cooling chamber and later ejected therefrom, whereby the resilient mold opens and releases the finished egg product. Means may be provided for cleaning the separator tube externally and internally during the withdrawal thereof from the mold. In an alternate arrangement the egg white is first injected into the space between the mold and separator tube and allowed to partially coagulate. The separator tube is then withdrawn and the egg yolk is thereafter injected into the central cavity defined by the egg white.

3,823,660

## RADIANT TUNNEL

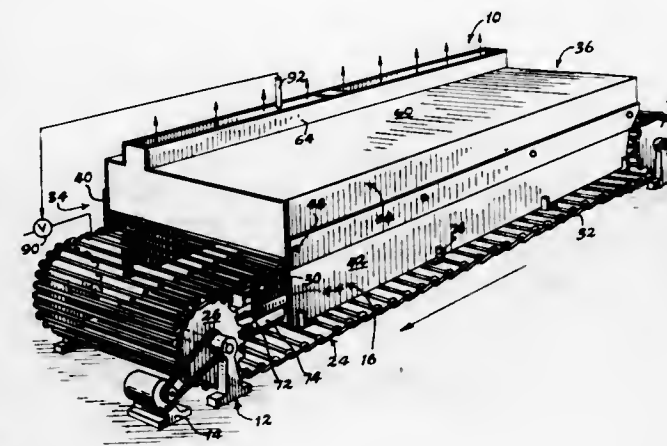
Carl H. Nerthling, 1026 W. 35th St., Erie, Pa. 16508

Filed Oct. 2, 1972, Ser. No. 293,762

Int. Cl. A47j 37/04

U.S. Cl. 99—386

12 Claims



A device for cooking meat products and in particular solid frozen hamburger patties within less than a minute without loss of flavor and juices; the device employing gas burner heated metal screens vertically bounding a hamburger patty transport conveyor.

3,823,661

## APPARATUS FOR THAWING FOOD

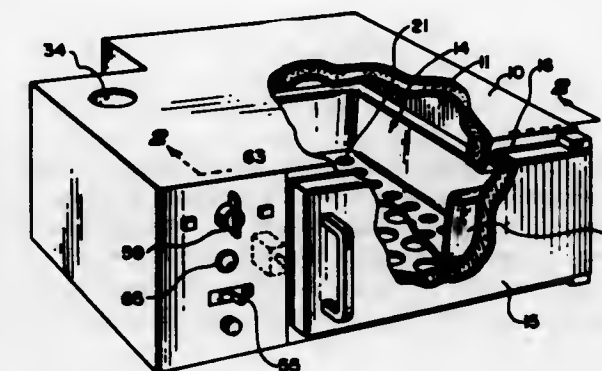
Edward L. Kells, Batavia, Ill., assignor to Dover Corporation, New York, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,311

Int. Cl. A23l 1/00

U.S. Cl. 99—468

7 Claims



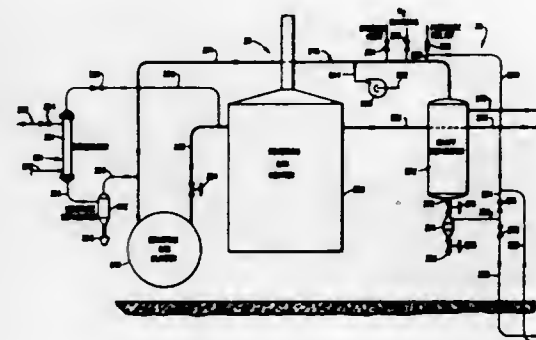
Relatively low pressure steam is forced through an area within which lumps of frozen vegetables are located. Initially, steam is supplied at a relatively high rate, with the rate being reduced after the ice has been thawed from the surface of the vegetables. The condensate along with any other liquids present are withdrawn from the area in which the vegetables are located. As the surface ice is removed from the vegetables, the steam supply is automatically reduced.



3,823,662

**ROASTING APPARATUS**

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.  
Division of Ser. No. 137,247, April 26, 1971, Continuation-in-part of Ser. No. 44,464, June 8, 1970, Pat. No. 3,615,668. This application Aug. 11, 1972, Ser. No. 279,748  
Int. Cl. A23J 1/02; A23N 15/00  
U.S. Cl. 99-468 13 Claims

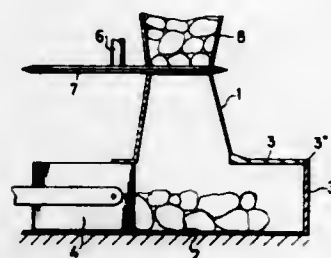


Apparatus for roasting particulate solids which includes a system for heating and circulating a fluid through a roasting vessel, and arrangements for supplying material to be processed to and discharging it from the reactor. Methods for roasting particulate solids.

3,823,663

**COMPRESSING APPARATUS HAVING A PORTIONING DEVICE**

Toni Reiffenhaeuser, Burglahr, and Helmut Maus, Oberlahr, both of Germany, assignors to Toni Reiffenhaeuser, Burglahr, Germany  
Filed May 9, 1972, Ser. No. 251,808  
Claims priority, application Germany, May 14, 1971, 2123906  
Int. Cl. B30b 15/08  
U.S. Cl. 100-97 6 Claims



The present portioning device has a metering chamber and a compression chamber in which the material metered in the metering chamber is compressed. An intermediate chamber having a volume larger than the metering chamber is arranged for receiving the yet uncompressed but metered portion to locate such portion for compressing transfer into the compression chamber.

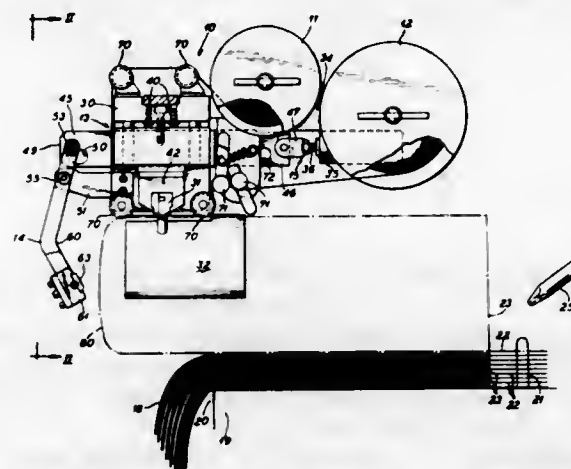
3,823,664

**INFLATED BAG PRINTER AND METHOD**

James L. Shenoha, Lockport, Ill., assignor to Norwood Marking & Equipment Co., Inc., Downers Grove, Ill.  
Filed May 10, 1973, Ser. No. 358,962  
Int. Cl. B41J 17/00 7 Claims

A method and device for imprinting indicia such as price and code data on an inflated bag which involves the steps of first inflating a bag by an air jet, second deflating a portion of

the inflated bag, third printing indicia on a portion of the deflated portion. The apparatus includes an air jet for inflating the bag to a position underlying a marker type face and an

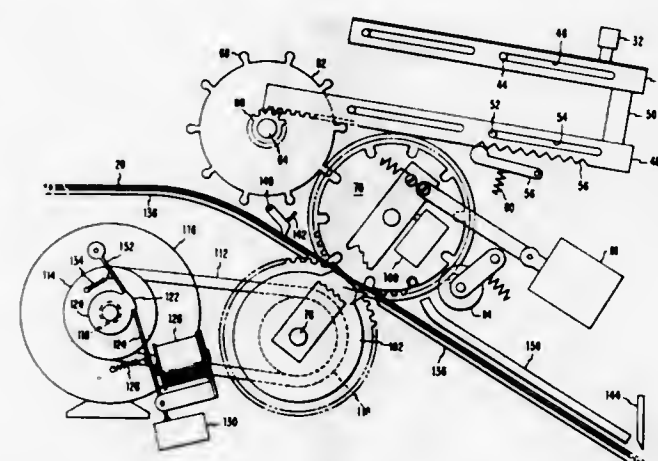


anvil movable to contact a portion of the bag and to collapse a portion of the bag while urging a surface portion of the collapsed portion against the marking face.

3,823,665

**LABEL PRINTING MACHINE**

Wilbur M. Davis, and Robert E. Yates, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Dec. 20, 1972, Ser. No. 317,018  
Int. Cl. B41J 7/06 1 Claim



A machine for printing a strip of connected labels including a stack of co-axially disposed print wheels, a series of print wheel setting knobs disposed on an exterior surface of the machine and drivingly connected respectively with the print wheels by means of toothed intermediate wheels and racks and pinions for rotatably adjusting the individual wheels, a solenoid for moving the print wheels out of engagement with the intermediate wheels, and a feed wheel having a print backup boss disposed to have a nip with printing surfaces of the print wheels so that the label stock is printed as the backup boss makes a nip with printing surfaces on the print wheels as the print wheels are collectively rotated with corresponding rotation of the feed wheel.

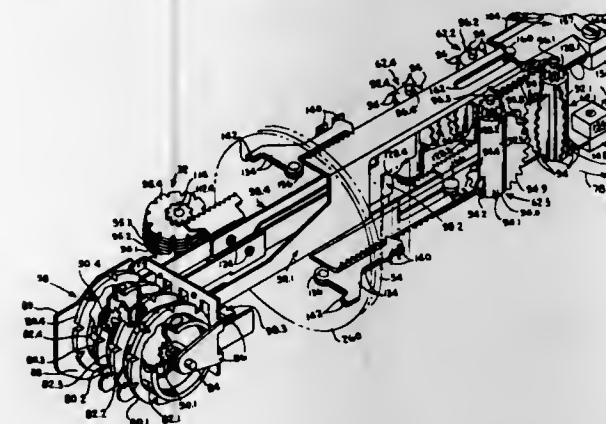
3,823,666

**VALUE DISPENSING MECHANISMS**

Walter J. Hanson, Old Greenwich, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.  
Division of Ser. No. 91,800, Nov. 23, 1970, Pat. No. 3,731,068.  
This application Apr. 16, 1973, Ser. No. 351,137  
Int. Cl. B41J 7/09 15 Claims

A postage meter having a mechanism which is rotatable to print a postage impression of a selected value. A mechanism

for setting the postage value is provided, and is assembled with the printing mechanism for rotation therewith. This setting mechanism includes selector wheels which are coaxially rotatable, and setting bars which are longitudinally translatable in response to rotation of the selector wheels. Economic accountability is assured by postage registers having four drivable decimal orders, and input pinions for each such order. The setting mechanism has four adjustable register-driving gear clusters which are normally disengaged from the register pinions, but engage them during printing. Mechanisms are provided for choking the register, and for clamping the choke devices to provide positive register locking when the driving gear clusters are disengaged from the pinions. The setting bars comprise an assembly of individual bar members,



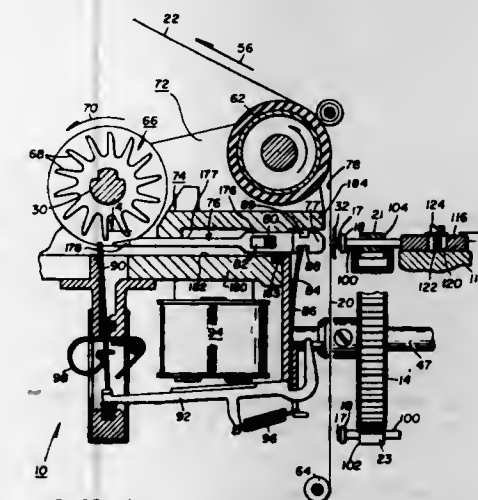
pairs of which are connected together for joint translation. The bars are nested in a unique way, and are formed with respective gear tooth racks which adjust the register-driving gear clusters and set the numerical value of the postage printing wheels. Rectification is accomplished by pawls which engage the setting bar racks, and have a mutually interlocking relationship with a shutter disk. This interlock operates either to disable the meter trip mechanism, and thus prevent postage printing operation, when the setting bars are not in rectified position; or to lock the setting bars during a postage printing cycle. A deadlock latch, which acts as an intermediate link between the shutter disk and trip mechanism, also blocks the trip mechanism when the descending postage balance is low, or the register compartment access door is open.

3,823,667

**FORCE ADJUSTMENT IN IMPACT PRINTERS**

Egon S. Babler, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.  
Filed July 3, 1972, Ser. No. 268,237  
Int. Cl. B41J 9/12 27 Claims

U.S. Cl. 101-93 C



A plurality of self-restoring equally spaced apart print hammers selectively are driven lineally toward a printing position

by continuously rotating impellers having equiangularly spaced radial impelling elements. Each impeller is effective through the agency of a rockable interponent, which is selectively elevated into the path of associated impelling elements upon latching of the armature of an electromagnet, for transmitting impeller force to a corresponding print hammer. An elastomeric bumper, disposed in the path of the print hammers, dampens printing force on dies, which are conveyed past said hammers for printing, in equally spaced relationship different from the spacing of said hammers. Each die, when at a printing station, is aligned with a print hammer but spaced therefrom a distance inversely proportional to its printing area for producing copy of uniform intensity.

3,823,668

**DUPLEX COMBUSTIBLE CARTRIDGE CASE**

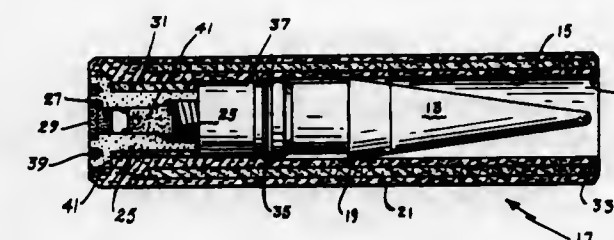
Robert F. Remaly, Olympia Fields; Milton S. Nusbaum, Chicago; Kenneth G. Johnson, Aurora, and Seymour Levine, Chicago, all of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 19, 1972, Ser. No. 298,977

Int. Cl. F42b 5/02

U.S. Cl. 102-38 R

2 Claims



A combustible cartridge case for use with a fully telescoped round of ammunition wherein the case is of a laminated type construction with a cylindrical molded grain propellant sandwiched between a double wall combustible case of felted nitrocellulose thereby adding considerable physical strength to the cartridge. A supplementary cylindrical charge of molded propellant is positioned in the rear portion of the case surrounding the outer wall of the igniter located aft of the projectile.

3,823,669

**FAIL-SAFE HAND GRENADE**

Alexey T. Zacharin, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1973, Ser. No. 327,518

Int. Cl. F42b 27/02

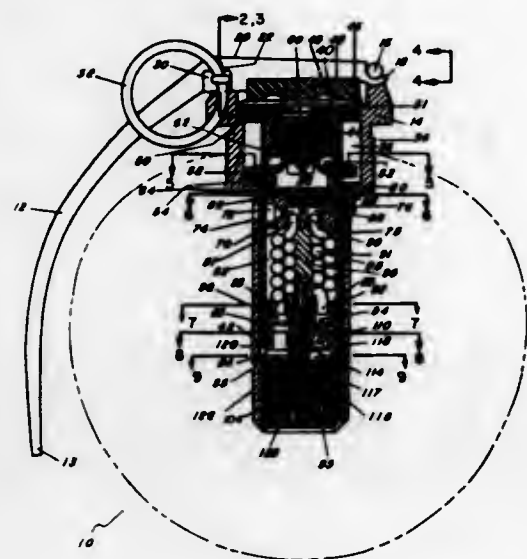
U.S. Cl. 102-64

4 Claims

This invention relates to a completely sealed improved hand grenade fuze having an out-of-line detonator held in a safe position by two independent safing elements. The present invention includes a formed latching member for preventing the inadvertent removal of the grenade initiating handle, puncturable sealing foil to prevent malfunctions due to accumulations of mud and ice, a compliant element intermediate the handle and the sealing foil, a spring biased detent cap for penetrating the sealing foil upon release of the safety handle and for mechanically releasing a rotor housing. The rotor housing, after mechanical release by the biased detent cup, is first rotated by a short delay cord which activates a gas generating charge forcing the rotor to turn from a "safe" out-



of-line position to an "armed" in-line position. The detonator in the in-line position is initiated by a long delay cord which is ignited simultaneously with a short delay cord. The detent cap



releases a biased firing pin causing it to strike a primer which initiates the dual delay cords. The initiated detonator in the in-line position activates an explosive train causing detonation of the grenade.

3,823,670

**HAND GRENADE TRIGGER SAFETY LOCK**

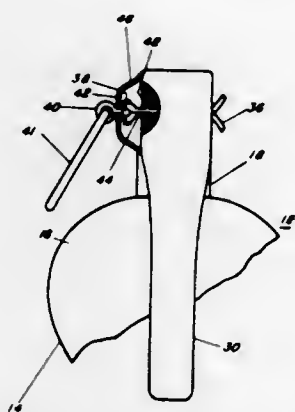
Alexey T. Zacharin, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 411,108

Int. Cl. F42b 27/00

U.S. Cl. 102-64

2 Claims



The present invention relates to a safety device for conventional hand grenades. The safety device comprises a double headed cotter pin which is automatically locked in a safe position by the lever handle and can be removed by the thrower, when desired, to arm the grenade.

3,823,671

**SYSTEM FOR TRANSFER OF GOODS ON RAILROAD TRAINS WHEN IN MOTION**

O. Robert Straumsnes, 1 Bryant Crescent, White Plains, N.Y. 10605

Filed Mar. 16, 1973, Ser. No. 342,056

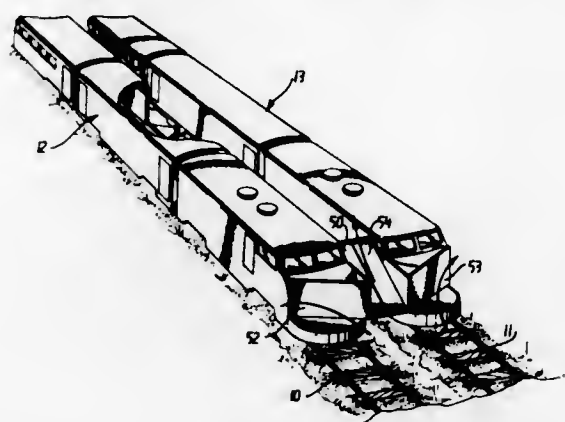
Int. Cl. B61k 1/00

U.S. Cl. 104-18

6 Claims

A system interlocking trains whereby passengers and/or goods may be transferred therebetween while the trains are in motion. The system includes means for interlocking a train travelling on a main line with a train travelling on a local line,

and means for providing transfer of passengers and/or goods therebetween while the trains are in motion. Local trains run on local lines spaced at desired locations along the main lines. After the transfer of passengers and/or goods is completed, the trains are decoupled, whereby the main train continues en route and the local train may be unloaded. Wind deflectors are provided to deflect any wind factor which might develop during transfer of passengers and/or goods. Floors are ex-



tended laterally from the side of each train to form a passenger bridge to transfer passengers therebetween. The bridges are provided with curtain roofs which are extendable from the top of each train. Prior to disengagement of the trains, the curtain roof is moved into contact with its respective floor and, as the floor is retracted back into its respective train, the curtain roof moves therewith to assure that no passengers are left on the bridge as the extendable floors are retracted.

3,823,672

**HIGH SPEED GROUND TRANSPORTATION SYSTEMS**

Thomas George Fellows, Barnet; David John Ivor Garstin, Newmarket, and Michael Charity, Cambridge, all of England, assignors to Tracked Hovercraft Limited, London, England

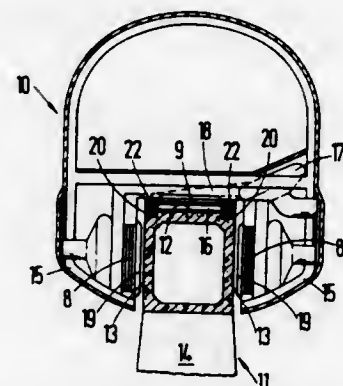
Filed July 7, 1972, Ser. No. 269,831

Claims priority, application Great Britain, July 15, 1971, 33393/71

Int. Cl. B61b 13/00

U.S. Cl. 104-148 MS

9 Claims



In a transportation system comprising a prepared track and a vehicle having levitation means such as an air cushion for supporting the vehicle above the track, roll control of the vehicle is effected by on or more pairs of electromagnets co-operating with magnetic material extending along the track. The magnets are normally energised so as to exert a substantially constant downward force in opposition to but less than upward forces exerted by the levitation means, and means are provided responsive to forces exerted on the vehicle tending to produce a rolling movement thereof for controlling the energisation of the electromagnets so that they act differentially to counteract a rolling movement of the vehicle. Further pairs of magnets comparably controlled may be provided to guide the vehicle.

3,823,673

**CONVEYOR INSTALLATION WITH INDIVIDUAL RAIL-BOUND SELF-PROPELLING VEHICLES OR VEHICLE GROUPS**

Erich Wesener, deceased, late of Munchen-Obermehring, Germany (by Renate Wesener and Oliver Wesener, heirs), assignor to Buro Patent AG, Glarus, Switzerland

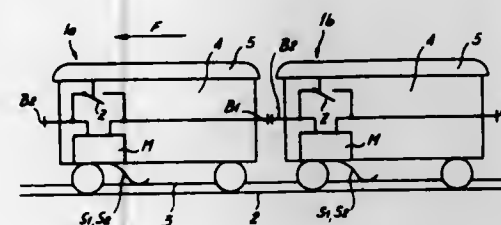
Filed Aug. 11, 1972, Ser. No. 280,077

Claims priority, application Switzerland, Aug. 13, 1971, 11919/71

Int. Cl. B601 3/04

U.S. Cl. 104-148 R

11 Claims



A conveyor installation embodying individual rail-bound self-propelling vehicles or vehicle groups, wherein each vehicle is equipped with a drive motor supplied with power via current rails. The vehicles or vehicle groups possess at both ends a respective contact element essentially located at the same height and at least the contact element which is rearwardly located with regard to the direction of travel has current supplied thereto. The front contact element is coupled with a switching element located at the drive current circuit of the drive motor and interrupts the drive current of the drive motor at least for such length of time as, viewed in the direction of travel, the front contact element touches the rear contact element of a similar type vehicle or vehicle group located forwardly in the direction of travel.

3,823,674

**BIN TYPE FREIGHT CAR**

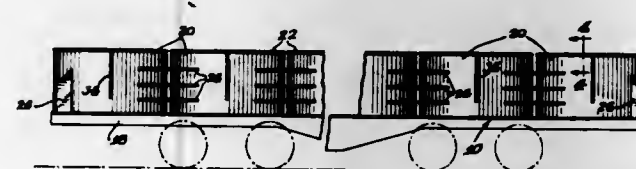
Barry E. Dupre, Lansing, Ill., assignor to North American Car Corporation, Chicago, Ill.

Filed Dec. 20, 1971, Ser. No. 209,579

Int. Cl. B60p 1/64; B65j 1/02

U.S. Cl. 105-366 R

13 Claims



A vehicle having a flat deck provided with a plurality of upwardly open bins or cells, with each bin or cell dimensioned for receiving, supporting and transporting an individual self-contained, flexible, collapsible container filled with flowable material.

3,823,675

**CEILING SUPPORTED LOAD SPACER**

Larry Farley, Woodland, Wash., assignor to Narad, Inc., Wayne, Mich.

Filed Apr. 6, 1973, Ser. No. 348,665

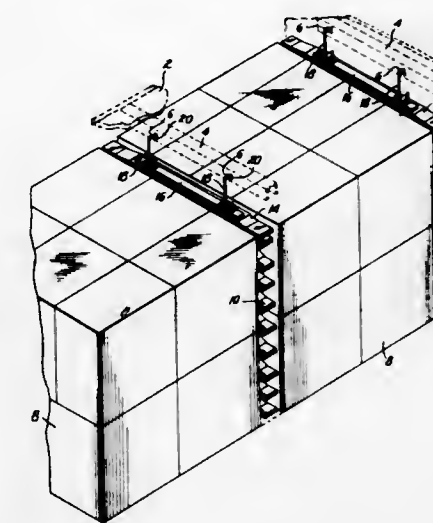
Int. Cl. B61d 45/00

U.S. Cl. 105-369 B

4 Claims

A spacer for filling spaces, in a freight vehicle or container, between a side of a stack of articles of freight and another sur-

face in the container, in the form of a lightweight expandable honeycomb structure, expandable in a vertical direction



3,823,676

**METHOD OF REDUCING SULPHUR DIOXIDE EMISSIONS FROM COAL**

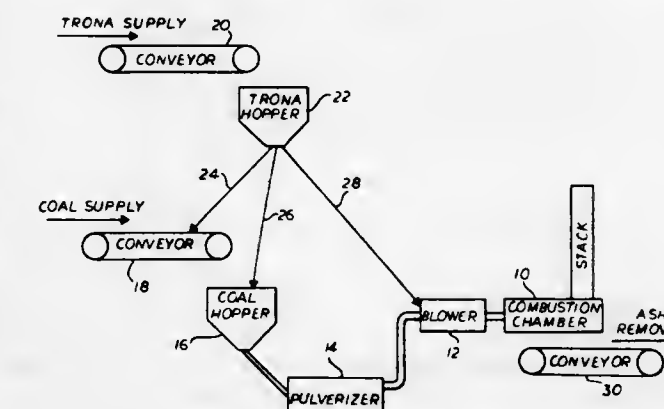
Webster Warren Cook, and James A. Maitland, both of c/o Warren Cook Chemical, Inc., Monee, Ill. 60449

Filed Oct. 10, 1972, Ser. No. 296,147

Int. Cl. F23b

U.S. Cl. 110-1 J

8 Claims



A method of reducing sulphur dioxide emissions from coal by adding an effective amount of Wyoming Trona to the coal for combining with sulphur in the coal to form a relatively heavy ash which is collected with other heavier ash for removal in the usual way.

3,823,677

**GRAVITY FLOW INCINERATOR**

Edwin Mark Polsak, South Euclid, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 15, 1972, Ser. No. 315,742

Int. Cl. F23g 5/12

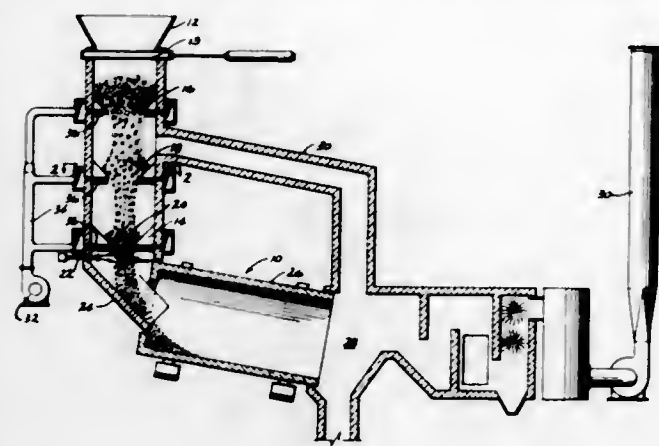
U.S. Cl. 110-8 C

4 Claims

A gravity flow incinerator for burning refuse, trash, and industrial wastes, etc. including an upright vertical chamber having grates vertically spaced throughout the height of the unit. Each grate is inclined downwardly and inwardly towards



a central opening. Air is fed to each of the openings through the grate itself. The central openings in the grates are progressively



sively smaller from the uppermost grate to the lowermost grate. The residue leaving the vertical incinerator is fed to a rotary incinerator where combustion is completed.

3,823,678

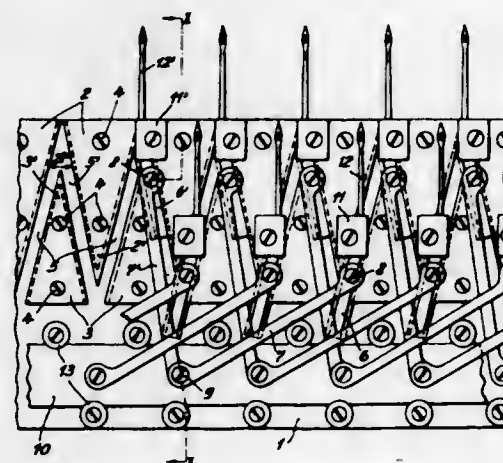
### AUTOMATIC COLOR-CHANGE MECHANISM FOR SHUTTLE EMBROIDERING MACHINE

August Langenegger, 97 Tambett St., Melbourne, Australia  
Filed July 12, 1973, Ser. No. 378,536

Int. Cl. D05c 5/00

U.S. Cl. 112-84

3 Claims



An automatic color-change mechanism for a shuttle embroidering machine has a pair of pusher guides arranged on a needle carriage and converging to a point at the front of the latter and at an acute angle to each other. For the 4/4 repeat, a left hand pusher in one guide and a right hand pusher in the other are linked with a control bar movable transversely to the working direction of the needles. The linkage levers are disposed at an angle to each other such that, as the control bar moves left, the left hand pusher is moved into working position while the right hand pusher is withdrawn and vice versa.

3,823,679

### SEWING FOOT FOR SEWING MACHINES

Gunter Meier, Weingarten, Germany, assignor to Pfaff Haushaltsmaschinen GmbH, Karlsruhe-Durlach, Germany  
Filed Feb. 21, 1973, Ser. No. 334,279

Claims priority, application Germany, Mar. 8, 1972, 2210996

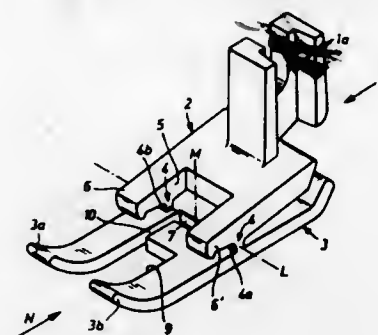
Int. Cl. D05b 29/00

U.S. Cl. 112-235

8 Claims

A sewing machine foot for guiding material in respect to a reciprocating sewing needle includes a substantially upright shank portion, a relatively flat sole support extending out-

wardly from the lower end of the shank portion which includes a forward end having spaced apart legs defining an opening therebetween for the needle and a sole below the sole support which has a resilient web connection to the sole support. The sole includes spaced forwardly extending feet with a space



therebetween leading to a transversely extending slot for the passage of the needle which is located below the open space of the legs of the sole support. The sole support legs provide downturned edges forming stops to limit the amount of pivotal movement of the sole in respect to the sole support.

3,823,680

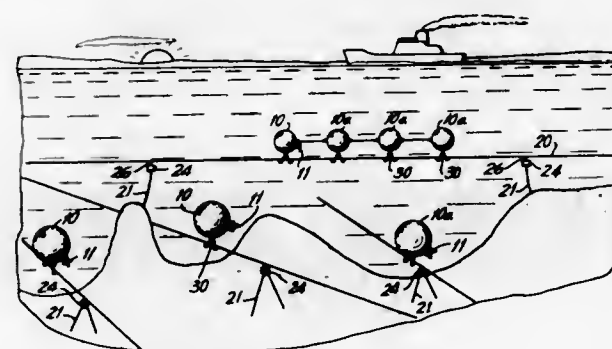
### UNDERSEAS TRANSPORT SYSTEM

O. Robert Straumsnes, 1 Bryant Cres., White Plains, N.Y.

Continuation-in-part of Ser. No. 163,955, July 19, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,308

U.S. Cl. 114-5 R

6 Claims



An underwater transport system comprising buoyant self-propelled vehicles which are secured to an underwater cable track which positively guides the vehicles along their routes and secures the vehicles under the water.

A guidance cable is supported by floatation chambers by means of pillars fixedly secured to the underside of the cable. The floatation chambers are anchored to the sea floor. The vehicles are secured to the cable by means of connectors which are constructed in a manner to allow passage of the connector over the pillar support of the cable. The vehicles are provided with visual and electronic signal means for communication with terminal stations and/or which automatically send out emergency signals should the vehicles break away from the cable and rise to the water surface.

3,823,681

### BARGE CARRYING TRANSPORT VESSEL

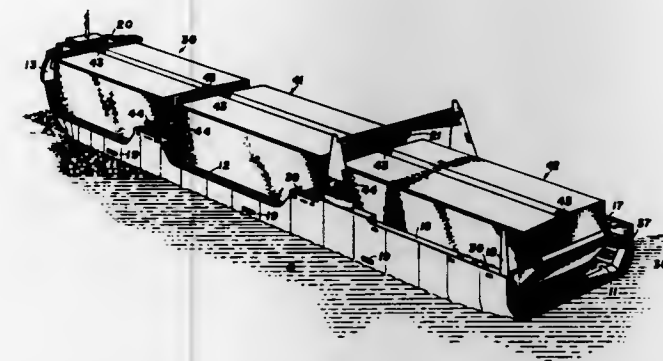
Charles R. Cushing, New York, N.Y.; Stephen Phelps Henderson, Kentfield, Calif., and Paul Steven Wells, Mount Vernon, Wash., assignors to Inter-Hull, San Francisco, Calif.

Filed Nov. 16, 1972, Ser. No. 307,291

Int. Cl. B63h 35/28

U.S. Cl. 114-43.5

9 Claims



A vessel for transporting a plurality of barges is disclosed. A hull having a well deck adapted to support a plurality of barges has a plurality of ballast tanks adapted to be filled with sea water. When the ballast tanks are flooded, the hull is in a loading configuration, wherein the well deck is submerged so that barges can be floated over the well deck and positioned thereon. The ballast tanks, when empty, place the hull in a transporting configuration, wherein the well deck is above water to transport the barges thereon. A wing wall is located on the edge of the well deck and is adapted to enclose the starboard side, the port side, and the bow thereof. The wing wall is adapted to be submerged when the hull is in the loading configuration and above water when the hull is in the transporting configuration.

3,823,682

### BOAT FENDER AND BRAKE

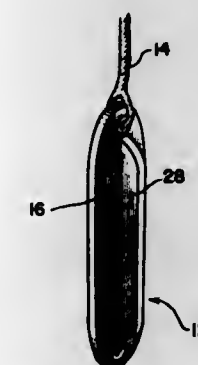
Stefan Jochimski, 30 E. Oak St., Chicago, Ill. 60611

Filed July 24, 1972, Ser. No. 274,662

Int. Cl. B63b 59/02

U.S. Cl. 114-219

9 Claims



An elastomeric boat fender in which two elastomeric walls are mounted in normal relationship to each other. Two pairs of diagonally opposite dihedral planes are formed and such diagonally opposite planes are respectively opened and closed as the bumper makes dock impact. The inside edges of an opening dihedral plane frictionally contact both the hull and the dock structure to brake boat movements, the dihedral planes being biased to resume right angle or normal configuration.

3,823,683

### PROPULSION DEVICES

Andrew Charles Osborne, Sheffield, England, assignor to UA Engineering Limited, Sheffield, England

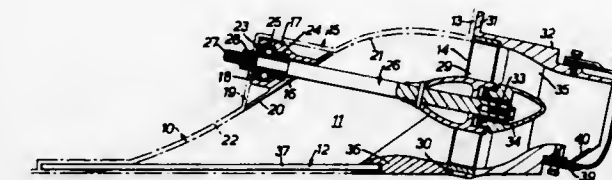
Filed Oct. 20, 1971, Ser. No. 190,799

Claims priority, application Great Britain, Oct. 20, 1970, 49639/70

U.S. Cl. 115-16

Int. Cl. B63h 11/08

4 Claims



A water-borne vessel has an intake duct provided by a formed section of the hull. An impeller unit comprising a rotary impeller within a casing fixed to a discharge duct is fastened to the hull at the outlet of the intake duct.

3,823,684

### BOAT DRIVE

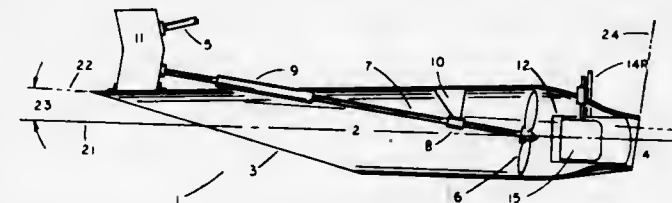
Joseph E. Baggs, 13632 Lanning St., Garden Grove, Calif. 92643

Filed Mar. 2, 1973, Ser. No. 337,753

Int. Cl. B63h 5/16

U.S. Cl. 115-39

9 Claims



Boat Drive System comprising as an integral unit, a propeller, propeller driving shaft with suitable bearings and seals, a duct having an inlet and outlet end oriented essentially parallel to the longitudinal axis of the boat within which said propeller rotates in a plane essentially normal to the longitudinal axis of the duct, and steering and reversing vanes within the discharge end of such duct. Said boat drive incorporates prior art ducted fan principal to improve efficiency, performance, safety, and reduce cost of boat drive systems available principally for pleasure craft.

3,823,685

### PROCESSING APPARATUS

Ronald L. Koepp, Dayton, and Stanley J. Dudkowski, Kettering, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Continuation of Ser. No. 169,545, Aug. 5, 1971, abandoned, which is a division of Ser. No. 886,185, Oct. 14, 1969, Pat. No. 3,645,695. This application Oct. 23, 1973, Ser. No. 408,700

Int. Cl. C23c 13/08

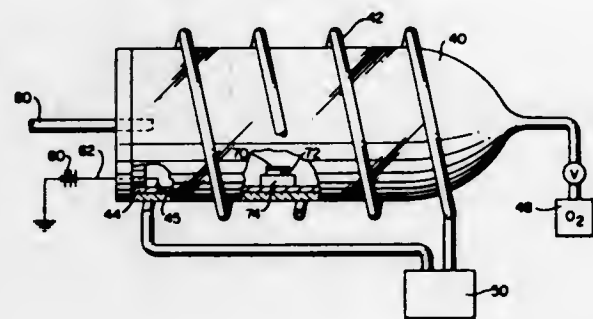
U.S. Cl. 118-49

4 Claims

The present invention relates to a processing apparatus for growing and annealing a silicon dioxide insulator layer to obtain a mobile positive ion free silicon dioxide insulator layer. A mobile positive ion free silicon dioxide insulator layer is required in order to make a stable insulated gate field effect transistor. The processing apparatus comprises a non-oxidiz-



ing, high-melting-point platinum metal film coated quartz furnace tube, potential means for placing a positive potential upon the platinum metal film coating of the platinum metal film coated quartz furnace tube to repel mobile ions therefrom, heater means for heating the interior of the quartz furnace tube, and gas means for passing oxygen gas through the platinum metal film coated quartz furnace tube. A silicon wafer may be oxidized in said processing apparatus to form a relatively mobile positive ion free silicon dioxide insulator layer of an insulated gate field effect transistor upon the silicon wafer. The silicon dioxide insulator layer is relatively un-



contaminated by mobile positive ions which exist to the outside of the platinum metal film coated quartz furnace tube. A silicon wafer which previously has been coated by a silicon dioxide insulator layer may be processed to remove mobile ions within the silicon dioxide insulator layer. Mobile positive ions are repelled by the positive potential applied to the platinum metal film away from the outside of the quartz furnace tube, and mobile positive ions of the silicon dioxide insulator layer within the platinum metal film coated quartz tube are removed by the flowing oxygen gas due to the low vapor pressure of the mobile positive ions.

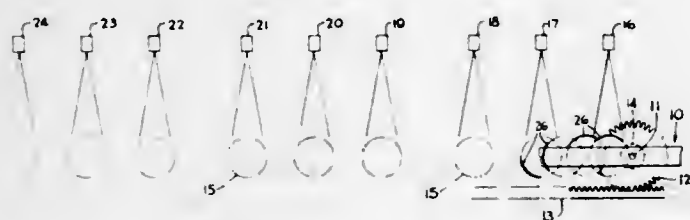
3,823,686

**APPARATUS FOR SPRAYING CYLINDRICAL ARTICLES**  
Herbert C. Snyder, Brockway, Pa., assignor to Brockway Glass Company, Inc., Brockway, Pa.

Filed Mar. 8, 1971, Ser. No. 121,735  
Int. Cl. B05c 5/00

U.S. Cl. 118—314

3 Claims



Apparatus for spray coating bottles by moving the bottles linearly and simultaneously rotating them at a rate synchronized with their linear movement. A series of spray guns are spaced alongside the path of the bottles at the side where their peripheries are rotating forwardly. The rotation of the bottles is so related to their linear movement and to the spacing of the spray guns that the points on the bottles which register with the spray guns as the bottles move rotatively along are uniformly spaced about the bottle peripheries.

3,823,687

**COATING APPARATUS**

James N. McGlashen, Winstanley, England, assignor to Dunlap Holdings Limited, London, England

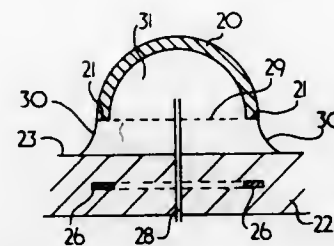
Filed Dec. 2, 1971, Ser. No. 204,262

Claims priority, application Great Britain, Dec. 16, 1970, 59827/70

Int. Cl. B05c 3/20

U.S. Cl. 118—421

7 Claims



A method and apparatus for the accurate coating of liquids, particularly adhesives, onto selected areas of the surface of an article. The article is positioned above the surface of the liquid in correspondence with a tool below the liquid surface. The tool corresponds in shape to the selected areas of the article. Raising the tool without breaking the surface of the liquid causes the liquid above it to rise and contact the article in the selected areas only, of which the following is a specification.

3,823,688

**MAGNETIC BRUSH ASSEMBLY**

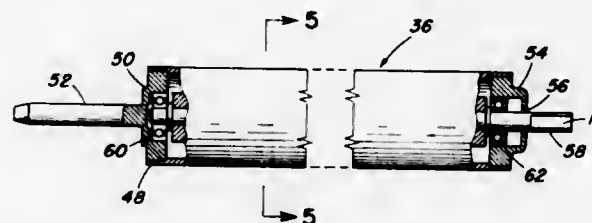
Stanley D. Klett, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 26, 1972, Ser. No. 220,965

Int. Cl. G03g 13/00

U.S. Cl. 118—637

6 Claims



A roller assembly for inclusion in a magnetic brush assembly wherein a floating bias is provided on a shaft of the roller assembly.

3,823,689

**DEVELOPING DEVICE FOR ELECTROSTATIC CHARGE IMAGES**

Gerardus Dietz, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,236

Claims priority, application Netherlands, Sept. 29, 1971, 7113329

Int. Cl. G03g 13/00

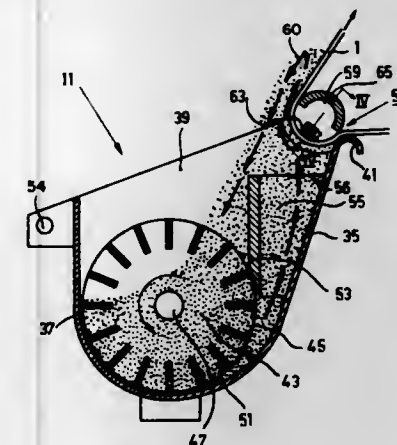
U.S. Cl. 118—637

5 Claims

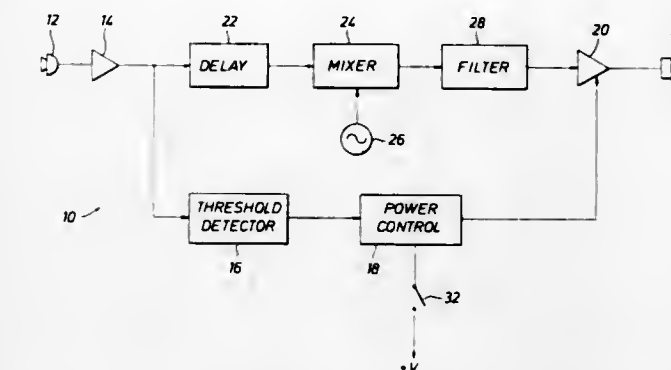
A developing device for a carrier provided with electrostatic charge images, consisting of a trough-like chamber

which accommodates a paddle wheel. A vertical partition limits a gap-like space in which developing powder is forced

frequency tone which is annoying to the dog, and the dog soon learns that the barking is punished by the high frequency



upwards by slow rotation of the paddle wheel until it comes into contact with the carrier.



sound. The silence of the dog is rewarded by termination of the high frequency sound. A switch override provides continuous output of tone.

3,823,690

**POOL CONSTRUCTION**

Robert W. Rynberk, Oak Lawn, Ill., assignor to Imperial Landscape & Supply Co., Inc., Oak Lawn, Ill.

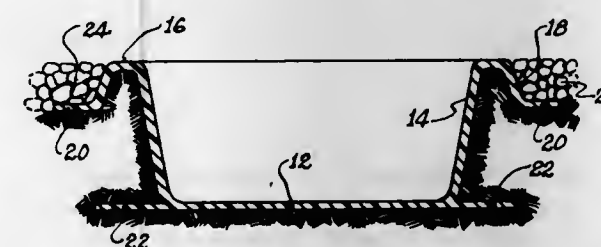
Filed Apr. 6, 1973, Ser. No. 348,514

Int. Cl. A01k 63/00

U.S. Cl. 119—5

2 Claims

U.S. Cl. 119—78



A one-piece molded pool construction for use in a garden and the like comprising an interior side wall portion for holding water. An integrally formed outer wall extends downwardly in spaced relationship relative to the interior wall for a short distance. This outer wall terminates in an outwardly extending flange. A second outwardly extending flange is located at the bottom of the construction, and the pool is located in place in an excavation or the like whereby both flanges are positioned beneath the surface with fill material extending over both flanges.

3,823,691

**ANIMAL TRAINING DEVICE**

Marshall M. Morgan, 10819 Chimney Rock, Houston, Tex. 77035

Filed May 10, 1973, Ser. No. 358,928

Int. Cl. A01k 15/00

U.S. Cl. 119—29

9 Claims

An apparatus useful in breaking dogs from barking, incorporating a microphone, threshold detecting circuit which senses a bark or other noise from the dog of suitable amplitude and duration, an oscillator providing an output frequency sufficiently high that human ears cannot hear it, a mixer circuit where the oscillator frequency is modulated by the bark, and a filter circuit which rejects low frequency components of the mixed signal to avoid annoying humans, and a power output amplifier connected to a speaker. The threshold detector controls the application of power to the output amplifier. When the device operates, the dog's bark modulates the higher

3,823,692

**LIVESTOCK WATERING FOUNTAIN**

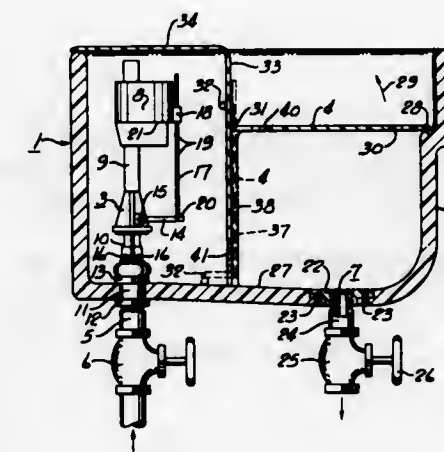
Harold O. Bowser, Box 22, Renfrew, Pa. 16053

Filed Mar. 26, 1973, Ser. No. 344,489

Int. Cl. A01k 7/00

U.S. Cl. 119—78

4 Claims



A livestock watering fountain wherein a watering bowl or basin is provided with an adjustable water level control valve which, in turn, is connected to a controllable water source. A drain is provided in the bottom of the bowl for periodic cleaning. The watering bowl is characterized by a removable horizontal false bottom. The watering fountain is particularly adaptable to use with race horses. The false bottom prevents an overheated horse from swallowing more than a predetermined amount of water. The horse can drink no lower in the bowl than the level of the false bottom when the main water supply is turned off, thereby preventing the horse from foundering.

3,823,693

**FLUIDIZED BED HEAT EXCHANGER**

Richard William Bryers, North Cranford, and Jack David Shenker, Dover, both of N.J., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Filed Jan. 16, 1973, Ser. No. 324,041

Int. Cl. F22b 1/02

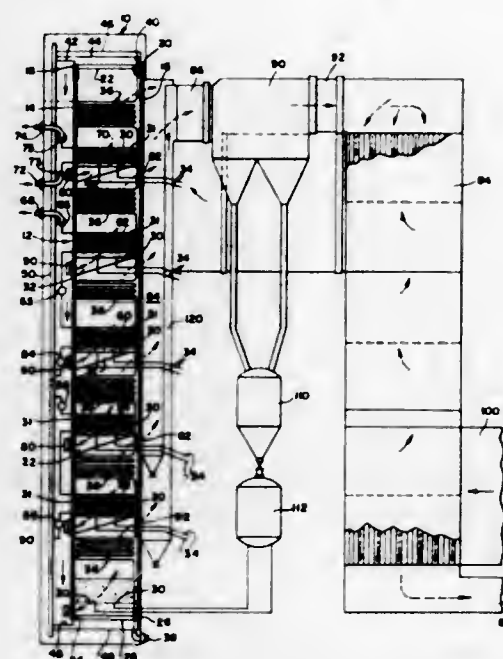
U.S. Cl. 122—4 D

9 Claims

A vapor generator in which a plurality of vertically stacked beds of particulate material containing a solid fuel are



disposed in a housing. Air is passed through each of the fuel beds to promote the combustion of the fuel and maintain the



beds at predetermined temperatures while a heat exchange medium is circulated in a heat exchange relation to the beds.

3,823,694

**ROTARY PISTON ENGINE HAVING ALTERNATELY USED EXTERNAL COMBUSTION CHAMBERS**  
Concezio Mazzagatti, 3786 Santa Fe Ave., Buenos Aires, Argentina

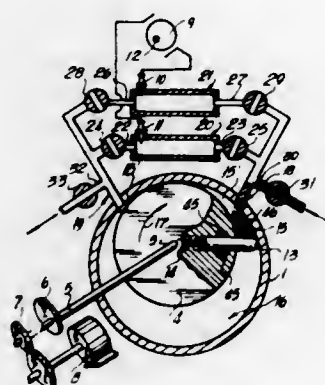
Filed May 31, 1972, Ser. No. 258,292

Claims priority, application Argentina, June 1, 1971, 235905

Int. Cl. F02b 53/00

U.S. Cl. 123-8.27

10 Claims

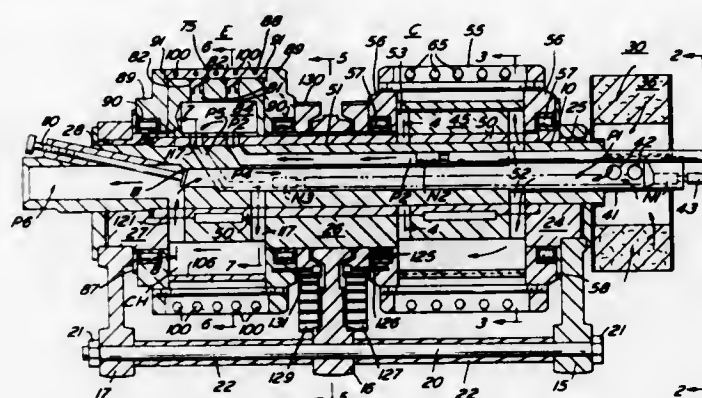


Rotary engine having a casing, a rotor housed therein and dividing said casing into a volume increasing chamber and a volume decreasing chamber, respectively connected to a fuel mixture inlet conduit and an exhaust gas outlet conduit, a pair of compressed fuel mixture receiving chambers outside said casing for producing the ignition of the compressed fuel mixture therein, and sending the expanding gases into said casing for driving said rotor, which in turn compresses the fuel mixture for sending it into said compressed fuel mixture receiving chambers and discharges the exhaust gases.

3,823,695  
**ROTARY ENGINE**  
William G. Swartz, Box 543, North Hills, Pa. 19038  
Filed June 4, 1973, Ser. No. 366,612  
Int. Cl. F02b 53/08

U.S. Cl. 123-8.23

10 Claims



A rotary engine is provided which includes a stationary shaft, three spaced stationary supports with eccentric cylinders, thereon interposed between the supports and the shaft, a multilobed compressor rotor carried on a sleeve concentric with the shaft between the first and second support, a compressor casing surrounding the rotor carried by bearings on the eccentric cylinders, a multilobed engine rotor between the second and third supports carried by a sleeve concentric with the shaft, an engine casing surrounding the engine rotor carried by bearings on the eccentric cylinders, and multiple passageways in the rotors and the shaft to provide for communication therebetween for fuel mixture introduction, compression, treatment, compression, combustion and exhaust gas feedback.

3,823,696

**ARRANGEMENT FOR REGULATING FUEL INJECTION**  
Ulrich Mutschler, Neillingen, and Norbert Rittmannsberger, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

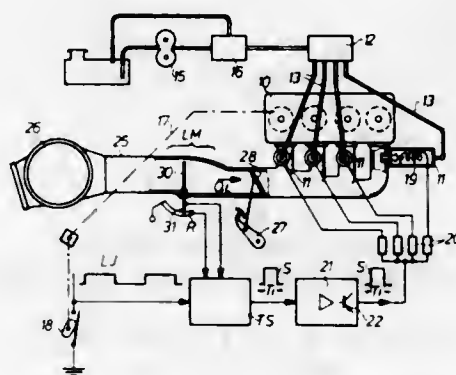
Filed July 17, 1972, Ser. No. 272,256

Claims priority, application Germany, July 17, 1971, 2135824

Int. Cl. F02m 51/00

U.S. Cl. 123-32 EA

13 Claims



A regulating arrangement maintains proper fuel-air mixing ratios in a combustion engine by regulating the fuel-injection time as a function of airflow through the air-intake passage. The arrangement includes an electrically controllable fuel-injection valve, adjustable electric timing means for opening the valve for an adjustably predetermined time, and an adjusting member for adjusting such predetermined time. An airflow sensing member is operatively associated with the adjusting member and is mounted in the air-intake passage for displacement by air flowing through such passage. The sensing

member is displaceable to a plurality of positions each corresponding to a different amount of airflow. A pneumatic damping unit is operative in response to airflow changes and applies to the sensing member a damping force which decreases with time. In this manner, the damping means opposes displacement of the sensing member in response to sudden and short-lasting changes in airflow conditions.

3,823,697

**MULTICYLINDER MOTOR OR ENGINE WITH DOUBLE-ACTING PISTONS**

Paul Von Esch, Zurich, Switzerland, assignor to Bekama AG, Zug, Switzerland

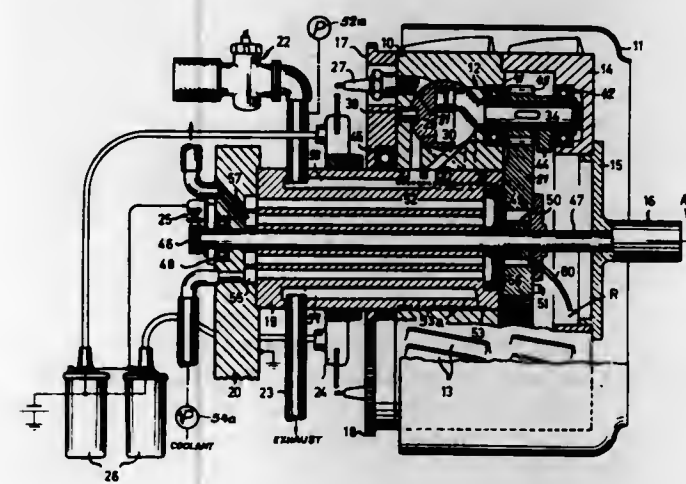
Filed Apr. 17, 1972, Ser. No. 244,499

Claims priority, application Switzerland, Nov. 18, 1971, 16921/71

Int. Cl. F02b 57/00

U.S. Cl. 123-43 R

12 Claims



An internal-combustion engine or fluid (pneumatic or hydraulic) motor has a fixed central shaft formed with a sun gear, and a housing rotatable around the shaft. This housing is formed with a plurality of bores each subdivided into two compression chambers by a double-acting piston which is displaceable along an axis parallel or transverse to the shaft axis. Each piston is connected by a crank to a pinion which acts as a planet gear meshing with the sun gear so that reciprocation of the piston causes the planet gear to rotate, thereby entraining the housing about the fixed shaft. Alternatively the device may be driven mechanically to operate it as a pump.

3,823,698

**MECHANICAL LASH ADJUSTER**

Walter H. Van Deberg, Berkley, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed Jan. 18, 1972, Ser. No. 218,806

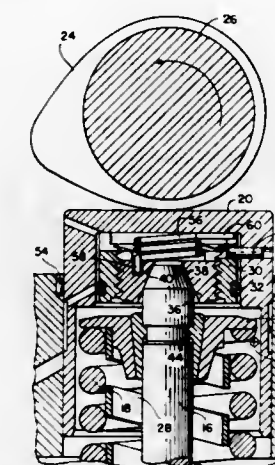
Int. Cl. F01l 1/20

U.S. Cl. 123-90.54

17 Claims

In an internal combustion engine having a lash adjuster, the usual shortening of the valve train occurs during the opening stroke of the valve (to introduce excessive lash or clearance), then the train is lengthened at the end of the closing stroke to remove all lash. In this invention, the motion for shortening the train is derived from the inherent unwinding of the helical valve spring when compressed to open the valve. This unwinding turns a screw within a nut of a threaded connection in the tappet or valve lifter thereby shortening the train and introducing lash. The screw can turn in the nut because the nut is prevented from following the rotating spring either by counter rotational urge of an offset cam on the lifter or by a one-way clutch holding the lifter. The turning of the valve

spring also winds up a restoring spring between the screw and the nut. When the valve closes, the force of the valve spring is



removed from the lifter. The lifter (and nut) are then allowed to rotate in the opposite sense and the connection is threaded out by the restoring spring to remove all lash.

3,823,699

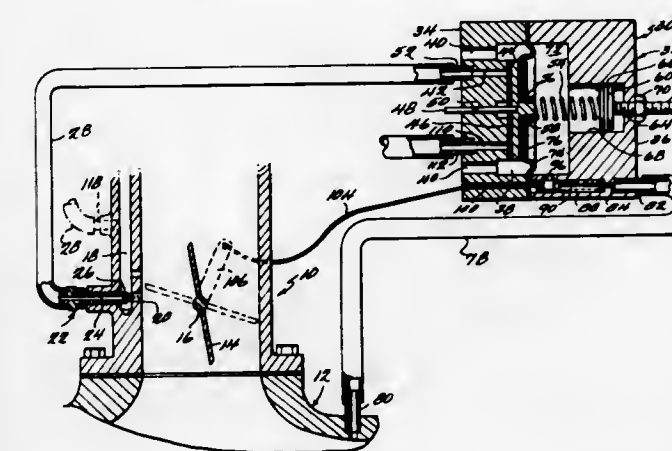
**DECELERATION FUEL FLOW AND EMISSION CONTROL FOR INTERNAL COMBUSTION ENGINES**  
Paul F. Adair, Miami, Fla., assignor to Aerodex, Incorporated, Miami, Fla.

Filed Oct. 20, 1972, Ser. No. 299,460

Int. Cl. F02m 23/04

U.S. Cl. 123-119 DB

4 Claims



A control for the idling carbureted mixture of fuel and air of a vehicle-propelling internal combustion engine to reduce the fuel to air ratio when the vehicle is decelerating and is coupled to the engine. Engine intake manifold pressure and throttle valve setting govern the control which preferably leans the mixture sufficiently so it is not combustible in the engine.

3,823,700

**COMBINED CARBURETOR THROTTLE AND CHOKE CONTROL FOR SMALL GASOLINE ENGINES**

Herbert A. Gumtow, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed May 7, 1973, Ser. No. 357,879

Int. Cl. F02d 37/00, 9/00

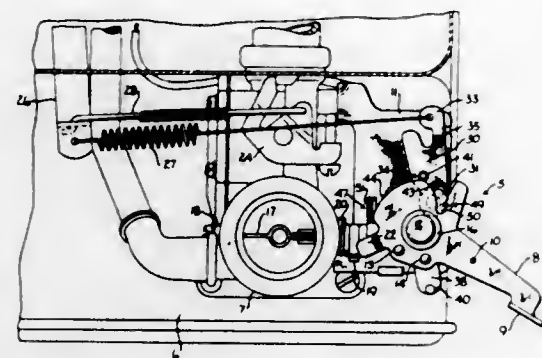
U.S. Cl. 123-119 F

3 Claims

A manually movable engine control lever swings between defined "stop" and "choke" positions, through a range of "run" positions, its maximum speed setting being nearest the "choke" position. A second lever is connected with the engine governor spring to tension it for desired engine speed. A cam edge of the first lever cooperates with a cam follower on the



second, providing a connection whereby the second lever swings with the first as the first is moved between "stop" and



maximum speed positions but the first swings between maximum speed and "choke" positions independently of the second while the second remains in maximum speed position.

3,823,701

# PNEUMATIC PULSE COUNTING DEVICE

Hirokazu Taji, Kobe, Japan, assignor to The Nippon Air Brake Co. Ltd., Kobe, Japan

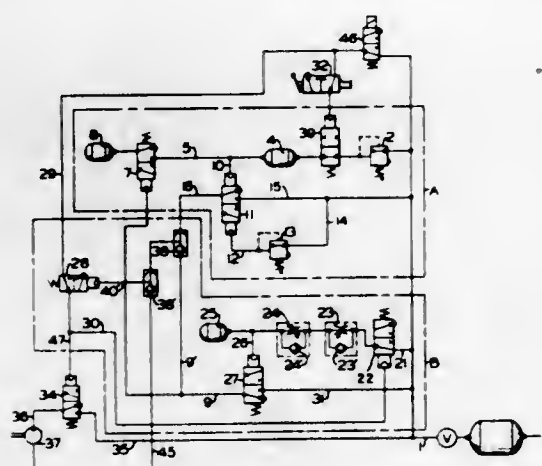
Filed Nov. 30, 1972, Ser. No. 310,776

Claims priority, application Japan, Dec. 18, 1971, 46-102930

Int. Cl. F02n 7/00, 9/00

U.S. Cl. 123-179 R

20 Claims



This invention is concerned with a fluid pressure type pulse counting device. To start an internal combustion marine engine, a starting device is actuated by a repeated supply of compressed air, but this repeated actuation process cannot be carried out unlimitedly. When the engine fails to start after a certain number of actuation processes, the actuation process is discontinued temporarily and the engine is examined. Therefore, it will be of extreme convenience, if a pulse counting device can be installed in the starting device mentioned above to count the number of actuation processes performed.

3,823,702

# INTERNAL COMBUSTION ENGINE MANIFOLD AND FLUID FLOW CONFIGURATION

Charles G. Roberts, 1015 Michigan Ave., Howell, Mich. 48843

Filed Jan. 11, 1971, Ser. No. 105,474

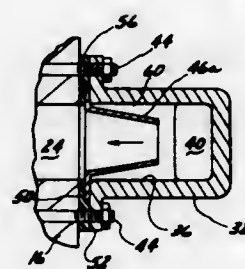
Int. Cl. F01l 3/02

U.S. Cl. 123-188 M

36 Claims

The manifold and cylinder head structures of an internal combustion engine are provided with fluid flow passageways extending from the manifold plenum to the valve ports of the engine cylinders, with fluid flow control members disposed in

the passageways and defining peripheral restrictions therein. In some modifications the members are integrally formed in a gasket sandwiched between the manifold and the cylinder head and having openings registered with the passageways, which openings have a cross sectional area less than the passageway cross sectional areas. In some modifications the insert members are elongated and increase in cross sectional area from the upstream to the downstream ends. In some



modifications, each insert member has an integral flange at either end or intermediate the ends, the flange being retained between the manifold and the cylinder head. In some modifications a plurality of members are formed integrally in a single gasket element sandwiched between the manifold and the cylinder head. In some modifications, the insert members are integral with the manifold or with the cylinder head port runners. In some modifications, the intake passageway insert members are press fit or otherwise secured closely adjacent the intake ports.

3,823,703

# SELF-STORING SOLAR HEATER

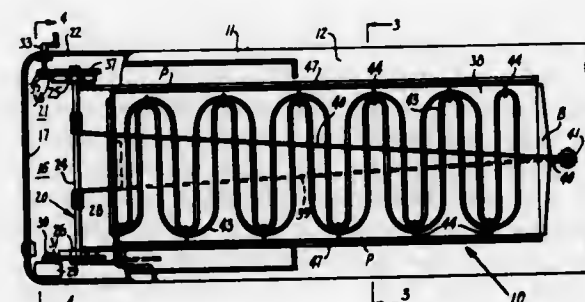
Joseph A. Lanciault, 902 Highland Ave., Fitchburg, Mass.

Filed Oct. 21, 1971, Ser. No. 191,375

Int. Cl. F24j 3/02

U.S. Cl. 126-271

6 Claims



A self-storing solar heater is disclosed installed on a house trailer with the heater being extendable over a portion of the roof of the trailer to receive the rays of the sun during the day and is stored in a heated compartment on cold days and nights to prevent the water in the solar heater from freezing. A thermostatically controlled motor driven reel retracts the solar heater into the heated storage compartment and a pulley system actuated by the same motor extends the solar heater when heating rays are available from the sun.

3,823,704

# POWER BURNER APPLICATION TO FIN TUBE HEAT EXCHANGER

Paul G. Daugirda, Chicago, and Leslie D. Smith, Hickory Hills, both of Ill., assignors to Rheem International, Inc., New York, N.Y.

Filed Feb. 14, 1973, Ser. No. 332,368

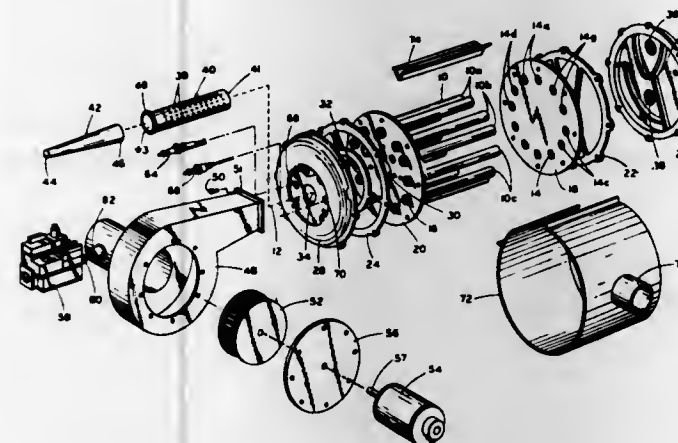
Int. Cl. F24h 1/34

U.S. Cl. 126-392

4 Claims

A power burner, fin tube heat exchanger includes a plurality of parallel fin tubes connected at each end with a manifold to

define a combustion chamber or enclosure. A gas and air mixture is provided to the enclosure by a blower and ignited. A



flue gas collector enshrouds the fin tube enclosure and provides an exhaust path for the combusted flue products.

3,823,705

# BLOOD VESSEL BRIDGING DEVICE

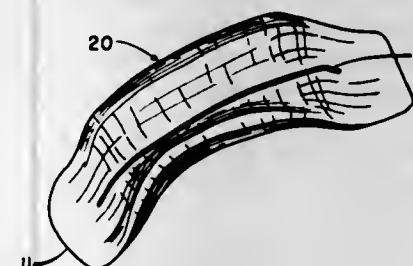
Cleve Trimble, Denver, Colo., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 26, 1972, Ser. No. 318,130

Int. Cl. A61b 19/00

U.S. Cl. 128-1 R

8 Claims



A blood vessel bridging device to be surgically implanted between two blood vessels to prevent partial occlusion of one by the other. The device comprises a generally U-shaped molded body of, e.g., Dacron reinforced silicone rubber having flattened bearing portions at both ends thereof and a generally U-shaped cross-section at its mid portion to cradle the overlying blood vessel.

3,823,706

# BLOOD FLOW DIAGNOSTIC METHOD

Merlin Davis, 105 Columbia Ave., Pitman, N.J. 08071

Division of Ser. No. 867,561, Oct. 20, 1969, Pat. No.

3,689,393. This application Aug. 10, 1972, Ser. No. 279,738

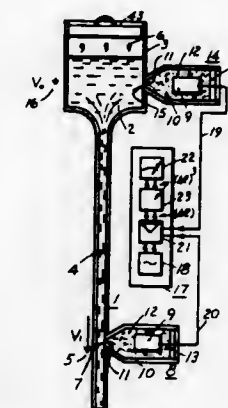
Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 F

1 Claim

A diagnostic method intended primarily for the evaluation of velocity-related abnormalities in blood. These conditions are determined by sensing the inherent tendency of blood red cells to modulate the amplitude of an electric current at a distance from the electrodes. Resulting variations in electrical impedance follow an invariable cube-root function of corpuscle velocity. Electrode configuration and placement are essential factors. The electrodes employed are specially adapted

for the measurement of velocity in very small vessels or hollow tubes. Remote sensing, without penetration of the vessel,



is effected by means of ionic-coupling to the electrolytic mixture through membranous materials impervious to blood.

3,823,707

# RETAINING MEANS FOR SPHYGMOMANOMETER VALVE CONTROL HEAD

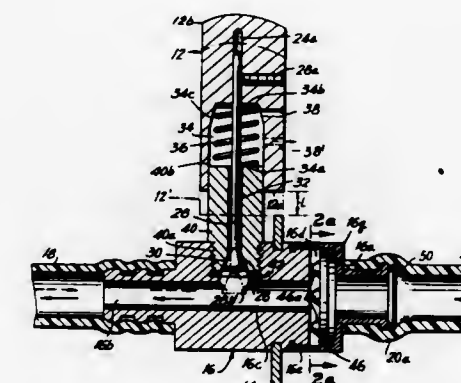
Roger Hayes, 260 Garth Rd., Scarsdale, N.Y. 10583

Filed Sept. 14, 1972, Ser. No. 289,149

Int. Cl. A61b 5/02; F16k 51/00

U.S. Cl. 128-2.05 G

5 Claims



An improved control mechanism for a self-closing sphygmomanometer valve is disclosed. The valve head is movable from an upper closed position to a lower open position against the action of an internal spring. The internal chamber of the valve head is narrowed at its upper portion to achieve a wedging fit over the enclosed valve guide, to thereby selectively retain the head in a depressed position from which it can be released by the application of a lateral force by the operator.

3,823,708

# TACHYCARDIA DETECTOR

Richard D. Lawhorn, Dublin, Calif., assignor to Cardiodynamics, Inc., Dublin, Calif.

Filed June 8, 1972, Ser. No. 260,775

Int. Cl. A61b 5/04

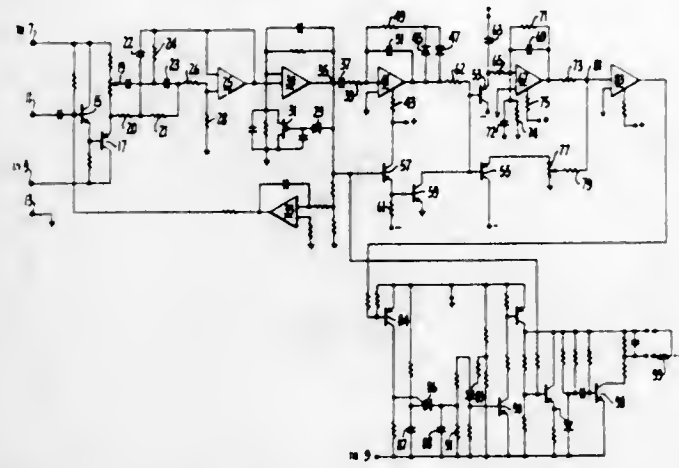
U.S. Cl. 128-2.06 A

10 Claims

A selective circuit is provided for passing only selected waveforms of a desired polarity from a complex input waveform. The circuit is particularly adapted for use in a heart ventricular arrhythmia detector. In such a detector, it is first necessary to differentiate the abnormal negative ventricular ectopic beats from the normal negative Q & S waves. After these abnormal beats are detected, they are accumulated and,



if a number of them occur within a limited period of time, an alarm circuit is actuated. One embodiment also includes



means for detecting bradycardia and tachycardia. A further embodiment provides means for transmitting an ECG over the telephone.

3,823,709

### TABLE SUPPORTED SURGICAL RETRACTOR AND PELVIC SUPPORT

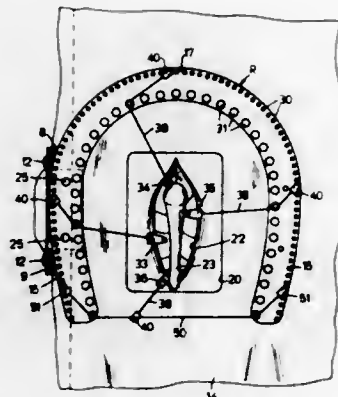
George McGuire, Rt. 3 Orange Ln., Depere, Wis. 54115

Filed Apr. 27, 1973, Ser. No. 355,034

Int. Cl. A61b 17/02; A61g 13/00

U.S. Cl. 128—20

16 Claims



An operating table supported surgical retractor assembly for individual retracting blades which hold the various parts of the body away from the surgical area. The assembly includes a generally C-shaped retractor which is particularly designed for hip or shoulder area operations.

A body support for the pelvic region firmly supports the patient on his side during the operation to enable the surgeon to work on the patient and know precisely the location of the patient's bones in the surgical area. The body support also provides a mounting for the retractor when the patient is operated on while lying on his side.

3,823,710

### PULSED AIR TOOTHBRUSH AND METHOD

John V. Borden, 1835 Eye St., Washington, D.C. 20006

Filed Nov. 7, 1972, Ser. No. 304,568

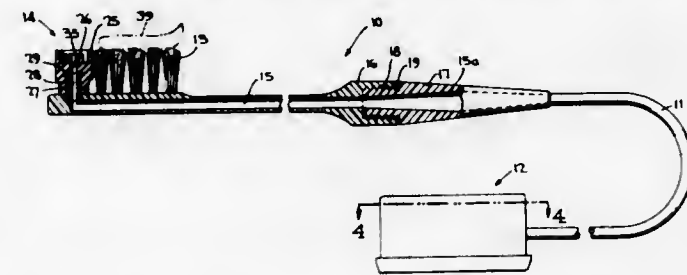
Int. Cl. A61h 1/00

U.S. Cl. 128—40

28 Claims

A system for cleansing teeth and gums is disclosed wherein a gas is pressurized to produce a series of pulses, and the gas pulses are injected into the mouth through an implement. The outlet orifice of the implement is positioned in juxtaposition to the teeth and gums to provide intimate but gentle contact and

scrubbing action of the escaping bubbles that is particularly effective to remove plaque. Additional and higher intensity pulses may be provided by periodically sealing the outlet orifice to permit buildup of pressure and then releasing the seal to more effectively loosen foreign material and provide bubble scrubbing between the teeth, similar to known "flossing" action. Plaque is further combated by concurrent massaging with the resilient tip forming the outlet orifice, similar to known "wiggling" action, particularly around the gum line. The bubbling of the gas, preferably air, is effective to gently



circulate the liquid solution of oral cleanser and saliva in the mouth of the user around and against the teeth and gums and thereby assuring movement of the bacteria away for disposal. The tip element has dual concentric flexible rims that provide a double seal against large surfaces; the inner smaller seal being solely effective against the smaller teeth. The pulsing air is generated by tandem diaphragm pumps, driven by electromagnetic motors that may be operated in or out of phase. Rebound of the oscillatable drive lever is enhanced by a resilient pad on the top of the diaphragm thus increasing the amplitude of the stroke.

3,823,711

### INFLATABLE PROFILE WITH HIGH PNEUMATIC RIGIDITY

Gildas Hatton, Paris, France, assignor to Aerazur Constructions Aeronautiques Anciens Etablissements Claude Ethatten, Issy-Les-Moulineaux, France

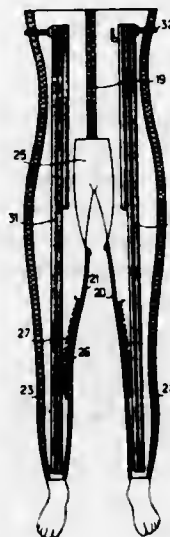
Filed June 28, 1972, Ser. No. 267,162

Claims priority, application France, Dec. 14, 1971, 71.44817

Int. Cl. A61f 5/02

U.S. Cl. 128—78

9 Claims



An inflatable shaped structure comprising an assembly of pneumatic tubular elements, characterized by the combination of a number of inflatable tubes made from elastic material and a fabric casing forming adjacent elongated cells which contain the tubes, each pair of adjacent cells having plane sides joined by stitching along at least one generator to the vicinity of a continuous wall which closes the cells.

Its application to orthopaedic clothing.

3,823,712

### PNEUMATIC APPARATUS FOR HOLDING THE POSTURE OF PARALYZED, DISEASED, DISABLED OR WOUNDED PERSONS

Georges Morel, Berck, France, assignor to Aerazur Constructions Aeronautiques, Issy-Les-Moulineaux, France

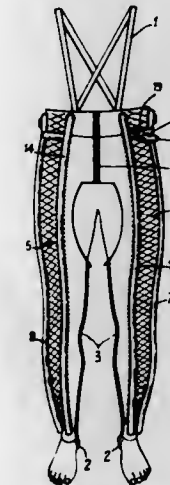
Continuation of Ser. No. 172,617, Aug. 18, 1971. This

application July 3, 1973, Ser. No. 376,216

Int. Cl. A61f 5/04

U.S. Cl. 128—87 R

12 Claims



The apparatus according to this invention comprises essentially a pair of trousers, or an overall of special, lightweight and high-resistance material, retained on the wearer's body by suitable means such as suspenders, belts, trouser-straps, et cetera, provided with zip fasteners and adjustable through suitable means such as lacings, these trousers having incorporated therein a plurality of separate flexible inflatable tubes adapted, when inflated, to impart to the various portions involved the desired rigidity permitting of holding the proper posture or position.

3,823,713

### AURAL DRESSING

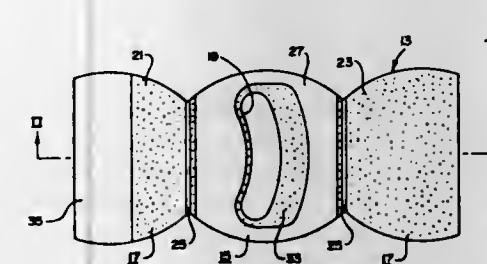
Navnit Shanker Shah, London, England, assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Nov. 10, 1972, Ser. No. 305,439

Int. Cl. A61f 13/00

U.S. Cl. 128—157

3 Claims



An aural dressing having a flexible body formed of open cell material. The body includes a base portion for attaching to a patient's head surrounding his ear and includes flap portions for folding over the base portion and covering the patient's ear. The base portion is provided with a slot for allowing the patient's ear to pass therethrough.

3,823,714

### METHOD AND APPARATUS FOR LAVAGING THE LOWER INTESTINAL TRACT

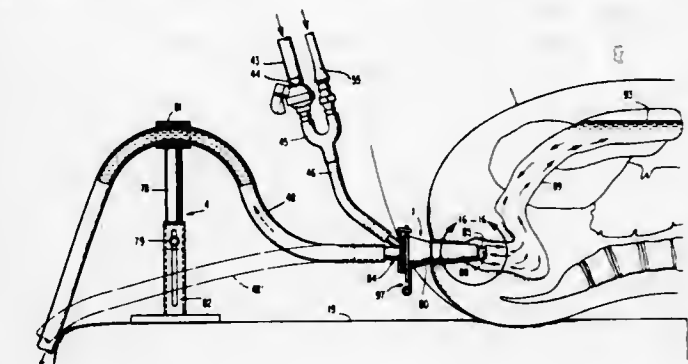
John J. Waysilk, and Enid A. Waysilk, both of 155 E. Alyio Rd., Palm Springs, Calif. 92262

Filed Oct. 2, 1973, Ser. No. 402,850

Int. Cl. A61m 3/00

U.S. Cl. 128—229

8 Claims



A method and apparatus are disclosed which provides for lavaging the lower intestinal tract of a patient by the use of an instrument that is adapted to be inserted into the anal canal of a patient. The instrument is provided with an inlet passageway and an outlet passageway. Auxiliary apparatus is provided for controlling the supply of water flowing by way of inlet tubing into the inlet passageway of the instrument so that the water is introduced into the lower intestine with a negligible amount of force in order to insure the safety and comfort of the patient. A regulator valve is fluidly connected between the inlet tubing and a source of pressurized water such as a faucet having a water control valve for adjusting the water temperature. The regulator valve includes a bellows-type shut-off element which responds to sensing water temperature above a predetermined level to block flow through the valve outlet. A valved drain port in the regulator valve enables water from the supply source to by-pass the valve outlet until water temperature has been adjusted to a desired level. The regulator valve includes a thermometer which provides an indication of water temperature.

3,823,715

### SUPPOSITORY INTRODUCER

Stanislav Holanek, and Karel Stolpa, both of Brno, Czechoslovakia, assignors to Chirana Zovody Zdravotnický technický Odbarovy Podnik, Stara Tnra, Czechoslovakia

Filed Dec. 8, 1971, Ser. No. 205,829

Claims priority, application Czechoslovakia, Dec. 10, 1970, 8311/70

Int. Cl. A61m 31/00

U.S. Cl. 128—264

7 Claims



An introducer for suppositories and flowable, extrudable material. The introducer, which is preferably made of plastic material, has a tubular body with a forward necked-down inserting section and a rear, pressure-generating section in the form of a cylinder within which there reciprocates a pressure-generating piston. The forward end of the piston is extended into a forward portion having a smaller effective diameter, such forward section fitting within the necked-down inserting section of the body. The suppository or other medicament is placed in the cavity of the inserting section of the tubular body, and after introduction of the inserting section, such



material is forced outwardly by the piston. The introducer of the invention facilitates manipulation with suppository preparations, and greatly improves the hygienic conditions during the introduction of the material.

3,823,716

## URINARY DRAINAGE DEVICES

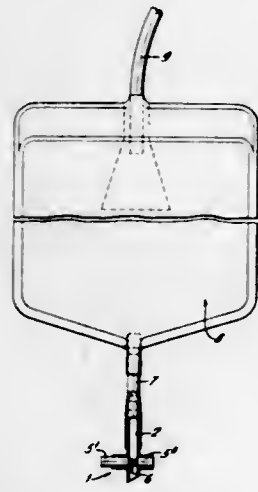
Max Hale, Cardiff, England, assignor to Simpla Plastics Limited, Cardiff, England

Filed Aug. 14, 1972, Ser. No. 280,095

Int. Cl. A61f 5/44

U.S. Cl. 128—275

6 Claims



A urinary drainage bag having an inlet tube and a large bore bottom drain outlet tube with a slide valve in the outlet tube controlling the flow out of the bag.

3,823,717

## APPARATUS FOR DISINTEGRATING CONCRETIONS IN BODY CAVITIES OF LIVING ORGANISMS BY MEANS OF AN ULTRASONIC PROBE

Reimar Pohlman, and Manfred Cichos, both of Aachen, Germany, assignors to Reimar Pohlman, Aachen, Germany

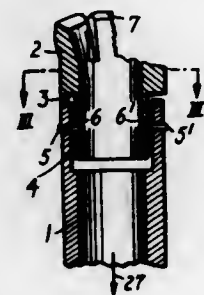
Filed Apr. 16, 1973, Ser. No. 351,140

Claims priority, application Germany, Apr. 22, 1972, 2219790

Int. Cl. A61b 17/32

U.S. Cl. 128—305

12 Claims



An ultrasonic probe for disintegrating concretions e.g. urinary calculus, in body cavities comprises a probe tube, ultrasonically vibrated in a longitudinal direction, having at one end a tubular impact element loosely coupled to it in the direction of vibration. The impact element is provided on its free end with a cutting edge, preferably formed by a plurality of teeth. The disintegrated concretions are continuously evacuated through the tubular impact element and the tubular probe.

3,823,718

## PORTABLE CRYOSURGICAL APPARATUS

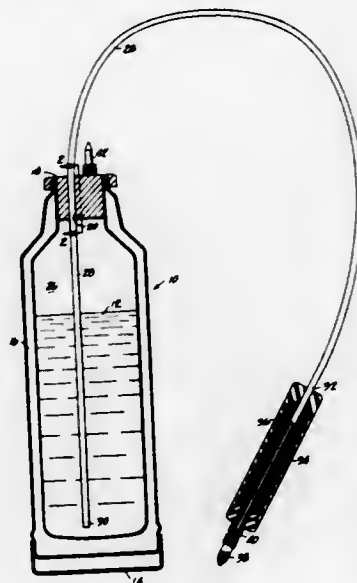
Theodore A. Tromovitch, 1667 Escalante Way, Burlingame, Calif. 94010

Filed Sept. 15, 1972, Ser. No. 289,753

Int. Cl. A61b 17/36; B67d 5/40

U.S. Cl. 128—303.1

2 Claims



This invention relates to cryosurgery, and more particularly to the delivery and application of liquified gas coolant to living tissue in order to necrotize the same.

3,823,719

## FINGER OPERATED FORCEPS TYPE SURGICAL INSTRUMENT

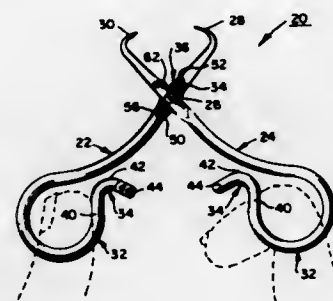
Clinton M. Cummings, Southbury, Conn., assignor to Acme United Corporation, Bridgeport, Conn.

Filed Nov. 14, 1972, Ser. No. 306,321

Int. Cl. A61b 17/12, 17/28

U.S. Cl. 128—322

16 Claims



An inexpensive and efficient clamp type surgical instrument which is comfortable to use and eliminates excessive pressure at the jaws of the instrument is produced by incorporating heel and shoulder stops and open finger gripping loops having a return curve portion between the normal finger gripping position and the pivot axis of the instrument's arms. The return curve portion in the finger gripping loops of the instrument prevents the operator's fingers from sliding into the open portion of the fingerloops, thereby eliminating pinching the operator's fingers. The heel and shoulder stops assure that the jaws of the surgical instrument cannot have more force applied thereto than the instrument is designed to handle. As a result, these features of the surgical instrument of this invention cooperate to provide an inexpensive instrument having the rigidity and feel of more expensive surgical instruments.

3,823,720

## SURGICAL DRAIN

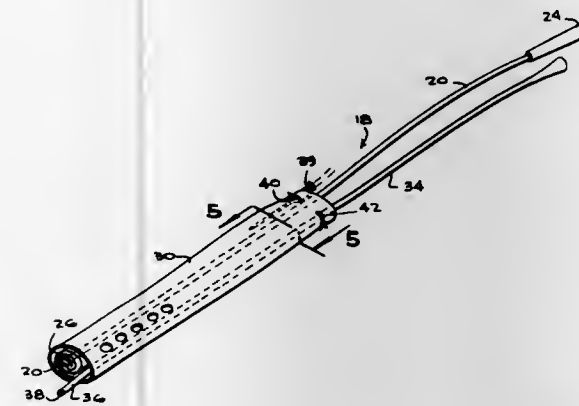
David E. Tribble, 1400 Barnwell St., Columbia, S.C. 29201

Filed June 21, 1972, Ser. No. 264,757

Int. Cl. A61b 27/00

U.S. Cl. 128—350 R

10 Claims



A surgical drain is disclosed in the form of a drainage catheter about the inner or distal end of which a nylon net is wrapped and retained in position loosely by a plurality of ties with the net and catheter being encased in a thin rubber sheath in a loose manner so that air can flow into the sheath when the outer or proximal end of the catheter is connected to suction; an additional feature resides in an irrigation catheter extending through and along the length of the sheath for providing an irrigation discharge outwardly of the distal end of the sheath for discharging internally of the sheath for internally flushing the sheath for discharge via the suction catheter.

3,823,721

## WOMEN'S GARMENTS

Henry M. Herbener, 803 N. Dawson, Thomasville, Ga. 31792

Filed Aug. 13, 1973, Ser. No. 387,792 The portion of the term of this patent subsequent to Jan. 23, 1990, has been disclaimed.

Int. Cl. A41c 1/00

U.S. Cl. 128—524

3 Claims



A body garment for women covers at least the hip region of the wearer and is formed of multidirection stretch material. The garment has leg openings and a crotch portion which is provided with a front-to-back elongated opening or slit which has the capability of expanding automatically to a relatively large open configuration when the wearer assumes a sitting position and which closes substantially and automatically when the wearer is standing or walking. The garment finds particular utility as a woman's convenience garment and as apparel for children.

3,823,722

## METHOD FOR EXPANDING TOBACCO

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

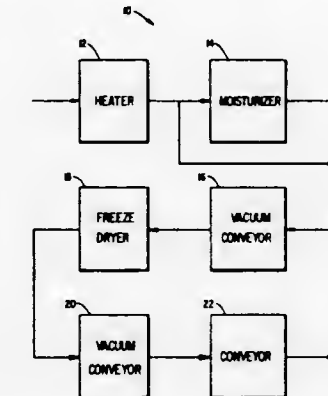
Continuation of Ser. No. 78,809, Oct. 7, 1970, abandoned.

This application Jan. 5, 1973, Ser. No. 321,226

Int. Cl. A24b 3/18

U.S. Cl. 131—140 P

5 Claims



Methods of expanding tobacco in which the tobacco is heated and moistened to increase the elasticity of the cell walls and then subjected to a vacuum rapidly imposed to convert moisture in the tobacco cells to vapor and effect an expansion in the volume of the moisture and a consequent distention of the cell walls to increase the size of cells. The tobacco is then frozen and dried in vacuo to remove at least part of the remaining water without significant alteration in the expanded structure of the tobacco. Heating to a temperature of at least -20° F. is then undertaken to sublime the remaining moisture.

3,823,723

## FALSE EYEBROWS

Marie O. Miller, 4615 A Pky., Sacramento, Calif. 95823

Filed Mar. 14, 1973, Ser. No. 341,087

Int. Cl. A41g 3/00

U.S. Cl. 132—5

2 Claims



False eyebrows formed of human or animal hair attached to a flexible material and having an adhesive backing which will adhere to the skin or to the hair of natural eyebrows. The eyebrows are preshaped into a number of curved forms.

3,823,724

## CONTROLLING FLOW OF MEDICAL FLUIDS

William P. Davis, Salt Lake City, Utah, assignor to Med-Lab Computer Services, Inc., Salt Lake City, Utah

Filed May 25, 1973, Ser. No. 364,184

Int. Cl. F16k 31/145

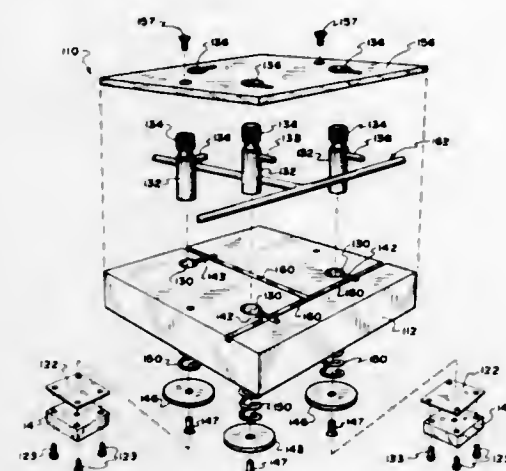
U.S. Cl. 137—15

13 Claims

Medical pinch valve assemblies, networks, manifolds and related methods, the assemblies comprising two or more pinch



valves each of which comprises an actuator, a spring-loaded plunger and a valving arm which collapses an array of channel-contained medical tubing with memory at a selected site to occlude flow of medical fluid across the site. When open, the memory of the tubing and the pressure of the medical fluid



opens the previously occluded site to permit flow. Hence, flow of medical fluid from source to destination sites is facilitated. Only the tubing is sterilized and tubing removal and replacement is rapidly achieved so that "down time" is virtually nonexistent.

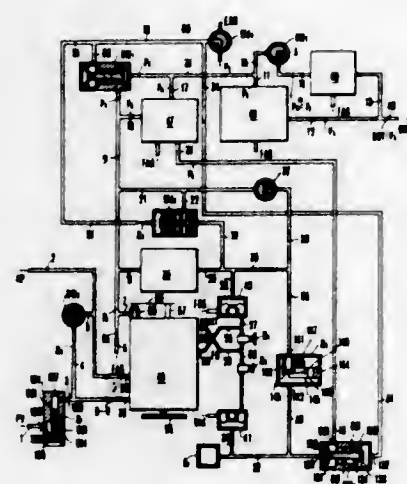
### 3,823,725 PNEUMATIC CONTROL APPARATUS

Tadashi Akiyama; Ryuhei Fukuda; Masanobu Ando; Norikazu Wada, all of Yokohama; Toshio Umeda, Tokyo, and Tatsuhide Shiga, Zushi, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 30, 1972, Ser. No. 268,002  
Int. Cl. G05d 16/00; F15b 5/00

U.S. Cl. 137-86

2 Claims



A pneumatic, proportional, integrating and differentiating control apparatus wherein a rate unit is interposed between the output of an automatic control unit and a negative feedback circuit and wherein an automatic-manual transfer switch is employed to bypass and cut out the effect of the rate unit at the time of manual operation and to reactivate the rate unit at the time of automatic operation. This control apparatus is constructed so that the transfer switch will operate with a longer time delay than its other automatic-manual transfer switches, which operate substantially instantaneously, when switching from manual to automatic operation and thereby provides bumpless and balanceless manual-automatic switching.

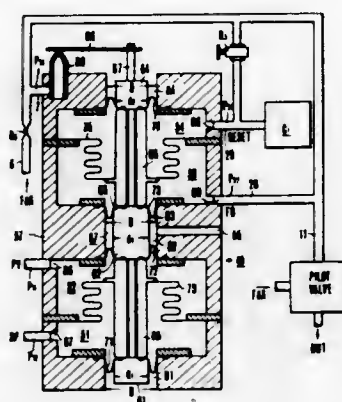
### 3,823,726 PNEUMATIC CONTROL UNIT

Tadashi Akiyama; Ryuhei Fukuda; Masanobu Ando; Norikazu Wada, all of Yokohama; Toshio Umeda, Tokyo, and Tatsuhide Shiga, Zushi, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 30, 1972, Ser. No. 268,005  
Int. Cl. G05d 16/00; F15b 5/00

U.S. Cl. 137-86

1 Claim



A precision pneumatic proportional derivative or proportional integral derivative controller having a plurality of pistons each one of which forms a different portion of a balancing beam. Each piston is arranged to pass through a different one of several spaced apart cylindrical passageways formed by inner wall portions of the casing of said controller. A separate rolling diaphragm is connected in fluid tight sealing engagement with each piston and with its associated wall portion to form a rolling seal therebetween. The diameters of these pistons are of predetermined sizes in relation to their associated passageway diameters. As a result, a predetermined difference or offset is allowed to exist between positive and negative feedback forces applied to the balancing beam, thereby allowing the output offset of the controller to deviate from a zero value while it is maintaining its loop gain at a proper value.

### 3,823,727 FOAMING SYSTEM AND IMPROVED FOAMING DEVICE

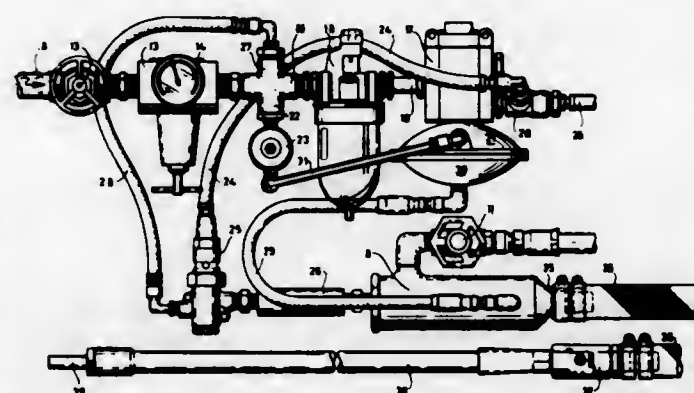
Arthur Francis Fry, Mount Waverley, Australia, assignor to Applied Chemicals Pty. Ltd., Hawthorn, Australia

Filed June 26, 1972, Ser. No. 266,041  
Claims priority, application Australia, June 24, 1971, 5302/71

Int. Cl. B08b 3/00; F16k 19/00

U.S. Cl. 137-88

9 Claims



A foam cleaning system and a foam cleaner which is provided with a control actuated by build-up of static pressure in a foaming chamber to cut off air pressure to the chamber thus ensuring that during periods when foam is not being produced

the pressure on the foamer hose is minimized. The foamer also has a facility whereby any tendency of leakage of liquid back into the air system is prevented and automatic purging takes place on the pressure drop in the foam chamber.

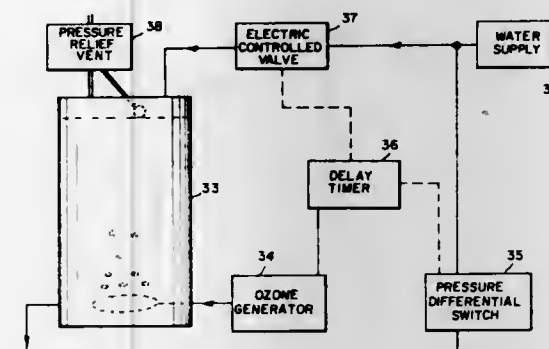
### 3,823,728 CONTROL SYSTEM FOR LIQUID TREATMENT

W. Alan Burris, 7 E. Jefferson Cir., Pittsford, N.Y. 14534

Filed Dec. 29, 1972, Ser. No. 319,783  
Int. Cl. C02b 1/38

U.S. Cl. 137-88

62 Claims



A system for adding material to a liquid on variable demand is controlled by a switch responsive to liquid pressure for operating the material-adding means whenever a pressure drop shows that the liquid is withdrawn. A delay means operates the material adding means for a pre-determined interval after the switch changes state in response to stoppage of the withdrawal of the liquid. Also, a valve preferably prevents liquid entry into the system except during liquid withdrawal. The material-adding means is then activated on each liquid withdrawal and for a fixed interval thereafter, and no liquid enters the system without having added material. The system can also be operated without a delay means when the input is controlled so no input can occur except when the system is operating.

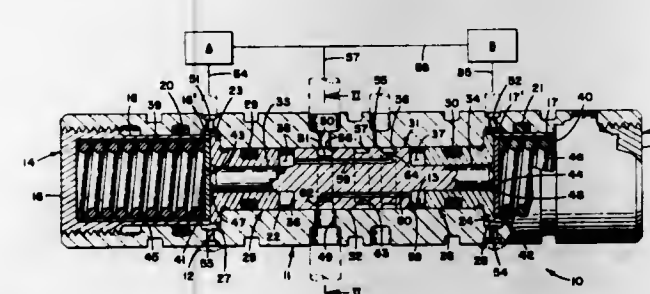
### 3,823,729 DIFFERENTIAL PRESSURE MONITORING VALVE

Emery C. Swogger, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed May 7, 1973, Ser. No. 357,984  
Int. Cl. G05d 11/00; F16k 11/07

U.S. Cl. 137-100

18 Claims



A fluid control valve of a type operable to shut off fluid flow through the valve upon the occurrence of a pressure differential above a predetermined level between two portions of a fluid system. A valve member is slidably mounted within a valve chamber and movable therein within first, second, third, fourth, and fifth positional ranges. The valve member has a passageway which provides communication through the valve between first and second ports for providing fluid flow

therebetween upon the valve member being positioned within its third positional range, and also has valving means for shutting off fluid flow upon the valve member being positioned within its first or its fifth positional ranges.

### 3,823,730 ALIGNMENT CONTROL SYSTEM

John W. Sandstrom, Dallas, and Kenneth C. Cloud, Garland, both of Tex., assignors to Integral Systems, Inc., Dallas, Tex.

Filed Mar. 30, 1973, Ser. No. 346,425  
Int. Cl. A01g 25/02; B05b 15/06, 9/02

U.S. Cl. 137-344

40 Claims



Disclosed is an electronic control system for maintaining linear alignment of adjacent fluid conduit sections being reversibly driven, particularly in a pivotal irrigation system, and for interrupting power to the drive means when the sections are in excessive misalignment. A photodetector or potentiometer sensor assembly coupled to the sections serve as pivotal detectors, and a phase detection network serves as a directional detector, the outputs of which are coupled to a logic comparator for selectively energizing drive means coupled to intermediate sections for bringing adjacent sections into alignment.

### 3,823,731 TANK WITH INTEGRAL REMOTELY CONTROLLED POWER ACTUATED BOTTOM VALVE

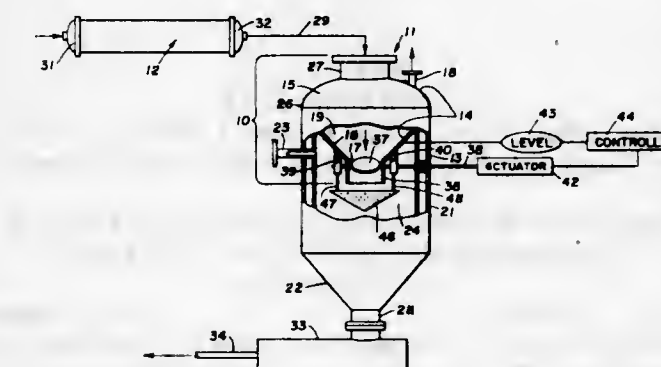
Robert E. Gordon, Monson, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 8, 1973, Ser. No. 321,612

Int. Cl. F16k 31/02

U.S. Cl. 137-395

3 Claims



A tank and integral valve assembly suitable for storing and controlling the transfer of viscous fluids. The assembly utilizes a vessel in which is constructed a butterfly-type valve assembly located so as to regulate rate of egress of viscous fluid from the bottom of the vessel. An actuator assembly as-



sociated with a lateral side portion of the vessel controls rotary movements of a valve disc. The actuator is responsive to a level sensor coupled thereto through a controller assembly.

### 3,823,732 VALVE

Ian Eric Elsby, Linketty House, Pine Rd., Tokai, Cape Town, South Africa

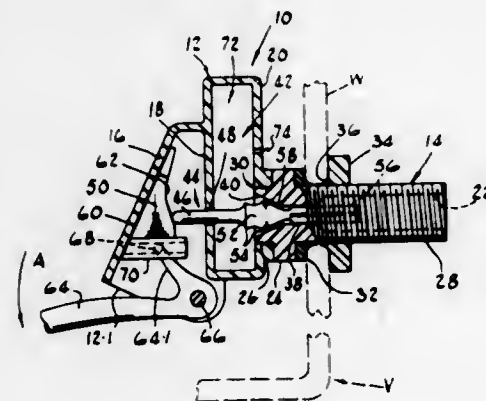
Filed June 30, 1972, Ser. No. 268,199

Claims priority, application South Africa, July 2, 1971, 4369

Int. Cl. F16k 31/24

U.S. Cl. 137-436

13 Claims



A liquid flow control valve is disclosed which comprises a silencing chamber into which an inlet member opens. The mouth of the inlet member is flared and constitutes a valve seat. A closure member co-operates with the seat to control liquid flow through the inlet member into the chamber. The closure member is moved to the closed position by a cam, and the cam is moved by a float. When the float drops the pressure in the inlet member urges the closure member away from the seat to open the valve. The silencing chamber is open at the top and this open top constitutes the outlet from the chamber. The chamber forms one upright limb of an inverted U-bend. In use the silencing chamber is always full. Means for creating turbulent flow into the chamber are provided on the valve closure member.

### 3,823,733 DIAPHRAGM VALVE

Chester DuBois, Zion, and Paul R. Hunt, Lindenhurst, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 85,954, Nov. 2, 1970, Pat. No. 3,746,036.

This application Jan. 18, 1973, Ser. No. 324,849

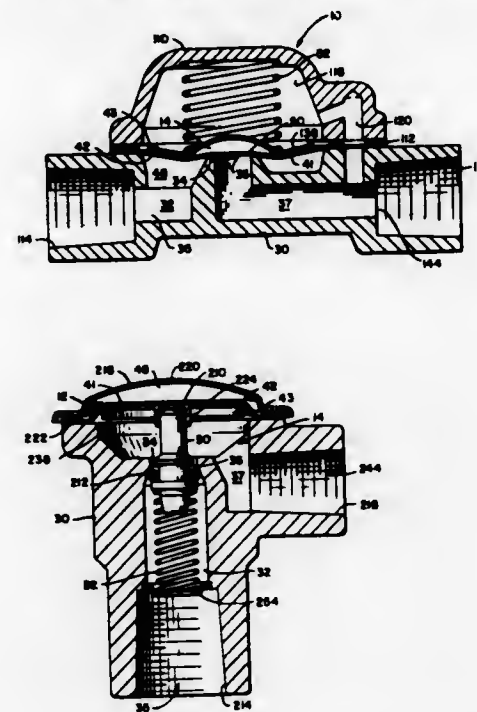
Int. Cl. F16k 15/14

U.S. Cl. 137-496

12 Claims

Disclosed herein is an improved valve for regulating the flow of fluids. The valve includes a housing defining, in part, a flow passageway having a port surrounded by a valve seat. A diaphragm is mounted within the housing and assists in completing the flow passageway. The diaphragm is movable between a first position to cause closing of the port and a second position to cause opening of the port. A spring having an end with a diameter larger than the port is operatively engaged with the diaphragm urging the diaphragm to close the port. A suction force operates on the same side of the

diaphragm as the spring creating a pressure differential on opposite sides of the diaphragm. The pressure differential is effective to overcome the action of the spring, thereby displacing the diaphragm to an open position and allowing flow of fluid through the port.



### 3,823,734

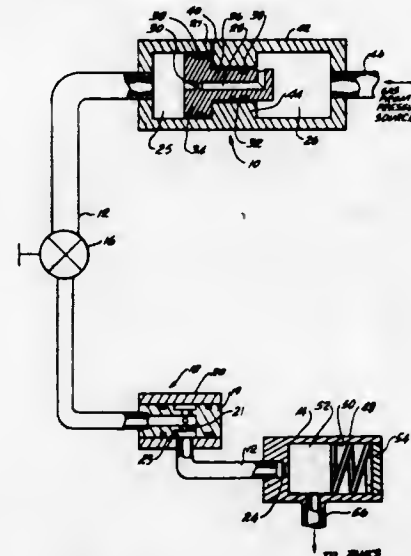
AREA RATIO EXCESS FLOW SHUTOFF VALVE SYSTEM  
Robert W. McJones, 529-Via Del Monte, Palos Verdes Estates, Calif. 90274

Filed May 21, 1973, Ser. No. 362,213

Int. Cl. F16k 31/36

U.S. Cl. 137-498

11 Claims



A spool of a normally open valve has an orificed passage for gas flow from a source chamber to a control pressure chamber. The spool has an area facing control pressure which exceeds the area of the spool facing source pressure. The spool is kept in its open position during normal operation because the product of control chamber pressure and spool area seeing the control chamber and normal to the axis of the spool is maintained equal to or greater than the product of source pressure and spool area seeing source pressure and normal to the axis of the spool. Downstream from the control pressure chamber, a second orifice maintains the pressure in the control pressure chamber during normal operation at a value great enough to keep the spool control area control chamber pressure product high enough to keep the valve

open. When there is a leak, however, between the valve and the second orifice, the second orifice cannot maintain a sufficiently high control pressure and the product of source pressure and spool source area will exceed the offsetting product and the spool will move to a closed position preventing gas flow through the valve. The orifice in the spool assures that there will be sufficient pressure drop between the two chambers to cause the spool to close.

### 3,823,735 UNIFLOW VALVE

Mark Isaakovich Frenkel, ulitsa 6, korpus 2, kv. 20, Lenin-grad, U.S.S.R.

Filed Nov. 11, 1971, Ser. No. 197,686

Int. Cl. F16k 15/16

U.S. Cl. 137-512.15

8 Claims



A uniflow valve comprising a pack of flexible plates alternating with valve seats having portions of varying thickness. The flexible plates have inlet channels for the working fluid and at least some part of the flexible plates have teeth which close the fluid inlet channels on the length from the roots to the tops of the teeth. The valve seats are provided with fluid outlet channels facing the spaces between the teeth.

### 3,823,736

ELECTROMAGNETICALLY OPERATED VALVE  
Lamberto Vanti, Milan, Italy, assignor to Sirai S.R.L. Società Italiana Regolatori Automatici Industriali, Milan, Italy

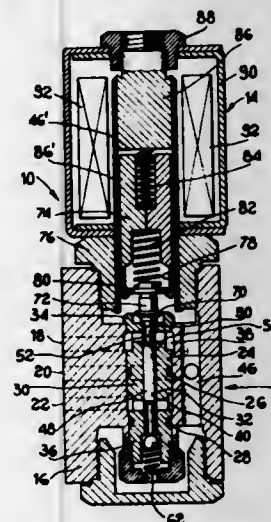
Filed Feb. 12, 1973, Ser. No. 331,876

Claims priority, application Italy, Feb. 10, 1972, 020448/72

Int. Cl. F16k 11/10

U.S. Cl. 137-596.17

4 Claims



An electromagnetically operated valve, comprising a movable assembly having at least a shiftable component carrying valve means to control passages between valve chambers. The movable assembly and the shiftable component are subjected to balanced axial thrusts due to pressure fluid in each operating position thereof.

### 3,823,737

ADAPTOR FOR PLUMBING FITTING

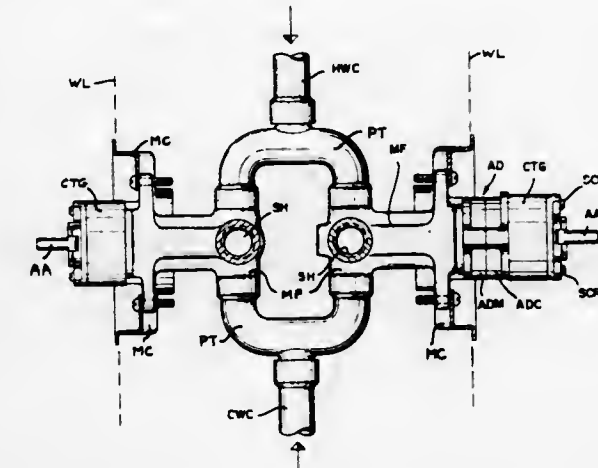
Donald Michael Szymanski, Somerville, N.J., assignor to American Standard Inc., New York, N.Y.

Filed July 26, 1973, Ser. No. 382,986

Int. Cl. F16k 19/00

U.S. Cl. 137-607

6 Claims



This covers a simple, unitary arrangement for interconnecting (1) the hot and cold water manifold normally inserted within and between the walls of kitchens, bathrooms, etc., of a building and (2) the adjacent plumbing fittings of such rooms of the building, the arrangement minimizing or eliminating the additional piping required for so-called cross-over connections. The arrangement, when applied to back-to-back plumbing fittings, will reverse the hot and cold water lines to one of the two adjacent fittings so that hot water will be made available to the left sides of both of the back-to-back fittings and cold water will be made available to the right sides of both fittings and thereby simplify the usual procedures for making the installations and also reduce the costs of such procedures.

### 3,823,738

DEMAND VALVE ASSEMBLY

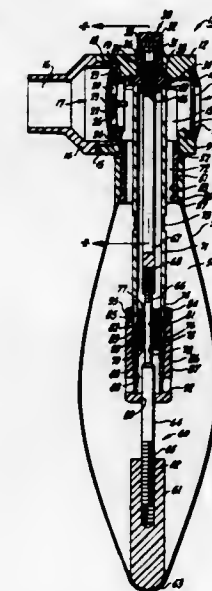
August Edwin Weninger, Cathedral City, Calif., assignor to Bird Corporation, Palm Springs, Calif.

Filed June 19, 1972, Ser. No. 264,395

Int. Cl. A61m 16/00; F16k 31/165

U.S. Cl. 137-613

5 Claims



Demand valve assembly and method for delivery of gases to a patient having a valve body with an outlet adapted to be connected to a patient adapter and an inlet in communication



with the outlet for receiving the gases from a high pressure source. Valve means is disposed in the inlet. A distensible generally ellipsoidal bag is connected to the valve body for controlling the operation of the inlet valve as the bag changes its dimensions along its major axis in response to patient breathing. An additional chamber is in communication with the inlet for creating an intermediate pressure which can be used for humidification of the gases or entraining medicants therein. Valve means are provided between the intermediate pressure in the additional chamber and the low pressure contained in the valve body and the distensible bag.

In the method, the changes in the dimensions in the bag along its major axis are sensed to control the filling of the bag.

### 3,823,739 RELAY

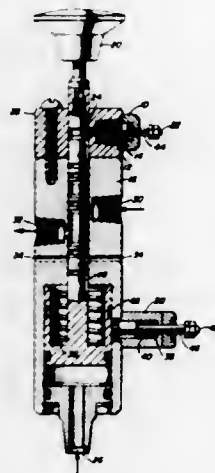
Jeffrey S. McMullan, Lake Charles, La., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 1, 1973, Ser. No. 328,806

Int. Cl. F16k 31/00

U.S. Cl. 137-624.27

5 Claims



A fail-safe lock-out device is disclosed which retains the piston portion of a pneumatic relay out of service until safety system pressure is returned to operating conditions at which time it releases the piston portion returning the relay to service.

### 3,823,740

#### VALVE DEVICE FOR REGULATING MIXTURE AND FLOW OF LIQUID TO A DISCHARGE OUTLET FROM TWO SEPARATE INLETS

Dennis Charles Arbon, Cheltenham, England, assignor to Walker Crosswell & Company Limited, Cheltenham, England

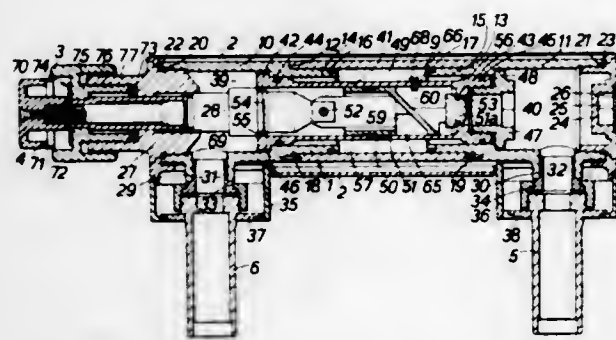
Filed Mar. 29, 1972, Ser. No. 239,054

Claims priority, application Great Britain, Mar. 30, 1971, 8734/71

Int. Cl. F16k 11/02

U.S. Cl. 137-625.17

9 Claims



A valve for mixing and controlling the flow of fluid from two different sources, e.g. hot and cold water, the valve including a

liner having a port leading to a mixing and discharge chamber and a piston received within the liner for both reciprocating and rotating controlled movement, the piston including two ventricles each for receiving fluid from one source and each ventricle having a port which on controlled piston movement may be brought into register with the liner port to vary both the flow rate by reciprocating movement and to vary the mixture by rotating movement.

### 3,823,741

#### FLUIDIC CONTROL ARRANGEMENT

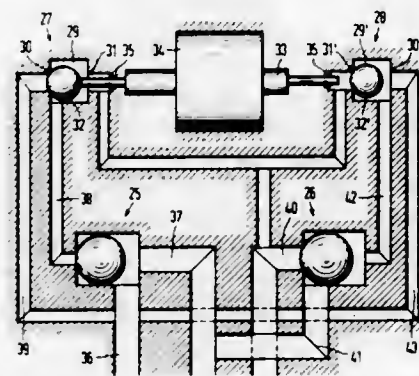
Helmut Hirt, Dusslingen/Wurt, and Wolfgang Bott, Mossingen/Wurt, both of Germany, assignors to Riko Maschinenfabrik GmbH & Co. KG, Dusslingen, Germany

Continuation-in-part of Ser. No. 46,639, June 16, 1970, abandoned. This application Oct. 25, 1972, Ser. No. 300,465  
Claims priority, application Germany, June 23, 1969, 1931837; Oct. 31, 1969, 1954994; Feb. 2, 1970, 2004567; Feb. 24, 1970, 2008580

Int. Cl. F16k 11/10

U.S. Cl. 137-625.48

14 Claims



A quick-acting control arrangement for hydraulic machinery includes a cylindrical valve chamber formed with a discharge orifice in one radial end wall, a control orifice in the other radial end wall, and a supply orifice in the cylindrical chamber wall near the first-mentioned end wall. Respective conduits connect the discharge orifice to the controlled machinery, the supply orifice to a suitable pump and the control orifice to a valve which may vent the valve chamber to the sump of the pump or connect it to a source or control pressure. A spherical control element in the chamber moves axially to seal the control orifice or the discharge orifice in response to the pressure prevailing at the control orifice. Modification of this valve and applications to single-acting and double-acting reciprocating hydraulic motors are illustrated.

### 3,823,742

#### MIXING TAP

Paul Saffin Von Corpon, 4 rue de l'Athene, Geneva, Switzerland

Filed Mar. 31, 1972, Ser. No. 240,093

Claims priority, application Switzerland, Apr. 6, 1971, 4984/71; Nov. 30, 1971, 17428/71

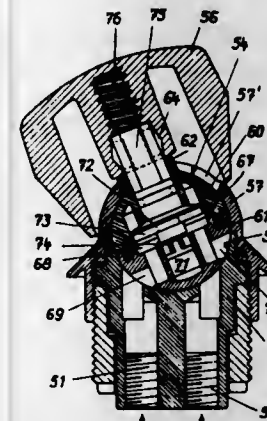
Int. Cl. F16k 11/18, 5/20

U.S. Cl. 137-636.3

3 Claims

A mixing tap comprises a tap body with hot and cold water inlets and three outlets all communicating with an internal spherical housing in which a spherical control member with an external actuating handle is fluidtightly swivelably mounted. Three peripheral openings in the control member communicate with an inner mixing chamber, the actuating handle serving as means for moving the control member between positions in which the said inlets and outlets selectively communicate with the peripheral openings corresponding to a

desired hot/cold water mixture and selection of one of the outlets by means of a grid guiding the handle. A valve clapper in



the mixing chamber can be actuated to adjust the rate of flow of the desired mixture from the selected outlet by screw operated means on the handle.

### 3,823,743

#### PRESSURE REDUCING DEVICE

Colin Forbes King, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England

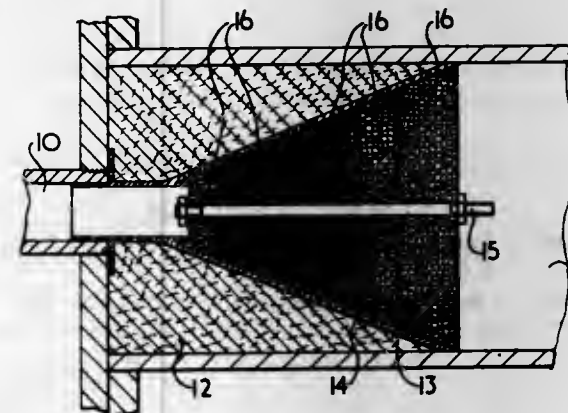
Filed Oct. 26, 1971, Ser. No. 192,146

Claims priority, application Great Britain, Nov. 6, 1970, 52847/70 The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.

Int. Cl. F15d 1/00

U.S. Cl. 138-42

15 Claims



A pressure reducing device comprises an inlet for high pressure gas, an outlet for low pressure gas and a path therebetween for flow of gas from inlet to outlet, said path including at least one porous baffle having an inner portion made of porous material disposed in an inner zone of said path and an outer portion comprising a fibrous medium disposed in an outer zone of said path, the inner portion having a lower flow resistance than the outer portion. The porous materials used for the inner portion of the baffle include: layers of gauze, expanded metal, sintered metal, ceramic foams and plastics foams such as rigidified foams. The fibrous materials used for the outer portion of the baffle include: spun mineral fibers, natural fibers and glass wool.

### 3,823,744

#### PIPE PROTECTOR

Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif. 92631

Filed Oct. 6, 1972, Ser. No. 295,455

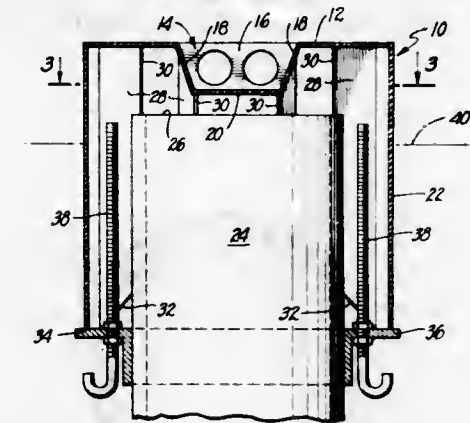
Int. Cl. B65d 59/06

U.S. Cl. 138-96 R

2 Claims

A pipe protector for use in protecting a pipe having an end as concrete is located adjacent to the pipe end and in provid-

ing a cavity within the concrete extending around the pipe adjacent to the pipe end preferably is constructed as a single unit out of a polyolefin polymer such as polyethylene which is substantially incapable of bonding to concrete as the concrete sets. Such a protector includes a top having a handle adapted to be used for removing the protector after concrete has been cast around it, a dependent skirt attached to the top which is



capable of fitting around the pipe adjacent to the pipe end and at least three spacing fins attached to the skirt so as to extend radially inwardly from the skirt. The fins are capable of engaging the exterior of the pipe so as to stabilize the protector and are sufficiently flexible so as to absorb at least some forces applied to the exterior of the skirt so as to tend to cushion the pipe against damage.

### 3,823,745

#### FLAME-RESISTANT CONDUIT COVERING

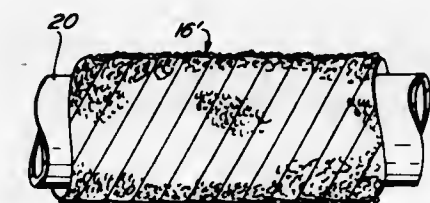
Ralph Schafenacker, Jr., Doylestown, Pa., assignor to Keller Glove Mfg. Company, Plumsteadville, Pa.

Filed Nov. 6, 1972, Ser. No. 303,919

Int. Cl. F16l 11/12

U.S. Cl. 138-103

9 Claims



A flame-resistant conduit covering knitted from an organic material such as flame-retardant rayon having looped pile on at least one surface thereof is disclosed. The knitted material is free from any finish which releases substantial amounts of toxic gases other than CO or CO<sub>2</sub> when subjected to heat, whereby it may be used in place of prior art conduit coverings made from a flame-retardant material such as asbestos.

### 3,823,746

#### FIBER-REINFORCED PLASTIC TUBING WITH CONTINUOUS FIBERS, FOR PRESSURIZED WATER CONDUITS IN THE GROUND

Borge Ingmar Carlstrom, Postalde, 317, Sweden

Filed Sept. 29, 1971, Ser. No. 184,932

Int. Cl. F16l 9/14

U.S. Cl. 138-144

6 Claims

For fiber-reinforced plastic tubing which is to be laid in the ground and subjected to inner over-pressure the windings of continuous fibers are concentrated in the central part of the wall of the tube, thereby minimizing flexural stress of the fibers.



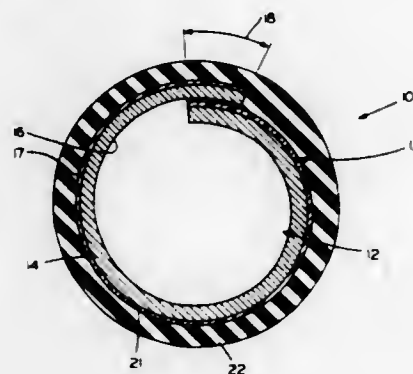
### 3,823,747 TUBULAR MEMBER HAVING A SEALED LONGITUDINAL SEAM

Matthew R. Dembiak, Clifton, N.J., and George H. Webster, Timonium, Md., assignors to Western Electric Company, Incorporated, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 125,362, March 17, 1971, Pat. No. 3,703,605, which is a continuation-in-part of Ser. No. 809,589, March 24, 1969, abandoned. This application Aug. 2, 1972, Ser. No. 277,189  
Int. Cl. F611 9/14

U.S. Cl. 138-141

11 Claims



Successive portions of an aluminum tape having one major surface thereof coated with an adhesive copolymer across the entire transverse width thereof and the other major surface precoated with a stripe of adhesive material along an edge portion are folded longitudinally as the successive sections of the tape are being advanced along a predetermined path to form an overlapped seam so that the adhesive copolymer on an edge portion of the one major surface of the tape overlaps the stripe. Subsequently, the adhesive materials on the major surfaces along the overlapped seam develop an adhesive bond by the application of heat and pressure prior to or during the extrusion of a plastic jacket over the tape. The adhesive material on the other, now inwardly facing, major surface is substantially restricted in location and is adhesively bonded to the portion of the inwardly facing major surface of the tape which forms the overlapped seam with a portion of the one, now outwardly facing, major surface. The remaining portion of the inwardly facing major surface of the aluminum tape is bare and the resulting tubular member may be used in a variety of ways.

3,823,748

### ENERGY ABSORBENT TEXTILE STRUCTURE

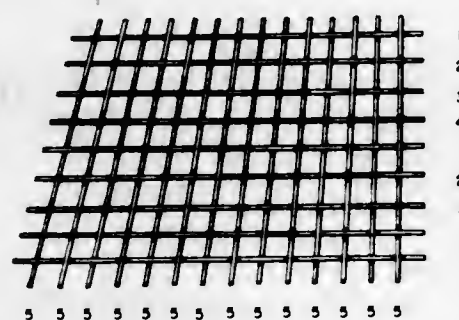
William T. Altman, Ashland, Va., and Gungor M. Solmaz, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 226,235, Feb. 14, 1972, which is a continuation of Ser. No. 881,809, Dec. 3, 1969, abandoned.  
This application Feb. 16, 1973, Ser. No. 333,252

Int. Cl. D03d 15/00

U.S. Cl. 139-383 R

4 Claims



Impact absorbent textile structures constructed of substantially unidirectional yarns having differential elongations at

the break exhibit sufficient extensibility to minimize residual recovery without impairment of strength.

3,823,749

### BENDING MACHINE FOR WIRE OR STRIP

Josef Ritter; Hans Gott; Klaus Ritter; Otto Gamillscheg; Wilhelm Boyer, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-u. Verwertungsgesellschaft m.b.H., Graz, Austria

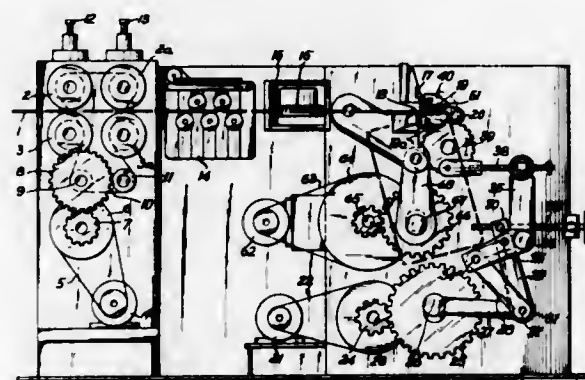
Filed Jan. 11, 1973, Ser. No. 322,878

Claims priority, application Austria, Apr. 12, 1972, 3182/72

Int. Cl. B21f 1/00

U.S. Cl. 140-105

6 Claims



The invention is concerned with a bending machine for wire or strip in which the raw material is advanced through the machine step by step and, between each step, a bend is made by a mobile bending tool. The bending tool is retractable from a working position on one side of the path of advance of the material, moveable to the other side of the path without intersecting the path and advancable into a working position on the other side of the path of the advance of the material, so that the tool may be used for bending the material selectively in either direction out of the path of the advance of the material.

3,823,750

### VACUUM NOZZLE DEVICE

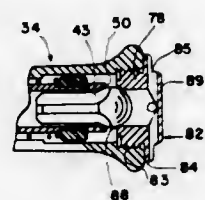
Dave L. Owen, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 844,883, July 25, 1969, Pat. No. 3,628,576. This application Feb. 8, 1971, Ser. No. 113,703

Int. Cl. B65b 31/04

U.S. Cl. 141-65

2 Claims



A manually operated vacuum device for withdrawing air from a package, and positioning the package for closing. The device has only 4 basic parts that may be disassembled and assembled by hand, a suction tube, a slide tube mounted on the suction tube for reciprocation thereon, a nozzle at the entrance to the slide tube and a valve means trapped between the nozzle and the suction tube for valving the device in response to reciprocation of the slide tube. A special nozzle is of shallow depth and has a closed end with ports entering from the side. Another special nozzle member has a sump in its tip and narrow slot openings entering into its vacuum evacuated bore.

3,823,751

### FLUID DISPENSER CONTROL SYSTEM

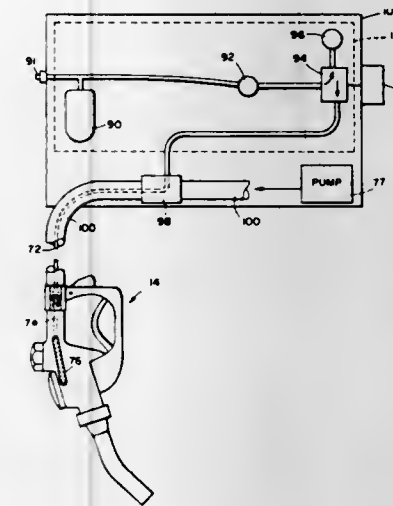
James W. Healy, Wakefield, Mass., assignor to Automatic Systems, Inc., Waltham, Mass.

Filed June 13, 1973, Ser. No. 369,460

Int. Cl. B65b 1/30

U.S. Cl. 141-198

20 Claims



A system for use with a fluid dispensing apparatus having a fluid flow metering mechanism and a nozzle including an automatic pressure differential-actuated full tank shutoff. The system comprises a holding tank, means for maintaining the pressure in the tank at a differential with respect to atmospheric pressure and for connecting the holding tank to the nozzle to actuate the shutoff, and a mechanical selector operatively linked to the metering system and to the first mentioned means for actuating those means when substantially a predetermined amount of fluid has been dispensed through the nozzle.

3,823,752

### LIQUID DISPENSING NOZZLE OF THE AUTOMATIC SHUT-OFF TYPE

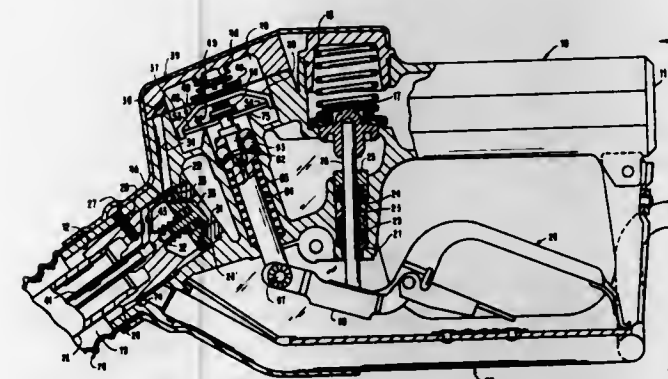
Donald A. Lasater, Cincinnati, and Chester W. Wood, Milford, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,237

Int. Cl. B65b 3/26, 57/14; B67c 3/00

U.S. Cl. 141-217

9 Claims



An automatic shut-off nozzle has a single diaphragm responsive to either the vapor pressure in the tank which is being filled exceeding a predetermined pressure or the liquid in the tank reaching a predetermined level. When the liquid in the tank reaches the predetermined level, the diaphragm moves in one direction to cause closing of a manually operated valve which stops flow through the nozzle through a connecting mechanism. When the pressure in the tank ex-

ceeds a predetermined pressure, the diaphragm moves in the opposite direction, but the connecting mechanism has transfer links to cause the valve to again be closed even though the diaphragm moves in the opposite direction.

3,823,753

### TREE HARVESTER WITH SUPPLEMENTAL GRAPPLE

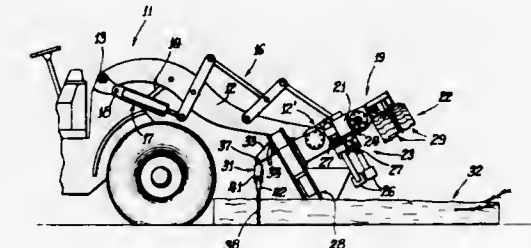
Raymond L. Moser, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 9, 1973, Ser. No. 348,928

Int. Cl. B27c 9/00

U.S. Cl. 144-3 D

8 Claims



A tree harvester including a tree harvester assembly pivotally mounted on a vehicle with a grapple mechanism arranged on the harvester assembly for engaging a tree and raising it into a processing position by pivotable movement of the tree harvester assembly.

3,823,754

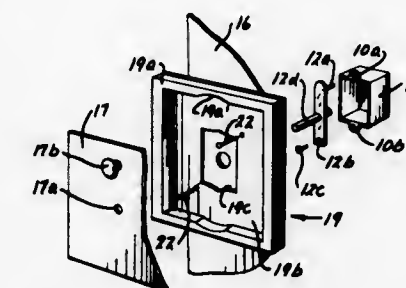
### METHOD FOR CUTTING OPENINGS IN PANELING OR THE LIKE

William R. Nix, 200 S. Tekoppel Ave., Evansville, Ind. 47712  
Division of Ser. No. 6,906, Jan. 29, 1970, Pat. No. 3,733,707.  
This application Feb. 12, 1973, Ser. No. 332,026

Int. Cl. B27c 1/00

U.S. Cl. 144-323

1 Claim



A method and structure for simplifying the cutting of an opening in paneling, wallboard or the like, as for access to an electrical outlet box, characterized by the use of a jig having a centering pin, where the jig is removably secured to the electrical outlet box, a guide plate having an opening which receives such centering pin, and a template surrounding the guide plate. After removing the guide plate, and with the use of a conventional router in combination with the template, an accurate opening for the electrical outlet box is readily achieved.

3,823,755

### GEARED SCREWDRIVER

George V. Sheffield, 133 Van Dyke Rd., Hopewell, N.J. 08525  
Filed Apr. 26, 1973, Ser. No. 354,779

Int. Cl. B25b 15/02

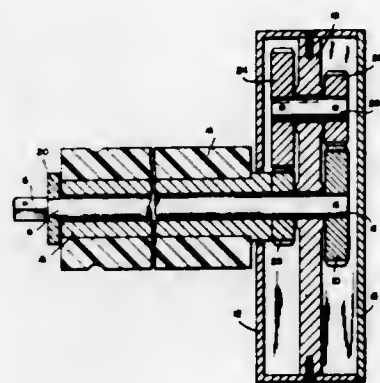
U.S. Cl. 145-50 R

1 Claim

A geared screwdriver having an improved mechanical advantage. The tool is provided with a gear train in driven connection with a screwdriver shank. The latter is disposed to



turn within its handle. The gear train is housed in a structure which can be turned to operate the shank with the handle remaining fixed or, in the alternative, the latter may be turned



to drive the shank with the housing fixed in place affording a different mechanical advantage from that which is afforded in the first mode of operation.

3,823,756

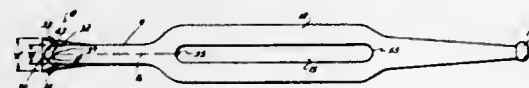
## MOUNTING HEAD FOR A TIRE TOOL

Donald B. Rainey, Hamilton, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio  
Filed Jan. 30, 1973, Ser. No. 328,010

Int. Cl. B60c 25/04

U.S. Cl. 157-1.3

4 Claims



An improved mounting head for a tire tool, the mounting head being adapted for either clockwise or counterclockwise rotation (on either an automatic or manual tire changing machine) as desired by the operator. The mounting head is characterized by a forehead that is curved on its leading surface and that extends upward and forward, and a lip that is curved downward and rearward, the forehead and the lip merging together at a mouth. The curvature axis of the lip (which lies parallel to the tool's x plane) is transversely disposed relative to the curvature axis of the forehead (which lies in the tool's Y plane). The forehead and lip are further characterized by being fully symmetrical about the Y plane, the tool's x and Y planes being at right angles one to the other.

3,823,757

## APPARATUS FOR USE IN MOUNTING TIRES ON AND REMOVING TIRES FROM WHEEL RIMS

Derek Hogg, Sutton Coldfield, England, assignor to Dunlap Limited

Filed June 14, 1972, Ser. No. 262,745

Claims priority, application Great Britain, June 23, 1971, 29358/71

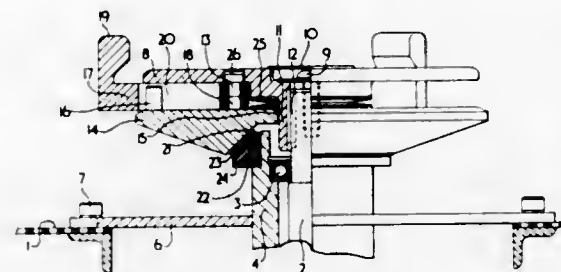
Int. Cl. B60c 25/10

U.S. Cl. 157-1.24

4 Claims

Apparatus for use in mounting tires on and removing tires from wheel rims comprising a wheel supporting means which comprises three slideable and pivotal arms mounted between

two rotatable coaxial plates which on being relatively rotated cause the arms to pivot and slide thereby gripping a wheel. The first plate is rotatably driven and the second plate is con-



tinuously engaged by braking means. Resilient means act on the second plate to increase the reaction force between the second plate and the braking means.

3,823,758

## ACTUATOR ASSEMBLY

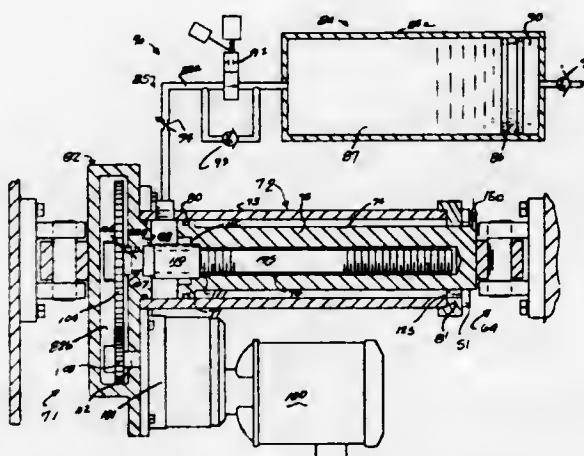
William E. Heese, Akron, Ohio, assignor to Allen Electric and Equipment Company, Orrville, Ohio

Filed Dec. 3, 1970, Ser. No. 94,802

Int. Cl. E05f 15/04

U.S. Cl. 160-188

14 Claims



A power operated hatch cover assembly including a pair of hatch covers hinged together and actuating assemblies for moving the hatch covers between closed and open positions. Each actuating assembly includes a pair of actuators which are simultaneously operated to produce a varying actuating force with the total force being greater than the force required to open the hatch cover assembly. One actuator operates on stored energy derived from closing the hatch and in case of power failure prevents the hatch cover assembly from rapidly falling closed.

3,823,759

## METHOD FOR PROVIDING AND USING AN INSTALLATION FOR THE ELECTROSLAG REMELTING OF METALLIC CONSUMABLE ELECTRODES

Jury Vadimovich Latash; Boris Izraellevich Medovan, both of Kiev; Semen Abramovich Leibenzow, and Gary Petrovich, both of Zaporozhie, all of U.S.S.R., assignors to Patent Management Inc., Washington, D.C.

Division of Ser. No. 669,608, Sept. 21, 1967, abandoned. This application July 16, 1971, Ser. No. 163,483

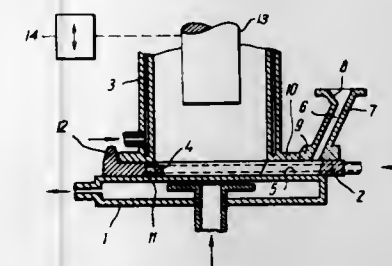
Int. Cl. B22d 27/02

U.S. Cl. 164-52

12 Claims

Method for the electroslag remelting of metallic consumable electrodes by providing and operating an electroslag remelting apparatus comprising a bottom plate, a discrete slag

inlet means disposed on said bottom plate and a hollow mold disposed on the latter, said slag inlet means establishing fluid-flow communication between said mold and an access port



outside of said mold into which slag may be poured. A removable slag inlet conduit is provided in fluid-flow communication with the slag inlet in said slag inlet means.

3,823,760

## LOW PRESSURE DIE CASTING APPARATUS

Francis Richard Bloomfield, Enfield, and Gordon David Cooper, Abergavenny, both of England, assignors to Soag Machinery Ltd., Brentford, England

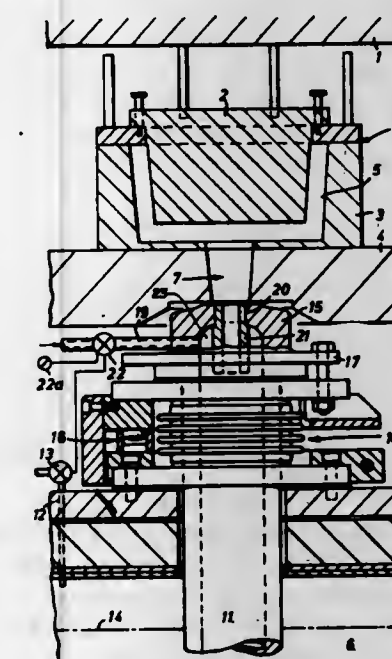
Filed Oct. 12, 1972, Ser. No. 296,810

Claims priority, application Great Britain, Oct. 18, 1971, 48387/71

Int. Cl. B22d 17/14

U.S. Cl. 164-113

1 Claim



A method of low pressure die casting in which molten metal is forced upwardly from a furnace into a die through a riser tube extending below the level of the molten metal in the furnace by gas pressure applied to the surface of the metal. To avoid the formation of oxides in the metal, an inert gas, heavier than air, is introduced into the riser tube adjacent the die to fill the riser tube above the level of the metal in the furnace. On application of gas pressure to the molten metal in the furnace, as the metal rises in the tube, the inert gas expels out from the die cavity. After solidification of the metal in the die and removal of the gas pressure to the furnace, excess molten metal falls back by gravity into the furnace, the inert gas again filling the space above the metal in the tube to prevent ingress of air at the interface between the sprue orifice of the die and the riser tube. A low pressure die casting apparatus is disclosed which includes an apertured cap on the riser tube for engagement with the sprue orifice, the cap being provided with an inlet for an inert gas.

3,823,761

## QUICK RELEASE MECHANISM FOR CONTINUOUS CASTING MOLD SUPPORT FRAME

Charles H. Bode, Jr., Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

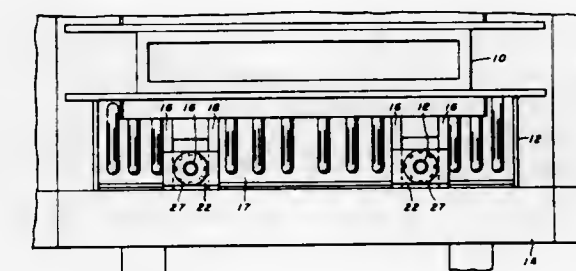
Division of Ser. No. 167,723, July 30, 1971, Pat. No.

3,777,436. This application May 7, 1973, Ser. No. 357,765

Int. Cl. B22d 11/00

U.S. Cl. 164-273 R

5 Claims



A quick release mechanism for releasably attaching a continuous casting mold oscillating frame to a support. A bolt is fixed to the support and carries a spring and rotatable anchor block between the nut and bolt head, whereby the anchor block can be seated in a recess in the frame by a minimal movement of the nut.

3,823,762

## ROLL-COUPLE, CONTINUOUS-STRIP CASTER

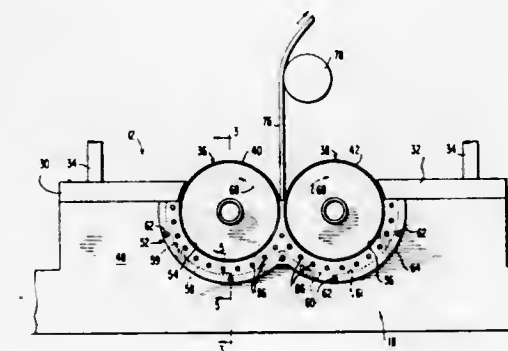
Erich F. Wondris, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,494

Int. Cl. B22d 11/06

U.S. Cl. 164-277

9 Claims



Roll-couple, continuous-strip caster in which arcuate, resilient refractory seals are employed to elastically adapt to the peripheral surfaces of the casting rolls and establish sealing contact with the rolls to prevent flow of molten metal between rolls and vessel walls. The seals can be segmented for movement toward the casting rolls, to accommodate wear of the seals while still maintaining sealing contact with the rolls. The seals can be moved axially along the rolls to adjust the width of the cast strip without interruption of the casting operation. Peripheral bands of thermal insulation can be employed on the rolls, which are water-cooled, to reduce heat transfer from the seals to the rolls and thereby reduce tendency for molten metal to solidify on the seals. Heaters in the seals can be used to further reduce such tendency.



3,823,763

**RAMP-TYPE APPARATUS FOR DISCONNECTING AND STORING A FLEXIBLE STARTER BAR**

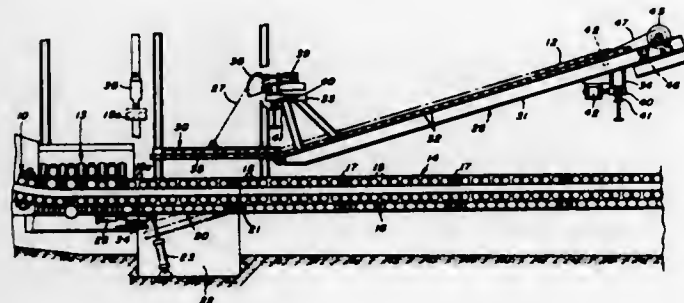
Gottfried Hofmann, Lutzelfuh-Goldbach, Switzerland, and George J. Wagner, N. Fayette Township, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 19, 1972, Ser. No. 298,886

Int. Cl. B22d 11/08

U.S. Cl. 164-282

7 Claims



A ramp-type apparatus for disconnecting and storing a flexible starter bar of a continuous casting machine. The ramp is formed of long and short sections. The long section is supported at a fixed angle on two carriages, whereby the ramp can move transversely of the casting machine to get it out of the way. The short section is hinged to the long section and suspended from one of the carriages. Hence only the short section need be raised and lowered to disconnect or charge the starter bar.

3,823,764

**APPARATUS FOR CENTRIFUGALLY CASTING AN ANNULUS OF METAL ABOUT A HUB**

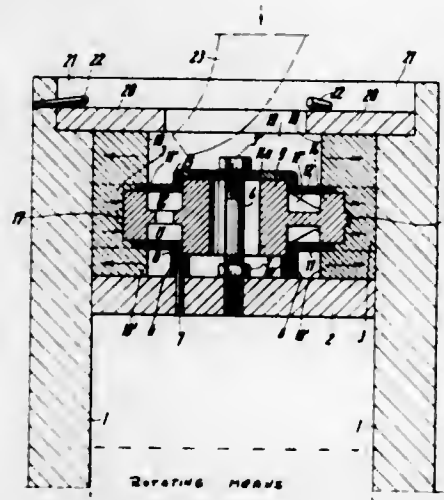
Willi Schmitz, Andernach, Rhine, Germany, assignor to Mittelehrheinische Metallgießerei H. Beyer KG, Andernach, Germany

Filed May 18, 1972, Ser. No. 254,365

Int. Cl. B22d 13/04

U.S. Cl. 164-288

5 Claims



A hub member is accommodated in the cavity of an upright mold, whereupon the latter is rotated with the hub member and metal which is to form the outer annular part of the gear is introduced into the mold to become united with the hub member by centrifugal casting. An apparatus for carrying out this method is also disclosed.

3,823,765

**DIE CASTING MACHINE**

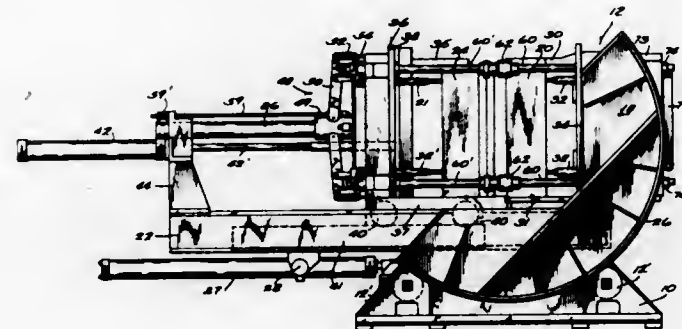
Nic J. Watry, Fort Myers, Fla., assignor to Watry Industries Inc., Sheboygan, Wis.

Filed Sept. 5, 1972, Ser. No. 286,410

Int. Cl. B22d 17/10

U.S. Cl. 164-303

5 Claims



A die casting machine in which two die half sections are moved between a closed pouring position and an open position at which the cast piece is removed. The die half sections are mounted on a stationary and a movable base plate respectively, both of which are incorporated in a frame which can be rotated between an upstanding pouring position and a horizontal position at which the casting is removed. When in the pouring position, the die half sections are locked together by four two-piece tie rods which extend between the movable and stationary base plates and which are located at each of the corners of the die. The two sections of each tie rod are interconnected by bayonet couplings. The tie rods extend through the stationary base plate and are fixed to a platen located below the stationary base plate. The platen is connected to the stationary base plate by a parallelogram linkage and two hydraulic cylinders. After each of the bayonet couplings are engaged, the two hydraulic cylinders are actuated to move the platen away from the stationary base plate. Because of the parallelogram linkage, this motion is uniformly imparted to each of the tie rods and therefore, the closing force of the die is uniform throughout the interface of the die.

3,823,766

**DYNAMIC REGENERATIVE HEAT EXCHANGER**

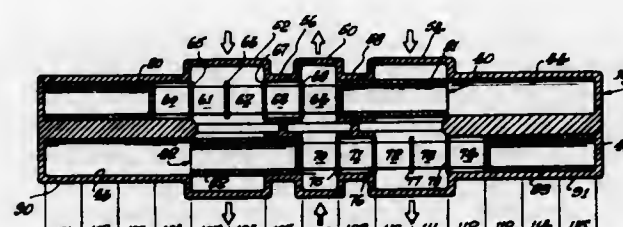
Kenneth W. Sawyer, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 22, 1971, Ser. No. 136,430

Int. Cl. F28d 19/04

U.S. Cl. 165-1

10 Claims



Described is an axial, piston-type, dynamic regenerative heat exchanger.

3,823,767

**PROCESS FOR TREATING WATER**

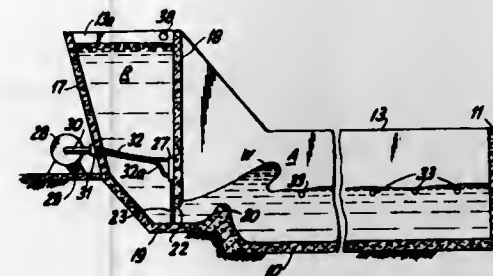
Minor E. McLaughlin, Newfane, Vt., assignor to Economic Development Corporation, Brattleboro, Vt.

Filed Feb. 29, 1972, Ser. No. 230,424

Int. Cl. F28d 5/00

U.S. Cl. 165-1

6 Claims



A process for treating a body of water to cool and to increase the dissolved oxygen content of the water which involves producing controlled transitory waves in the body of water. The process includes storing water in a reservoir at a selected height above the level of the body of water, periodically releasing specified quantities of water from the reservoir at a point below the level and in an upward direction toward the surface and into the body of water. The upward direction of the released water is accomplished by releasing the water against a deflector located near the base of the reservoir. The released water forms a transitory wave in the body of water and as it moves away from the reservoir, it breaks causing effective mixing of air and water, cooling the water and increasing the oxygen content of the water. The transitory wave produced is referred to as a plunger breaker type. In this type of wave, the waves curl over in breaking enclosing an air pocket which explodes during the breaking process. This action accomplishes excellent mixing of air and water and where solid particles are present, breaking and pulverizing of the particles.

The process may be used in conjunction with natural or artificial bodies of water and provisions are made with artificial bodies for removal of water at a point remote from the point of wave formation at a rate substantially equal to the average rate of addition of water from the reservoir. The invention pertains to cooling water effluent from power generation stations to prevent thermal pollution of natural bodies of water. The invention in another embodiment pertains to a more efficient method of aerating and treating sewage.

3,823,768

**AIR CONDITIONING APPARATUS**

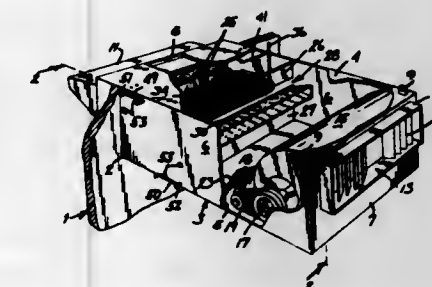
John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed Jan. 31, 1973, Ser. No. 328,273

Int. Cl. F25b 29/00

U.S. Cl. 165-48

5 Claims



An elongated generally rectangular housing having air inlet and discharge openings in its opposite ends, a cooling element

and a heating element being mounted within the housing in spaced relationship longitudinally of the housing. A blower is mounted in the housing for receiving air from the interior of the housing and delivering conditioned air outwardly through the discharge opening. A damper arrangement provides for heat directing air selectively through or past the cooling element for controlling the temperature of air being delivered to the discharge opening of the housing.

3,823,769

**SEPARABLE HEAT PIPE ASSEMBLY**

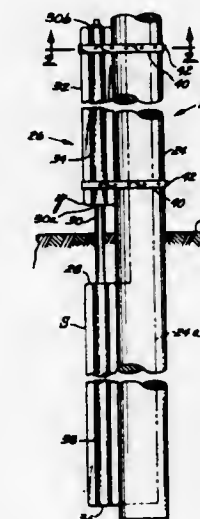
John H. Anderson, and Elmer D. Waters, both of Richland, Wash., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 2, 1972, Ser. No. 303,221

Int. Cl. F28d 15/00

U.S. Cl. 165-76

10 Claims



A separable heat pipe assembly for stabilizing the generally frozen soil adjacent and supporting a structural member or foundation in permafrost or similar regions, including a cooperative combination of a sheath installed in the frozen soil and a closely mating heat pipe element normally inserted into the sheath with a substance of good thermal conductivity filling the small void remaining therebetween. The underground sheath preferably has a plurality of heat gathering fins and the mated heat pipe element preferably has an integral radiator section protruding aboveground. The thermal substance is preferably a liquid mixture of water and ethylene glycol, for example, mixed in a selected ratio.

3,823,770

**HEAT EXCHANGE ASSEMBLY**

Richard J. Duell, Syracuse, and Fred V. Honnold, Jr., North Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,794

Int. Cl. F28f 7/00

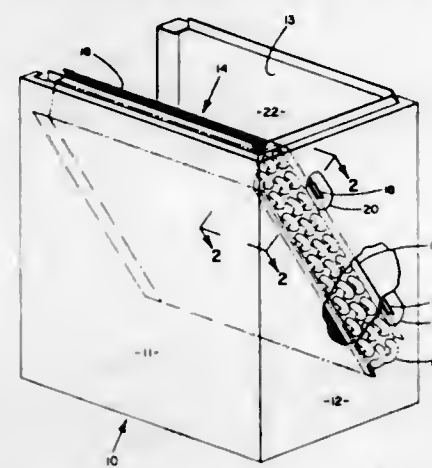
U.S. Cl. 165-76

6 Claims

A heat exchange assembly comprising a casing including a wall having at least one slot defined therein, said casing defin-



ing a chamber. A heat exchange coil is disposed in the chamber of the casing and includes at least one tab extending



from an end thereof, the tab being inserted into the slot in the wall of the casing to secure the heat exchange coil within the chamber.

3,823,771

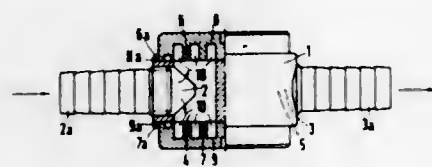
### COOLING BOX FOR INSTALLATION IN STACKS OF DISK-CELLS

Klaus Ludwig, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany  
Filed Dec. 4, 1972, Ser. No. 311,568  
Claims priority, application Germany, Dec. 4, 1971, 2160302

Int. Cl. H01J 3/00

U.S. Cl. 165-80

5 Claims



A flat cooling box for capsuled disk-cells is disclosed consisting of two round cooling pots at both sides of a flat connecting piece, provided with concentric annular grooves for cooling fluid and current supply. Inflow and outflow channels are directed through the center of the circle with symmetrical passages in communication with the annular grooves. The cooling pots are connected with their connecting piece through annular riveting.

3,823,772

### ELECTRICAL INSULATOR ASSEMBLY

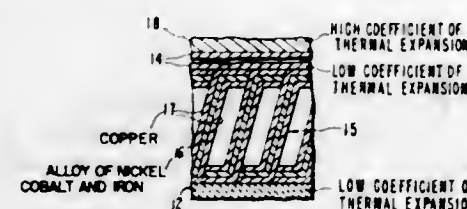
Gordon R. Lavering, Belmont, and Jules S. Needle, Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Dec. 8, 1972, Ser. No. 313,369

Int. Cl. F28f 7/00; H01j 1/02

U.S. Cl. 165-81

12 Claims



An electrical insulator body is supported from a surrounding structure via the intermediary of a plurality of yieldable support members. The yieldable support members, in a

preferred embodiment, are annular truncated conical members bonded to the outside surface of the insulator body and to the inside surface of the surrounding member. In a preferred embodiment the conical support members are made of a copper clad or copper plated alloy of nickel, cobalt and iron to provide increased thermal conductivity between the insulator body and the surrounding structure.

3,823,773

### PRESSURE CONTROLLED DRILL STEM TESTER WITH REVERSING VALVE

Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,368

Int. Cl. E21b 47/00

U.S. Cl. 166-5

18 Claims



Methods and apparatus for testing offshore wells with testing equipment operated in response to changes in the pressure of fluids in the well annulus, wherein the test valve is opened and closed in response to such pressure changes to alternately flow and shut-in the formations, and a reversing valve is automatically opened after a predetermined minimum number of pressure changes have occurred to enable fluids received in the pipe string to be removed before withdrawing the test tools from the well.

3,823,774

### DIGESTED ALKALINE TALL OIL PITCH SOAP COMPOSITION

Ying C. Chiu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 235,039, March 15, 1972, abandoned, and a continuation-in-part of Ser. No. 235,088, March 15, 1972, abandoned. This application Apr. 16, 1973, Ser. No. 351,738

Int. Cl. E21b 43/16

U.S. Cl. 166-252

11 Claims

The oil in a subterranean reservoir is advantageously displaced by injecting into the reservoir an aqueous surfactant system containing a digested alkaline tall oil pitch soap composition produced by heating a mixture of tall oil pitch and an excess of aqueous base for a time and temperature that yields a substantially completely water soluble digestion product.

3,823,775

### METHOD FOR UPGRADING COAL GASIFICATION PRODUCTS

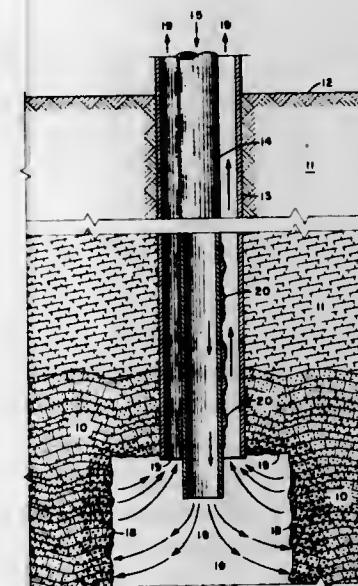
Roger C. Parsons, and Kang Yang, Ponca City, both of Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 30, 1973, Ser. No. 355,854

Int. Cl. E21b 43/24

U.S. Cl. 166-260

10 Claims



A method for upgrading gasification products produced by the gasification of subterranean carbonaceous deposits and recovered through a well bore by contacting said products with an effective amount of a suitable catalyst positioned in said well bore.

3,823,776

### OIL RECOVERY METHOD BY OXIDATION AND FORMING SURFACTANTS IN SITU

Billy G. Holmes, Lancaster, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,823

Int. Cl. E21b 43/22, 43/24

U.S. Cl. 166-361

6 Claims

This specification discloses a method of producing oil from an oil-containing subsurface formation penetrated by an injection well and a production well. An oxygen-containing gas is injected into the formation to rapidly oxidize a portion of the oil therein and establish a stabilized in situ combustion zone. The oxidation of the oil forms organic acids within and surrounding the in situ combustion zone. An aqueous caustic solution is injected into the formation to quench the combustion within the in situ combustion zone and to react with the organic acids within and surrounding the in situ combustion zone and form surfactants in situ. Oil is produced from the formation facilitated by the surfactants and the heat of the in situ combustion zone.

3,823,777

### MULTIPLE SOLVENT MISCIBLE FLOODING TECHNIQUE FOR USE IN PETROLEUM FORMATION OVER-LAYING AND IN CONTACT WITH WATER SATURATED POROUS FORMATIONS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,410

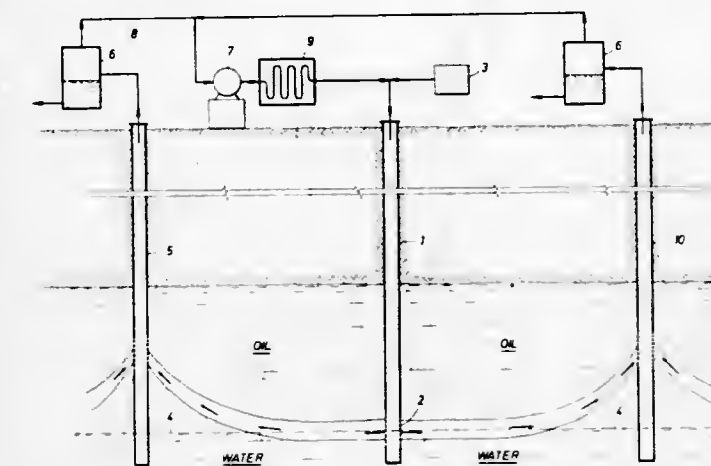
Int. Cl. E21b 43/16

U.S. Cl. 166-266

18 Claims

A petroleum recovery method employing a mixed solvent for use in formation in contact with and over-laying a substantially water saturated porous formation which is prone to bot-

tom water coning. The mixed solvent density is less than the density of water and greater than the density of the formation petroleum, and has a boiling point less than the boiling point of the formation petroleum. The solvent is injected into the



formation near the petroleum-water interface and the mixture comprising solvent and petroleum is recovered from production wells. The solvent may be separated from the produced petroleum-solvent mixture by distillation and recondensation for reinjection into the formation.

3,823,778

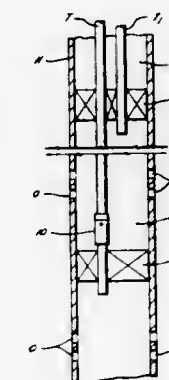
### METHOD OF COMPLETING A WELL USING A COMPLETION AND KILL VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company Division of Ser. No. 138,947, April 30, 1971, Pat. No. 3,750,752. This application Mar. 26, 1973, Ser. No. 344,602

Int. Cl. E21b 41/00

U.S. Cl. 166-313

24 Claims



A completion and kill valve adapted to be placed immediately above a packer in the well production tubing including a tubular member having an inner bore and a circulation channel therein permitting communication between the inner bore and the well annulus area adjacent the exterior of the tubular member. A movable sleeve closes or opens communication through the circulation channel in response to various pressures and a spring bias acting on the sleeve. Provisions for locking the sleeve in the open position and subsequently unlocking the sleeve in response to inner bore pressure are provided.

3,823,779

### FIRE EXTINGUISHING SYSTEM NOZZLE

Johann A. Stamm, Export, and Siavash Eshghy, Pittsburgh, both of Pa., assignors to Factory Mutual Research Corporation, Norwood, Mass.

Filed Jan. 30, 1973, Ser. No. 327,960

Int. Cl. A62c 37/08

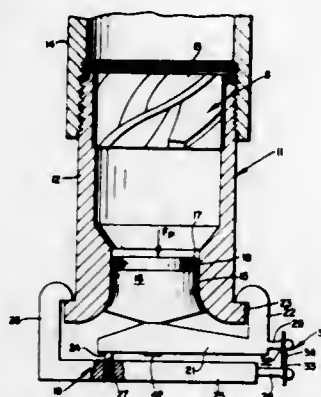
U.S. Cl. 169-39

14 Claims

The discharge outlet plug of a fire extinguishant nozzle is retained by an external lever system that is conditioned by the



operation of a heat fusible means in response to the presence of a first temperature rise to permit release of the plug under fluid pressure in the nozzle. An overriding beam arrangement is provided to prevent release of the plug unless the nozzle



fluid pressure exceeds a predetermined pressure floor, and in some forms a temperature responsive override arrangement is provided to disable the overriding beam arrangement in the presence of a materially higher temperature rise to permit the plug to be expelled by fluid pressures below the pressure floor.

3,823,780

## COMPACT GROUND PREPARING ROLLER

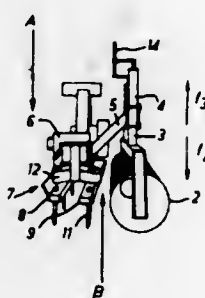
Adolphe Crete Guerin, 98, route Nationale, Mezieres, France  
Filed Aug. 8, 1972, Ser. No. 278,800

Claims priority, application France, Aug. 16, 1971, 71.29867

Int. Cl. A01b 5/00

U.S. Cl. 172-150

1 Claim



Ground preparing device comprising a harrow frame and a roller frame, the teeth of the harrow disrupting the ground ahead of the roller and the roller compacting the earth behind the harrow, wherein a leveller deflector distributes the excess earth thicknesses.

3,823,781

## VEHICLE AND SAND-TRAP RAKE

Joseph M. Check, Minneapolis, Minn., and Ronald E. Lewis, Hanover, N.H., assignors to The Toro Company, South Minneapolis, Minn.

Filed Jan. 5, 1973, Ser. No. 321,227

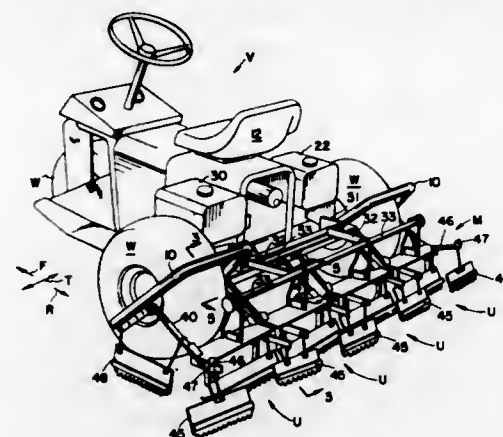
Int. Cl. A01b 13/00

U.S. Cl. 172-192

2 Claims

A three wheeled, with equal weight distribution, vehicle with lesser torque capacity to the single front wheel relative to the torque capacity to each rear wheel and specifically designed to operate in a golf course sand-trap. A multi-unit sand-trap rake assembly adapted to be drawn by the vehicle. Each unit rake assembly including a carrier frame pivotally connected to the frame of the vehicle, two vertical support bars downwardly depending from the carrier frame and connected to a breaker bar that is drawn beneath the surface of

the sand to break the bonds between the sand particles. The multi-unit assembly including a first row of smoothing plates pivotally connected to the carrier frames, a second row of



dressing plates pivotally connected to the carrier frame, and side dressing plates each smoothing and dressing plate having a lower serrated edge for dressing the surface of the sand-trap.

3,823,782

## LAND RECLAMATION APPARATUS

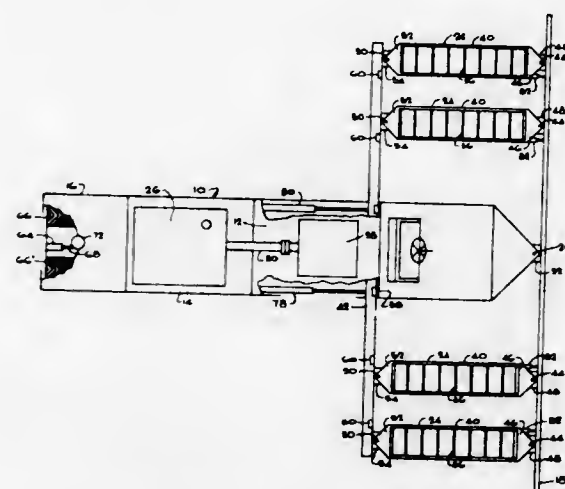
John W. Howland, Stilwell, Kans., assignor to The Pittsburgh & Midway Coal Mining Co., Kansas City, Mo.

Filed Nov. 20, 1972, Ser. No. 307,888

Int. Cl. E02f 3/76

U.S. Cl. 172-292

12 Claims



An improved earthmoving apparatus particularly suited for use in land reclamation operations comprising a cutting and casting blade which may be articulated through either a left or right angle, relative to the direction of operation, of at least 45°. A plurality of power modules are disposed at spaced intervals along and behind the cutting and casting blade such that they remain at substantially the same distance from the blade when the blade is articulated. By providing power to the blade in this manner, the adverse effects of side thrust and turning moments inherent in most angle blade operations are significantly reduced.

3,823,783

## POWER PITCHING AND ANGLING BULLGRADER

Ronald E. Luedtke, Elmhurst, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 29, 1973, Ser. No. 327,286

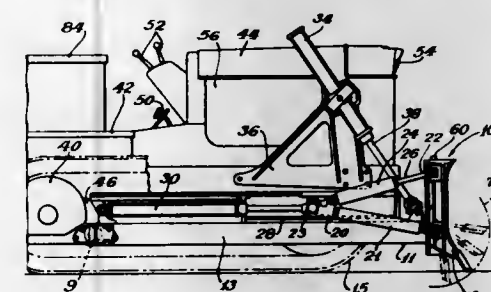
Int. Cl. E02f 3/76

U.S. Cl. 172-802

4 Claims

Power adjusted bulldozing attachment for a tractor having a C-frame and a bullgrading blade thereon capable of pitching, tilting, and single and double angle angling. An intermediate

region of the blade has a universal mounting to the front of the C-frame. Pairs of strut members incorporating power units are connected to the end sections of the blade and to the legs of the C-frame for pitching and tilting the blade. The blade is an-



gled by shifting the struts by means of power pistons on the legs of the C-frame. Piston locks fix the struts at locking points on the frame legs so that the blade, formed of bisected sections, can have the sections swung similarly to single angles or oppositely for double angle contouring.

3,823,784

## METHOD AND APPARATUS FOR CONTROLLING HYDRAULIC DRIFTERS

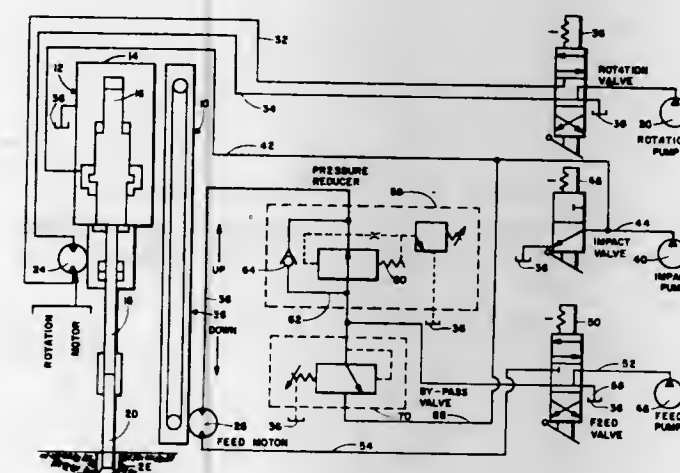
Jacob Edward Feucht, Sidney, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 8, 1973, Ser. No. 368,152

Int. Cl. E21b 5/00

U.S. Cl. 173-1

9 Claims



Disclosed herein is a hydraulic circuit for use in conjunction with a hydraulic drifter or impact mechanism used for drilling holes in connection with mining or the like. The hydraulic circuit described is arranged to provide for the rotation of the drill, to supply hydraulic fluid to the drifter for causing reciprocation of the bit, and to supply hydraulic fluid to a feed mechanism to maintain the drifter in engagement with the formation to be drilled. The circuit is arranged to provide for the automatic diversion of a portion of the feed mechanism fluid supply when the pressure in the feed mechanism exceeds a predetermined value. The diverted fluid is supplied to the impact mechanism to provide additional power when the feed mechanism is at or near the stall condition.

3,823,785

## SELF-DRIVE SUPPORT AND ANCHOR FOR SUPPORTING ELEMENTS

George W. Tolliver, 2035 Landen St., Camarillo, Calif. 93010

Filed June 27, 1973, Ser. No. 374,260

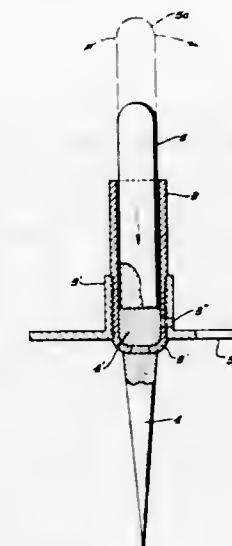
Int. Cl. B25d 1/00

U.S. Cl. 173-90

3 Claims

A light-weight, portable, self-driving support and anchor for parasols, umbrellas, flagpoles and other substantially vertical

supporting elements for temporary structures, enclosures or decorative purposes, the support and anchor being characterized by its ability to be easily fixed, driven and firmly positioned without the use of extraneous tools in soils or ground of various degrees of compactness, including sandy beaches, sun-



baked compacted soil and asphaltic cement pavements. The anchor and standard of this invention includes a gravity-actuated driving pin, movably retained within a standard adapted to cooperate with a pole, picket, or other element of the structure to be erected and means for positioning and stabilizing the anchor with respect to the surface of the soil or ground.

3,823,786

## IMPACT BODY OF A HAMMER

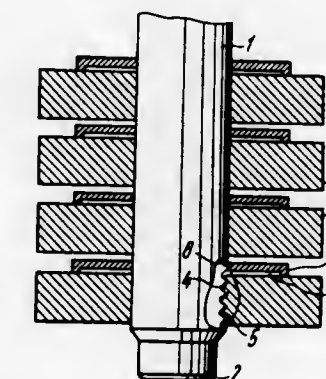
Bogdan Vyacheslavovich Voitsekhovskiy, ulitsa Akademicheskaya, 2; Valentin Pavlovich Nikolaev, ulitsa Maltseva, 1, kv. 8, and Grigory Yankelevich Shoikhet, ulitsa Pravdy, 1, kv. 34, all of Novosibirsk, U.S.S.R.

Filed May 15, 1973, Ser. No. 360,477

Int. Cl. B25d 1/00

U.S. Cl. 173-126

1 Claim



The impact body of a hammer comprises a massive central rod adapted to deliver impacts in operation. The rod has threadedly received thereabout a plurality of weight-adding disc weights, each disc weight being associated with a resilient lock nut positioned behind this disc weight in the direction of the propagation of a compression wave caused by an impact.

The lock nut engages the respective one of the disc weights only by the peripheral portion of this lock nut, there being left a gap between the rest of the nut and the disc weight. The lock nut is employed to take up play in the threaded connection between the rod and the disc weight. The impact wave branches off into each of the disc weights and gradually attenuates.



3,823,787

**DRILL HOLE GUIDANCE SYSTEM**

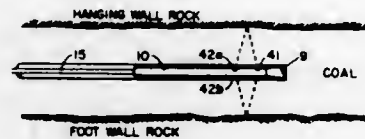
Gordon R. Haworth; Tibor O. Edmond, both of Ponca City, Okla., and William N. Poundstone, Pittsburgh, Pa., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 21, 1972, Ser. No. 246,297

Int. Cl. E21b 7/10

U.S. Cl. 175—24

3 Claims



An apparatus for directing the drilling of a bore hole through a mineral vein which includes a drilling apparatus which has means for changing its direction near the bit, a guidance system mounted near the bit which includes a radiation source, a radiation detector and electrical and mechanical apparatus operated in accordance with the detected signal and connected to the direction changing apparatus to cause the drill to bore a hole in a prescribed manner. The bore hole drill is capable of following precisely between the top and the bottom of a coal seam or at the prescribed distance from the top or the bottom of a coal seam.

3,823,788

**REVERSE CIRCULATING SUB FOR FLUID FLOW SYSTEMS**

Erskine P. Garrison, Long Beach, and John E. Tschirky, Manhattan Beach, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 2, 1973, Ser. No. 346,739

Int. Cl. E21b 3/08, 21/00, 33/126

U.S. Cl. 175—94

9 Claims



A reverse circulating device which supplies flowing carrier fluids and returns flowing fluids through a fluid conduit or string to efficiently and speedily remove the carrier fluids by providing a return conduit of less cross sectional flow area than that of the conduit or string through which the fluid is supplied. Also, and more specifically, a reverse circulating device which is connected to an inhole fluid motor so that carrier fluid can be supplied between the casing or the wall of the hole and the conduit or string and returned in the restricted fluid conduit.

3,823,789

**DRILL BIT CENTER JET**

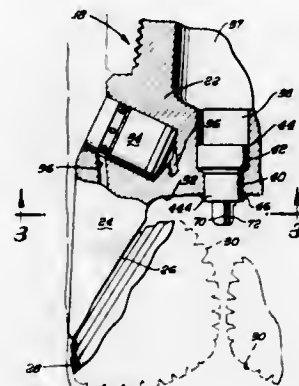
Lloyd L. Garner, Los Alamitos, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 18, 1973, Ser. No. 361,479

Int. Cl. E21b 9/08

U.S. Cl. 175—340

13 Claims



A drill bit construction including a center jet for preventing the accumulation of masses of earth formation between and above the cutters, the jet being provided by a nozzle which breaks up or diffuses the stream of pressurized drilling mud issuing therefrom to avoid abrasive concentration of the jet on portions of the teeth of the cutters. In addition, a jet nozzle construction and mounting arrangement permitting installation and replacement of nozzles downwardly through the drilling mud passage in the body of the bit, there being means provided for reducing turbulence where it is not desired, while at the same time providing controlled diffusion or breaking up of the stream and also means for protecting the bit body adjacent the nozzle against undue abrasive action.

3,823,790

**POWER-OPERATED WHEEL CHAIR**

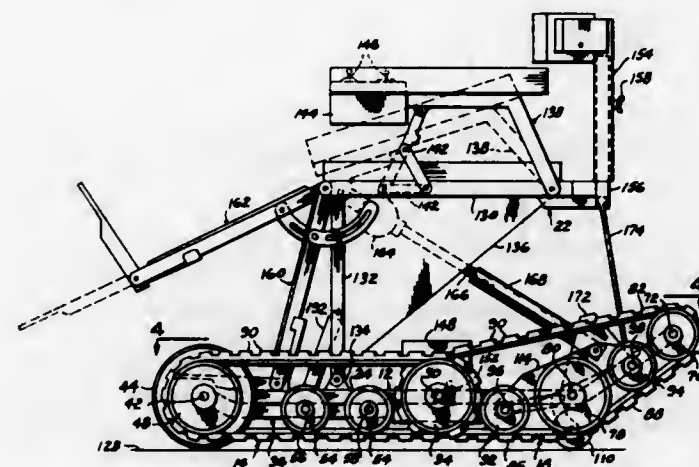
Eugene M. Richison, and Ethel M. Richison, both of Kinta, Okla., assignors to Thomas Conklin, Stigler, Okla.

Filed Feb. 12, 1973, Ser. No. 331,908

Int. Cl. B62d 55/04; B62b 9/02

U.S. Cl. 180—6.7

5 Claims



A power-operated wheelchair including selectively operated pairs of traction belt means driven by stub axles arranged on a central horizontal axis extending transversely of the chair with a forward pair of the traction belt means normally disposed horizontally and a rearward pair of the traction belt means normally disposed in a horizontal and rearwardly upward inclined plane. The wheelchair is normally supported on a horizontal surface by a pair of forward wheels and a rearward caster-type wheel. Control means, including gear trains and motors, drives the traction belt means and positions the

plane of the pivotally mounted wheelchair seat in a substantially horizontal plane when the wheelchair is ascending or descending a flight of stairs, or the like, while simultaneously retracting the caster wheel to a position above the depending horizontal plane of the rearward pair of traction belt means.

3,823,791

**STEERING AND DRIVE MECHANISM FOR FLOOR CLEANING MACHINE**

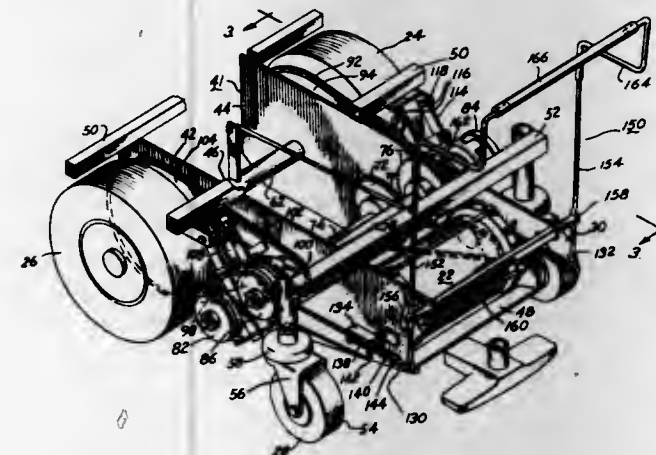
Milo W. Sheler, Elkhart, Ind., assignor to Keltec Inc., Elkhart, Ind.

Filed Oct. 25, 1972, Ser. No. 300,514

Int. Cl. B62d 11/08

U.S. Cl. 180—6.66

10 Claims



A floor cleaning and scrubbing machine in which two main drive wheels located near the front of the machine are driven individually by a motor connected thereto by separate drives, each drive having a forward and reverse clutch therein. A steering mechanism controls the operation of the four clutches to operate one of the two clutches to steer the machine and includes a transversely positioned horizontal handle movable forwardly or rearwardly to drive the machine forwardly or rearwardly, and rotatable on a vertical axis to turn the machine in the right and left directions.

3,823,792

**VEHICLE WITH STEPLESS DRIVE AND AUXILIARY BRAKING FORCE**

Walter Dinkloh, Obernau, and Wilhelm Spennemann, Aschaffenburg, both of Germany, assignors to Linde Aktiengesellschaft, Weisbaden, Germany

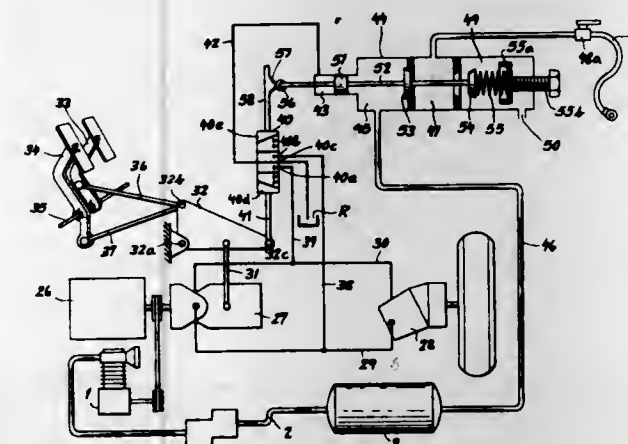
Filed Aug. 3, 1972, Ser. No. 277,679

Claims priority, application Germany, Aug. 6, 1971, 2139584

Int. Cl. B60t 7/20

U.S. Cl. 180—82

13 Claims



A vehicle having a stepless drive, e.g., a hydrostatic transmission, between the engine and the vehicle wheels is provided with brake means in addition to the transmission for braking the vehicle or a trailer drawn thereby. The actuating device for the auxiliary braking force is connected to the hydrostatic transmission and is effective when the latter is in a braking condition to operate the auxiliary brake.

3,823,793

**SEMI-SEALED SILENCER STRUCTURE**

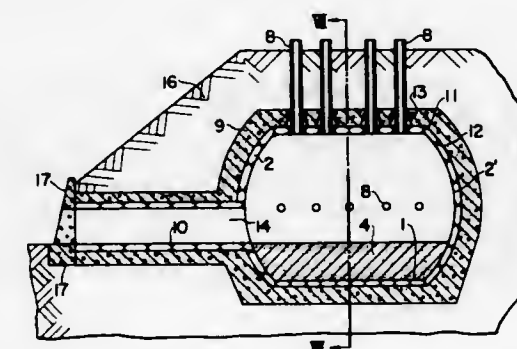
Kazumoto Yamamoto, Saga-ken, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1972, Ser. No. 294,159

Int. Cl. F01n 1/02

U.S. Cl. 181—33 R

2 Claims



A drum which receives explosion impulse waves directly on the inner surface thereof is made of steel, and a material inlet tunnel and pipes for alleviating the explosion impulse and reducing the explosion noise are connected to said drum, and further the resultant structure is covered exteriorly with soil or concrete, whereby a semi-sealed silencer structure is provided which has substantially improved pressure-resistance and in which several tens to several hundreds kilograms of explosive can be exploded without causing dangers and public nuisances.

3,823,794

**ACOUSTICAL PANELS**

Michel Bre, Paris, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

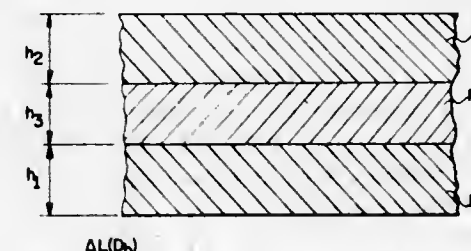
Filed Nov. 24, 1972, Ser. No. 309,022

Claims priority, application France, Nov. 25, 1971, 71.42222

Int. Cl. E04b 1/84

U.S. Cl. 181—33 G

13 Claims



Transparent, translucent and opaque laminates are made from outer layers of vitreous material such as glass and ceramics and an interlayer of optical quality plastic. Many modifications are possible. The products are light, have a density near 1 and are very strong.



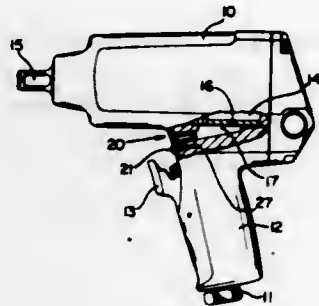
3,823,795

**AIR TOOL MUFFLER**

Donald Earl Fleagle, Abingdon, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.  
Filed May 30, 1973, Ser. No. 365,199  
Int. Cl. F01n 3/06

U.S. Cl. 181-36 A

9 Claims



A pneumatic portable power tool such as an impact wrench is disclosed which incorporates an improved air exhaust passage and muffler. The tool is of the pistol-grip type and the exhaust passage is provided immediately above the trigger and handle, the exhaust air being directed away from the operator. An improved muffler incorporating several noise-reduction features in a simplified construction is provided in the passage.

3,823,796

**MUFFLERS FOR INTERNAL COMBUSTION ENGINES**

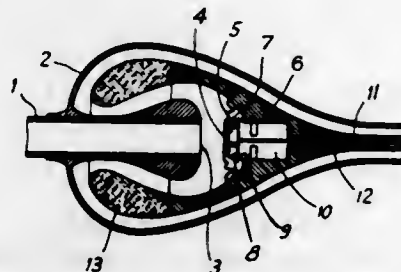
Paul Damiron, 10 Place des Etats-Unis, 75016 Paris, France  
Filed Aug. 8, 1973, Ser. No. 386,692

Claims priority, application France, Aug. 17, 1972, 72.29485

Int. Cl. F01n 1/08

U.S. Cl. 181-49

7 Claims



This invention relates to mufflers for internal combustion engines of all kinds.

The invention provides means to break up the plane sound waves formed in the conduit between the engine and the muffler so as to absorb these waves wholly or in part near the point where the gas inlet conduit leads into the muffler. A vibratory diaphragm and a resonant cavity play important parts in arrangements according to the invention.

3,823,797

**APPARATUS FOR THE APPLICATION OF A FLUID PASTY MATERIAL ON A WIRE SHAPED ELEMENT**

Jean Ducatillon, Wilkms Nord, France, assignor to Cato Oil & Grease Co., Oklahoma, Okla.

Continuation of Ser. No. 174,615, Aug. 25, 1971. This

application Mar. 21, 1973, Ser. No. 343,896

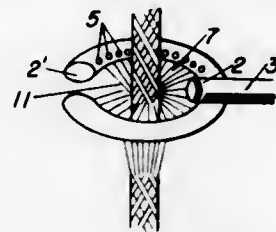
Int. Cl. F16n 7/00

U.S. Cl. 184-16

3 Claims

An apparatus for the application of a fluid pasty material on a wire shaped element and more particularly, but not exclusively for the lubrication of cables. Broadly, the apparatus comprises a solid ring shaped member having an inner and

outer periphery. A network of closely spaced bristles are arranged about the inner periphery of the ring shaped member. The bristles extend radially inward and downward to form a funnel shape adapted to engagingly encompass the periphery of the wire shaped element. The apparatus also includes a conduit portion located above the network of closely spaced bristles.



ties. The conduit portion is provided with a passageway therethrough to provide communication between a source of fluid pasty material and the wire shaped element. The fluid pasty material is deliverable from the source, through the passageway and into the funnel shaped portion for uniform application on the periphery of the wire shaped element by the wiping action of the network of closely spaced bristles.

3,823,798

**PLURAL SELF-ENERGIZING SPREADING DISC BRAKE ASSEMBLY**

Piotr Ostrowski, Sutton Coldfield, England, assignor to Girling Limited, Birmingham, England

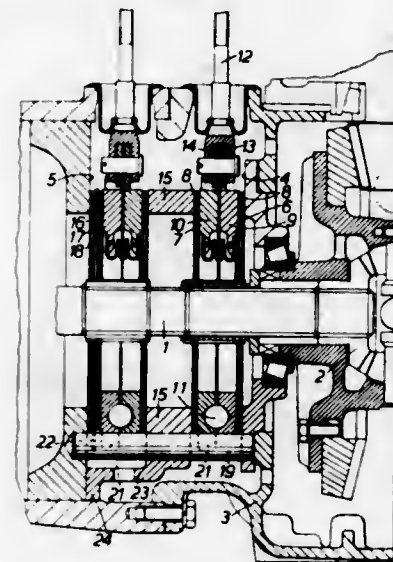
Filed June 30, 1972, Ser. No. 267,991

Claims priority, application Great Britain, July 3, 1971, 31262/71

Int. Cl. F16d 55/04

U.S. Cl. 188-71.4

3 Claims



In a brake assembly incorporating two brakes of the self-energising spreading disc type the brakes are located side-by-side in a stationary housing with the friction discs of both brakes on a common shaft, and the torque on the pressure plates of both brakes is taken by a common pin mounted in the housing with its axis parallel to that of the shaft.

3,823,799

**CROSS-PULL BRAKE ACTUATOR**

Hugh Grenville Margetts, Birmingham, England, assignor to Girling Limited, Birmingham, England

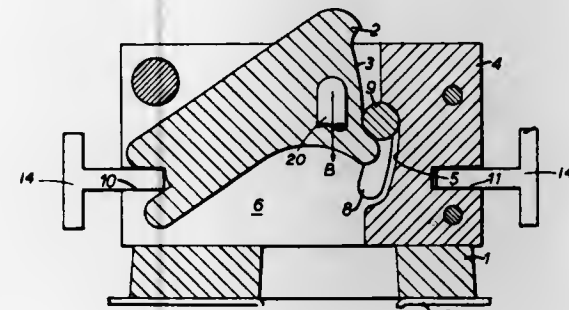
Filed Apr. 24, 1972, Ser. No. 246,592

Claims priority, application Great Britain, Apr. 27, 1971, 11624/71; Aug. 23, 1971, 39445/71

Int. Cl. F16d 51/22

U.S. Cl. 188-78

9 Claims



In a cross-pull mechanical actuator for an internal shoe drum brake, an input member and a reaction member for engagement with respective, opposed brake shoes interengaged through the intermediary of a cam and follower means whereby an actuating force applied to the input member parallel with the drum axis is translated into separating movement of the said members in a direction perpendicular to the actuating force.

3,823,800

**BUFFER DEVICE USED FOR INDUSTRIAL ROBOT MACHINE**

Hisao Fujiwara, and Kentaro Sakamoto, both of Yokohama, Japan, assignors to Kabushiki Kaisha Kelaisha Seisakusho, Yokohama-shi, Kawagawa-ken, Japan

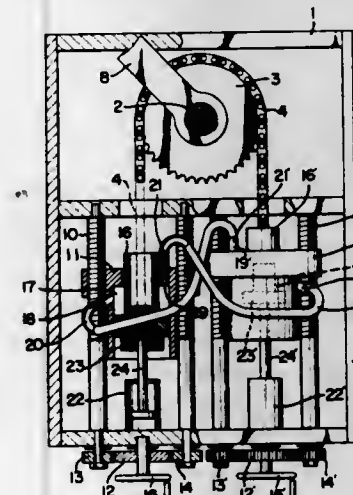
Filed Dec. 26, 1972, Ser. No. 318,275

Claims priority, application Japan, Dec. 27, 1971, 46-105273

Int. Cl. F16f 9/28

U.S. Cl. 188-303

4 Claims



This invention relates to a buffer device used for an industrial robot machine, which comprises a chain which is wound onto the rotational shaft of a robot, and connected at its ends with the two piston rods of hydraulic cylinders via stop members provided at ends of said piston rods which engage with the pistons slidable in the two buffer cylinders. The airtight chambers which are formed in said cylinders are connected to each other by means of two tubes having sliding valves operable in opposite directions, said valves adapted to open and close said airtight chambers by the pistons, whereby the move-

ment rate of the pistons may be restricted for buffering according to the change in flow quantity of the oil which flows in and out, due to the change of spaces of the openings when opening and closing.

3,823,801

**CLUTCHES WITH A FLUID AND CAM OPERATED PRESSURE MODULATING VALVE**

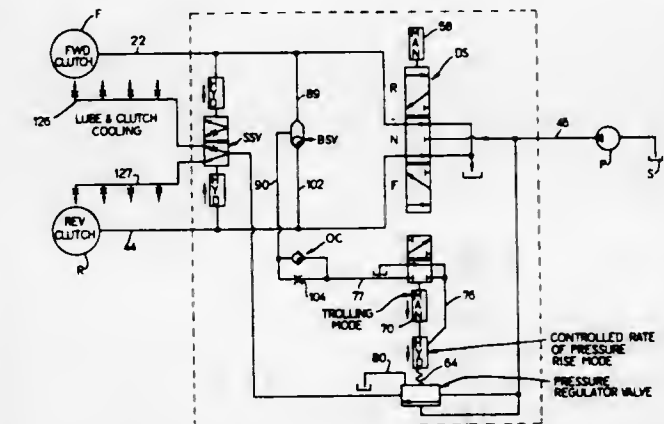
Bruce C. Arnold, Racine, Wis., assignor to Twin Discs Incorporated, Racine, Wis.

Filed Sept. 7, 1973, Ser. No. 395,200

Int. Cl. F16d 25/10, 13/72

U.S. Cl. 192-87.19

5 Claims



A clutch engaging and trolling valve for a marine gear transmission which transmission has both a forward and reverse clutch. The control valve permits trolling of the vessel in either the forward or reverse directions and also insures smooth and shock-free engagement of either the forward or reverse clutch. A single operating lever controls both the clutch engaging "controlled rate of pressure rise" mode and the trolling mode.

3,823,802

**CLUTCH WITH CONTROLLED COOLANT FLOW**

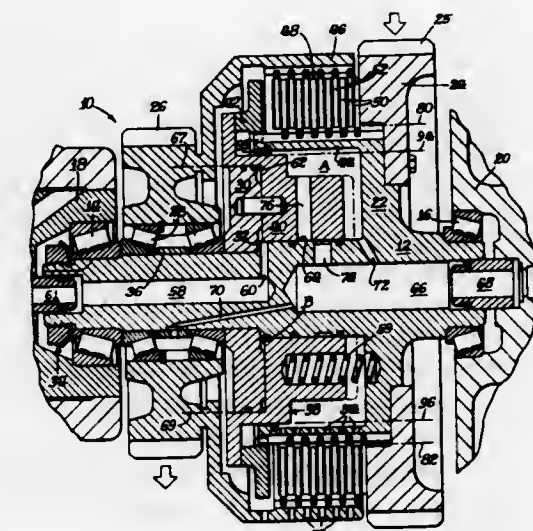
James E. Winzeler, and William M. McClure, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 18, 1972, Ser. No. 281,913

Int. Cl. F16d 13/72

U.S. Cl. 192-113 B

5 Claims



A rotating clutch having a plurality of friction plates includes a plate cooling and lubrication system which maximizes supply of the coolant fluid thereto upon engagement of the clutch. Such maximized supply aids in the release of the clutch



by utilization of the pressure of such supply of fluid in the clutch, and also by utilization of the centrifugal pressure head of such supply of fluid within the clutch.

3,823,803

## NUT TRANSFER AND ORIENTING DEVICE

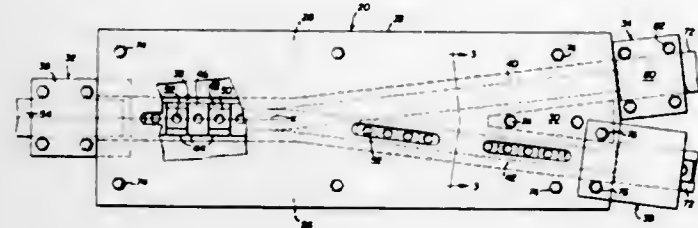
Arnold I. Lubin, Southfield, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed Dec. 26, 1972, Ser. No. 317,963

Int. Cl. B65g 11/20, 11/16

U.S. Cl. 193-43 A

6 Claims



A transfer mechanism receiving nuts having a reduced pilot portion extending perpendicular to the transfer axis, separating and transferring the nuts according to the pilot position. The transfer mechanism includes an inlet passage receiving and guiding the nuts in two pilot orientations and two outlet passages each configured to receive and transfer the nuts in only one pilot orientation, in a continuous flow.

3,823,804

## BRAILLE TYPEWRITER

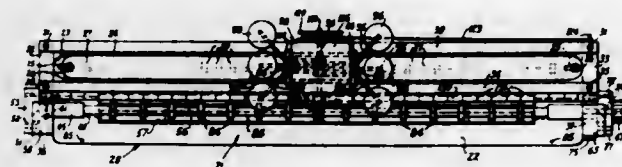
Robert C. Lokey, Box 75356, Tamal, Calif. 94964

Filed Nov. 5, 1969, Ser. No. 874,220

Int. Cl. B41j 3/32

U.S. Cl. 197-6.1

10 Claims



A braille typewriter comprising a frame and a removable and linearly adjustable die plate having a series of sets of six protuberances or points thereon corresponding to all of the units of a braille cell, and a movable carriage having six keys each corresponding to a particular one of the six units of a braille cell, each actuating a lever having an indentation in its end whereby depression of one or more keys will emboss the specific unit or units of a braille cell for a specific letter on a sheet of paper passed between the platen and the keys. The device includes a spring biased carriage advancing mechanism and ratchet and pawl means for releasing the carriage for movement upon the completion of the printing operation.

3,823,805

TYPEWRITER CONTROLLED BY A RECORD MEDIUM  
Edward M. Richards, Commack, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,403

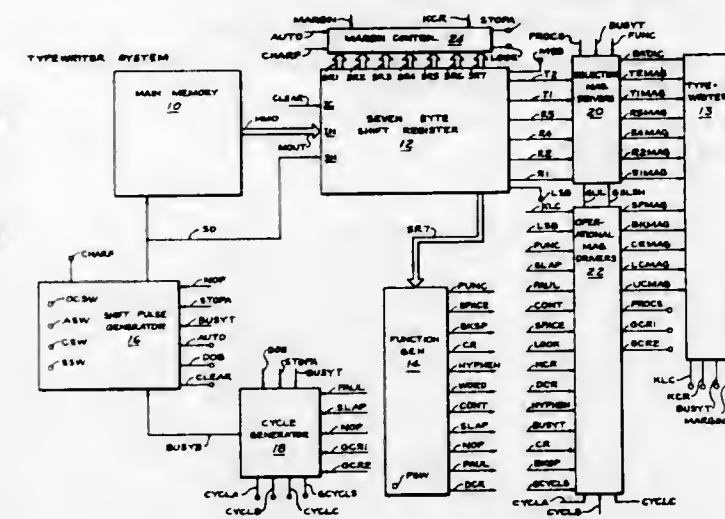
Int. Cl. B41j 5/30

U.S. Cl. 197-19

18 Claims

Connected to a typewriter controllable by coded combinations of signals is a source of the combinations to control the operation of the typewriter. In addition to the usual graphic printing instructions, signals are generated to automatically

vary the line advances following each carrier return, further signals are generated to control automatically the occurrences



of the carrier returns, while still further signals control the automatic underlining or overprinting of graphics, i.e. characters, numerics and symbols.

3,823,806

## COUNTERBALANCE TOUCH CONTROL

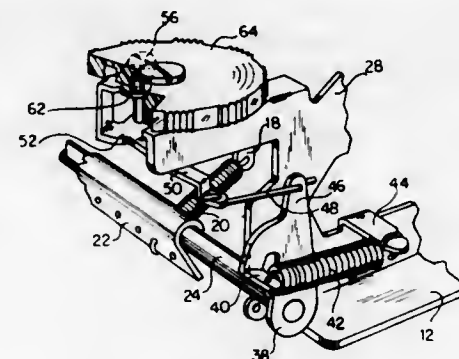
Herrick R. Diamond, Homer, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,611

Int. Cl. B41j 7/26

U.S. Cl. 197-33

7 Claims



The key depression touch of a key-actuated business machine is controlled by adjusting the position of a spring bail which simultaneously controls the tension of all the key lever springs. A manually positioned control member with attendant linkages positions the spring bail and simultaneously adjusts the tension of counterbalancing spring means to minimize the unbalanced spring forces acting on the spring bail and the entire touch control system at all touch settings of the touch control apparatus.

3,823,807

## ROTARY PRINT WHEEL MECHANISM WITH HAMMERING BRACKET

Takami Suzuki, Fujisawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1973, Ser. No. 355,062

Claims priority, application Japan, Apr. 28, 1972, 47-043165

Int. Cl. B41j 1/32

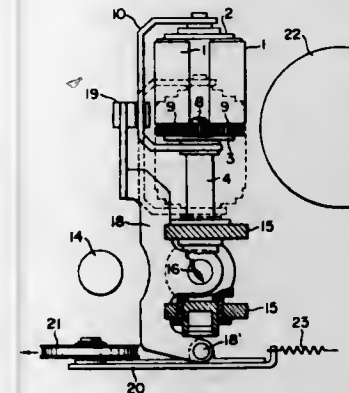
U.S. Cl. 197-55

3 Claims

A type wheel or wheels are rotably mounted between the upper and lower arms of a yoke-shaped member which in turn is drivingly coupled to a rotary shaft for rotating about the axis

thereof the type wheel or wheels, and the upper end of a hammering bracket is slidably fitted over the yoke-shaped member

turn is picked up by a suction device from an incoming conveyor and deposited in spaced relation on another conveyor, and another suction device picks up each spaced bar in turn



so that the striking force or impact is applied through the upper end to the rotary shaft thereby causing the latter to rotate toward the platen.

3,823,808

## TAPE CARTRIDGE PROVIDED WITH A DISPLAY PORTION

Minoru Murata, Yokohama; Tatsuo Nishikawa, Tachikawa, and Takayoshi Hanagata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

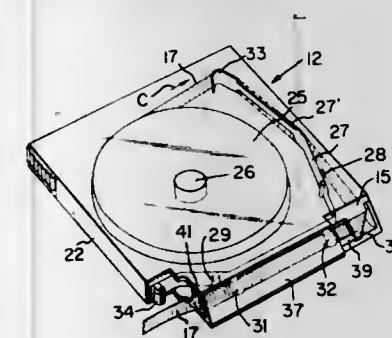
Filed Apr. 7, 1971, Ser. No. 132,057

Claims priority, application Japan, Apr. 13, 1970, 45-31840; Apr. 13, 1970, 45-31844

Int. Cl. B41j 15/00

U.S. Cl. 197-133 R

13 Claims



A tape cartridge containing therein a printing tape for use with a compact electronic computer. The tape may readily be set with respect to the computer body, and printing may be effected on the tape at an exposed portion of the cartridge by the printing device of the computer and information so printed on the tape may be viewed through a viewing window provided in the computer as the tape moves through a viewing section formed in the cartridge. The lock means is provided in the cartridge for cooperating with retaining rollers in the computer to positively and removably fix the cartridge when inserted in the computer body, a resilient member being provided in the cartridge for accomplishing smooth movement of the printing tape.

3,823,809

## ARTICLE TRANSFER

Marcel Henry, Les Chenes-Ermont, and Andre Malatray, Bois-D'Arcy, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,773

Claims priority, application France, Jan. 6, 1971, 71.00213

Int. Cl. B65g 47/100

U.S. Cl. 198-25

18 Claims

Apparatus for handling relatively soft articles such as freshly molded bars of soap effects transfer of the soap bars, as to a wrapping machine, by a system wherein each soap bar in



and delivers it to a wrapping station. During the entire transfer between the incoming conveyor and the wrapping station movement of each soap bar is accomplished without mechanical gripping or sliding of the bar along guide surfaces.

3,823,810

## DEVICES FOR HANDLING WORKPIECES BY MEANS OF CENTERLESS HOLDERS

Gerard Druge, Annecy, and Claude Valentini, Billancourt, both of France, assignors to Societe Nouvelle De Roulements, Annecy (Haute Savoie), France

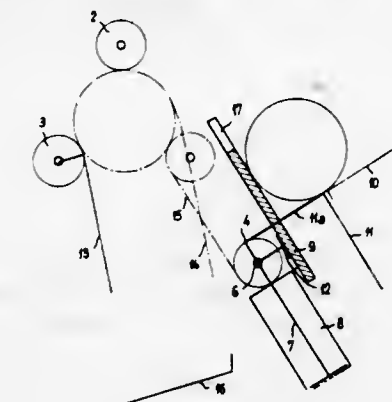
Filed Jan. 26, 1973, Ser. No. 326,781

Claims priority, application France, Feb. 2, 1972, 72.03463

Int. Cl. B65g 47/00

U.S. Cl. 198-26

8 Claims



This device for feeding, loading and discharging workpieces by loading them rotatably and centerlessly utilizes peripheral holding members of which at least one is movable for performing the loading step and constitutes the lower support of the workpiece, mounted on a movable unit displaceable along an abutment acting as a ramp for lifting the workpieces from a reception position to a loading position; this movable unit acts at the same time as a ramp for lowering the workpieces between its holding members after clearing said feed ramp, the path along which said movable holding member is caused to travel diverging from the path along which the workpieces are discharged by gravity, in order to permit this discharge.

3,823,811

## CONVEYOR MEANS FOR PAPER OR PLASTICS TUBE SECTIONS IN THE MANUFACTURE OF BAGS

Friedrich Franz Brockmuller, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Dec. 5, 1972, Ser. No. 312,354

Claims priority, application Germany, Dec. 7, 1971, 2160709

Int. Cl. B65g 47/22

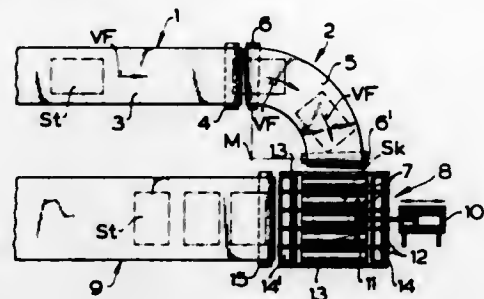
U.S. Cl. 198-29

4 Claims

A mechanism for correcting errors in the positions of stacks of flattened paper or plastics tube sections travelling on a belt conveyor followed by a curved wire belt conveyor. The errors



caused by differences in the coefficients of friction between the stacks and the successive conveyors, are corrected by an



aligning mechanism in the form of at least one transverse slide positioned downstream of the curved conveyor.

3,823,812

### MATERIAL HANDLING APPARATUS

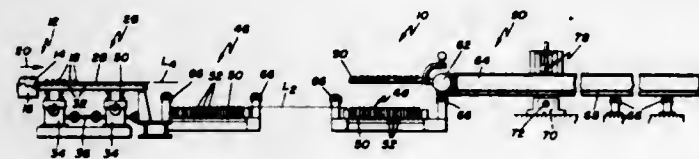
Donald Sieurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Oct. 18, 1972, Ser. No. 300,733

Int. Cl. B65g 47/26

U.S. Cl. 198—31 AB

16 Claims



### ERRATUM

For Class 198—273 see:  
Patent No. 3,823,815

3,823,814

### APPARATUS FOR ATTACHING OBJECTS TO EACH OTHER

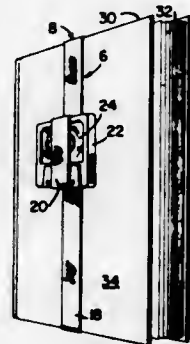
Albert K. W. Lum, 1711 Yamada Ln., Honolulu, Hawaii 96817

Filed Apr. 7, 1972, Ser. No. 242,029

Int. Cl. B65d 79/00, 63/10

U.S. Cl. 206—225

7 Claims



3,823,813

### ROLL FEED AND PACKAGE GROUP FORMING CONVEYOR

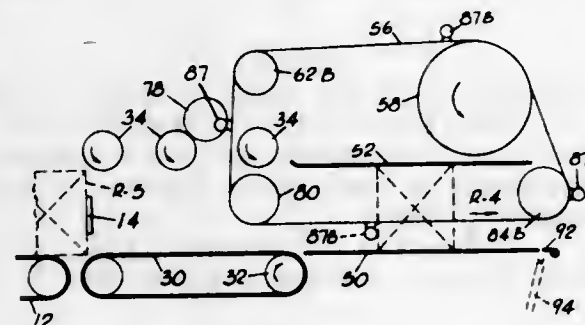
Ronald Holt, Battle Creek, Mich., assignor to Battle Creek Packaging Machines, Inc., Battle Creek, Mich.

Filed Feb. 9, 1973, Ser. No. 330,958

Int. Cl. B65g 37/00

U.S. Cl. 198—76

5 Claims



A parallel pair of supply belts deliver lines of articles (rolls) to retractable gates. Higher speed belts with top pressure rolls

spaced above them separate pairs of articles from following articles on the supply belts and create gaps in the lines. Parallel vertical chain loops at each side of the lines have pusher bars extending therebetween and advance the bars downwardly between the pressure rolls and into the gaps in the lines of articles, then push the package group on to and transversely across the way of a receiving conveyor where incoming flights bars pick up the package group and feed it at right angles to a wrapping machine. The number of pusher bars on the chain loops and their speed can be varied to advance single or plural pairs of articles to the receiving way, and the distance of advance of the pusher bars can be adjusted to center package groups of different sizes in front of the flight bars on the receiving conveyor. The gates are synchronized with successive flight bars on the receiving conveyor, and the speeds of the accelerating belts, pressure rolls, and chain loops are adjustable to advance package groups of different lengths to the center of the receiving conveyor. A package guiding gate swings up behind package groups having plural pairs of articles as the group is delivered to the receiving conveyor.

An elastic band defines a double loop for placement about a book, a book cover or the like and about a container for audiovisual material or the like used in conjunction with the book. The double loop is stitched together along a straight line for minimal band bulk between the book and the container to reduce the required storage space. The band has a sufficient width to both firmly hold the container and to orient it with respect to the book for a neat and orderly appearance.

3,823,815

### APPARATUS FOR MARSHALLING ELONGATED ARTICLES

David Charles Bretten, and Peter Charles Chown, both of Bridge Works, St. Germans, Kings Lynn, Norfolk, England

Filed June 2, 1971, Ser. No. 149,298

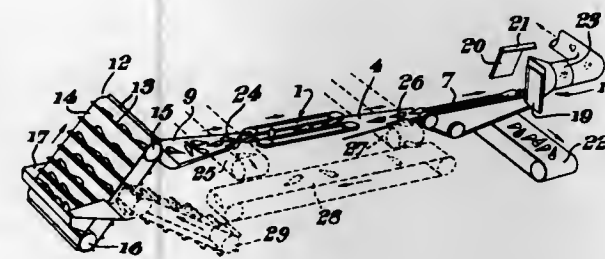
Int. Cl. B65g 47/24

U.S. Cl. 198—33 R

2 Claims

Marshallling apparatus for delivering, from a bulk supply, tapered vegetables and generally similarly shaped articles in single file with their larger ends leading includes a carrier comprising two elongated members diverging in the direction of delivery, and a lower retarder to engage the lower smaller

ends of the articles supported, with the larger ends uppermost, by and between the elongated members, to turn the articles into the required alignment. An elevator feeds the articles from a hopper to a multi-level multi-unit form of the ap-



paratus, each unit comprising a vibratory tapered trough to marshal and feed the articles in single file to the carrier, and a similar trough may receive the articles from the carrier to present them to automatically actuated means for processing their larger ends.

3,823,816

### WATER-SOLUBLE PACKAGE

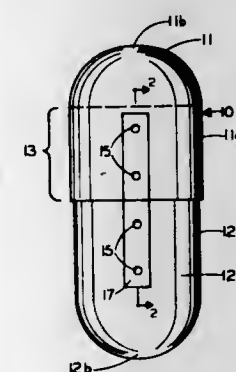
John Controulis, Grosse Pointe Farms; Kenneth N. Larsen, Southfield, and Larry M. Wheeler, Grosse Pointe Farms, all of Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Feb. 3, 1972, Ser. No. 223,123

Int. Cl. A61k 9/04

U.S. Cl. 206—.5

6 Claims



A water-soluble package is provided in the form of a hard shell capsule filled with powder, granules, or the like. The capsule shell is apertured, and the apertures or holes are covered over by a water-soluble barrier film which seals the holes and blocks any escape of the contents from the shell. The film is more water-soluble than the cap and body parts of the shell so that when the package is contacted with water, as in the digestive tract, the film rather than the shell dissolves first exposing the contents for dissolution and/or release by way of the apertures while the shell is still intact.

3,823,817

### PAPER HANGER'S TOOL BOX

Charles R. Hughes, 4800 Jella Way, North Highland, Calif. 95660

Filed Nov. 15, 1972, Ser. No. 306,560

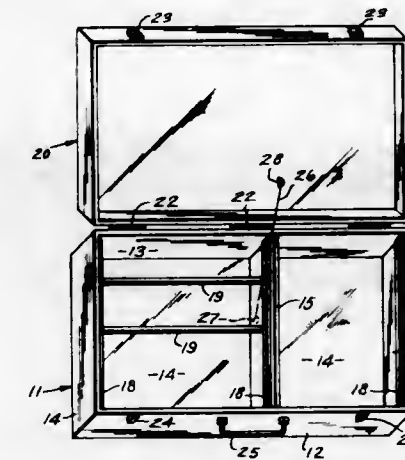
Int. Cl. B65d 57/00, 85/00; A45c 11/00

U.S. Cl. 206—349

4 Claims

A tool box consisting primarily of a tray and hinged lid portion with compartment means for a brush and tools, the com-

partments being covered by removable lid portions and the hinged cover of the tray includes a ruler for measuring and a



3,823,818

### BELTED PREFORMS

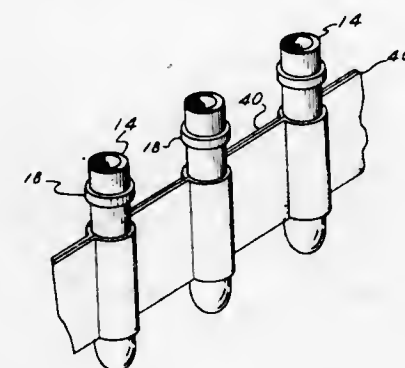
Charles H. Shaw, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 24, 1972, Ser. No. 220,218

Int. Cl. B65d 73/00, 85/20

U.S. Cl. 206—390

1 Claim



Preforms used in blow molding plastic containers are sequentially affixed at spaced locations along a disposable web. As the preforms are affixed to the web, the composite is wound on a suitable storage reel which is housed in an enclosed shipping and storage container. Thereafter, the belted preforms may at any convenient time and place be fed to a finishing unit where they are removed from the web by any suitable means, such as by severing the web or by application of heat. Each preform is then fed to a blow molding station where the fabrication of the containers is completed.

3,823,819

### COMBINED HARVESTER, GRAIN AUGER AND CLEANER

Elmer L. Bakke, Box 87, Kensal, N. Dak. 58455

Filed Oct. 17, 1972, Ser. No. 298,244

Int. Cl. B07b 9/00

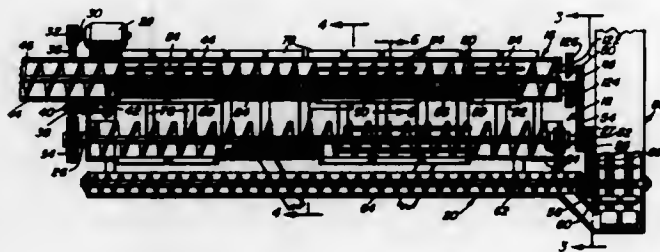
U.S. Cl. 209—12

12 Claims

An inclined grain auger conveyor provided with first and second upper and lower vertically registered auger assemblies. Both of the auger assemblies include sections therein wherein the auger screw is provided with circumferentially spaced and longitudinally extending bars and the housing portion includes removable grate sections in lieu of the more conventional screening sections which generally extend substantially the full length of each auger conveyor outer housing. The forward



end of the auger conveyor is provided with an auger extension for disposition in a pile of grain and to convey grain to the lower end of the grain cleaning portion of the auger assembly. In order to mount the cylindrical bars on the auger screw portions of the auger assemblies adjacent flutes of the auger screw are provided with sets of longitudinally spaced and aligned



notches spaced circumferentially about the auger screw and the cylindrical bars are secured within these notches. In each section of each auger assembly where the cylindrical bars are used, the usual screen portions of the housing of the auger assembly are replaced by grates wherein the grain auger and cleaner may not only clean but also thresh the cut grain being handled by the auger and cleaner.

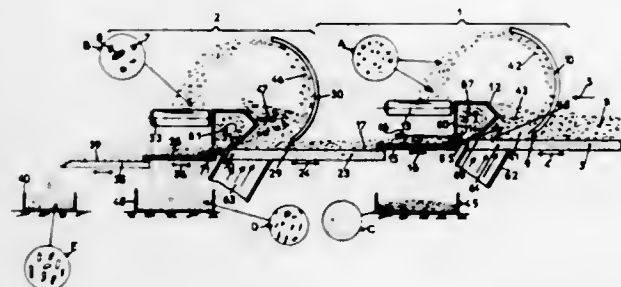
3,823,820

# APPARATUS FOR SEPARATING COMMINUTED ELECTRICAL WIRE

Guy Sesson, Chemin du Grillon, Caluire (Rhône), France  
Filed Apr. 26, 1972, Ser. No. 247,800  
Int. Cl. B07b 9/00

U.S. Cl. 209-44

3 Claims



A combination stratifier and sifter comprising at least one reciprocating porous table which delivers material to the sifter. A first deflector having a concave surface on its downstream side is arranged upstream and spaced above the table. A second V-shaped deflector arranged downstream of the first deflector forms part of a casing having an open side adjacent and spaced from the table. A blower directs air through the table and on both sides of the second deflector thereby blowing lights up the concave surface of the first deflector and setting up an eddy current within the casing. Air escapes from beneath the casing upstream and downstream to aid the separation.

3,823,821

# METHOD AND APPARATUS FOR PRODUCING WEIGHT CONTROLLED GROUPS OF SLICED FOOD PRODUCT

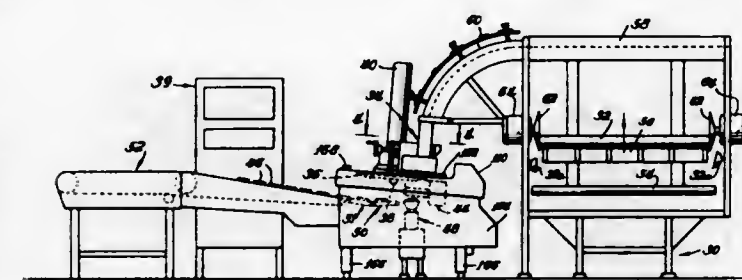
Gary Leonard Wallace, Oak Lawn, Ill., assignor to Chemetron Corporation, Chicago, Ill.  
Filed Sept. 28, 1972, Ser. No. 293,146  
Int. Cl. B07b 13/08

U.S. Cl. 209-74 R

6 Claims

A method and apparatus for producing weight controlled stacks of counted slices cut from an elongated mass of food product includes means for feeding the mass longitudinally along a downward feed path into a cutting path normal thereto, a rotary knife movable around the cutting path to cut

slices from the mass, means below the cutting path for accumulating a selected number of the slices into a group, means positioned below the accumulating means for weighing a group of slices and producing a signal in response to the



weight thereof, means for removing the group from the weighing means after the signal is produced, means for varying the rotary speed of the knife around the cutting path according to the weight signal, and means for accepting or rejecting weighed groups in response to the weight signal.

3,823,822

# PUSHUP GAUGE

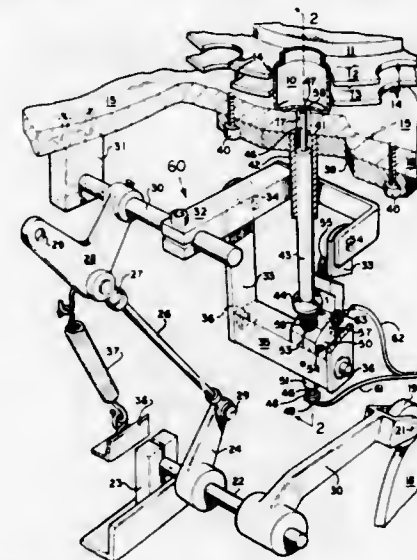
Ronald Cochran, Roxana; August J. Federle, Godfrey, and Samuel W. Marsh, III, Alton, all of Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 7, 1973, Ser. No. 357,685

Int. Cl. B07c

U.S. Cl. 209-80

15 Claims



An inspection device for glass containers to check for bottom pushup height, more particularly, to check for those containers having a rejectably flat pushup or a rounded bottom and therefore unstable characteristics during handling and filling, the device being adaptable for incorporation into a multistation automatic container inspection apparatus. A probe shaft is positioned below the center of the container and mounted in an elevating apparatus to move the probe shaft upward into contact with the container. The design allows for relative downward movement between the probe and the elevating apparatus when the upward movement of the probe is restricted by the container before the elevating apparatus completes its upward travel. An open switch made of one contact point on the probe and a second on the elevating apparatus is set open a distance determined by the minimum allowable height of a container bottom pushup, and the level beyond that height to which the probe is set to travel, that distance then being the amount of allowable relative motion before the switch is closed. When the switch is closed, an electrical circuit is completed, activating an indicator device to signal that a defective container is in the device, or activating an automatic discharge mechanism to dispose of the container.

3,823,823

# CLEANING SYSTEM AND METHOD

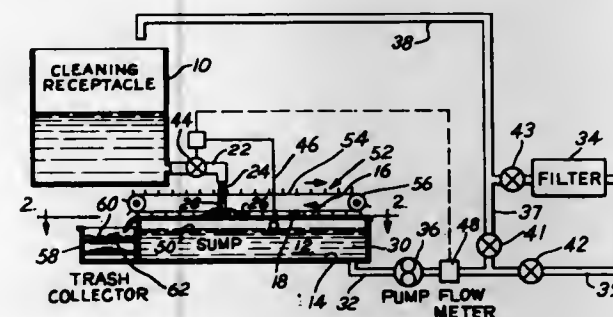
Henry J. Dokter, Lansing, and Robert P. Clark, Barrington, both of Ill., assignors to F. W. Means & Company, Chicago, Ill.

Filed Apr. 4, 1972, Ser. No. 240,980

Int. Cl. B01d 29/04

U.S. Cl. 210-79

36 Claims



A cleaning system and method includes a screen for removing lint and other large solids from cleaning solvents. The dirty solvent is discharged from the cleaning receptacle at a location spaced from the screen and the lint and other solids accumulate upon the screen while the solvent passes through the screen where it is collected in a sump. At least a portion of the solvent in the sump is returned to the cleaning receptacle and control means controls the discharge rate of the solvent from the receptacle, either in response to the liquid level in the sump or to the flow rate of the liquid being returned to the receptacle, to maintain the solvent in the sump out of contact with the screen. Periodically the lint which has accumulated on the screen is scraped from the screen and discharged by way of a trash conveyor.

3,823,824

# PORTABLE DRINKING WATER PURIFIER

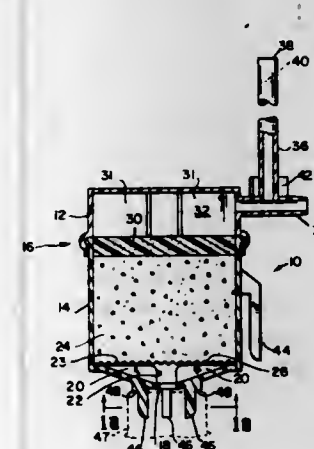
Sam Close, R.R. No. 5, Lebanon, Ind. 46052

Filed Sept. 21, 1972, Ser. No. 291,006

Int. Cl. B01d 35/00

U.S. Cl. 210-86

14 Claims



For use with an adjustable flow faucet including a delivery port and a manually adjustable control valve, a portable disposable water filter comprising a housing having an inlet end portion and an opposite discharge end portion, and a filtering medium disposed between the end portions and through which the water must pass in movement from the inlet end portion to the discharge end portion. The inlet end portion is formed to provide a space for receiving water to be filtered, and this space is connected to the faucet delivery port. A device for visually indicating when the water pressure in the said space is at a predetermined level corresponding to the desired flow rate through the filtering medium is provided.

This visual indicating device preferably is proportioned and designed to exhaust excessive unfiltered water away from the space to reduce the water pressure in the space to the desired level and/or to maintain it at or below that level. In one embodiment of the invention, the space above the filtering medium is an open container into which the water to be filtered may be deposited. In another embodiment, the water is deposited in a collapsible container, and the container is collapsed to move the water through the filtering medium.

3,823,825

# WATER TREATMENT FILTER BED FOR SEWAGE SYSTEMS

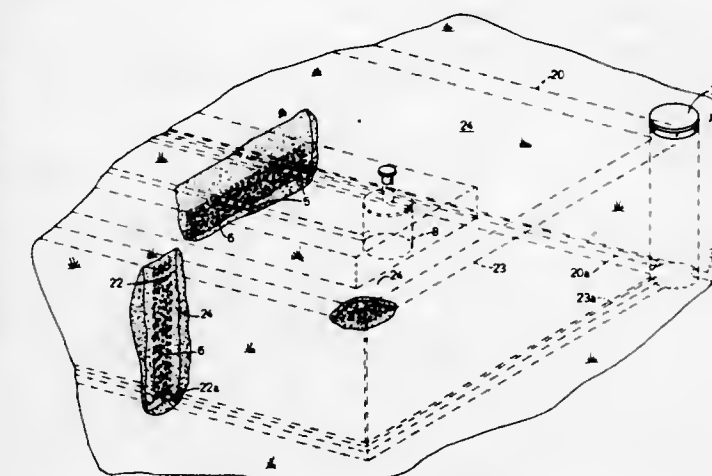
Joseph L. Bergles, Rt. 2, Box 385-3901 3 Mile Rd., Franksville, Wis. 53132, and Marvin A. Nelson, Rt. 1, Box 169, Union Grove, Wis. 53182

Filed June 15, 1973, Ser. No. 370,218

Int. Cl. E02b 11/00; B01d 23/16

U.S. Cl. 210-170

5 Claims



A trickle-type water treatment filter bed formed in the ground for receiving water of a sewage plant and which absorption bed has a drain wall around its sides and which functions to prevent saturation of the absorption bed. The drain wall means for the absorption bed finds particular utility in soils of poor permeability. The drain walls have tile means located at a depth lower than the tile means in the absorption bed and the drain walls function to prevent surface water from running into the absorption bed thereby contributing to its saturation, and also functions to drain off excessive water in the absorption bed so as to permit the absorption bed to function in a proper manner.

3,823,826

# HORIZONTAL FILTER PRESS

Dieter Wieland, and Hans Becker, both of Bad Kreuznach, Germany, assignors to Seitz-Werke G.m.b.H., Bad Kreuznach, Germany

Filed Feb. 20, 1973, Ser. No. 333,765

Claims priority, application Germany, Feb. 21, 1972, 2207984

Int. Cl. B01d 33/00

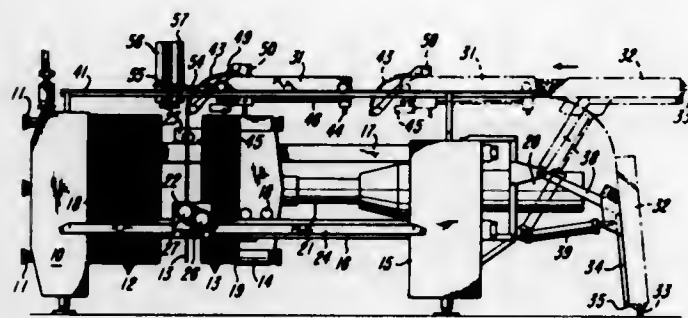
U.S. Cl. 210-225

14 Claims

A horizontal filter press, which includes a device for separating the plates and which also includes a conveyor arrangement for conveying filter members into position to be supplied to opposite sides of the plates, with the conveyor arrangement including feeding and guiding means for withdrawing the filter members from the conveyor arrangement and for



guiding the filter members into position relative to the plates. Also carried by the conveyor arrangement is a cleaning device



operable for scraping the opposite sides of the filter plates and for supplying cleaning jets for cleaning the filter plates or the filter members thereon.

3,823,827

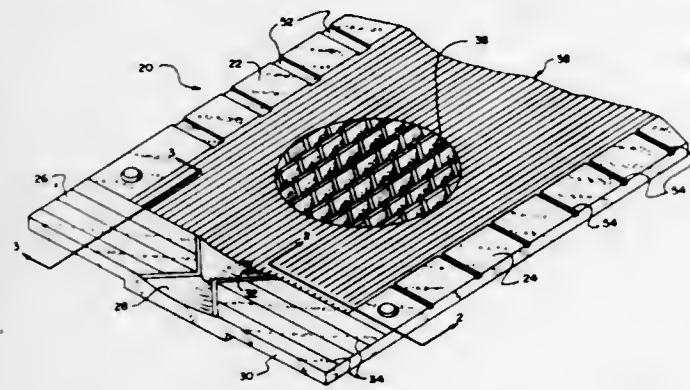
**MEMBRANE SUPPORT SYSTEM**

David L. Radford, Salt Lake City, Utah, assignor to Vital Assists, Inc., Salt Lake City, Utah  
Continuation-in-part of Ser. No. 106,184, Jan. 13, 1971, Pat. No. 3,723,305. This application Apr. 11, 1972, Ser. No. 242,994

Int. Cl. B01d 31/00

U.S. Cl. 210-238

11 Claims



An extracorporeal hemodialyzing system formed of a plurality of stacked plates defining a convoluted path for a tubular membrane. Each plate has a removably attached flexible veneer including an improved wedge support system formed of wedged shaped support elements which are easily machine-tooled and which accommodate adequate membrane support with reduced masking. Dowels and mating recesses maintain the plates and connected veneers in proper alignment. The plates are assembled on a novel clamp assembly which evenly distributes a compressing force throughout the stacked plates such that a generally uniform pressure exists over the membrane path.

3,823,828

**PROPELLING ARRANGEMENT FOR OIL AND GARBAGE SKIMMER CRAFT**

Abram Yakovlevich Derzhavets, prospekt Gagarina, 4, kv. 5; Petr Grigor'evich Kogan, ulitsa Perekopskoi divizii 2, kv. 14; Vladimir Nikolaevich Semenov, ulitsa Varnenskaya, 19, korpus 8, kv. 29, and Viktor Iosifovich Tabachnikov, ulitsa Varnenskaya 19, korpus 8, kv. 31, all of Odessa, U.S.S.R.

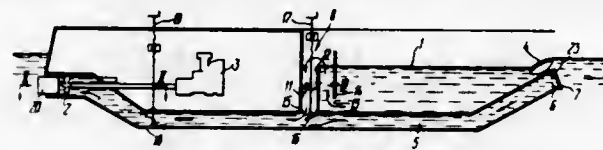
Filed May 8, 1973, Ser. No. 358,360  
Int. Cl. B01d 35/02

U.S. Cl. 210-242

5 Claims

A propelling arrangement for self-propelled oil and garbage skimmer craft having a collecting receptacle, comprises a water jet and a duct for taking in water and delivering it to the

water jet. The intake hole of the duct is located below the means for water inflow to the collecting receptacle of the skimmer craft, due to which a water stream entering the duct



draws in the upper layer of water together with floating impurities towards the means for water inflow to the collecting receptacle.

3,823,829

**APPARATUS FOR REVERSE OSMOSIS OR HYPERFILTRATION TREATMENT OF FEED SOLUTIONS**

Barry David George Mantle, Kent, and Samuel Alan Hill, Motherwell, both of England, assignors to Babcock and Wilcox Limited, London, England

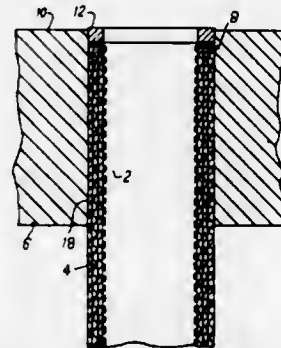
Filed May 16, 1973, Ser. No. 360,924

Claims priority, application Great Britain, May 18, 1972, 23440/72

Int. Cl. B01d 31/00

U.S. Cl. 210-321

10 Claims



Tubular membranes used in apparatus for reverse osmosis or hyperfiltration treatment of feed solutions, comprising a tubular semi-permeable membrane and a coaxial porous support tube, have improved end seals in which the support tube is provided with resilient end portions, a portion of the membrane at each end extends radially of the end face of the corresponding resilient end portion of the support tube and sealing means, e.g., O-rings or washers, urge the radially extending portions of the membrane into sealing contact with the resilient end portions.

3,823,830

**MAIN VALVE FOR ROTARY FILTERS**

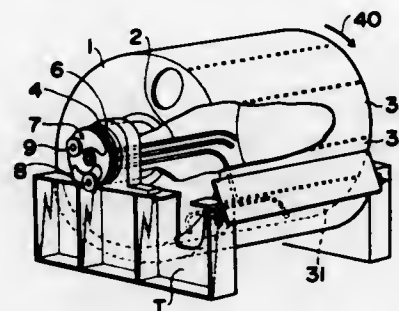
Yukio Hayafune, Tokyo, Japan, assignor to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,574

Int. Cl. B01d 33/00, 33/06

U.S. Cl. 210-330

1 Claim



A main valve having an exhaust port for filtrate and another exhaust port for gases, each being provided with an exchange-

able baffle plate covered with wear resisting material. Mounted between the main valve and the wear plate is a main plate having an annular groove, in which the first and the second bridge blocks are fitted.

3,823,831

**STRAINER DEVICE FOR LIQUIDS**

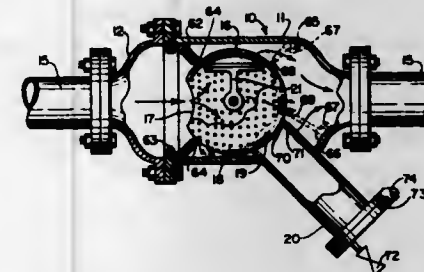
Henry P. LeBlanc, Jr., 1201 Transcontinental Dr., Jefferson Parish, La. 70001

Filed Nov. 19, 1971, Ser. No. 200,495

Int. Cl. B01d 35/02

U.S. Cl. 210-408

8 Claims



The present invention is concerned with an improved straining device for separating solid materials from a fluid stream. More specifically, the present invention relates to an in-line strainer or filter for removing solid material from a fluid stream without interrupting the fluid flow and during which operation the strainer element can be back flushed without blowing the system down. The present strainer device basically comprises a ball shaped strainer element rotatably mounted within a strainer body, the strainer element being provided with an inlet into which the debris containing fluid is directed whereby the debris is continuously collected within the ball shaped strainer element. Screen closure means are provided within the strainer element whereby its inlet can be closed off to retain the debris within the strainer element which is back flushed by rotation thereof during which time the fluid stream is continued to be strained. Clean out means are provided in conjunction with the ball shaped strainer element whereby the debris therein can be collected in a sump reservoir without blowing the system down, after which the ball shaped strainer element is returned to its normal straining position.

3,823,832

**PORTABLE POLE**

Roy L. Cobb, 716 Bennington, Kansas City, Mo. 64125

Filed Dec. 4, 1972, Ser. No. 311,687

Int. Cl. D06f 53/00

U.S. Cl. 211-119.01

7 Claims



A portable pole for use as a line support and the like, includes an elongated generally upright standard adapted to have a lower end portion thereof supported on or extending into a support surface and a cross member mounted on the

standard adjacent the lower end portion and engageable with the support surface and a pair of inclined lateral brace members, each extending between and connected to the standard and to a respective opposite end of the cross member. A brace structure has an upper end portion pivotally mounted on the standard at a position above the lateral brace members and has a lower end portion engageable with the support surface at a location spaced from the cross member and a connector mounted on the standard adjacent the upper end thereof for receiving and supporting an elongated line extending from the standard in a direction substantially normal to the cross member.

3,823,833

**POLYUREAURETHANE SHOCK ABSORBING UNIT**

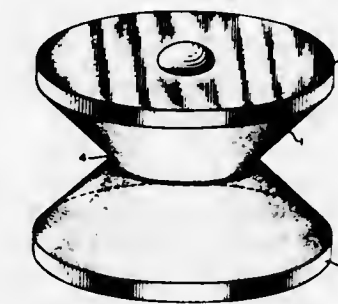
Daniel A. Chung, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 8, 1973, Ser. No. 386,688

Int. Cl. B61g 9/10

U.S. Cl. 213-40 R

12 Claims



A polyureaurethane shock absorbing unit prepared from an adjusted and balanced mixture of specific diamines, di-isocyanates and a manipulative determined molecular weight balance of predetermined polyether polyols and polyester polyols. The unique shock absorbing unit is characterized by withstanding at least 300 cycles of a cyclic shock endurance test when of the prescribed configuration.

3,823,834

**METHOD AND DEVICE FOR PERFORMING THE INSERTION OF PILING STRIPS IN TIMBER PACKAGES**

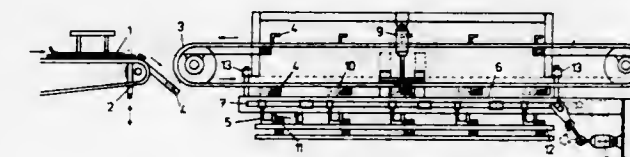
Alpo Rysti, Frisantsintie 22, 02240 Frisans, Finland

Filed Nov. 3, 1971, Ser. No. 195,176

Int. Cl. B65g 57/06

U.S. Cl. 214-6 DK

4 Claims



A device used for inserting piling strips into a timber package includes a conveyor, supporting hooks carried by the conveyor and carrying the strips, a vertically movable frame, spaced fetching hooks and means moving the fetching hooks laterally with reference to the frame, whereby the strips move upon the fetching hooks and then upon the timber package.



3,823,835

**APPARATUS FOR TURNING OVER AND STACKING MESH MATS**

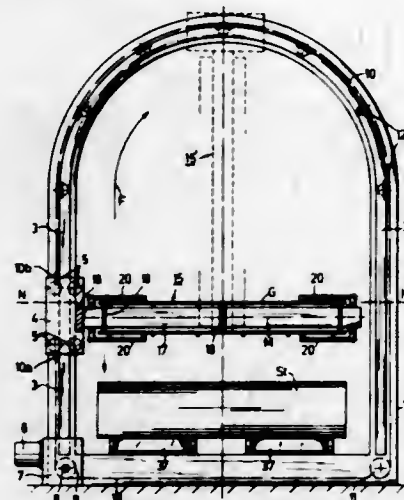
Hans Gott; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to Firma EVG Entwicklungs- u. Verwertungsgesellschaft m.b.H., Graz, Austria  
Filed Aug. 1, 1973, Ser. No. 384,741

Claims priority, application Austria, Aug. 18, 1972, 7168/72

Int. Cl. B65g 67/06

U.S. Cl. 214—6 DK

12 Claims



The invention is concerned with an apparatus for stacking mesh mats leaving a mesh production machine and for turning at least some of the mats about their longitudinal axis immediately above the stack. The apparatus comprises at least one gantry which bridges the mesh feed path and which forms an arcuate track for a carriage, an arm which is rigidly connected to the carriage and has two opposite supporting surfaces for mesh mats which, when the carriage is on one of the upright side portions of its track extends across the gantry opening, and releasable guide and holding devices provided on each supporting surface of the arm to guide a mesh mat while it is being fed onto the arm and to hold it temporarily until it is stacked with or without a turning operation.

3,823,836

**VACUUM APPARATUS FOR HANDLING SHEETS**

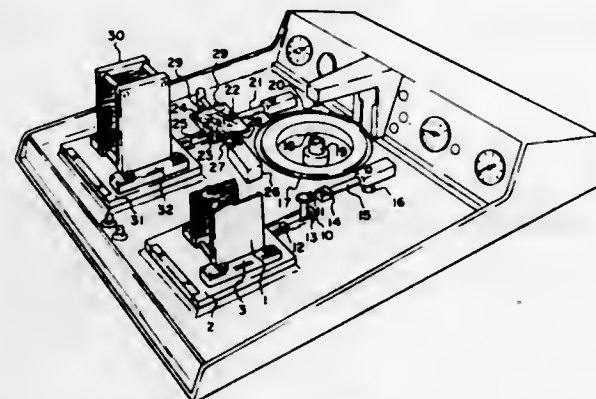
Oliver F. Cheney, and Tamas Dobo, both of Philadelphia, Pa., assignors to Flat-General, Inc., Mt. Laurel, N.J.

Filed May 22, 1973, Ser. No. 362,671

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 R

13 Claims



An apparatus is provided for handling generally flat sheets such as discs or rectangles of fragile silicon. The apparatus includes a supply carrier with a plurality of ledges to hold the sheets and a withdrawing means of a vacuum chuck to lift and

hold the sheets between the adjacent ledges, attached to an elevator to raise and lower the chuck, the level of which is indexed by a control to progressively higher ledge levels as the lower sheets are removed. A horizontal movement means is provided to bring the sheets clear of the supply carrier. In particular, the level control includes a spiral staircase the steps of which act as stops to hold the elevator at predetermined levels between the adjacent ledges so as to prevent the sheets from touching the carrier except when they are gently raised off of or lowered onto the ledges.

3,823,837

**DEVICE FOR DISCHARGING BULK MASSES FROM A STORAGE CONTAINER**

Olov Carl Gustav Wennberg, Champ du Vert Chasseur 16, B-1180 Brussels, Belgium

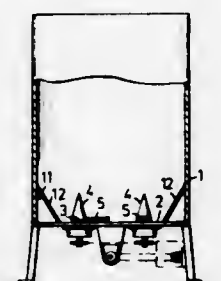
Filed Feb. 1, 1973, Ser. No. 328,603

Claims priority, application Sweden, Feb. 14, 1972, 1719/72

Int. Cl. B65g 65/48

U.S. Cl. 214—17 D

5 Claims



This invention relates to a device for discharging material, especially sticky material having a tendency to bridging from a storage container, especially a silo with a bottom of circular or rectangular shape having one or more flutes or openings through which the goods are discharged. The invention refers especially to discharging devices having scraper wings mounted on rotatable shafts and arranged to sweep circular surface portions or the surface of the bottom of the container. The invention consists in that a plurality of shafts with scraper wings are arranged so that the surface portions of the bottom swept by each wing have their peripheries passing very near each other, touching each other or intersecting each other, said peripheries passing either very near or touching the outer contour of the container bottom. The sweeping fields of the wings also extend to or over the edge of one or more discharge openings or discharge flutes in the bottom, said flutes containing feed members such as conveyor screws to feed the material falling or being swept down into the flute to a discharge end thereof. Filler bodies covering the non-swept surface portions of the bottom have guide surfaces inclined downwards and inwards from the container wall towards the bottom.

3,823,838

**BALL RETRIEVER**

August W. Gustafson, and Edna L. Gustafson, both of Pasadena Place, Corpus Christi, Tex. 78411

Filed Sept. 12, 1972, Ser. No. 288,263

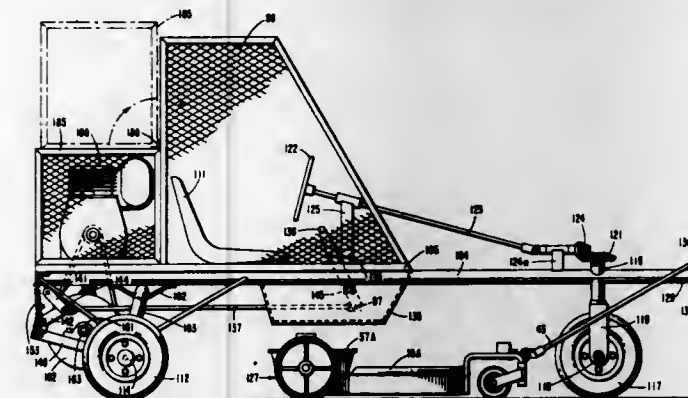
Int. Cl. B60p 1/00

U.S. Cl. 214—356

8 Claims

An apparatus for retrieving balls from the surface of a practice field has a means for diverting balls spread over the field to a pair of spaced rotating discs carrying elastomeric projections therebetween and adapted to pick up the balls and rotate them to an elevated position where they are discharged into a suitable container. The retriever is provided with an apparatus for propelling it over the ground having a motor elevated

above the drive wheels of the apparatus and connected to the drive wheels through sprocket and pulley wheels adapted to



be engaged and disengaged by means of a toggle joint and a manually actuated lever accessible to the operator of the apparatus.

3,823,839

**CARTOP CARRIER ELEVATOR**

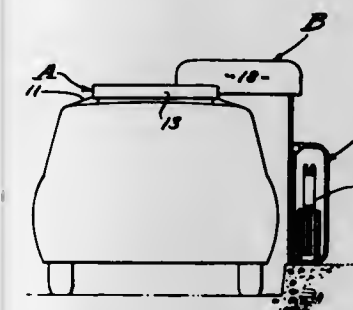
Robert C. Petzing, and Betty H. Petzing, both of 1013 3rd St., Los Angeles, Calif. 90403

Filed May 8, 1972, Ser. No. 251,379

Int. Cl. B60r 9/00

U.S. Cl. 214—450

12 Claims



An elevator mechanism for moving a cartop carrier between a ground level loading position and a roof level riding position, and comprised of a rack mounted onto the car top, a cradle shiftable laterally upon the rack between said loading position and said riding position, a carrier transported by the relative movement of the cradle and rack between said ground level positioning and said riding positioning, and coordinated means shifting the cradle and moving the carrier between said positions; the combination providing an enclosure in the riding position and which is automatically opened at the ground level positioning, and all of which is power automated.

3,823,840

**PREPUNCTURED CLOSURE**

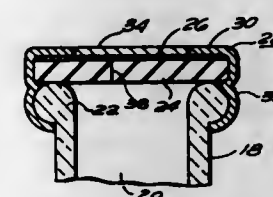
Ell A. Zackheim, Norwich, Conn., assignor to Jules Silver, Norwich, Conn.

Filed Aug. 4, 1972, Ser. No. 278,046

Int. Cl. B65d 51/00

U.S. Cl. 215—37 R

5 Claims



A closure is provided which consists of three parts and is particularly usable with a container of the type having an open

top. The three components are (1) a flat elastomeric member closing the open top, (2) a flexible impermeable and tearable barrier layer, and (3) a cap overlying the barrier and the flat member to seal the combination to the container. An arcuate slit is provided in the flat member, the slit being substantially resealed by the elastomeric properties of the seal member. However, the slit permits the insertion therethrough of a plastic canula so that a dosage may be removed without substantial exposure of the contents of the container to contamination.

3,823,841

**CLOSURE SYSTEM FOR STERILE MEDICAL LIQUID CONTAINER**

Charles K. Lovejoy, Canoga Park, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 13, 1972, Ser. No. 243,687

Int. Cl. B65d 51/18

U.S. Cl. 215—39

26 Claims



A closure system for a sterile medical liquid bottle that has a neck with external threads and an annular neck bead below these threads. This closure system includes an inner screw cap, an outer tear-off cap, and a rubber cup disposed between these two caps. The rubber cup is crimpingly held against the bottle neck bead in a bacteria-tight joint to protect the threaded area of the inner screw cap. In a procedure for opening the container to reduce chance of contamination, the outer closure is first torn off and crimping pressure relieved from the rubber cup, and then the cup is rotated to break loose the inner screw cap without completely removing it. Next, the rubber cup is vertically separated from the screw cap while the screw cap is still engaged with the bottle threads. After removal of the resilient cup the screw cap is easily unscrewed from the sterile threaded area.

3,823,842

**DOUBLE PLY WELDED PLATE TANK WALL CONSTRUCTION**

Chung-Wie Chang, No. 14, 1st Kuang Fu St., Taiwan, China

Filed Mar. 15, 1973, Ser. No. 341,761

Int. Cl. B65d 7/42

U.S. Cl. 220—1 B

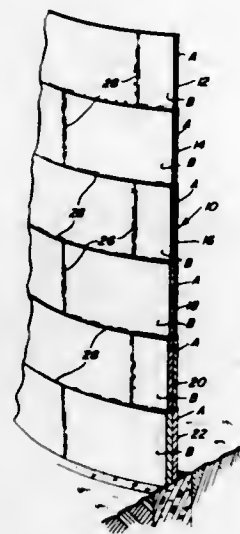
9 Claims

A large volume steel plate liquid storage tank including inner and outer wall plies of plate steel. Each of the inner and



outer walls comprises a plurality of vertically stacked courses of wall plates and the thickness of the plates of the inner and

communication with the storage container; and, as the small articles leave the outlet of the adaptor unit, they are detected



outer plies of the tank decreases as the elevation of the courses of plates increases.

3,823,843

#### LOCKING CAPSULE

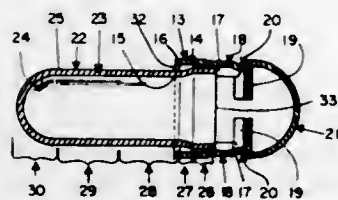
Matheson George Bernard Stephens, Plobsheim, and Robert Albert Wuest, Strasbourg, both of France, assignors to Eli/Lilly and Company, Indianapolis, Ind.

Filed Oct. 26, 1972, Ser. No. 301,045

Int. Cl. B65d 41/18

U.S. Cl. 220-42 A

20 Claims



A locking capsule is provided for packaging unit doses of physiologically active agents, said capsule having a body portion and a cap portion which are adapted to be telescopically joined together in a frictionally engaged pre-locking position prior to the filling thereof and to be fully telescopically joined together in a mechanically locked position when filled.

3,823,844

#### SMALL ARTICLE DISPENSER AND COUNTER

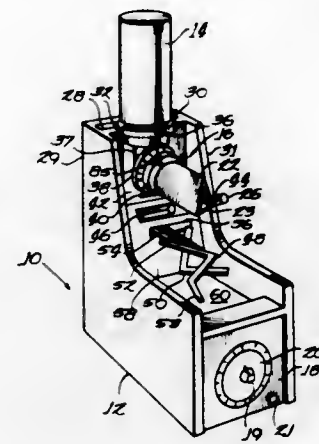
Bernard Linkemer, 535 N. Michigan Ave., Chicago, Ill. 60611; Larry Michelson, 2710 W. Summerdale, Chicago, Ill. 60625, and Glenn L. Beall, 1080 N. Ferndale, Gurnee, Ill. 60031

Continuation-in-part of Ser. No. 08,938, Feb. 5, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 234,863  
Int. Cl. G07f 11/00

U.S. Cl. 221-13

13 Claims

A device for dispensing a predetermined number of small articles from a storage container, in which the small articles move in response to a vibrator through an adaptor unit in



by a counting mechanism which stops the vibrator after the predetermined number of small articles has been counted.

3,823,845

#### TOP LOADING ARTICLE DISPENSER

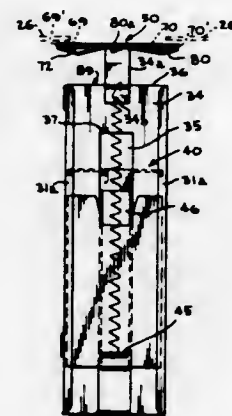
Ralph Beach Mott, Sr.; Ralph Beach Mott, Jr., and Richard C. Cantella, all of Houston, Tex., assignors to Reserv-A-Roll Co., Houston, Tex.

Filed July 18, 1973, Ser. No. 380,486

Int. Cl. A47k 10/44

U.S. Cl. 221-59

2 Claims



A top loading article dispenser including an open upper end container for receiving articles with support means in the container to receive and support the articles. The support means is spring loaded to urge the support means towards the top of the container and the top of the container is provided with cover means that are pivotally secured adjacent the top thereof so that the cover means may be pivotally moved to a position for access to the container from the top thereof for loading the container with articles. The cover means comprises a pair of members pivotally secured adjacent the top of the container whereby they may be moved to a position for access to the container and thereafter moved downwardly after the container has been loaded with articles to aid in retaining the articles in position in the container.

The pair of members are of less width than the open upper end of the container to provide a slot in the top of the container for access to the articles for removal from the container as desired. Spring means mounted on the container aid in retaining said pair of members in substantially a vertical position when loading articles into the container and for aiding in retaining the pair of members in a horizontal position.

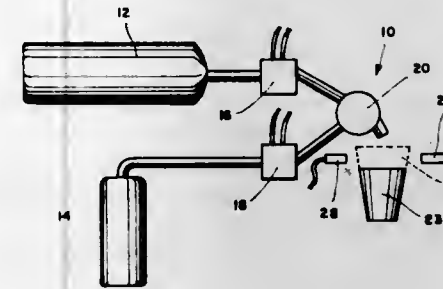
3,823,846  
MEANS FOR AUTOMATICALLY DISPENSING  
PRESELECTED VOLUMES OF A BEVERAGE  
Timothy F. Probst, 2000 Jaquelyn Dr., North Canton, Ohio 44720

Filed Aug. 26, 1971, Ser. No. 175,078

Int. Cl. B67d 5/08

U.S. Cl. 222-70

5 Claims



A control circuit for a beverage dispenser such as a soft drink dispenser. The closing of a push button actuates the dispensing solenoids and a time delay relay. The solenoids remain energized for a period of time determined by the relay and means are provided for selecting one of two time intervals to dispense either large or small drink. Counters are also provided to record the number of large and small drinks dispensed.

3,823,847

#### WATER CANNON

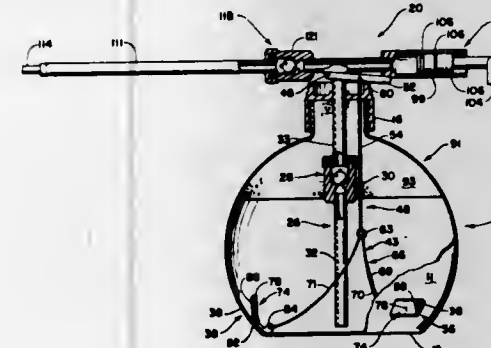
Paul C. Ware, 6880 Excelsior Blvd., Minneapolis, Minn. 55426

Filed May 21, 1973, Ser. No. 362,509

Int. Cl. A63h 33/00

U.S. Cl. 222-79

6 Claims



A water cannon for use on land or in the water. Water inlets may be opened to fill the container and closed so that the container may be moved from the water source for use. Construction of the apparatus is such that it will float when used in a water environment. The design of a compression cylinder, barrel and nozzle is such that maximum distance may be achieved with a droplet size that will not be injurious to those who use the apparatus.

3,823,848

#### SEALING PLUG FOR A CONTAINER

Martin E. Schuster, Northglenn, and Frederick J. LePenske, III, Golden, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Aug. 29, 1972, Ser. No. 284,661

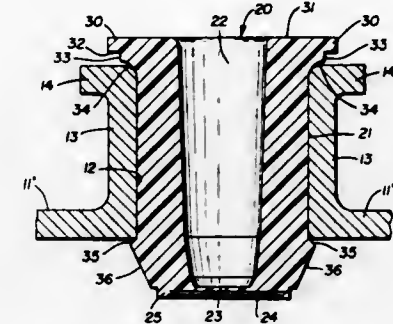
Int. Cl. B65d 83/00

U.S. Cl. 222-82

4 Claims

A sealing plug for insertion in the tap hole of a container, comprising a cylindrical body having a uniform diameter portion, said body having means extending radially outwardly on

its upper end for manual gripping for withdrawal of the plug from the hole and for preventing pushing of the plug from the hole into the container, and having means on its lower end for preventing ejection of the plug from the hole without hindering the insertion of the plug into the hole. The uniform diameter body of the plug fits snugly within and in sealing contact



3,823,849

#### VALVE FOR DELIVERING A LIQUID FROM AN AEROSOL CONTAINER

Tomaso Ruscitti, Milan, Italy, assignor to Coster Technologie Speciali S.p.A., Milan, Italy

Filed Mar. 6, 1972, Ser. No. 231,964

Claims priority, application Italy, Mar. 30, 1971, 22457/71  
Int. Cl. B65d 35/28

U.S. Cl. 222-96

6 Claims



A valve for delivering a liquid from an aerosol container, comprising a rigid body member seamed to a bottom attachable on a container mouth or inlet and having side and bottom walls defining a cavity, a first shutter which is accommodated and movable within the cavity of said rigid body member, a tubular element having one end projecting from the bottom on the opposite side to that from which said body member projects and its other end fast with said first shutter, a resilient sealing member between the rigid body member and the bottom and having a hole, in which said tubular element is forced and can move and swing, at least one passage between the inside of the tubular element and the cavity of the rigid body member adjacent to said first shutter, at least one free hole in said side wall of the rigid body member, at least one spring acting on the first shutter by pressing it against said sealing member to close said passage, a hole being provided in the bottom wall of the rigid body member, at which hole a hollow extension projects from the rigid body member, on which extension the inlet of a deformable bag can be superimposed, this bag containing said liquid and capable of being accommodated within said container, said valve being characterized in that an annular resilient strip can be superimposed to the outer surface of the side wall of said rigid body member,



this strip being forced on the side wall, superimposed to and sealing the hole in said wall, and in that at the bottom end of said first shutter means are provided for closing the hole in said bottom wall of the rigid body member under the conditions where said tubular element and first shutter are displaced against the action of said spring to press on said bottom wall.

3,823,850

## FOLDABLE TUBULAR PACKAGE

George Henry Holoubek; David Edward Ales; Harland Elmer Harms; Warren E. Erickson; Maurice A. Ditmars, and J. Keith Brookhart, all of Muscatine, Iowa, assignors to Dart Industries Inc., Los Angeles, Calif.

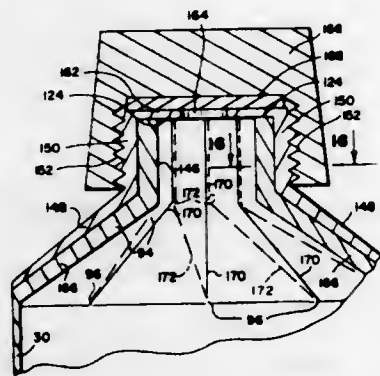
Continuation of Ser. No. 214,654, Jan. 3, 1972. This

application July 5, 1973, Ser. No. 376,725

Int. Cl. B65d 35/08

U.S. Cl. 222-107

10 Claims



A laminated settable tubular package is disclosed having integral end and body portions of the same material. The tubular package is formed with a process and apparatus which permits head and shoulder portions to be formed as a continuation of the tubular body through folding and shaping operations. The package is substantially impermeable and has particular use for containing toothpaste, essential perfumes, oils, solvents, flavorings, and other substances in which permeation of the atmosphere and/or volatilization losses are problems.

3,823,851

# DEVICE FOR DISPENSING HEATED FLUENT PRODUCTS

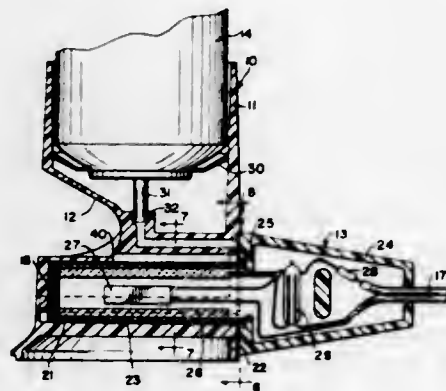
Robert S. Waters, Lancaster, Pa., assignor to Schick Incorporated, Lancaster, Pa.

Filed May 10, 1973, Ser. No. 359,026

Int. Cl. B67d 5/62

U.S. Cl. 222-146 HA

10 Claims



A dispensing device for dispensing a heated fluent product from a container comprises a molded housing having a recess in which a removable heating probe is received. The product is heated prior to being discharged by means of a series of passageways which convey the product adjacent the heated

probe. Improved heat transfer to the product and reduced manufacturing costs are obtained by forming the passageways from channels molded into the inside surface of the probe-receiving recess and a heat-conductive sleeve inserted into the recess between the probe and the inside surface. The sleeve may be made removable to enable access to the passageways for cleaning where the dispenser is to be used with multiple products. Furthermore, since the probe is removable and does not come in direct contact with the product, it may be conveniently used with other dispensing devices.

3,823,852

## SILO CONTAINER

Johann Nikowitz, Vienna, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria

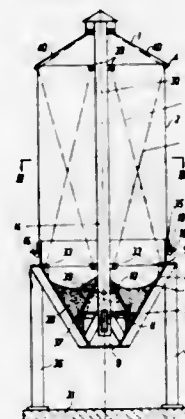
Filed Nov. 27, 1972, Ser. No. 309,884

Claims priority, application Austria, Nov. 26, 1971, 10196/71

Int. Cl. E04h 7/22

U.S. Cl. 222-185

10 Claims



A silo which has an outer silo container and an inner supporting framework supporting the container. The container is composed of roof and floor units and a foldable tubular side wall unit extending between the roof and floor units. Upper and lower connecting rings serve to connect the side wall at its upper and lower ends respectively to the roof and floor units. The supporting framework is situated in the interior of the container and includes a central supporting column which extends upwardly from the floor unit and carries the roof unit, the latter having a supporting structure which extends radially around the supporting column and which carries the upper connecting ring.

3,823,853

## POCKET-SIZE DISPENSER

Paul Peter Alden, Rebberstrasse 57, CH-8049 Zurich, Switzerland

Filed Dec. 29, 1971, Ser. No. 213,549

Claims priority, application Switzerland, Jan. 29, 1971, 1409/71

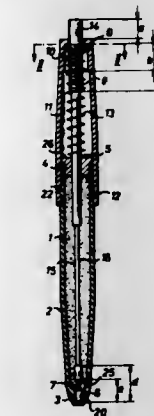
Int. Cl. G01f 11/18

U.S. Cl. 222-361

8 Claims

A pocket-size dispenser for dispensing granular goods such as sweeteners of pharmaceuticals. The dispenser has the outer form of a ball point pen with a push-button at the rear end. By pressing the push-button a piston projects from a discharge opening and releases a small quantity of goods stored inside of

the dispenser. Refilling is effected by putting the front end of the dispenser into an aperture of a refill container, then turn-



3,823,855

## GARMENT HANGER

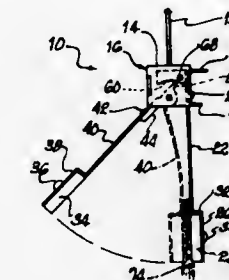
Hans M. Dohring, Gordon, Nebr. 69343

Filed Jan. 31, 1973, Ser. No. 328,419

Int. Cl. A47j 51/14

U.S. Cl. 223-96

4 Claims



ing the dispenser together with the refill container around and moving the piston in rearward direction to open the discharge opening preferably by turning the push-button.

A garment hanger construction including a pair of jaws for holding a garment. At least one of the jaws is mounted on a pivoting arm, and a latch is employed for holding the pivoting arm in closed position relative to the other arm. The arm is formed of a resilient material such as spring metal, and the latch mechanism includes a plurality of latching positions so that the jaw mounted on the pivoting arm can be pressed against a garment and so that resilient pressure can be applied to the garment until the hanger is unlatched. The unlatching operation is accomplished through manually engageable means for providing a convenient hanger structure.

3,823,854

## TROUSER PRESSES

Nicholas Wynne Everett, Holme Via Carnforth, England, assignor to Ibis Engineers Limited, Kendal, England

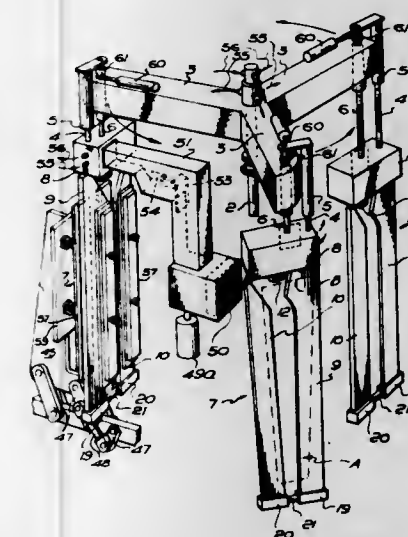
Filed July 9, 1973, Ser. No. 377,304

Claims priority, application Great Britain, July 18, 1972, 33444/72

Int. Cl. D06c 5/00

U.S. Cl. 223-73

9 Claims



An industrial trouser press comprises a stationary frame housing a central shaft supporting main arms each of which carries a cylinder having a piston rod secured to a box supporting the relatively movable depending hollow arms of a pressing assembly on which the trouser legs of trousers are mounted to surround a perforated steam chest, and periodically the shaft is turned for moving each pressing assembly in turn into a relatively stationary pressing station in registry between pressing heads capable of substantially horizontal movement to contact the trouser carrying arms, and each pressing assembly is rocked through 90° while moving between a loading station and the pressing station and between the pressing station and an unloading station.

3,823,856

# ACCESSORIAL DEVICE FOR HOLDING A HELMET OR THE LIKE ON AN AUTOBICYCLE

Masaaki Uchida, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

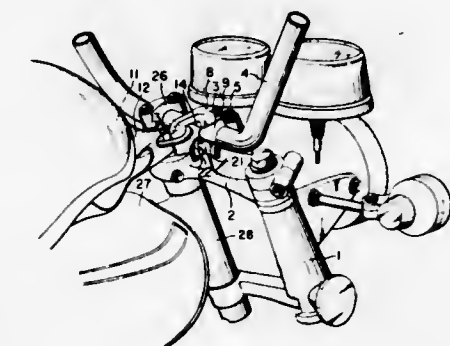
Filed Sept. 28, 1972, Ser. No. 292,913

Claims priority, application Japan, Sept. 30, 1971, 46-89554

Int. Cl. B62j 39/00

U.S. Cl. 224-36

3 Claims



An accessorial device for holding a helmet or the like on an autobicycle is comprised of a handle setter for holding the handle of the autobicycle on the frame thereof, a hook-shaped cover member of which root portion is pivotally connected to the handle setter so as to cover at least part of the upper surface of the handle setter while the cover member holds a loop portion of the tie band of a helmet or the like at its hook-shaped portion in association with the upper surface of the handle setter, and a locking means for locking up said cover member against the handle setter, whereby the helmet or the like is certainly held on the autobicycle not to be stolen.



3,823,857

## SPARE TIRE CARRIER

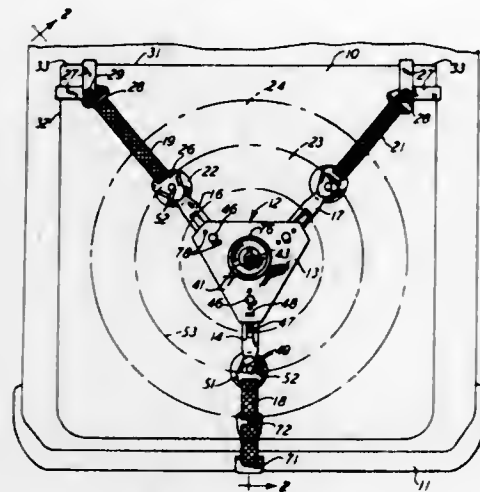
Carl F. Yandt, 703 Oak Ter., La Cresent, Minn. 55947

Filed Apr. 17, 1972, Ser. No. 244,610

Int. Cl. B62d 43/00

U.S. Cl. 224-42.24

7 Claims



A spare tire carrier for mounting onto an automobile and supporting an assembled tire and rim, including a plurality of radially extending arms having cushion supports underneath for supporting the carrier on the automobile. The arms are pivotally interconnected through a connector, and upstanding lugs engage the tire rim and align the rim on the carrier, and a threaded member holds the rim down onto the carrier. Straps extend from the arms and hooks are on the ends of the straps for hooking onto the trunk lid and onto the automobile bumper.

3,823,858

## SPARE TIRE CLAMP

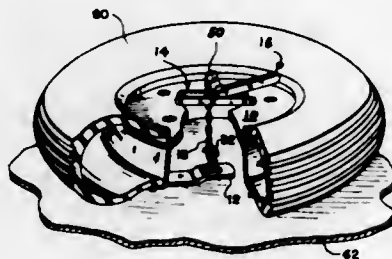
Herbert E. Schnakenberg, 315 S. Boswell, Crete, Nebr. 68333

Filed May 29, 1973, Ser. No. 364,631

Int. Cl. B62d 43/02, 43/08

U.S. Cl. 224-42.24

9 Claims



To clamp a spare tire in place within the trunk of an automobile, a clamp includes two flat metal base struts held in parallel spaced-apart relation to each other by tubular spacers and rivets, with the edges of the struts being adapted to rest against the top of the tire over its central opening. The bifurcated end of a handle formed from two flat metal stampings fastened together at one end and spread apart at the other is pivoted at a central point on the base struts to:

1. lift the upper end of an upstanding arm fastened between the stampings where the bifurcated sections come together when the handle is pivoted downwardly to tighten a chain connected between the end of the arm and a bracket beneath the tire; and
2. lower the arm when the handle is raised so as to loosen the chain. The clamp is sufficiently narrow to pass through the center of the tire when the tire is being removed or placed into the trunk.

3,823,859

## HELICAL WEB PATH PROCESSING RACK

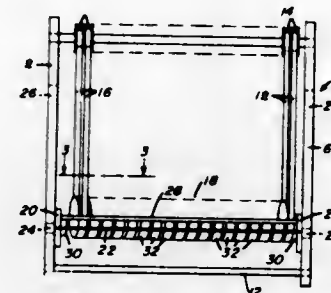
Robert I. Anderson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,202

Int. Cl. B65h 17/42

U.S. Cl. 226-118

8 Claims



A helical web or film path processing rack for use in a processing device comprising a tray having a plurality of semi-cylindrical cavities arranged in parallel side-by-side relation. The tray is in vertical register with a shaft, and each cavity has planar sides lying in parallel planes transverse to a plane passing through the axis of the shaft and through the centers of the openings in the upper surface of the tray defining the cavities. The tray supports a plurality of film spools extending into the cavities.

3,823,860

## WEB GUIDING APPARATUS

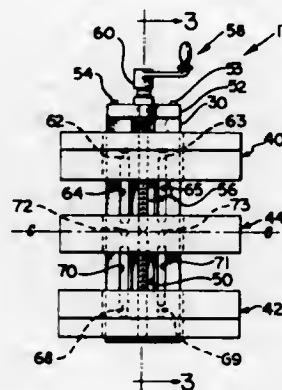
Jack I. Perry, Sylvania Township, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 2, 1973, Ser. No. 346,955

Int. Cl. B65h 23/32

U.S. Cl. 226-199

17 Claims



Apparatus for guiding webs of material in such a manner as to maintain a fixed center line regardless of the width of the web. A main carrier member is fixed to a base. The center line which must be maintained regardless of web width passes through the center of the vertical height of the main carrier. Upper and lower movable web guides are slidably mounted on the main carrier. An adjustment mechanism allows both the upper and lower web guides to be moved toward or away from the fixed center line simultaneously. This movement keeps both web guides the same distance away from the fixed center line to allow guiding of webs of differing widths. An alignment mechanism is used to initially set both web guides the same distance away from the fixed center line. This is then locked, thereby maintaining the equi-distance relationship even though the actual distance value is increased or decreased by operation of the adjustment mechanism.

3,823,861

## REPAIR PRESS FOR PALLET STRINGERS

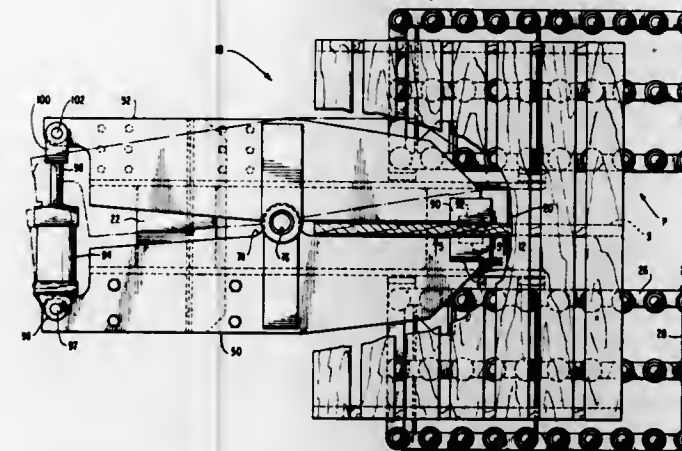
John Calvin Jureit, Coral Gables, and Benjamin Harry Kushner, Miami, both of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Mar. 26, 1973, Ser. No. 344,642

Int. Cl. B27f 7/02

U.S. Cl. 227-153

10 Claims



The press includes a support table comprised of a pair of outrigger assemblies carrying upstanding ballbearings. A pair of arms are carried by the press and at like ends mount press platens having magnets recessed in opposed platen faces for supporting reinforcing plates to be embedded into the sides of the damaged stringer portion undergoing repair. One of the arms is pivotally secured to the press at a location intermediate the ends of the arm. The opposite ends of the arms mount a hydraulic cylinder whereby the platen carried by the pivotally mounted arm is movable toward and away from the other fixed platen. In use, a pallet is disposed on the bearings and located such that the portion of the stringers undergoing repair is positioned between the opposed platen faces. The cylinder is actuated to pivot the one arm whereby the platens embed the teeth of the reinforcing plates carried thereby into the opposite sides of the stringer.

3,823,862

## CLAMPING TOOL

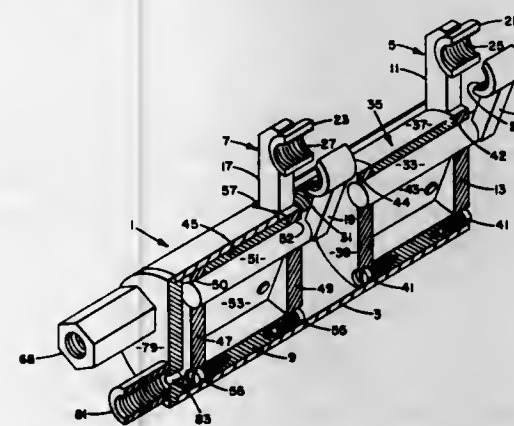
Wayne R. Reedy, Cazenovia, and Edward F. Russ, Baldwinville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,773

Int. Cl. B23k 1/00

U.S. Cl. 228-4

11 Claims



A tool for forcing a pair of tubular workpieces coaxially together, comprises a stationary clamp for gripping one workpiece and a second clamp mounted on a movable piston for gripping the other workpiece. The clamps each include a fixed arm, and a rotatable arm extending from a shaft which is

rotatable in response to the application of fluid pressure to a vane fixed to the shaft. Movement of the piston towards the first clamp urges workpieces held by the clamps into a telescoping relationship.

3,823,863

## COMPENSATING BASE FOR LEAD-FRAME BONDING

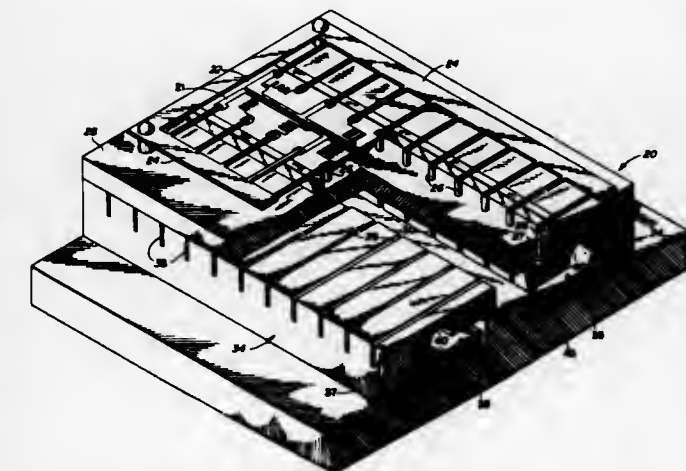
Benjamin Piechocki, Bethlehem, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 333,267, Feb. 16, 1973, which is a division of Ser. No. 207,854, Dec. 14, 1971, Pat. No. 3,729,810. This application July 30, 1973, Ser. No. 383,874

Int. Cl. B23k 19/00

U.S. Cl. 228-6

7 Claims



Bonding of lead frames to ceramic substrates is performed on a bonder with a compensating base. The compensating base includes a series of cantilever spring elements attached to a rigid support. The elements are reduced in cross sectional area near the point of attachment to the rigid support. A free end of each of the spring elements is placed under each point of the substrate to which a lead is to be bonded. The elements accommodate to variations in thickness and waviness of the substrate so that it does not crack during the bonding operation.

3,823,864

## CONTAINER WITH A CATCH FOR PRESSING AND OPENING A LID

Hachiro Ohkubo, Osaka, Japan, assignor to Kinki Printing Company Limited, Osaka-shi, Japan

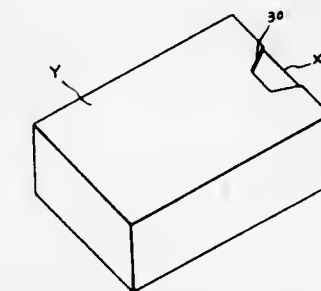
Filed June 1, 1972, Ser. No. 258,824

Claims priority, application Japan, June 11, 1971, 46-49755

Int. Cl. B65d 5/38

U.S. Cl. 229-19

1 Claim



This invention relates to a container. The said container comprises a hexahedronal outer case with its right side open and is provided with a cut-off portion at the right edge of its upper wall, and an inner case having a base plate, front and back walls, a left side wall and a compressible and deformable right wall in the shape of a quadrilateral three-dimensional



body. When the top of the quadrilateral three-dimensional body is pressed and opened, that pressed body constitutes the catch for pressing and opening a lid. The said inner case is slidable within the said outer case.

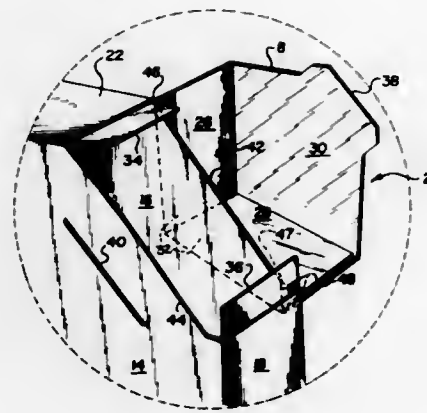
3,823,865

**PACKAGE FOR CIGARETTE AND THE LIKE**  
William R. Mechnick, de la Cote 10-1110, Morges, Switzerland

Filed Aug. 7, 1972, Ser. No. 278,420  
Int. Cl. B65d 5/66

U.S. Cl. 229-44 CB

3 Claims



A package for cigarettes is provided, the package being formed from a single blank sheet of material and includes top and bottom panels, two side panels, a front facing panel and a back facing panel and a lid as an integral part thereof. The lid which includes, front, top, side and back portions is fashioned to fit over and cover an open top corner of the package and is hingedly connected to the back facing panel along an oblique fold line on said back facing panel extending from the top panel towards one of the side panels of the package. A blank from which the package is formed is also provided.

3,823,866

**TEAR STRIP ARRANGEMENT FOR CONTAINERS**  
John R. Elward, Novato, and Stanley B. Inglis, Greenbrae, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.

Filed Aug. 14, 1972, Ser. No. 280,090  
Int. Cl. B65d 5/54

U.S. Cl. 229-51 TS

6 Claims



A shipping container comprises upstanding sidewalls secured together by a manufacturer's glue flap and a removable tear strip formed around the container by parallel tear lines which extend completely through the sidewalls and the glue flap. A vertically disposed slot is formed at the corner whereat the glue flap is secured to a sidewall to permit the tear strip to be grasped and removed from the erected container in either direction.

3,823,867

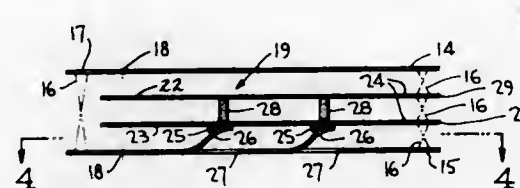
**ENVELOPE ASSEMBLY**

Emil A. D'Luhy, Youngstown, and William R. Wakeman, Ransomville, both of N.Y., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,823  
Int. Cl. B65d 27/10, 27/32

U.S. Cl. 229-69

3 Claims



A manifold assembly comprising a plurality of series-connected envelopes, each having front and back panels with insert material within each envelope, means for securing the panels together to form an envelope pocket for the insert material, the insert material having marginal edges adjacent but unattached to the securing means, means for opening the envelope pocket and means connecting the insert material to an adjacent one of the panels so as to maintain the insert material in a desired registration position within the envelope pocket, the connecting means comprising an easily releasable adhesive and tabs formed in the one panel on which the adhesive is located so that, during extraction of the insert material as the envelope pocket is opened, the connection between the insert material and the one panel is gradually broken as the tabs are moved in the direction of insert material extraction.

3,823,868

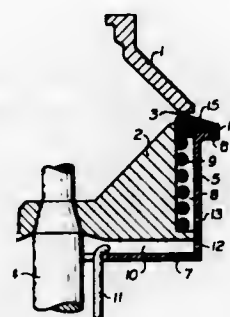
**SLUDGE EJECTING CENTRIFUGE**

Martin Baram, 2660 Brondby Strand, 13 Svanholmvej, Denmark

Filed Feb. 14, 1973, Ser. No. 332,330  
Claims priority, application Denmark, Mar. 1, 1972, 935/72  
Int. Cl. B04b 1/14

U.S. Cl. 233-20 A

9 Claims



A sludge ejecting centrifuge with an unbroken 360° ejection slit which is opened and closed by an annular sealing device which is held in closed position by an annular spring arrangement that surrounds the rotor and which is held in open position by centrifugally generated hydrostatic pressure of injected control fluid.

3,823,869

**CENTRIFUGAL SEPARATING APPARATUS**

Robert Lolson, Residence des Presidanes 54, Avenue de Verdun 78, Croissy sur Seine, France

Filed Apr. 5, 1973, Ser. No. 348,095  
Claims priority, application France, Apr. 21, 1972, 72.14284

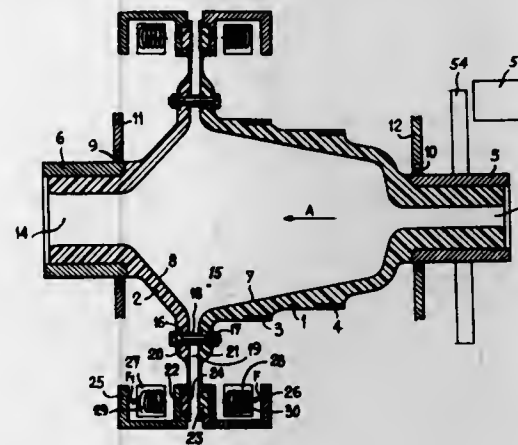
Int. Cl. B04b 1/14

U.S. Cl. 233-20 R

12 Claims

Centrifugal separating apparatus comprises a rotatable drum formed from at least two axially-spaced parts. The ad-

jacent portions of adjacent parts have frusto-conical walls which co-operate to define a chamber which receives a component separated in the drum. The adjacent edges of the parts



comprise lips of a deformable material which bound an outlet opening from the chamber. The lips are associated with means for selectively closing the opening, for example by moving the lips together.

3,823,870

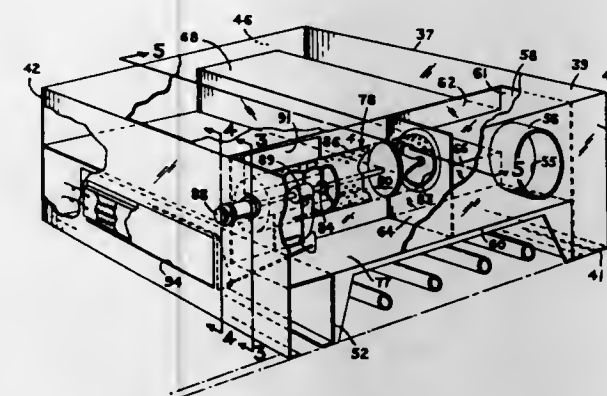
**AIR CONDITIONING WITH MIXING DUCT**

Robert B. Chandler, South Pasadena, Calif., assignor to Kilpatrick & Company, Alhambra, Calif.

Division of Ser. No. 54,782, July 14, 1970, Pat. No. 3,720,258.  
This application Dec. 27, 1971, Ser. No. 212,593  
Int. Cl. F24f 3/08

U.S. Cl. 236-49

16 Claims



An air conditioning system and method of operating an air conditioning system wherein conditioned primary air is transmitted to a plenum chamber in a terminal unit, which terminal unit may be positioned for example, directly within a space to be conditioned or supported above a suspended ceiling in a space to be conditioned. A portion of the primary air is utilized to pass through nozzles and establish primary air flow in a mixing duct, which flow may induce and mix with a flow of secondary air to constitute supply air for discharge into a space to be conditioned. The supply air may comprise solely primary air or selectively variable volumes of primary air and secondary air, which secondary air may include selectively variable volumes of air recirculated from the space being conditioned and, if appropriate, air from the plenum chamber formed by a suspended ceiling in the space to be conditioned.

Additionally, an air handling or terminal unit according to the invention may include a casing connected to a source of primary air for providing a constant flow of primary air and a selectively variable flow of primary air, means for selectively introducing and mixing a flow of secondary air with the constant flow of primary air, the secondary air comprising selectively variable volumes of recirculated air from the space and, if appropriate, volumes of air drawn from the plenum chamber

defined by a suspended ceiling in the space to be conditioned and a control means for controlling the thermal capacity of supply air for the space, the supply air including the primary air from the constant flow and, selectively, volumes of additional or by-pass primary air and secondary air.

3,823,871

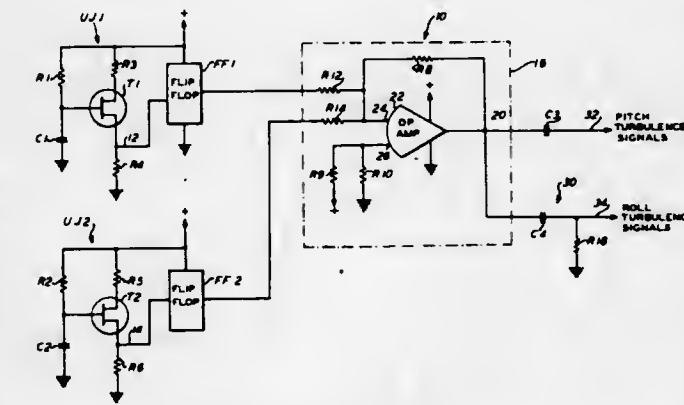
**AIR TURBULENCE SIMULATION APPARATUS**

James R. Patmore, Neptune, and Joseph E. Sidoti, Red Bank, both of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.

Filed Apr. 16, 1973, Ser. No. 351,246  
Int. Cl. G06g 7/26, 7/72

U.S. Cl. 235-197

7 Claims



Air turbulence simulation apparatus for providing pitch turbulence signals for simulating pitch turbulence and for providing roll turbulence signals for simulating roll turbulence, such apparatus including first means for providing first signals at a first predetermined frequency; second means for providing second signals at a second predetermined frequency; the second predetermined frequency being lower than the first predetermined frequency; summing means for receiving and summing the first and second signals and for providing third signals which are the sum of the first and second signals; coupling means for receiving the third signals and for providing the pitch turbulence signals and the roll turbulence signals; such simulation apparatus may also include differentiating means for receiving the third signals and for differentiating the third signals to provide the roll turbulence signals whereby the differentiated roll turbulence signals are of shorter duration than the pitch turbulence signals.

3,823,872

**NOZZLE FOR USE IN HOT LIQUID EJECTOR PUMPS, AND RELATED PROCESS**

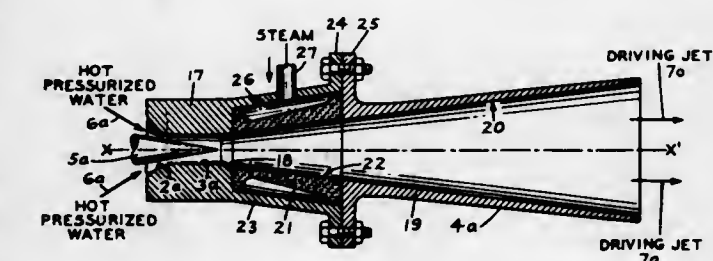
Otto Frenzi, Dammarie-les-Lys, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Oct. 26, 1972, Ser. No. 301,171  
Claims priority, application France, Nov. 19, 1971, 71.41528

Int. Cl. B05b 7/00

U.S. Cl. 239-8

28 Claims



The efficiency of conventional hot-liquid nozzles of the type normally used to create the driving jet in ejector pumps is in-



creased by eliminating at least a part of the predominantly liquid boundary layer normally found on the inner surfaces of such nozzles. The boundary layer can be eliminated by providing within the nozzle a gas layer in contact with the inner surfaces of the nozzle or by withdrawing from the nozzle liquid making up the boundary layer. This is accomplished by providing in the nozzle wall, means such as orifices, slits or porous sections which permit the transmission of a fluid such as a gas or liquid through the wall. Thus gas can be injected through such means from a source external to the nozzle to form the gas layer within the nozzle, or boundary layer liquid present within the nozzle can be withdrawn from the nozzle. The result of such procedures is to displace, and/or minimize the formation of the liquid boundary layer. The gas can be injected through the nozzle walls at various locations along the length of the nozzle. One technique for physically removing from the nozzle liquid making up the boundary layer is to provide a thin peripheral slit in the nozzle which communicates with a low pressure zone outside the nozzle. The pressure differential causes at least some of the liquid forming the boundary layer to flow out of the nozzle through the slit.

3,823,873

## VAPOR RELEASING DEVICE

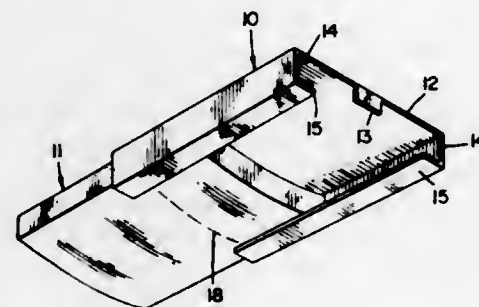
Alexander Miller, Jr., Modesto, Calif.; Victor F. Anderson, Wenonah, N.J.; Raymond W. Holt, Pleasant Hills, and Robert W. Fortenbach, Lafayette, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 15, 1973, Ser. No. 323,547

Int. Cl. A24f 25/00

U.S. Cl. 239—54

12 Claims



A vapor releasing device for reodorants, pesticides or other vaporous materials is defined by a flat upper portion having opposing downwardly extending walls which contain inwardly protruding lips forming slots or openings. A flexible solid containing the vaporous material is engaged in the slot or openings. Extending downwardly from the upper portion at each end of the slot or opening is a post which prevents removal or fallout of the flexible solid when engaged.

3,823,874

## CONTROL FOR LAWN SPRINKLER

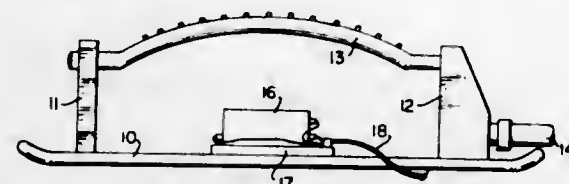
Herbert Kroeck, 120 Jefferson St., East Islip, N.Y. 11730

Filed Apr. 13, 1973, Ser. No. 350,954

Int. Cl. A01g 25/00

U.S. Cl. 239—65

4 Claims



A sprinkler control device using any type of water sprinkler and a sensing device comprising a water tank with conductive terminals. When the tank is dry or filled only to a shallow

level, a control unit causes a solenoid to open the water supply valve and the sprinkler is operated. When the sensing tank is filled to a predetermined level, the control circuit operates the solenoid valve and cuts off the water. When the water evaporates from the sensing tank and is lowered to a second level, the device is again operated and the water is turned on.

An auxiliary form of sensing device, including an absorbent cotton band, can be used to control the watering system.

3,823,875

## BURNER NOZZLE TIP FOR PULVERIZED COAL AND METHOD FOR ITS PRODUCTION

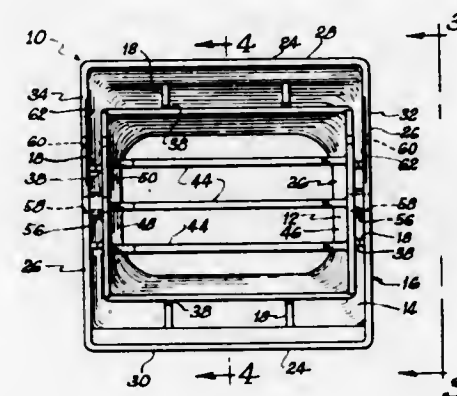
Terrence E. Bauer, 1011 Dover Ct., Lake Bluff; Michael E. Bauer, 615 Downing Pl., Libertyville, both of Ill. 60048, and Eugene C. Bauer, Box 370 RR No. 1, Round Lake, Ill. 60073

Filed Aug. 24, 1973, Ser. No. 391,498

Int. Cl. F23d 13/36

U.S. Cl. 239—419.5

10 Claims



A burner nozzle tip for a pulverized solid fuel combustion furnace is formed of a stainless steel, hollow, open ended cast outer shell and a replaceable stainless steel, weld-free, hollow, open-ended cast inner shell wherein at least one integrally cast, weld-free internal rib of the former engages at least one integrally cast, weld-free elongated rib of the latter to form a unitary concentric body. The nozzle tip is adapted for the projection of pulverized solid fuel and air through the inner shell, and air through the space between the inner and outer shells. A method for the production of a heat and erosion resistant tangential burner nozzle tip for a pulverized solid fuel combustion furnace is provided which includes casting the said shells and positioning the inner shell within the outer shell with each rib of the former engaging a rib of the latter whereby a unitary weld-free, concentric shelled burner nozzle tip is obtained.

3,823,876

## FOAM DISPERSAL NOZZLE

John C. Hardy, Gorham, and A. Brian Stevens, South Windham, both of Maine, assignors to Rockwood Systems Corporation, South Portland, Maine

Filed Dec. 18, 1972, Ser. No. 316,138

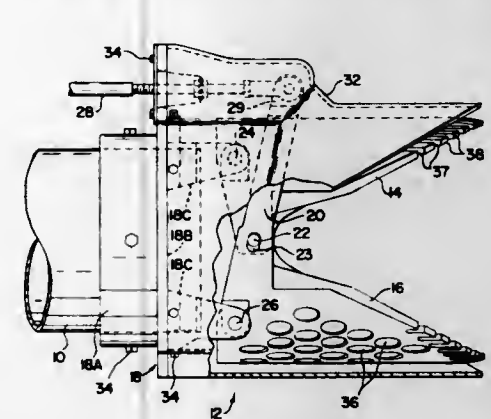
Int. Cl. B05b 1/34

U.S. Cl. 239—504

6 Claims

A foam dispersal nozzle has a hood enclosure containing two perforated deflectors mounted therein. The deflectors are mounted on a pivot shaft in opposed relationship to each other. An actuator handle extends from the deflectors in pivoting relation about the pivot shaft. The opposed downstream ends of the deflectors have a series of teeth formed therein. The perforations in said deflectors are chamfered to a knife edge at least along the downstream portions

thereof. The size of the opening formed between the toothed ends of the deflectors and the angle of attack formed between



the deflectors and a fluid stream moving through the nozzle may be varied by operating the actuator handle to pivot the deflectors around the pivot shaft.

3,823,877

## APPARATUS AND PROCESS FOR REDUCING WASTE ORGANIC MATERIALS INTO CLEAN, STERILIZED POWDER, MEAL OR FLAKES

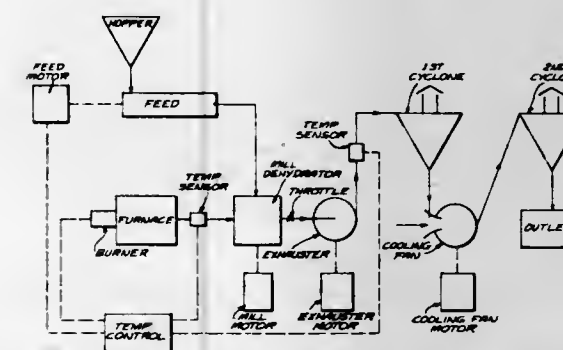
Joseph L. Poggie, 815 Iris Ln., Vero Beach, Fla. 32960

Filed June 5, 1972, Ser. No. 259,869

Int. Cl. B02c 21/00

U.S. Cl. 241—19

8 Claims



An apparatus and process are provided for rapidly and efficiently processing raw organic material into high quality clean, sterilized powder, meal or flakes. Means are provided for dividing the organic material into particles of substantially uniform size and for feeding the particles into milling and heating means. The particles are then simultaneously milled and heated by applying centrifugal forces to grind the material, and controlled laminar flow of hot air or gases to dry the material until the desired powder meal or flakes are produced. The powder, meal or flakes are then withdrawn from the milling and heating means and heated air and steam are separated therefrom.

3,823,878

## SHEARING CRUSHER

Yutaka Ishikura, Osaka, Japan, assignor to Horai Tekko Sho Co., Ltd., Osaka, Japan

Filed Nov. 17, 1972, Ser. No. 307,502

Claims priority, application Japan, Nov. 17, 1972, 47-92546

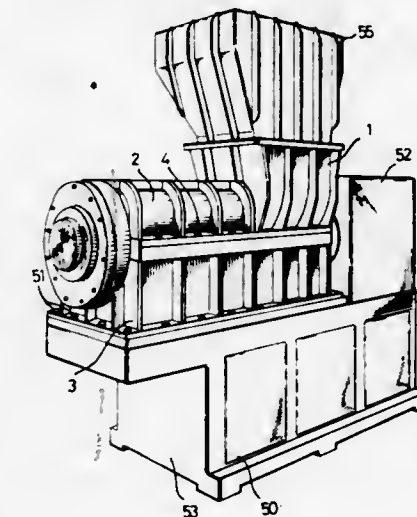
Int. Cl. B02c 13/284

U.S. Cl. 241—69

9 Claims

A crusher comprising a cylindrical crushing chamber defined by a casing composed of at least two segments dividably joined together diametrically thereof, the crushing chamber having a feed inlet at its starting end and a discharge outlet at its terminal end, stationary blades interposed

between the joining faces of the segments and extending over the entire length of the crushing chamber in parallel to its axis, and blocklike rotary cutters rotatably supported on a shaft side by side within the crushing chamber and each having on its outer periphery a plurality of helical blades at a desired twist angle with respect to the axis. Since the blade of the block-like rotary cutter has the desired twist angle with respect to the stationary blades, both blades shear a material in an obliquely cutting manner while a thrust acting on the face of the helical blade pushes the material forward within the crushing chamber during shearing. The crushing chamber is formed in its lower portion with an opening extending over



3,823,879

## KITCHEN COMPOSTER

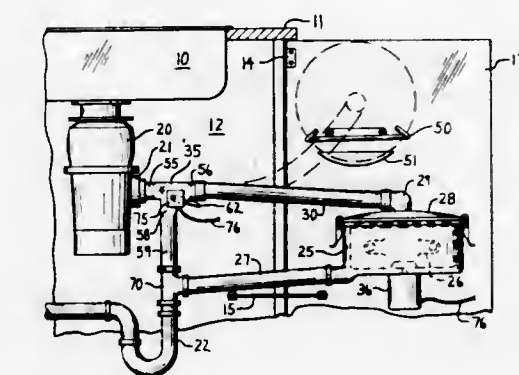
Harold R. Johnson, 1664 Sunrise Cir., N.N., Salem, Oreg. 97304

Filed Mar. 23, 1973, Ser. No. 344,131

Int. Cl. B02c 21/00

U.S. Cl. 241—101.2

9 Claims

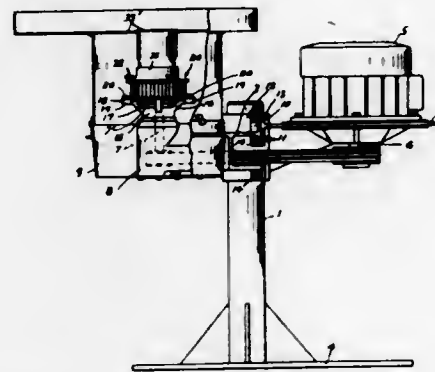


This apparatus is connected with a kitchen disposer-grinder for de-watering and collecting ground food scraps that are suitable for garden compost. A de-watering spin chamber containing a rotary spin basket is mounted on the inside of the door on an under-sink closet. A flexible drain tube from the spin chamber discharges into the sink drainpipe. A flexible inlet tube for the spin chamber is connected to one outlet of a



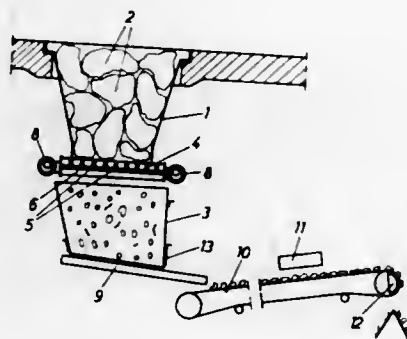
bypass valve. A second outlet of the bypass valve is connected to the sink drainpipe. The bypass valve receives the discharge from the disposer-grinder mounted in the sink drain whereby material that is suitable for compost use may be bypassed to the spin chamber where it is de-watered and collected while liquids and other ground material not desired for compost may be discharged directly into the drainpipe.

**3,823,880**  
**MACHINE FOR REDUCING THE SOUND LEVEL OF ITS OPERATION**  
Joe R. Urschel, 202 Michigan, Valpersso, Ind. 46383  
Filed Oct. 24, 1972, Ser. No. 300,102  
Int. Cl. B02c 18/00  
U.S. Cl. 241-86 18 Claims



The invention involves a cutting mill having a cylindrical head provided with a plurality of circumferentially arranged cutting edges and an impeller which is rotatable at a relatively high rate of speed and provided with blades which are so designed and constructed that the noise of the mill during its operation is appreciably reduced to an acceptable limit which will not impair the hearing of an operator.

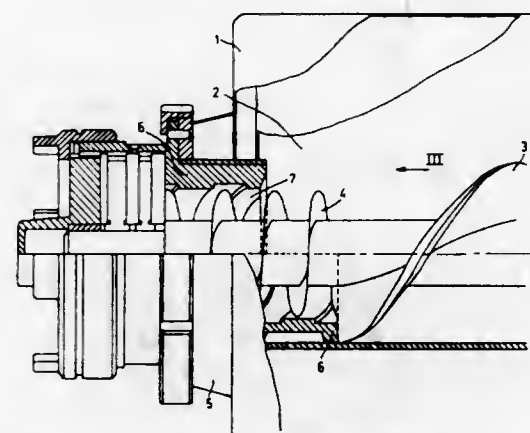
**3,823,881**  
**DEVICE FOR CRUSHING LARGE MOLDING SAND PIECES AND FOR SEPARATING RESIDUAL IRON PARTS THEREFROM**  
Konrad Grob, Slebuën, Switzerland, assignor to Alfred Gutmann Gesellschaft für Maschinenbau, Hamburg, Germany  
Filed May 25, 1972, Ser. No. 256,957  
Claims priority, application Germany, May 27, 1971, 2126284  
Int. Cl. B02c 19/20; B07b 13/00  
U.S. Cl. 241-79.1 4 Claims



A device for crushing large molding sand pieces and removing iron parts therefrom, according to which a cutting device, preferably in the form of crosswise arranged cutting edges, is interposed between feeding means for feeding the large molding sand pieces to be cut up and a receiving container for receiving the cut up molding sand, while only the cutting device is oscillated, a conveyor being associated with the out-

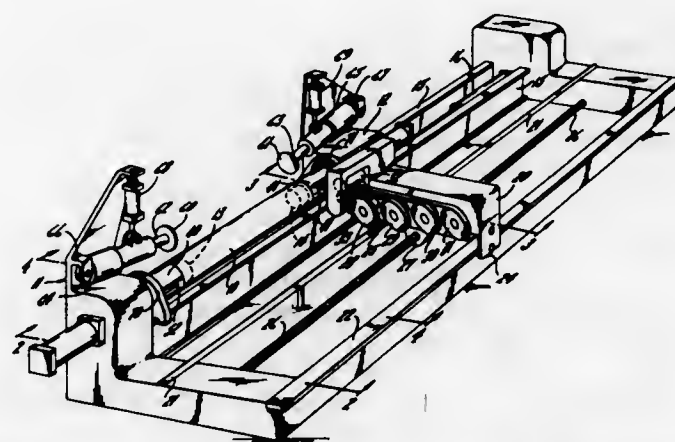
let of the receiving container for receiving the molding sand from the receiving container, while magnets adjacent the conveyor are adapted to withdraw iron parts from the molding sand on the conveyor.

**3,823,882**  
**MEAT MINCING MACHINE**  
William Jensen, Tjørnealle 10, 4200 Slagelse, Denmark  
Filed Apr. 27, 1971, Ser. No. 137,908  
Claims priority, application Denmark, Apr. 27, 1970, 2115/70  
Int. Cl. B02c 18/30  
U.S. Cl. 241-152 R 4 Claims



Apparatus for grinding food particularly frozen meat, which comprises two worm conveyors, the second and smaller one of which receives meat conveyed by the first conveyor and passes it to grinding means. To prevent the delivery of an excess amount of food to the second conveyor which would cause stalling of the device, the delivery point of the second conveyor to the first is within a hopper for feeding the meat to the conveyors and there are provided means for diverting the excess of food back into the hopper at the point of delivery.

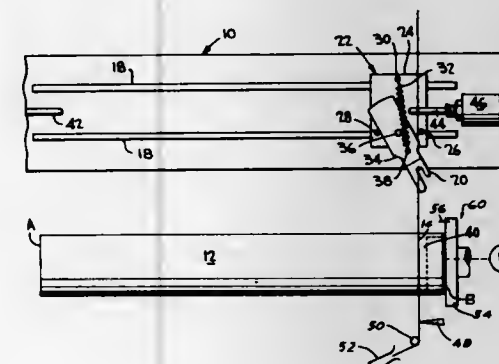
**3,823,883**  
**APPARATUS FOR WRAPPING PIPE WITH MULTIPLE STRIPS**  
Vernon R. Fend, Northbrook; Albert Roze, Chicago, and Edward M. Naureckas, Gurnee, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.  
Filed Feb. 22, 1972, Ser. No. 227,995  
Int. Cl. B65h 81/08; B21f 3/04  
U.S. Cl. 242-7.23 3 Claims



A method and apparatus for wrapping pipe, of the type used in gas pipe lines for example, with multiple strips of metal strapping. The pipe is mounted on a pair of chucks which fit into the open ends of the pipe to rotate the pipe while multiple spools of metal strapping are moved axially along the pipe.

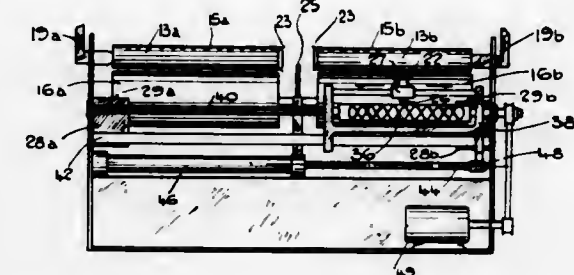
The ends of the multiple strips of strapping are initially clamped to a dummy mandrel having the same outside diameter as the pipe, and this mandrel is rotated along with the pipe so that the multiple strips of strapping are wound helically around the mandrel and the pipe as the spools of strapping are traversed along the length of the pipe. At the terminating end of the pipe, the wrapping of the multiple strips of strapping is continued on to a second dummy mandrel having the same outside diameter as the pipe, and the strapping is then clamped and cut on the second dummy mandrel. A pair of cutting discs are provided for cutting off the metal strapping flush with the ends of the pipe, and a pair of clamping ring locators are provided for positioning clamping rings adjacent the opposite ends of the pipe. The chucks which hold and rotate the pipe comprise expanding mandrels for expanding the pipe and the wrapping outwardly against the clamping ring so that the wrapping is clamped firmly between the clamping ring and the pipe at both ends of the pipe.

**3,823,884**  
**APPARATUS AND METHOD FOR FORMING A PIECING END FOR WOUND YARN**  
Roland Sartori, Riorges, France, assignor to Rhone-Poulenc-Textile, Paris, France  
Filed Oct. 16, 1972, Ser. No. 297,730  
Int. Cl. B65h 54/34  
U.S. Cl. 242-18 PW 5 Claims



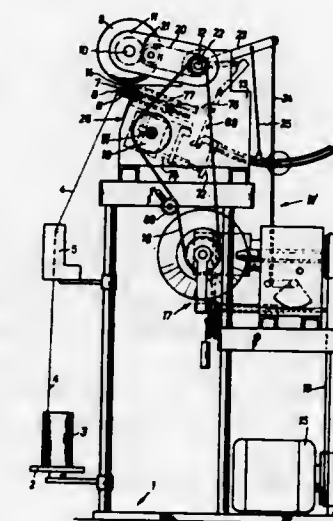
Apparatus for forming a piecing end for yarn wound on a rotatable support including a traveller movable along a reciprocating path parallel to the longitudinal axis of the support, a yarn guide pivotally mounted on the traveller and having a normal position for forming primary windings on the support and an extended position for forming piecing end windings on the support, and actuator members disposed at opposite ends of the reciprocating path for contacting the yarn guide to change positions thereof, the actuator member operable to place the yarn guide in the extended position being selectively movable to an inoperative position unable to contact the yarn guide such that, after initial forming of piecing end windings, the yarn guide remains in the normal position for forming primary windings on the support. A method of winding yarn on a rotating support including moving a traveller pivotally carrying a yarn guide toward an end of a reciprocating path with the yarn guide in the normal position, pivoting the yarn guide to an extended position to catch yarn to be wound at a point near the end of the reciprocating path and deliver the yarn to an end portion of the support to form piecing end windings, moving the traveller back towards an opposite end of the reciprocating path with the yarn guide in the extended position, returning the yarn guide to a normal position for forming primary windings on the support at the opposite end of the reciprocating path, and moving the traveller back and forth along the reciprocating path with the yarn guide in the normal position to form piecing end windings around the support.

**3,823,885**  
**APPARATUS FOR CONTINUOUSLY WINDING FILAMENTARY MATERIAL**  
Robin F. De Schulthess, Montreal, Quebec, Canada, assignor to The Bobtex Corporation Limited, Montreal, Quebec, Canada  
Filed July 3, 1972, Ser. No. 268,791  
Claims priority, application Canada, July 8, 1971, 117792  
Int. Cl. B65h 54/02  
U.S. Cl. 242-18 A 19 Claims



There is provided an apparatus for continuously winding yarn on a pair of successive bobbins. This apparatus comprises a pair of mandrels positioned in axial relationship to one another and including means for releasably supporting a pair of bobbins. It also comprises driving means for rotating the mandrels with the bobbins thereon in surface contact with a pair of rolls and means for moving the mandrels with the bobbins thereon in and out of contact with said rolls. The apparatus also includes a unitary guide-traveler-transfer assembly which comprises a yarn guide mounted on a traveler which reciprocates on a traveler roll for laying the yarn backward and forward onto a bobbin, and a carriage for the guide, traveler and traveler roll with transfer means for transferring this carriage from in front of a full bobbin to in front of an empty bobbin. Finally means are provided for anchoring the yarn on the empty bobbin during the transfer operation as well as for cutting this yarn between the two bobbins.

**3,823,886**  
**APPARATUS FOR WINDING MATERIALS, SUCH AS THREADS, YARNS OR BANDS INTO CROSS-WOUND BOBBINS**  
Walter Siegenthaler, Erlenbach, Switzerland, assignor to Maschinenfabrik Scharer  
Filed Jan. 26, 1972, Ser. No. 220,960  
Claims priority, application Switzerland, Feb. 6, 1971, 1764/71  
Int. Cl. B65h 54/32  
U.S. Cl. 242-43.1 13 Claims



The apparatus comprises first and second yarn guides rotatable in opposite directions about respective axes of rota-



tion which are offset from each other. Respective substantially circular-shaped guide means are provided for each of the yarn guides, centered on the respective axis of rotation of each yarn guide, so that the guide tracks intersect each other at a pair of diametrically opposite points for overlapping of the thread guides at these points. Each yarn guide is connected with a rotatably driven arm member. Means are also provided for changing the positive of the guide paths relative to the drive center points of the arm members, whereby it is possible to regulate the position of the points of intersection of the yarn guides.

3,823,887

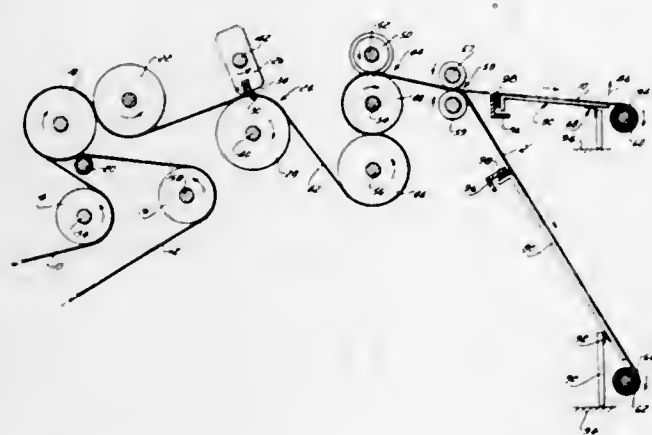
# DEVICE FOR FORMING LIGHTWEIGHT PAPER INTO ROLLS WITHOUT ANY CORE

David E. Gerstein, 63-33 98th Pl., Forest Hills, N.Y. 11374  
Filed Dec. 23, 1971, Ser. No. 211,319

Int. Cl. B65h 15/02, 35/02

U.S. Cl. 242-56.2

13 Claims



A device for coreless rolls of very lightweight fiber material, such as tissue, comprises feeding one or more continuous webs of the tissue material into juxtaposition and then for directing it into association with a perforator and a slitter. The paper which has been slit is then fed along a feed path onto winding mandrels. The windup of the tissue on the mandrel is effected by first wetting the edge so that it engages with the mandrel. The tissue is wound into a coil of predetermined thickness and it is broken away from the continuous web along the perforations by the simple expedient of moving a flat board-like member upwardly through the path of movement of the tissue to sever it along the perforations. The end is guided along the roll by a semi-annular member which engages around the exterior surface of the tissue roll. Thereafter, the mandrel is released at one end and pivoted outwardly from its support and the wound tissue roll is pulled off an end thereof. It is also possible with an embodiment of the invention to feed the tissue which has been slit into guide tubes or folding gauges which fold them into one or more folds as they are wound into a coreless roll.

3,823,888

# APPARATUS FOR DETECTING AND GUIDING THE LEADERS OF PHOTOGRAPHIC ROLL FILMS

Helmut Zangenfeld, Puchheim, and Erich Nagel, Anzing, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 11, 1972, Ser. No. 252,416

Claims priority, application Germany, May 19, 1971, 2125084

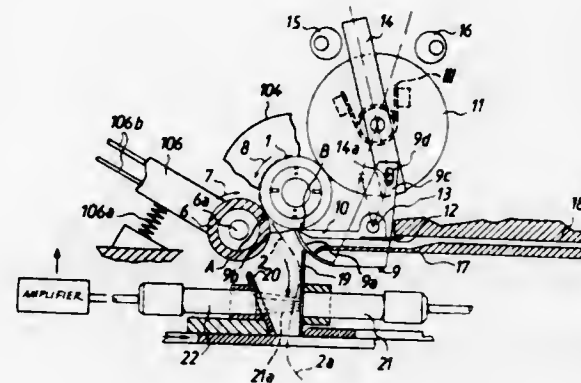
Int. Cl. B65h 75/00

U.S. Cl. 242-55

23 Claims

Apparatus for detecting, intercepting and guiding the leader of photographic film which is convoluted on a spool within a convoluted backing strip whose front portion extends beyond the leader of the film has a bearing which rotatably supports a

spool and a drive which rotates the spool in a direction to pay out the film and the backing strip. A deflector is biased against the outermost convolution of the backing strip on the rotating spool to deflect the front portion of the backing strip into a first path while simultaneously preventing entry of the leader of film into a second path wherein the leader is to advance toward a splicing station to be joined with the trailing end of a preceding film. A photoelectric detector scans the path for the backing strip and produces a signal in response to detection of the front portion whereby such signal causes a rotary elec-



tromagnet to move the deflector out of register with the inlet of the path for the leader so that the leader can enter such path in response to further rotation of the spool. Prior to rotation in a direction to pay out the film and the backing strip, the spool is rotated to the opposite direction and is arrested by a tracking device having a nozzle which attracts the front portion of the backing strip in such angular position of the spool that the front portion of the backing strip is located between the points of engagement of the backing strip with the drive means and with the deflector. Such orienting of the spool can be carried out prior to introduction into the bearing.

3,823,889

# TOILET PAPER HOLDER

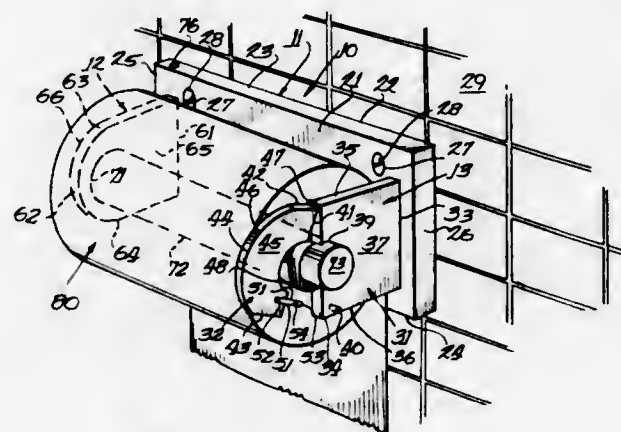
Leland R. Johnson, and Leland A. Johnson, both of 611 N. 13th St., San Jose, Calif.

Filed Sept. 12, 1973, Ser. No. 396,380

Int. Cl. B65h 19/00

U.S. Cl. 242-55.2

4 Claims



A spring loaded easy-on easy-off toilet paper holder consisting of a base having a pair of arms extending at right angles

from the base and longitudinally spaced apart, one of the arms being hinged to the base by a spring loaded hinge normally urging the arm into the normal position with a toilet paper holding spool projecting perpendicular from the end of the hinged arm in the direction of the other arm, the other of the arms being fixedly mounted on the base and aligned with the first arm and adapted to receive and retain the free end of the toilet paper holding rod projecting from the hinged arm such that a roll of toilet paper may be easily placed onto and removed from the toilet paper holder.

3,823,890

# AUTOMATIC FILM FEED DEVICE

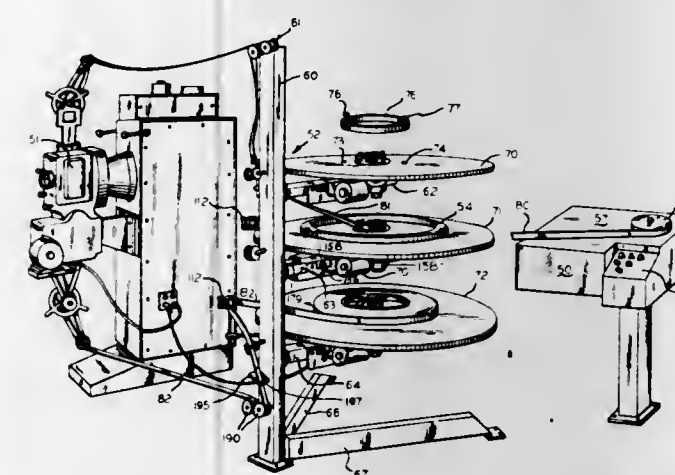
Edwin M. Potts, 710 W. Dodson, Urbana, Ill. 61801

Filed Nov. 22, 1971, Ser. No. 200,945

Int. Cl. B65h 17/48

U.S. Cl. 242-55.18

2 Claims



A plurality of rotatable horizontal turntable disks rotate to feed out or take up motion picture film, as it is transported through a projector. Optional threading arrangements enable any of the turntable disks to function as a supply or take up reel. Moreover, the third turntable effectively provides a spare which gives stand-by reliability. Suitable analog sensors detect film tension or broken film conditions and control the film feed accordingly. The analog sensors eliminate hunting as the mechanical operations proceed.

3,823,891

# FILM CARTRIDGE

Hellmut Schrader, 3071 Ellvase, Nr 166 Germany

Filed Nov. 7, 1972, Ser. No. 304,332

Claims priority, application Germany, Nov. 9, 1971, 2155521

Int. Cl. G03b 1/04

U.S. Cl. 242-71.1

8 Claims



A film cartridge capable of receiving a continuous film wherein the cartridge includes spiral shaped guide members coiling the film when it is introduced into the cartridge, and wherein the guide members have several breaks in their curvature to provide a spiral like spring which touches the coiled film only at discrete points.

3,823,892

# EXPANDABLE ROLL CORE SHAFT UNIT

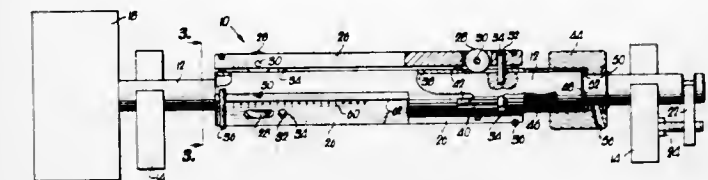
Donald A. Glaser, Emporia, Kans., assignor to Didde-Glaser, Inc., Lyon, Kans.

Filed Sept. 5, 1972, Ser. No. 286,216

Int. Cl. B65h 75/24

U.S. Cl. 242-72

19 Claims



A mechanically operated, expandable spool useful as a roll core shaft unit and having a plurality of longitudinally extending segments symmetrically located about a central shaft. A longitudinally movable, tubular member is located intermediate the shaft and segments with cam surfaces disposed to engage follower wheels carried by each of the segments. A drive collar carried by the shaft is threaded to the tubular member to drive the latter longitudinally relative to the segments causing the cam and follower to shift the segments radially and concentrically relative to the shaft to engage and disengage a roll of material. In one form the segments are rectangular bars having sharp corners for positively gripping a roll core carrying the material, and in another form the segments have circular outer surfaces allowing wind-up of the material directly therein.

3,823,893

# SAFETY HARNESS

Gustav Einar Wilhelm Svensson, Villa Solhall, Box 61, S310, 33 Holm, Sweden

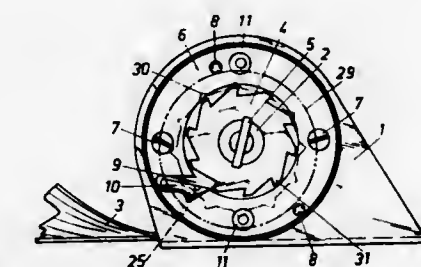
Filed Nov. 6, 1972, Ser. No. 303,686

Claims priority, application Sweden, Nov. 29, 1971, 15238/71

Int. Cl. A62b 35/02; B65h 63/04

U.S. Cl. 242-107.4

15 Claims



A blocking means in vehicle safety harnesses of the kind having a reel mechanism comprising a ratchet wheel with which the blocking means engages to lock the reel mechanism against further unwinding of the harness. The blocking means is floating freely in a cavity formed in a ring surrounding the ratchet wheel such that during normal use of the harness said blocking means is in a position beyond the circle of engagement of the ratchet wheel but upon tilting of the harness device as a result of an abnormal situation, the blocking means is actuated into engagement with the ratchet wheel, thus preventing further unwinding of the harness.



### 3,823,894 STRAND PACKAGE

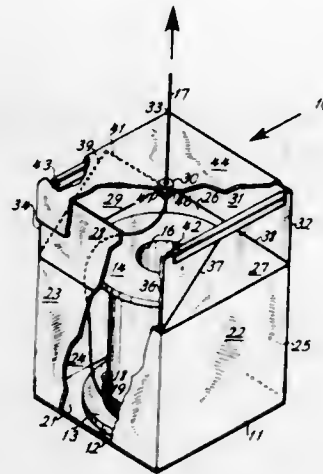
John E. Frederick, North Muskegon, and Howard H. Peterson, Muskegon, both of Mich., assignors to The Anaconda Company, New York, N.Y.

Filed Jan. 4, 1973, Ser. No. 321,063

Int. Cl. B65h 49/18, 55/00, 75/02

U.S. Cl. 242—137.1

3 Claims



In a shipping and dispensing package for wire, a reel is fitted into a fiberboard carton of which the cover is formed by foldable extensions of the carton walls. When wire is being dereeled these are held open by stiffeners and support an eyelet for the wire at the proper distance above the upper flange of the reel.

### 3,823,895 AUTOMATIC TAPE LOADING APPARATUS AND METHOD THEREFOR

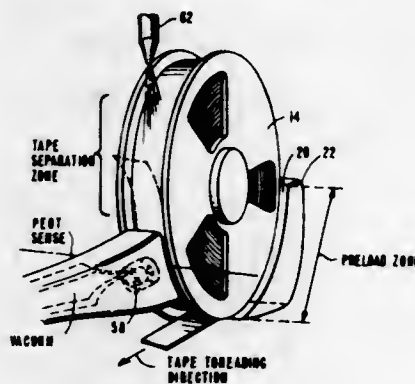
Hale M. Jones, Playa de Rey, and James P. Urynowicz, Los Angeles, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 3, 1972, Ser. No. 231,648

Int. Cl. G11b 15/66, 15/58

U.S. Cl. 242—186

9 Claims



Apparatus having an automatic tape loading path extending between a file reel and a machine reel, such as a digital magnetic tape transport, incorporates a physical end of tape (PEOT) sensor, an air jet forcing the physical end against the sensor, and control electronics. As the file reel is rotated in the tape wind direction after loading, the air jet forces a length of tape near the physical end thereof into contact with the sensor which provides a control signal when the physical end of the tape passes the sensor. The control electronics continue rotation of the file reel through a predetermined angular distance to align the physical tape end with a preload point of an automatic tape loading path. This apparatus simplifies tape loading by automatically aligning the physical tape end with the tape loading path and provides a fully automatic detection of improper loading and a retry if a first attempt at automatic threading is not successful.

### 3,823,896 RECORDING WEB TENSION CONTROL

Morris Baer Finkelstein, Bellmawr, N.J., assignor to RCA Corporation, New York, N.Y.

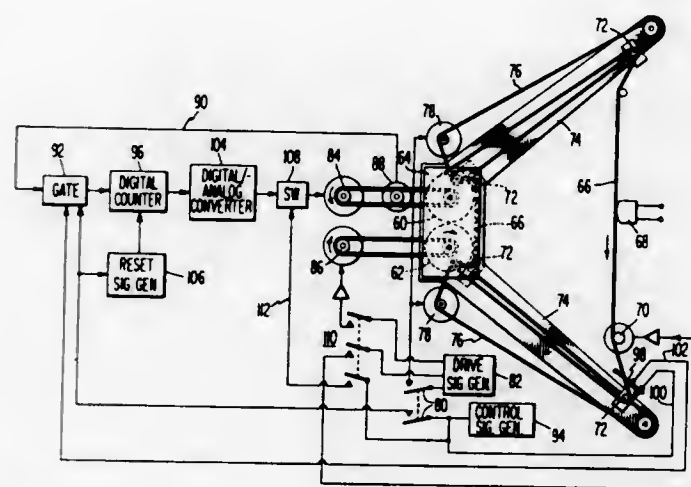
Filed July 30, 1971, Ser. No. 167,375

Claims priority, application Great Britain, Mar. 29, 1971, 08113/71

Int. Cl. G11b 15/18, 15/66

U.S. Cl. 242—191

7 Claims



An arrangement for providing initial holdback tension on a recording web which is payed out from a rotatable web supply reel, where the amount of recording web initially present on the supply reel is unknown. Rotational movement of the supply reel during web disposition for signal transducing, is sensed and utilized to provide appropriate initial counter-torque on the supply reel.

### 3,823,897 VERTICAL TAKE-OFF AND LANDING AIRCRAFT

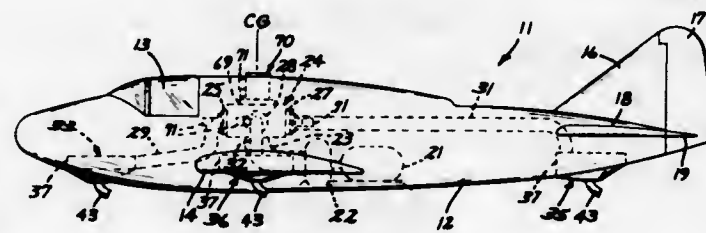
Orville E. Bloomquist, 5516 Corvallis, North, Minneapolis, Minn. 55429

Filed May 30, 1972, Ser. No. 258,091

Int. Cl. B64c 15/02

U.S. Cl. 244—12 R

3 Claims



A vertical take-off and landing aircraft (VTOL) having a single source of thrust acting through a plurality of reaction nozzles displaced from various axes of the aircraft to provide the requisite functions of lift, thrust and attitude control. The nozzles are infinitely variable to generate thrust in the desired direction, and each includes an extensible portion which is retracted for lift-off and extended for forward flight after a predetermined altitude has been reached. A bypass valve per-

mits the thrust engine or engines to operate at full power during lift-off and landing. The aircraft includes a conventional control system for use at cruising speed.

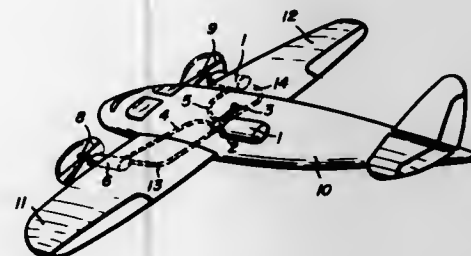
### 3,823,898 HYDRAULICALLY CONTROLLED FLUIDSTREAM-DRIVEN AIRCRAFT

Karl Eickmann, 2420 Isshiki, Hayama-machi, Japan  
Continuation-in-part of Ser. No. 782,349, Dec. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 551,023, May 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 328,395, Dec. 5, 1963, Pat. No. 3,220,898.  
This application Mar. 8, 1971, Ser. No. 104,676

Int. Cl. B64d 27/02

U.S. Cl. 244—55

21 Claims



In an aircraft a fluid handling device having a plurality of separated fluid handling working chamber groups with separated fluid outlets of each of said working chamber groups. Each fluid handling working chamber group has a plurality of individual fluid-handling spaces which together deliver the discharged fluid into the common fluid outlet of the respective working chamber group. Each working chamber group has an actuator means for actuating the respective displacement means, which move the working fluid into and out of the respective individual fluid handling spaces. Each fluid outlet of each working chamber group is connected by a respective uninterrupted fluid line directly to an associated fluid motor for revolving the same, while at least one propeller is associated with each respective fluidmotor to be driven by the same. The actuator means of more than one working chamber group are connected together for assuring equal or at least at all times proportionate actuation of the displacement means of the plurality of the working chamber groups. Thus equal or at least at all times proportionate rate of flow are forced out of the said separated fluid outlets through said fluidlines for forcing the said fluidmotors to revolve with equal or at least at all times proportionate rotary velocity of said fluid motors and propellers, whereby fluidstreams of equal or at least at all times proportionate thrust are generated and applied in substantial symmetric locations on the body of the craft to drive the same steadily in the desired direction.

### 3,823,899 ACTUATION SYSTEM FOR ANGULARLY POSITIONING AIRCRAFT LANDING GEAR WHEELS

Norman S. Currey, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Oct. 20, 1972, Ser. No. 299,406

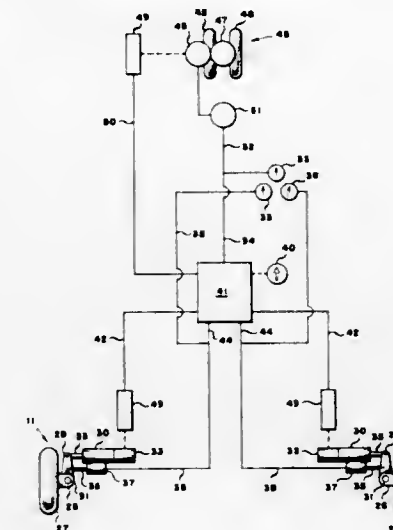
Int. Cl. B64c 25/50

U.S. Cl. 244—103 W

2 Claims

This device positions an airplane's landing gear wheels to a selected angle from the straight-ahead position relative to the longitudinal line of the aircraft or the direction of movement to compensate for crosswind landing and take-off. It comprises an axle for each such wheel, which axle is pivoted about

a vertically oriented pin so that when the several axles are rotated by actuator means the desired wheel angle is effected.



Such actuator means may be a linear type, pushing or pulling a bellcrank arm made as part of the axle, or it may be a rotary type turning about the vertical axis.

### 3,823,900 SUCTION SECURITY DEVICES

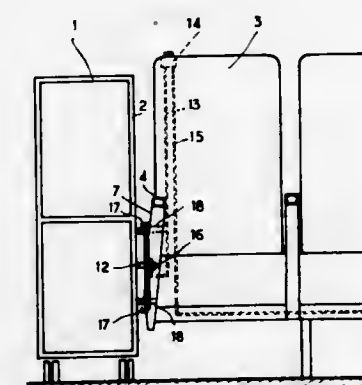
Robert Rene Marechal, Paris, France, assignor to Societe Industrielle et Commercial de Materiel Aeronautique (S.I.C.M.A.), Issoudun, France

Filed Apr. 20, 1972, Ser. No. 245,925

Int. Cl. B64d 11/04, 11/06

U.S. Cl. 244—118 P

10 Claims



A device particularly suited to securing aircraft serving trolleys to seats during flight. The seat is fitted with a panel which is provided with an airtight seal. When the trolley is placed against the seal it operates a projecting valve member which causes air trapped in the space between the trolley and the panel to be exhausted and to thereby hold the trolley to the panel by suction. A further manually operable valve placed in a convenient position serves to connect the said space with the air in the cabin thereby allowing the trolley to be released. Suction can, in the case of a pressurized aircraft, conveniently be applied by connecting the space to the outside of the aircraft.



3,823,901

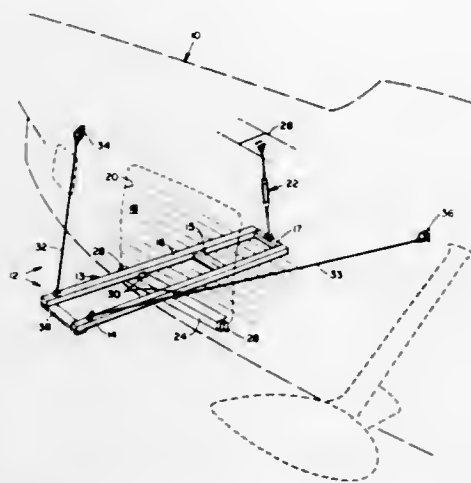
## AERIAL LAUNCH SYSTEM

Karl A. Holmes; James R. Kneppshield, and Dale E. Knutsen, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 24, 1973, Ser. No. 382,238  
Int. Cl. B64d 7/00

U.S. Cl. 244-118 R

4 Claims



A launcher support structure is provided for a helicopter installation which may be quickly and easily installed or removed. The primary structural members extend across the floor of the helicopter and out a doorway. These members are attached to the helicopter structure at the door sill using existing hardware. A compression strut between the launcher structural members and overhead helicopter structure is utilized in the helicopter cabin and tension rods are extended from the extreme outboard ends of the structure to the fore and aft helicopter tie-down rings.

3,823,902

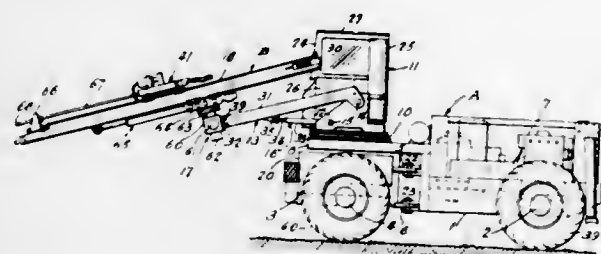
## ARTICULATED VEHICLE

Hermann Karl Bummueller, 95-Dequire Blvd., Montreal, Quebec, Canada

Filed July 12, 1972, Ser. No. 271,052  
Int. Cl. F16m 3/00

U.S. Cl. 248-2

17 Claims



An articulated vehicle for carrying a working assembly, e.g., a drilling assembly, includes first and second frames and a platform extending cantileverwise from the first frame over the second frame; the working parts are all mounted on the first frame and the platform, the parts mounted on the platform being mounted on a turntable unit adapted to rotate 360°, whereby a projecting working assembly can be made to overlie the first frame; the vehicle can thus adapt a compact arrangement for travelling and shows good manoeuvrability; the turntable unit has a braking arrangement applied directly to it.

3,823,903

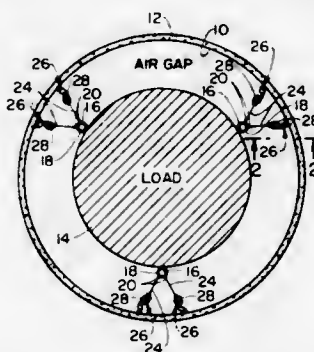
## DUAL LENGTH PENDULUM SHOCK ABSORBING SYSTEM

Giles A. Kendall, Des Moines, Wash.; James C. Hoppe, Burbank, and Wilbur P. Hsieh, La Canada, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Filed Mar. 3, 1972, Ser. No. 231,633  
Int. Cl. G01n 29/00; F41f 3/04

U.S. Cl. 248-18

10 Claims



A shock absorbing system employing a long pendulum and a short pendulum, the long pendulum to isolate against small motions, the short pendulum to isolate against large motions. A spring-damper assembly is connected to the long pendulum to damp the horizontal motion of the long pendulum.

3,823,904

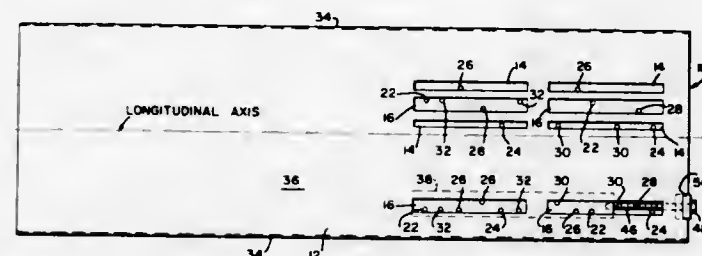
## MACHINERY MOUNTING BASE

August M. Stenger, Campbellville, Ky., assignor to Ingersoll-Rand Corporation, Woodcliff Lake, N.J.

Filed Aug. 28, 1972, Ser. No. 284,281  
Int. Cl. F16m 11/04

U.S. Cl. 248-23

15 Claims



The base comprises a base plate having a plurality of slots formed therein, for receiving mounting bolts for machinery frames for mounting the machinery to the base plate, in which some of the slots have a greater width than the diameters of the shanks of the bolts used therewith. Accordingly, the wider slots restrain the bolts at only one side thereof against lateral movement. In addition, a strap coupled to an adjustment bolt is disposed below the slots being used, so that the machinery mounted thereabove can be displaced lengthwise along the base plate. The strap has threaded holes for engaging the machinery mounting bolts.

3,823,905

## WATER HOSE ATTACHMENT HOLDER

McNally S. Ray, 3667 S. Van Ness Ave., Los Angeles, Calif. 90018

Filed Apr. 17, 1973, Ser. No. 351,878  
Int. Cl. A47g 29/00

U.S. Cl. 248-87

3 Claims

An improved water hose attachment holder is provided which includes a guide member of extended surface area mounted on the upper arm of an elongated rod-like support

3,823,907

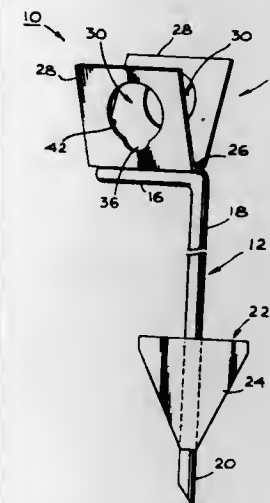
## POSITIVE LOCKING DEVICE

Theodore Ziaylek, Jr., 95 Box 292, Yardley, Pa. 19068  
Filed Jan. 10, 1973, Ser. No. 322,477

Int. Cl. A62c 33/00

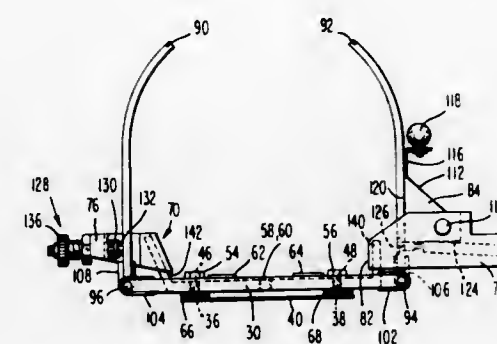
U.S. Cl. 248-313

18 Claims



member having a pointed lower end. The support member bears a projection in the form of a wedged plate to act as a foot brace for inserting the support member into the ground. The guide member defines an elongated attachment-receiving passageway and releasable gripping means. In one form of the

guide member, a pair of spaced upstanding wings connected by a base define a pair of apertures aligned to form the passageway, while in another form the guide member comprises a hollow open tube having threaded opposite ends to detachably receive a water hose and the attachment.



A device for use with a walkaway bracket, adapted to positively grasp breathing apparatus. Slide rails are fastened to a bracket, which bracket is affixed to a rescue package. Locking means are slidably received between the slide rails, and which locking means include a plate slidably received between the slide rails, and housings mounted at the extremities thereof. One of the housings includes an actuating means, the other including a positioning means characterized by a positioning finger. The housings each include openings which receive therethrough arm members which are pivotally mounted to the slide rails. A cam is associated with the actuating means and is active on one of the arm members. This action is translated into sliding movement of the locking device toward that arm member. Simultaneously the arm members are pivoted toward convergence with each other and they positively grasp the tank of the breathing apparatus.

3,823,906

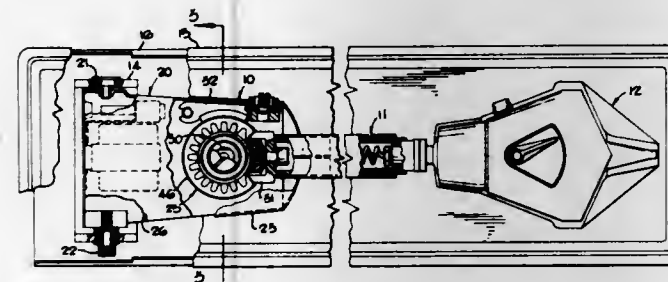
## BASE ASSEMBLY FOR SWIVEL LAMP

Gerald L. Rogers, St. Louis, Mo., assignor to Chemtron Corporation, Chicago, Ill.

Filed May 7, 1973, Ser. No. 357,729  
Int. Cl. F16m 13/00

U.S. Cl. 248-279

10 Claims



This lamp base assembly includes an exterior housing pivotally mounted to a wall bracket, and an interior housing pivotally mounting an extensible arm to the exterior housing. A torsion spring, attached at one end to the exterior housing and at the other end to the interior housing, provides a resistance torque balancing the arm at a predetermined position. An adjustable brake shoe assembly mounted to the exterior housing and engageable with the interior housing provides the friction force necessary to compensate for imbalance of the arm at other positions.

3,823,908

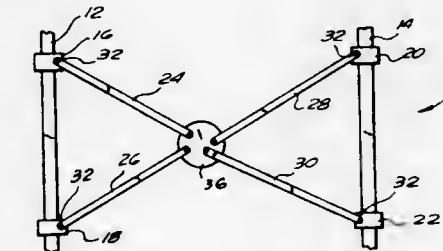
## TENSIONING DEVICE

Edward M. Jarvis, Ambler, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Oct. 19, 1972, Ser. No. 300,657  
Int. Cl. E04b 12/00; E04b 11/32

U.S. Cl. 248-351

9 Claims



A tensioning device for use with sway braces which may be used to interconnect vertical shelving supports wherein the tensioning device in the form of a circular plate to which a plurality of the sway braces are secured is rotated to place a tensioning force on the sway braces and then secured to maintain the tensioning force.



3,823,909

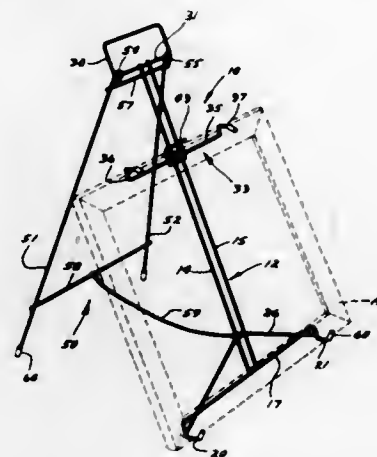
## ART CANVAS SUPPORT STRUCTURE

Clarence M. Theil, 4000 Elmwood, St. Paul, Minn. 55110  
Filed Feb. 20, 1973, Ser. No. 333,694

Int. Cl. A47b 97/08

U.S. Cl. 248-452

1 Claim



An art canvas holding and carrying device including an adjustable securing member, a self-collapsing supporting member and a hand holding carrying member.

3,823,910

## STAIRCASE MOLD ASSEMBLY

Arthur La Verne Crozier, 8202 Fairmount Dr., S.E., Calgary, Alberta, Canada

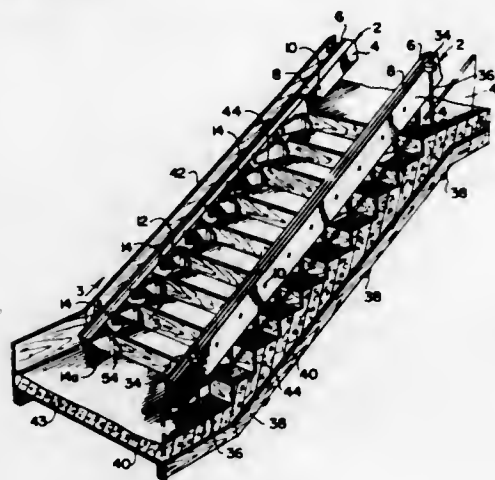
Filed Sept. 8, 1972, Ser. No. 287,411

Claims priority, application Canada, Sept. 10, 1971, 122571

Int. Cl. B28b 7/22; E04g 13/06

U.S. Cl. 249-14

11 Claims



A molding assembly for cement or concrete staircase construction is disclosed. The assembly consists of an elongate support member and a plurality of riser support plates pivotally carried by the elongate support member with each of the riser support plates having a substantially upright edge portion and means to secure a riser board against which concrete is poured to each of the upright edges of the riser support plates. The assembly is also provided with elongate guide means which extend longitudinally of the elongate support member with the riser support plates being pivotally secured to the elongate guide means. With this arrangement longitudinal movement of the elongate guide means imparts uniform rotational movement to each of the riser support plates and results in the upright edges of the riser support plates being substantially vertical regardless of the angle of inclination of the staircase and of the support member. It is usual that the assembly is employed in pairs, but three or more such assemblies could be employed depending upon the width of the staircase.

3,823,911

## SEATS FOR GATE VALVES

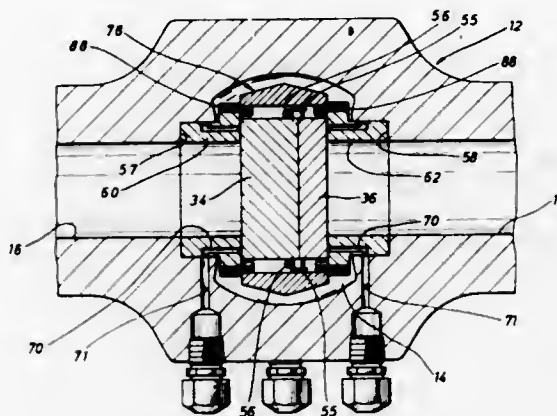
Paul J. Natho, and William L. Whaley, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,920

Int. Cl. F16k 25/00

U.S. Cl. 251-167

5 Claims



A gate valve having a gate assembly of the expanding type employing a gate element and segment with adjacent wedge surfaces to expand the gate mechanism in both open and closed positions. Opposed floating seat elements are mounted within recesses of the valve body on opposite sides of the gate structure and spacers are connected to the opposed seat elements along opposed sides of the gate assembly to maintain a predetermined spacing between the seat elements but yet to permit floating of the seat elements. A predetermined minimum clearance between the seat elements and the gate assembly is maintained at all times by the spacers.

3,823,912

## VALVE FOR INSTALLATION IN FLUME

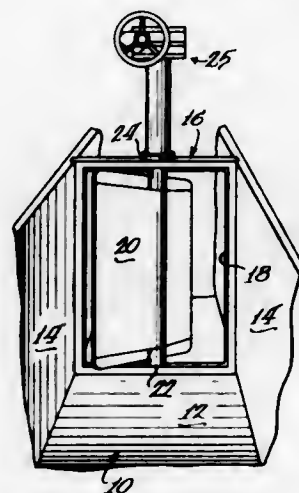
Gregory A. Kurkjian, Jr., Wheaton, Ill., assignor to Henry Pratt Company, Aurora, Ill.

Filed June 7, 1973, Ser. No. 367,777

Int. Cl. F16k 1/22

U.S. Cl. 251-305

5 Claims



A valve, such as a butterfly valve, for installation in a flume or the like. The valve includes a body having a shape substantially corresponding to the cross section of the flume in which the valve is to be installed, the valve body being slightly larger in size about a majority of its periphery than the cross section of the flume so as to be receivable in a preformed recess in the wall of the flume. The valve body includes a fluid passage and a valve disc journaled therein for movement between open and closed positions and the body is provided with a tongue extending outwardly from the body at the periphery thereof in

a direction substantially parallel to the fluid passage, which tongue is apertured for receipt of bolts which, in turn, may be fastened to the flume wall by means of conventional concrete anchoring elements.

3,823,913

## VALVE FOR INSTALLATION IN FLUME

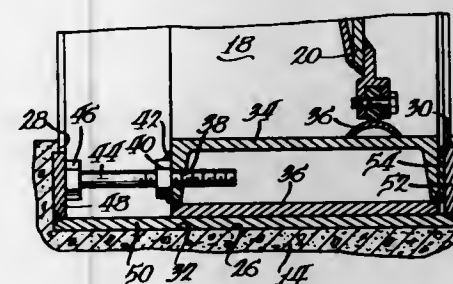
Gregory A. Kurkjian, Jr., Wheaton, Ill., assignor to Henry Pratt Company, Aurora, Ill.

Filed June 7, 1973, Ser. No. 367,778

Int. Cl. F16k 1/22

U.S. Cl. 251-305

12 Claims



A butterfly valve for installation in a flume or the like. The valve includes a body having a shape substantially corresponding to the cross section of the flume in which the valve is to be installed, the valve body being slightly larger in size about a majority of its periphery than the cross section of the flume so as to be receivable in a preformed recess in the wall of the flume. The valve body includes a fluid passage and a valve disc journaled therein for movement between open and closed positions. The valve body is easily mounted in the groove formed in the wall of the flume by the provision of a plurality of threaded elements threadably received at spaced locations in the valve body about the majority of the periphery of the valve body and which may be extended to tightly embrace one side wall of the groove in the flume to force the opposite side of the valve body tightly against the opposite wall of the groove in the flume.

3,823,914

## CHAIN ACCESSORY TOOLS

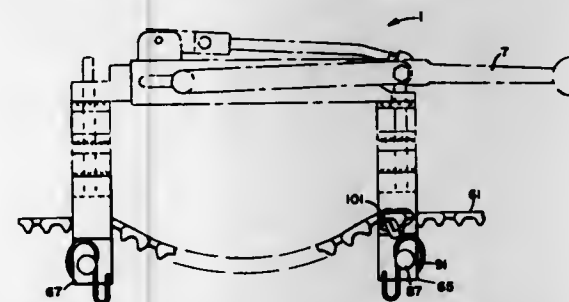
Frederick J. Coll, 109 Latham Trailer Cts., Latham, N.Y. 12110

Filed Apr. 9, 1973, Ser. No. 349,306

Int. Cl. B66f 3/00

U.S. Cl. 254-78

10 Claims



Discloses chain accessory tools for use with a chain accessory device that is operable for mounting a chain to be repaired, and for tightening same and at the same time rendering slack a portion of the chain for purposes of repair, said chain accessory tools, as carried for operative use by the chain accessory device are in a condition of bilateral symmetry and have similar construction. The chain accessory tools have hollow cylindrical elements and hooks. The hollow cylindrical elements are carried in fixed relationship by the chain guides of the chain accessory device, and the hooks are adapted to operatively engage portions of the chain to be repaired.

3,823,915

## ELEVATOR TABLE

Siegfried Koehler, Wiesbaden, Germany, assignor to Trepel AG., Wiesbaden, Germany

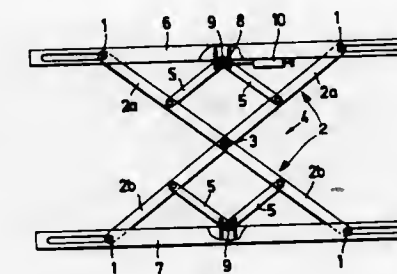
Filed Dec. 29, 1972, Ser. No. 319,770

Claims priority, application Germany, Feb. 24, 1972, 2208777

Int. Cl. B66f 3/22

U.S. Cl. 254-122

8 Claims



An upper and a parallel lower platform are connected by at least two transversely spaced lever units each having two crossed levers which are pivoted at their point of intersection and whose respective upper and lower ends are provided with rollers guided in guides of the upper and lower platform, respectively. The upper and/or the lower ends of the crossed levers of each unit have associated therewith at least one additional lever one end of which is pivoted to the respective platform intermediate the ends of the levers associated therewith, whereas the other end is pivoted to one of the two levers of the unit intermediate the point of intersection of the levers and the end of the lever which is connected with the respective platform. More of the additional levers can also be provided.

3,823,916

## IMPLEMENTS

Malcolm William Shaw, Alcester, England, assignor to M. W. Shaw (Steelworkers) Limited, Alcester, Warwickshire, England

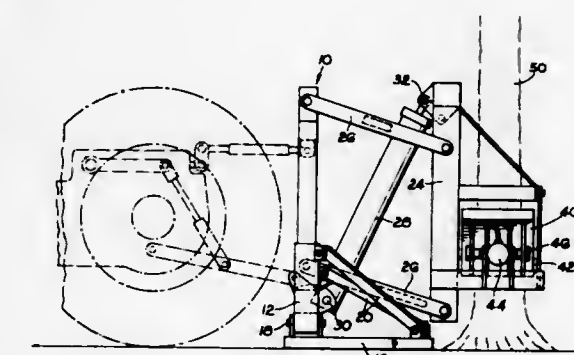
Filed Dec. 18, 1972, Ser. No. 316,120

Claims priority, application Great Britain, Jan. 22, 1972, 3131/72

Int. Cl. B66f 3/00

U.S. Cl. 254-132

6 Claims



The invention provides apparatus for uprooting trees or tree stumps and for mounting on a tractor, and includes a first frame having plates which can be swung into a ground contacting position to provide a reaction to force used in the uprooting action, and a sub-frame mounted on the frame and hydraulically powered to lift relative to the frame, the sub-frame carrying a pair of jaws which are hydraulically powered to grip the tree or stump between them.



3,823,917

**TRAILER CAPABLE OF LIFTING AND LOWERING BOATS OR THE LIKE**

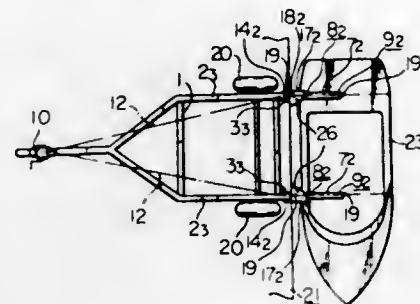
Masahiro Watabe, Kawanishi, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shinuoka-ken, Japan

Division of Ser. No. 93,935, Dec. 1, 1970, Pat. No. 3,716,217.  
This application Nov. 17, 1972, Ser. No. 307,633  
Claims priority, application Japan, Jan. 10, 1970, 45-3089;  
Jan. 14, 1970, 45-4043

Int. Cl. B66c 23/60

U.S. Cl. 254-139.1

5 Claims



A trailer capable of lifting and lowering boats or the like which includes a trailer body of the type known per se having a winch device mounted thereon, and a foldable crane assembly pivotally connected to the rear end of the trailer body, whereby the crane assembly can be moved between a raised or operative position and a folded or inoperative position.

3,823,918

**APPARATUS FOR MOVING SCENERY**

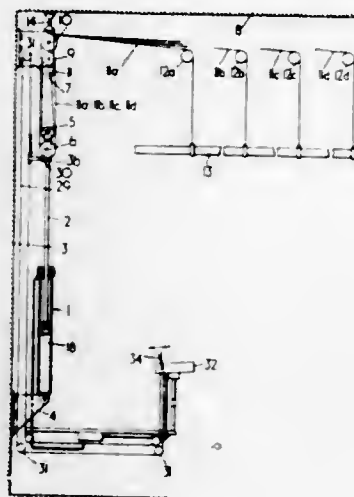
Michael Ian Max Barnett, Thetford, England, assignor to Mole-Richardson (Stage &amp; Studio Engineering) Limited, Thetford, Norfolk, England

Filed July 6, 1972, Ser. No. 269,302  
Claims priority, application Great Britain, July 8, 1971,  
32102/71

Int. Cl. B66c 23/60; A63j 1/02

U.S. Cl. 254-141

6 Claims



A hydraulic cylinder operating in the tensile mode moves a scenery bar by means of a pulley system. The movement of a cylinder rod of the hydraulic cylinder is conveyed by means of a cable to a drum. The drum turns a lead screw, which moves a travelling nut along a keyway. A pointer attached to the travelling nut indicates the position of the cylinder rod and consequently the height of the scenery bar. Abutment of the travelling nut against a height stop moves a control rod which returns a manual control lever to its off position when a pre-set height is reached. The speed of raising or lowering the scenery bar can also be pre-set.

3,823,919

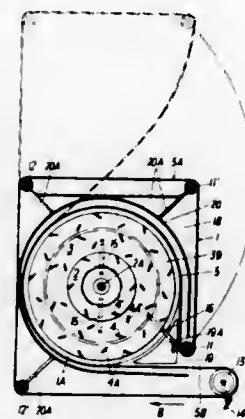
**HOUSING FOR EQUIPMENT HAVING ROTATING TOOLS FOR TREATING LUMPY TO LIQUID MATERIALS**

Karl Benedikter, Vienna, Austria, assignor to Patentanstalt Fur Neue Baustoffe, Vaduz, Liechtenstein

Filed Mar. 6, 1973, Ser. No. 338,521  
Claims priority, application Austria, Mar. 9, 1972, 1969/72  
Int. Cl. B01f 15/02; B02c 13/00

U.S. Cl. 259-2

9 Claims



A housing for equipment having rotating tools for treating lumpy to liquid materials comprises an inner peripheral wall which surrounds and is spaced from the flight circle of said rotating tools, an outer peripheral wall which surrounds said inner wall, two end walls, which cover the tools in front and at the rear, respectively, said end walls and said inner peripheral wall confining a working chamber, in which said rotating tools are carried by a drivable shaft, which axially extends into the working chamber, said tools being adapted to move the material to be treated outwardly and to treat said material in said chamber, said working chamber having a centrally opening inlet and an outlet which extends outwardly adjacent to said inner peripheral wall, and means for discharging the treated material from the working chamber through said outlet, said means comprising a revolving endless belt, which forms at least a portion of said inner peripheral wall of the housing and extends out of said working chamber of the housing outwardly through said outlet.

3,823,920

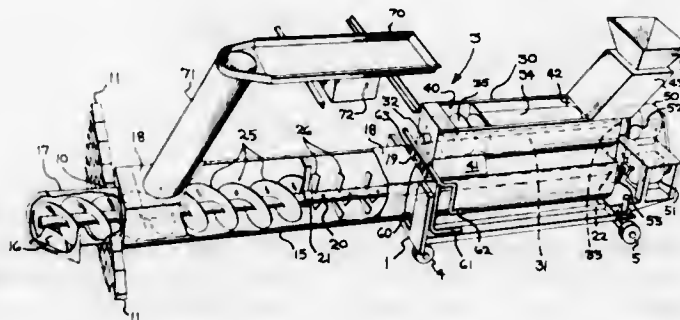
**FEEDING WET GLASS BATCH**

Harry N. Mills, Toledo, Ohio, and Henry E. Roll, Waco, Tex., assignors to Owens-Illinois, Inc., Toledo, Ohio, by said Mills

Division of Ser. No. 114,917, Feb. 12, 1971, Pat. No. 3,725,022. This application Oct. 24, 1972, Ser. No. 300,172  
Int. Cl. B01f 7/04; F27d 3/08, 3/16

U.S. Cl. 259-10

5 Claims



Method and apparatus for controllably and homogeneously combining and controllably feeding preselected amounts of a homogeneous blended mass of liquid and dry glass batch materials into a glass melting furnace. The foregoing is ef-

fectured by the use of a mixing and feeding device which employs a paddle blade mixing and conveying device which communicates with a screw conveyor device in a common chamber into which the liquid and dry materials are independently introduced.

3,823,921

**CONTINUOUS PROCESSOR FOR TREATING MATERIAL**

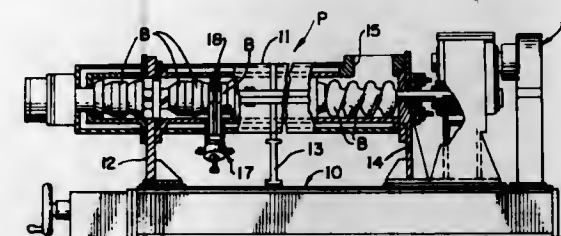
Ambrose K. Brennan, Jr., Thomasville, and Michael J. Lewis, Felton, both of Pa., assignors to Teledyne, Inc., York, Pa.

Filed Nov. 14, 1972, Ser. No. 306,296

Int. Cl. B01f 7/08

U.S. Cl. 259-192

14 Claims



A continuous processor for treating material comprising elongate tubular chamber means, inlet means at one end of said chamber means for introducing a material into the chamber means, outlet means at the other end of the chamber means for discharging material from the chamber means, means in said chamber means for treating material therein and for causing the material to flow from the inlet to the outlet, and adjustable restrictor means in said chamber means between the ends thereof for regulating the flow of material through said chamber means.

3,823,922

**HUMIDIFIER**

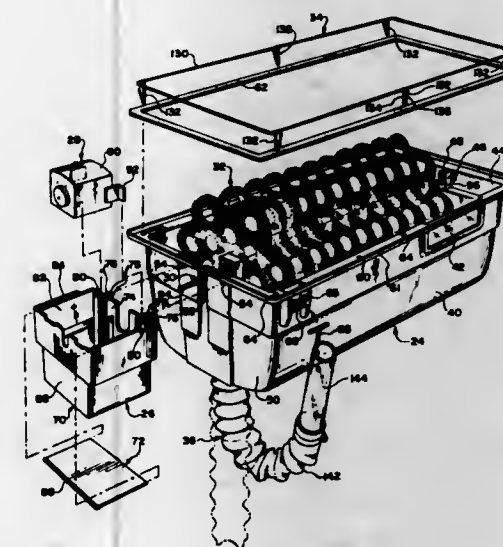
Elmer J. McElreath, Northbrook, Ill., assignor to Ultimatic Products, Inc., Rosemont, Ill.

Filed Mar. 25, 1971, Ser. No. 128,351

Int. Cl. B01f 3/04

U.S. Cl. 261-92

8 Claims



A humidifier adapted for mounting on an air conduit to add water vapor to air flowing through the conduit. The humidifier includes a flexible resilient plastic tank for holding water. A plurality of screen discs is rotatably mounted in the tank. Each of the discs has a plurality of holes, which holes are aligned to allow air to flow through the discs. The discs are rotated by a motor to pick up water in the tank and place the water in an air stream. The tank is secured to an air conduit by a frame

which has a plurality of fingers which extend through apertures in the tank. Wedges in the fingers hold the tank in position. The tank has a hose connected to its bottom to provide a drain for the tank. A transparent tube is connected to one end of the hose, which tube acts as a sight glass for the tank when the tube is mounted in a stored position and through which the tank may be drained when the tube and hose are lowered. The tank also has a pair of windows near the upper portion thereof to allow inspection of the interior of the tank while the humidifier is in operation.

3,823,923

**DEVICE AND APPARATUS FOR TREATING LIQUIDS SUCH AS DRINKING WATER AND WASTE WATER**

Paul Chapsal, Colombes, France, assignor to Trailgaz-Societe Industrielle du Traitement des Liquides et des Gaz, La Courneuve, France

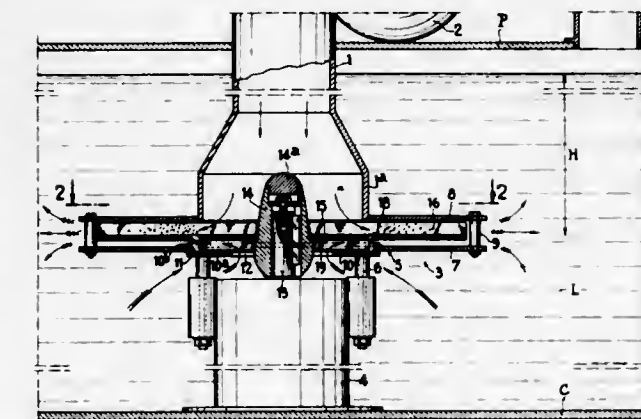
Filed Jan. 11, 1972, Ser. No. 216,951

Claims priority, application France, Mar. 16, 1971,  
71.09193

Int. Cl. B01d 47/18

U.S. Cl. 261-93

10 Claims



Device for treating a liquid and in particular drinking water or waste waters. The device comprises a tube which is immersed in the liquid in a tank and communicates at its upper end with treating gas-supply means. A diffuser having radial vanes fixed to a rotating disc communicates with the lower end of the tube. A pump disposed under and coaxial with the diffuser pumps the liquid from the tank through passages in the disc into chambers defined by the vanes so as to form in the chambers an emulsion of the gas and liquid which is thereafter ejected into the liquid in the tank.

3,823,924

**FILTER DEVICE**

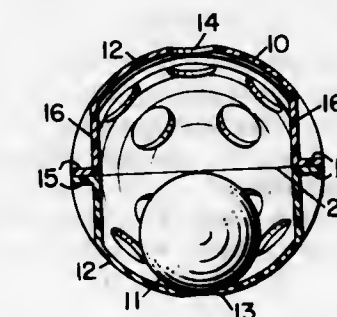
Harry E. Hoon, Jr., Strongsville, Ohio, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed June 21, 1972, Ser. No. 264,809

Int. Cl. B01d 47/00

U.S. Cl. 261-94

2 Claims



A filter unit for use in an apparatus for intercontacting fluid streams and comprising a hollow perforated spherical member



of polymeric plastic material having a solid spherical member disposed therein and freely movable with respect thereto. As applied to a separator in a dust collecting system the units are disposed within a bed of water flowing downwardly in the separator and are also subjected to a current of dust laden air moving upwardly through the bed and contacting the units. In such environment the units move upwardly through the bed of water under the action of the current of air until they reach the surface, where they become filled with water and then drop to the bottom of the bed of water where the water flows out and the cycle is repeated. Such movement of the units aids in the removal of material from the dust laden air.

3,823,925

# PRISMATIC COOLING-ELEMENT ASSEMBLY FOR WATER-COOLING TOWERS

Niculae Cornel Balan, Cluj, Romania, assignor to Trusul de Constructii Industriale Cluj, Cluj, Romania

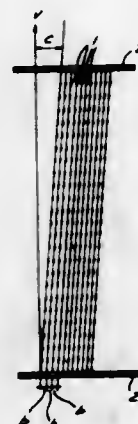
Filed Mar. 1, 1972, Ser. No. 230,555

Claims priority, application Romania, Mar. 12, 1971, 66237

Int. Cl. B01f 3/04

U.S. Cl. 261-98

3 Claims



A cooling-element assembly for a water-cooling tower in which water droplets are dispersed over the entire length of the tower for contact with air passing between and through the elements. The assembly comprises a prismatic array of mutually parallel equispaced polyhedral nets of galvanized iron or synthetic-resin fiber held at their tops and bottoms by horizontally extending pairs of galvanized iron ropes to maintain an inclination of each net to the vertical.

3,823,926  
HUMIDIFIER

Louis A. Brack, Cary, Ill., assignor to Nu-Air Humidifier Corporation, Rosemont, Ill.

Continuation of Ser. No. 136,824, April 23, 1971, abandoned.

This application June 21, 1973, Ser. No. 372,036

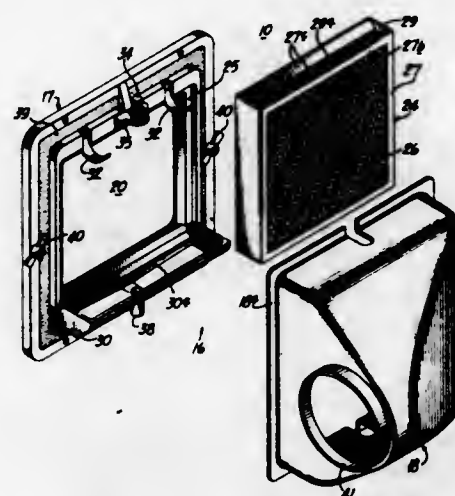
Int. Cl. B01f 3/04

U.S. Cl. 261-106

3 Claims

A humidifier apparatus is provided for use with a furnace system which includes means to circulate heated air. The humidifier apparatus includes a housing formed of a fixed frame member and a readily detachable cover member. The fixed

frame member is adapted to be secured to an air conduit of a furnace system and mounts a filter pad or liquid-air contactor.



The cover member is readily detachably assembled to the frame member so that the cover may be removed without disturbance of the filter pad or other humidifier elements.

3,823,927

# METHOD AND APPARATUS FOR HARDENING IRREGULAR INTERNAL SURFACES

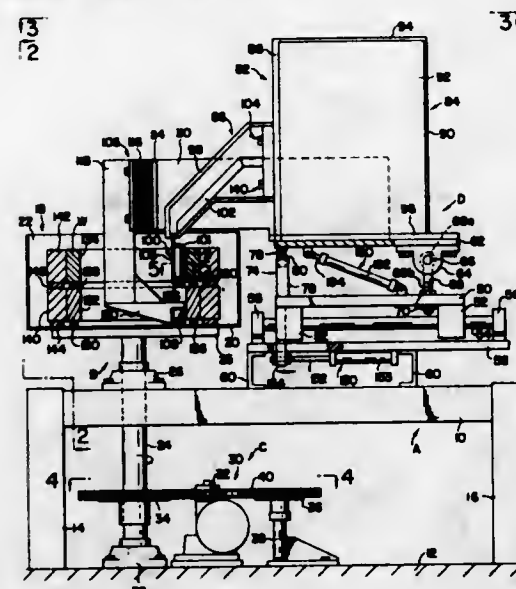
Roger R. Budzinski, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Oct. 16, 1972, Ser. No. 297,938

Int. Cl. C21d 1/10

U.S. Cl. 266-5 EI

9 Claims



Method and apparatus are disclosed for induction hardening the inside surface of Wankel engine housings. The apparatus includes a rotatable, open top support container in which an engine housing to be hardened is disposed with its axis parallel to the axis of rotation. The engine housing is disposed in the receptacle on top of an annular cam element having an inner surface contour corresponding to that of the engine. An inductor is supported adjacent the inner surface of the engine housing by means of a laterally reciprocable carriage, and the carriage also supports a cam follower assembly including a follower roller. When the support receptacle is rotated the cam follower moves along the surface of the annular cam causing the carriage to reciprocate laterally relative to the axis of rotation of the support container so that the inductor is maintained the same distance from the inner surface of the engine housing as the housing rotates. The support container is rotated by a drive assembly such that a constant scanning rate between the inductor and inner surface of the engine housing is maintained.

3,823,928

# TORCH HEIGHT CONTROL FOR FLAME CUTTING MACHINES

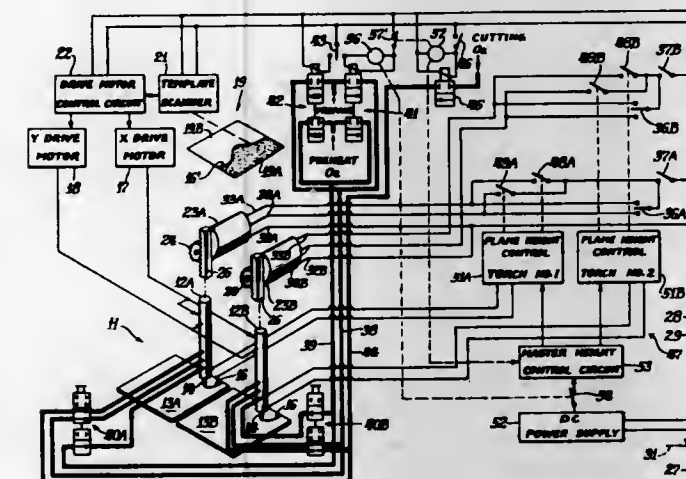
Billy L. Stollin, Manito, and Ronald D. Brown, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 1, 1972, Ser. No. 311,330

Int. Cl. B23k 7/10

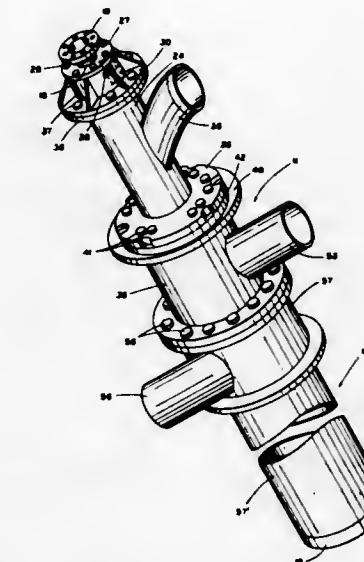
U.S. Cl. 266-23 M

6 Claims



A flame cutting machine having motor means for traveling one or more gas operated cutting torches along one or more workpieces includes a flame height control for maintaining each torch at a predetermined precise spacing from the workpiece. The height control does not require any mechanical element extending between the torch and the workpiece to sense spacing and is insensitive to surface conditions of the workpiece. Torch to workpiece spacing is sensed at the point of contact of the flame with the workpiece rather than at an adjacent area. An electrical voltage is applied between each torch and the associated workpiece whereby the cutting flame constitutes an electrical resistor, the resistance of which is a function of torch to workpiece spacing. The voltage drop across each flame is continually compared with a predetermined selectable reference voltage indicative of desired torch to workpiece spacing and correction signals are generated when necessary to actuate a servomotor that restores the desired spacing of the torch and associated workpiece. Means are also provided for maintaining different torch to workpiece spacings for preheating and cutting stages of operation and for manually adjusting all torches jointly or any selected torch individually and further means disable the automatic flame height control system in response to a pronounced increase in the electrical resistance of any flame such as occurs if a torch passes off the edge of a workpiece.

tube, extend through the bottom wall of the insulating pipe and extend into three converging-diverging orifices. The nar-



row fuel tubes are supported in cantilever fashion and are concentric with each orifice.

3,823,930

# SUPPORT AND DRAWING DEVICE FOR ROTARY CONVERTERS AND ROTARY CONVERTERS SO OBTAINED

Oscar Zinno, Genoa-Quinto, Italy, assignor to Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A., Genoa, Italy

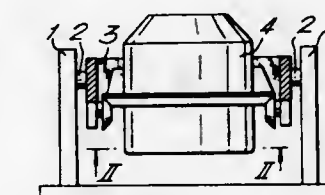
Filed July 20, 1972, Ser. No. 273,588

Claims priority, application Italy, Sept. 29, 1971, 12955/71

Int. Cl. C21c 5/50

U.S. Cl. 266-36 P

5 Claims



The invention aims to obtain a rotary converter about a vertical axis at high speed (70-100 turns per minute) for large quantities of steel per cast operation, said rotary converter though being of simple construction and sure working.

3,823,931

# TAPPING OF A BLAST FURNACE

William Wells, and Derek W. R. Haysom, both of Sydney, Nova Scotia, Canada, assignors to Sydney Steel Corporation, Sydney, Nova Scotia, Canada

Filed Nov. 20, 1972, Ser. No. 307,954

Claims priority, application Canada, Oct. 25, 1972, 154796

Int. Cl. C21b 7/12

U.S. Cl. 266-42

6 Claims

The use of a tuyere comprising an inner tube and an outer tube spaced from the inner tube and preferably coaxial therewith, a gas being passed through the inner tube and a hydrocarbon fuel such as propane, being passed through the outer tube, in tapping a metal refining furnace, particularly a

3,823,929

# NOZZLE FOR FUEL AND OXYGEN LANCE ASSEMBLY

Nicholas M. Rymarchyk, Pittsburgh, and Leo L. Meimert, Baden, both of Pa., assignors to Berry Metal Company, Harmony, Pa.

Filed Sept. 13, 1973, Ser. No. 396,912

Int. Cl. F27d 23/00

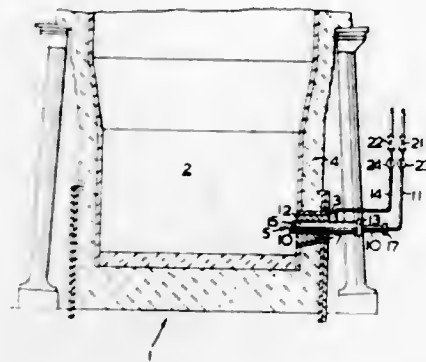
U.S. Cl. 266-34 L

8 Claims

A lance for directing oxygen and fuel oil to a basic oxygen furnace includes a central fuel pipe, an insulating pipe around said fuel pipe, an oxygen pipe and water coolant pipes, all concentrically disposed. The central fuel pipe and insulating pipe have closed bottom walls and a plurality of relatively narrow fuel tubes are connected to bores in the bottom wall of the fuel



blast furnace. The tuyere is cemented in a tapping notch and at the selected tapping time the hydrocarbon fuel flow is reduced and preferably stopped, oxygen being passed through



the inner tube whereby the tuyere disintegrates providing direct communication between the hearth of the furnace and the exterior of the furnace.

3,823,932

### VEHICLE SEAT SUSPENSION WITH VARIABLE SPRING RATE

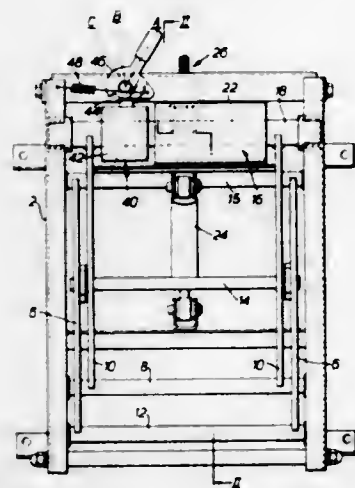
Allison K. Simons, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 24, 1972, Ser. No. 309,571

Claims priority, application Great Britain, Nov. 27, 1971, 55164/71

Int. Cl. F16f 5/00

U.S. Cl. 267—133



Seat suspension system for tractors, trucks and other vehicles includes a pair of rubber torsion springs and a mechanism for selectively connecting or disconnecting one of the springs from operation with the other. In one embodiment the springs are selectively connectable in parallel to increase the total spring rate and in a second embodiment the springs are selectively connectable in series to decrease the spring rate. In both embodiments, one of the springs can be adjustably preloaded to adjust the seat's "ride" position for a particular operator. The variable spring rate feature permits either light or heavy operators to experience a good ride. It also permits the suspension to be tailored to the terrain so as to provide a stiff suspension for bumpy terrain and a light suspension for smooth terrain. Either embodiment can be set to automatically become stiffer when seat movement reaches a predetermined level.

### 3,823,933 ADJUSTMENT APPARATUS FOR STIRRUP ASSEMBLY INCLUDING ROTATING CLAMP BRACKET

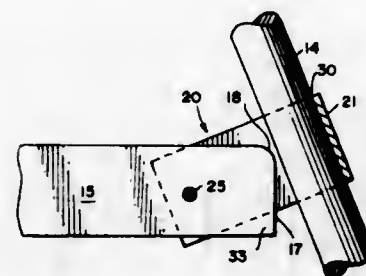
Floyd F. Mueller, Two Rivers, and Clarence J. Aulik, Manitowoc, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 5, 1973, Ser. No. 329,378

Int. Cl. A61g 13/00

U.S. Cl. 269—328

7 Claims



A mechanism is disclosed for permitting vertical and angular adjustment of a stirrup assembly located at either side of the foot end of a medical examination table. The assembly includes a clamping bracket pivotally secured to a horizontally extending extension bar. When the bracket is in a lowered position, it clamps the stirrup support rod and fixes the position of the stirrup assembly. When the bracket is raised, either by raising the bracket itself or by pulling the stirrup assembly, the stirrup support rod is released and the stirrup assembly may be adjusted.

3,823,934

### PRODUCTION OF MULTIPLE-COPY BUSINESS FORMS

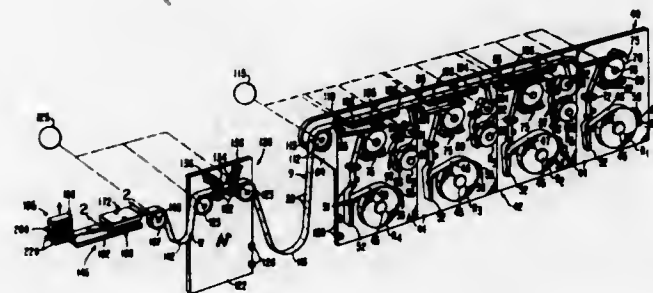
Frank V. Parenti, Dayton; Paul C. Abney, Montgomery County, and George R. Spaleny, Dayton, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Nov. 3, 1971, Ser. No. 195,231

Int. Cl. B65h 39/16

U.S. Cl. 270—18

6 Claims



A plurality of rolls of paper webs and rolls of carbon transfer webs are mounted on corresponding spindles which are cantileverly supported in tandem arrangement by an upright frame. Each paper supply roll is rotated by a constant pressure feed belt, and each paper web is fed upwardly from its supply roll through a corresponding punch unit which forms laterally spaced control holes and U-shaped cuts in the web at longitudinally spaced intervals. Each paper web is then fed upwardly through a corresponding multiple color print unit which successively prints formats on the web. Each carbon web is fed upwardly from its supply roll by a suction drum and passes through a corresponding punch unit which forms longitudinally spaced thumb notches and glue transfer holes in the web in addition to a set of control holes. The carbon webs are then collated with the printed paper webs which are secured together by glue spots projecting through the transfer holes in the carbon webs. The web assembly is then fed through a unit which prints consecutive numbers on the

printed forms and then through a device which simultaneously prepunches each form and sizes the form to length. The web assembly then feeds into another device which completely severs each form and feeds it upwardly into the bottom of a stack so that the consecutive numbers increase in a direction from the top of the stack toward the bottom.

3,823,935

### MACHINE FOR TURNING-IN THE EDGE OF A PIECE OF FLEXIBLE SHEET MATERIAL, ESPECIALLY A TEXTILE FABRIC

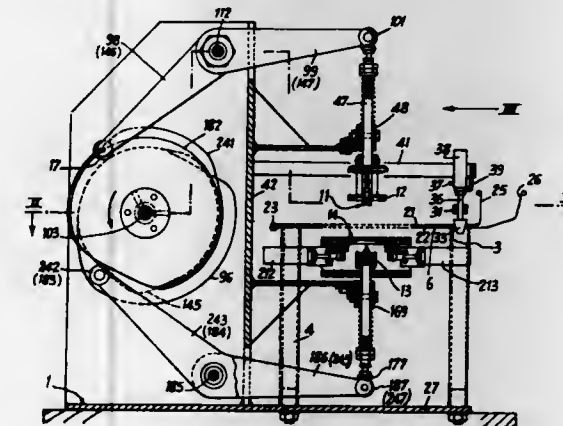
Jean Guichard, Yerres, France, assignor to Centre D'Etudes Techniques Des Industries De L'Habillement, Paris, France

Filed Mar. 22, 1972, Ser. No. 235,782

Int. Cl. B65h 45/00

U.S. Cl. 270—61 R

13 Claims



The machine comprises: a structural frame; a plate for supporting the piece of material with respect to said frame at least along the border to be turned-in; an inseting device adapted to fold at right angles the border to be turned-in by means of a movement in a direction at right angles to said plate; a folding-back device adapted to turn back in a flat position against the support plate the border of the piece of material which has already been folded at right angles, by means of a movement parallel to said plate; and means for displacing the support plate in its own plane in the direction of displacement of the folding-back device in order to free the turned-in piece of material.

3,823,936

### RECORD CARD RECEIVING AND FEEDING APPARATUS

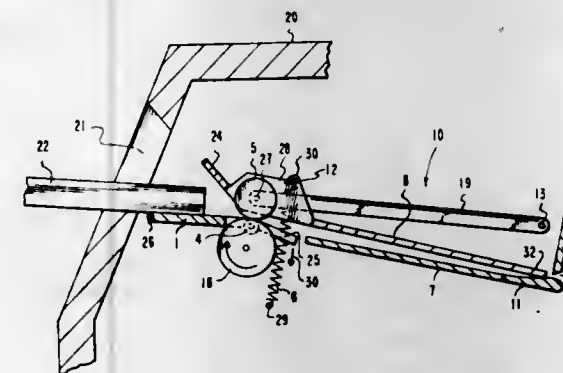
Frederick Fenn Quist, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,591

Int. Cl. B65h 3/06

U.S. Cl. 271—118

10 Claims



An apparatus for accepting a number of record cards and selectively feeding the cards, one at a time, to another station for operations such as reading and writing. In operation, an

operator will insert the cards through an opening in the housing enclosing the apparatus. Beyond the opening in the housing is an expandable pressure throat made up of angularly extending wings integral with a rotatable card lifter and a rotatable pressure plate. With the stack of cards fully inserted and against a knife blade and guide, the stack is maintained intact by 1) a pressure roller connected to the pressure plate and forming part of the pressure throat, 2) card lifter rollers connected to the card lifter and forming another part of the pressure throat, and 3) the pressure plate itself forcing the stack against a baseplate carrying the card lifter. In the normal position a feed roller is spaced from the pressure roller, and is located on the same plane with the pressure and lifter rollers. The pressure plate is spring biased against the stack such that the stack is maintained intact in the vicinity of an exit throat and the entry throat. The feed roller is a continually rotating roller which is brought into contact with an outer card on the stack each time the card lifter is rotated. When this occurs, the outer card is ejected through the exit throat made up of an opening between the knife blade and a throat piece connected to the baseplate. Thereafter, the lifter is rotated back to its normal position and the cards are brought out of contact with the feed roller.

3,823,937

### DEVICE FOR TEMPORARILY RENDERING A CONVEYED SHEET MATERIAL IMPERVIOUS TO THE ACTION OF CONVEYOR MEANS

Van Hirafuji, Atsugi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

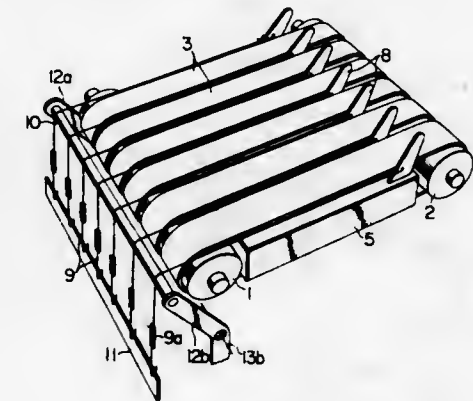
Filed Dec. 29, 1972, Ser. No. 319,750

Claims priority, application Japan, Dec. 28, 1971, 46-36672

Int. Cl. B65h 5/02

U.S. Cl. 271—276

12 Claims



A device mounted above conveyor means comprising a plurality of endless belts trained over a plurality of belt rollers and a sheet suction box disposed between the upper and lower runs of the endless belts for conveying a sheet material placed on the conveyor means while the sheet is drawn by suction to the endless belts. The device comprises at least two sheet material lifting wires trained over the upper run of the endless belt means and aligned with the direction of rotation of the belt, and drive means controlled by drive control means for moving the sheet material lifting means between a stand-by position which is lower than the upper run of the endless belts and an operative position which is higher than the upper run of the endless belts. When in the stand-by position, the sheet material lifting wires permit contact of sheet material with the upper run of the endless belts so that the sheet material on the wires moves with the endless belts; when in the operative position, the wires are spaced apart from the upper run of the endless belts so that the sheet material on the wires is rendered impervious to the action of the conveyor means.



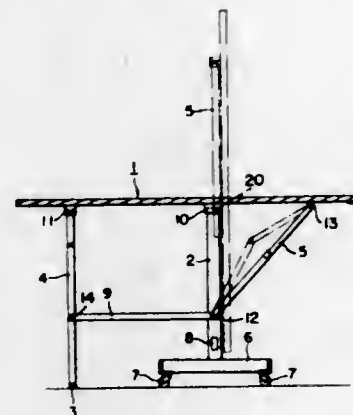
3,823,938

**PING-PONG TABLE WITH SWING TOP BOARD**  
Yoshio Unno, No. 9-10-3D, 4-chome, Higashi Nakano, Tokyo,  
Japan

Filed Jan. 12, 1973, Ser. No. 322,935  
Int. Cl. A63b 39/00

U.S. Cl. 273—30

6 Claims



A Ping-pong table unit, forming one-half of a Ping-pong table and designed for use with an identical Ping-pong table unit to constitute a complete Ping-pong table, comprises a table top board pivotally mounted on main supporting legs forming an under frame provided with castors. Supplementary legs have respective adjusters on the lower ends thereof and their upper ends are pivotally connected to the lower surface of the top board. Connecting rods or links extend between the main legs and the supplementary legs, and folding link pairs connect the supporting main legs to the top board.

3,823,939

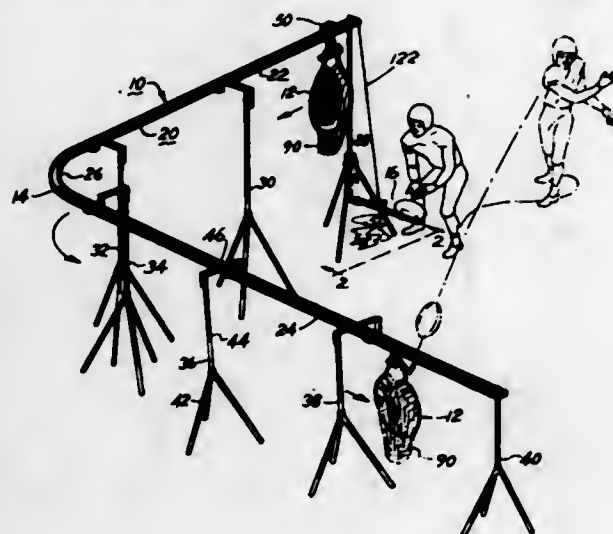
**FOOTBALL PRACTICE APPARATUS**

Richard D. Bottorff, 431 Victoria, Mishawake, Ind. 46544

Filed Nov. 3, 1971, Ser. No. 195,119  
Int. Cl. A63b 67/00

U.S. Cl. 273—55 R

9 Claims



An apparatus for practicing football passing in which a carriage is mounted on an inclined track and supports a target consisting of a vertically positioned hoop with a net on the side opposite the passer for catching the ball tossed thereto as the target moves along the track. A control unit is preferably used which, while supporting the football, holds the carriage and target in their initial starting position on the track and releases them for movement down the track when the ball is removed from the control unit. The track is supported in an elevated position on standards and may be of rigid construction, or may consist of a rigid upper section and a flexible line lower section.

3,823,940

**GAME BALL COMPONENT AND GAME BALL MADE THEREFROM**

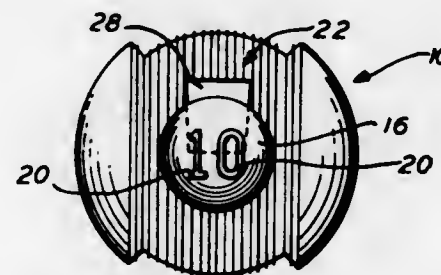
Charles J. Gentile, North Caldwell, N.J., assignor to Orange Products, Inc., Chatham, N.J.

Filed Oct. 1, 1973, Ser. No. 402,048

Int. Cl. A63b 37/00

U.S. Cl. 273—59 R

5 Claims



A game ball component for having an overlay of predetermined injection moldable plastic material of a first predetermined color injection molded over a predetermined portion thereof, including a core structure of a predetermined injection moldable plastic material of a second predetermined color, the core structure having an outer surface, a pair of diametrically opposed segments having the configuration of polar segments of a solid sphere formed integrally with core structure, and each of the segments having at least one cavity formed therein in the configuration of predetermined indicia, a plurality of outwardly extending ribs formed integrally with the core structure along a predetermined portion of the outer surface of the core structure, the ribs for being engaged by the overlay of predetermined injection moldable plastic material and for fusing with the overlay of predetermined injection moldable plastic material to structurally unite the game ball component with the overlay of predetermined injection moldable plastic material, and the core structure having a pair of passageways formed therein with each of the passageways communicating the outer surface of the core structure having the ribs formed thereon with the at least one cavity formed in one of the segments and the passageways for providing a flow path for the overlay of predetermined injection moldable plastic material to flow from the outer surface of the core structure into the cavities to fill the same; and a game ball made from such game ball component and the overlay of predetermined injection moldable plastic material.

3,823,941

**DIVERSIFIED MOTION DEVICE IN A STEERING GAME AMUSEMENT MACHINE**

Shikanosuke Ochi, Tokyo, and Norio Yasuda, Soka, both of Japan, assignors to Kabushiki Kaisha Sega Enterprises, Tokyo-to, Japan

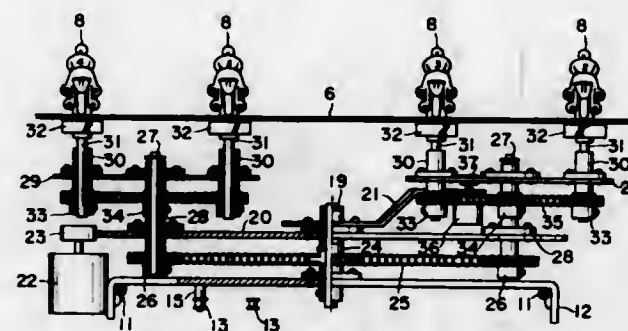
Filed June 28, 1973, Ser. No. 374,653

Claims priority, application Japan, Dec. 31, 1972, 47-2823

Int. Cl. A63f 9/14

U.S. Cl. 273—86 B

8 Claims



In a steering game machine having a single controllable moving object placed upon an opaque surface to be moved

under the player's control in relation with the motion of several free moving objects also placed upon the opaque surface to be moved by magnetic attraction therethrough, a first disk is rotatably mounted on a carriage which can linearly reciprocate below the opaque surface. A pair of first revolvable shafts are mounted uprightly on the first disk, each rotatably supporting a respective second disk above the first disk. A pair of second revolvable shafts are mounted uprightly on each of the second disks, each of the second shafts carrying a magnet on its upper end. By means typically consisting of sprocket wheels and an endless chain, the aforesaid first shafts are caused to revolve only around the axis of the first disk but not on their own axes, and the second shafts are similarly caused to revolve only around the axis of each of the second disks but not on their own axes, so that the free moving objects are maintained in a predetermined direction while being moved in various ways by the magnets on the upper ends of the second shafts.

3,823,942

**INTERCONNECTED HOOPS AND TARGETS**

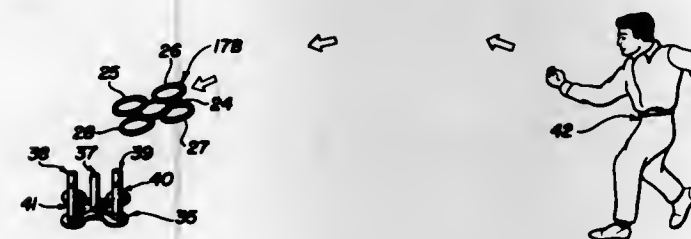
Aldred D. Duncan, Elmhurst, Ill., assignor to Duncanlite Laboratory, Inc., Villa Park, Ill.

Filed Dec. 4, 1972, Ser. No. 311,510

Int. Cl. A63b 71/02

U.S. Cl. 273—100

9 Claims



Hoop games utilizing hoop assemblies intended to be pitched or thrown through the air toward a target where points are scored depending upon the engagement between the hoop assembly and the target. The hoop assembly may take the form of a plurality of hoops secured together in rigidly connected form or chain form and wherein the hoops may be of different colors. The hoops are molded of plastic. In one embodiment, sticks are provided for propelling the hoop assembly through the air, and in other embodiments, the hoop assembly is propelled through the air by being pitched or thrown by a player. The target may be in the form of sticks held by a player or in the form of stakes mounted on a ground or floor supported base.

3,823,943

**PARLOUR GAME**

Samuel Chamecki, Paris, France, assignor to Les Jouets Rationnels, Drancy, France

Filed July 19, 1972, Ser. No. 273,201

Claims priority, application France, July 21, 1971, 71.26719

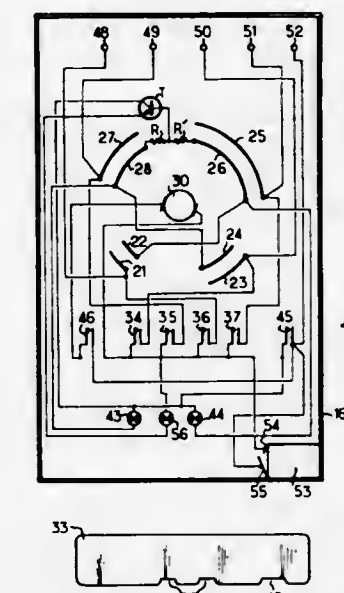
Int. Cl. A63f 3/00

U.S. Cl. 273—131 A

13 Claims

A parlour game in which two opposing forces can be engaged in an imaginary action comprises a board representing a field of action and which is divided into a plurality of divisions. Two groups of elements, respectively representing the two opposing forces, are movable over divisions of the board, whereby elements of the two groups can be moved into range of each other to engage in an imaginary action. A simulator connected to the game has a plurality of probability representing segments, each associated with one of the two opposing forces. The segments represent probabilities which differ. A plurality of push button switches are connected respectively to

each of the probability representing segments are provided for energizing specific ones of the segments in accord with and to total the probability of a given result for each of a pair of the engaged elements of the opposed forces. The push buttons are depressed to activate particular segments by one of a plurality of pattern cards, each of which represents a confrontation between particular opposing forces and carries a different pattern of notches. The notches register with particular push but-



tons to keep those push buttons from being depressed when the pattern card is positioned in a holder adjacent the buttons. A motor operated slidable contact is actuable for effecting a chance selection among the segments for determining and indicating the result of the engagement of the pair of elements. An automatic timer is provided for limiting the time available to the players of the game for moving the elements into engagement.

3,823,944

**GAMEBOARD WITH TWO PLAYING SURFACES AND INDICATING DISCS SLIDABLE THEREBETWEEN**

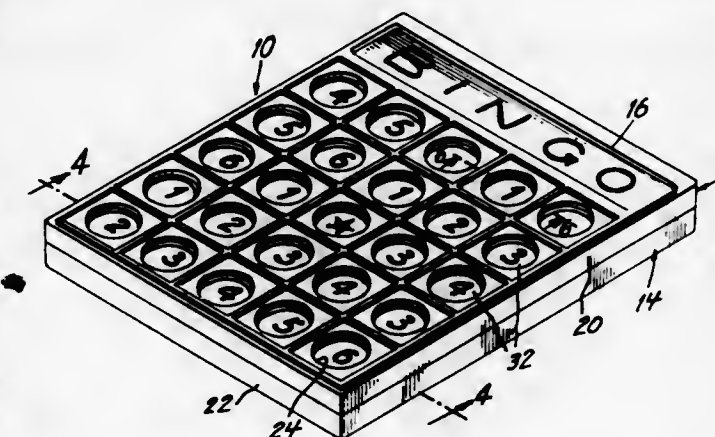
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.

Filed Aug. 20, 1973, Ser. No. 389,837

Int. Cl. A63f 3/06

U.S. Cl. 273—136 F

3 Claims



A gameboard having two playing surfaces for the playing of "Bingo," "Lucky" and similar games and having a matrix of uniformly sized channels within which are positioned permanently attached slidable inserts. The inserts or markers, have indicia on opposed surfaces and the thickness of each of the inserts is less than the depth of the corresponding channel so that the insert may be manually urged from the flush posi-



tion with one face of the board to a recessed position flush with the opposite face of the board, thereby indicating the call of the number and also permitting the use of both sides of the board as alternate "Bingo" cards. In the play of the game, the "call" of the number is preferably intended to be accomplished with a chance selector which agitates dice to designate the proper column and number to be played by each of the players.

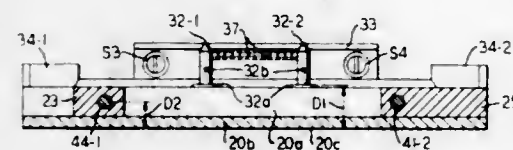
3,823,945

**CONTROLLED TRANSPORT OF A FLEXIBLE MEDIUM**  
Lee J. Milligan, Fairfield, N.J., assignor to Peripheral Systems Corp., Fairfield, N.J.

Continuation-in-part of Ser. No. 159,502, July 2, 1971, abandoned. This application Nov. 29, 1971, Ser. No. 202,888  
Int. Cl. G11b 5/00

U.S. Cl. 360-96

10 Claims



A tape transport unit with a main deck plate that accommodates a magnetic tape cassette against two vertically disposed support pins. A tape head for the cassette is mounted on a spring loaded head plate that is slidably received by the main deck plate on two horizontally disposed support pins. The tape of the cassette is driven by being sandwiched between a drive capstan and a roller wheel of a pinch roller assembly that is pivotally mounted on the head plate and brought into engagement with the tape by a solenoid operated cantilever spring. The capstan is directly driven by a brushless motor for which the speed of operation is controlled electrically. The various constituents of the unit, including forward motion and rewind motors and solenoids for controlling the pinch roller assembly and the position of the main deck plate, are operated from motion control circuitry and accompanying circuitry that is used to sense the beginning and the end positions of the cassette tape.

3,823,946

**TOY GRAMOPHONE**

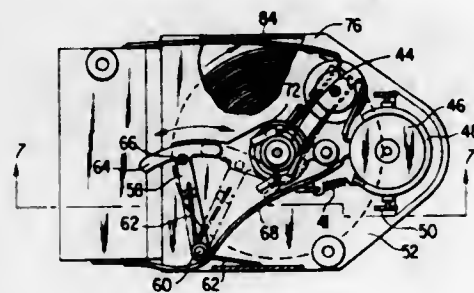
Takamitsu Nakajima, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1973, Ser. No. 355,703

Int. Cl. G11b 3/00

U.S. Cl. 274-9 R

6 Claims



A gramophone for incorporation within a toy provided with a housing having a rotatably mounted door which may be opened and closed, as desired, a spindle reciprocally mounted to the door so as to normally extend into the housing, the spindle being provided with a continuous electrical contact at one end thereof, a turntable mounted on the spindle and an interchangeable sound disc supported thereon, a motor mounted within the housing and arranged such that the shaft

thereof directly engages and drives the turntable, a pick-up arm provided with a platform within which is mounted a stylus, the arm normally being urged by a spring such that the stylus engages the sound disc at the beginning thereof, appropriate electrical means operatively connecting a source of energy to the motor, including a pair of electrical conductive prongs normally engaging the electrical contact of the spindle so as to complete the circuit, one of the prongs being positioned in the path of rotation of the platform such that when the stylus reaches the end of the sound disc the platform engages and pushes the prong away from the electrical contact of the spindle opening the circuit, a speaker cone mounted within the housing such that the platform of the arm makes sliding contact with the apex of the speaker cone during movement of the stylus across the sound disc and a manually operated actuating member for moving the reciprocally mounted sound disc and spindle toward the door of the housing thus disengaging the stylus from the grooves of the sound disc permitting the arm to return to its starting position.

3,823,947

**MAGNETIC RECORDING TAPE**

Minoru Sasaki, and Masana Uozumi, both of Ibaragi, Japan, assignors to Hitachi Maxell, Ltd., Ibaragi-shi, Osaka-fu, Japan

Filed Sept. 27, 1971, Ser. No. 183,795

Claims priority, application Japan, Sept. 25, 1970, 45-95293

Int. Cl. G11b 25/06

U.S. Cl. 274-11 E

13 Claims



A magnetic recording tape with a leader tape having one or both surfaces roughened so as to form small concave and convex portions therein. The leader tape is effective in removing the powder of the magnetic coating and dust from the capstan and the magnetic head of a magnetic recording and reproducing apparatus.

3,823,948

**DISC UNLOADING APPARATUS**

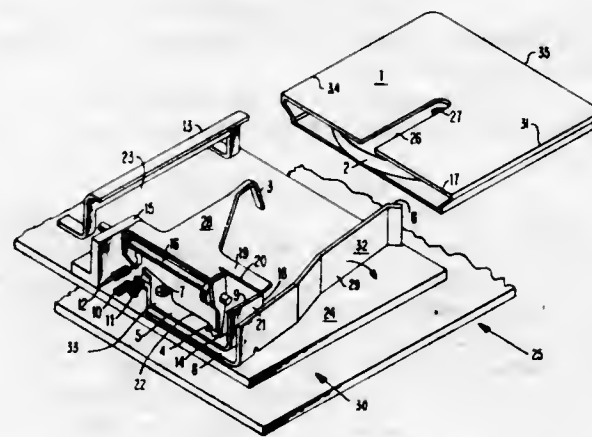
William Melchior Jenkins, Leander, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,272

Int. Cl. G11b 25/04

U.S. Cl. 274-9 B

10 Claims



An apparatus for unloading discs from a disc cartridge when the cartridge is inserted into an intake hopper, or loading sta-

tion, of a recorder, or the like. The apparatus is incorporated into the hopper and is generally defined by a cantilevered unloader and a cantilevered gate. When the cartridge is inserted into the hopper a first extent, the cantilevered gate is pivoted, enabling the remainder of the apparatus such that the discs in the cartridge can be engaged by the unloader. Complete insertion of the cartridge into the hopper will result in downward rotation of the unloader for engaging center openings in the discs. The unloader will then hold the discs in place in the hopper until the cartridge has been completely removed. Complete removal of the cartridge will allow the cantilevered gate to return to its normal position, causing the unloader to rotate in an upward direction and out of engagement with the discs.

3,823,949

**SHAFT SEAL**

Leendert L. J. Derks, De Steeg, and Olav E. Koster, Arnhem, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

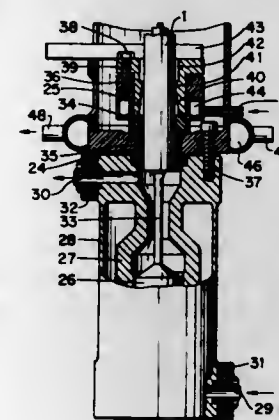
Filed Jan. 21, 1971, Ser. No. 108,491

Claims priority, application Netherlands, Jan. 29, 1970, 7001239

Int. Cl. F16j 15/40, 15/00

U.S. Cl. 277-22

3 Claims



A means for sealing liquids under pressure is disclosed whereby the liquid itself is used as a sealant by cooling the liquid below its solidification point.

3,823,950

**IMPROVED PRESSURE VENTED WEAR RING ASSEMBLY FOR USE IN ROTARY MACHINERY**

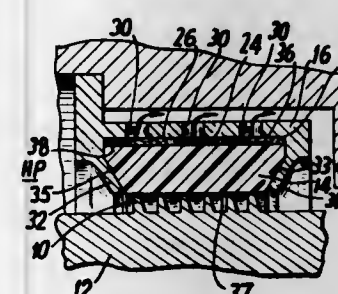
Haakon O. Pedersen, Yardly, Pa., assignor to DeLaval Turbine, Inc., Trenton, N.J.

Filed Oct. 24, 1972, Ser. No. 299,852

Int. Cl. F16j 15/40

U.S. Cl. 277-70

16 Claims



An improved, pressure vented, wear ring assembly is herein described for use in rotary machinery having a substantial axial pressure gradient. A rotor shaft contacting element, in the form of a plastic wear ring, is mounted in a holding member to extend generally co-axially about the axis of rotation of the rotor member. The holding member substantially

3,823,951

**UNBONDED FLEXURE SEAL DESIGN**

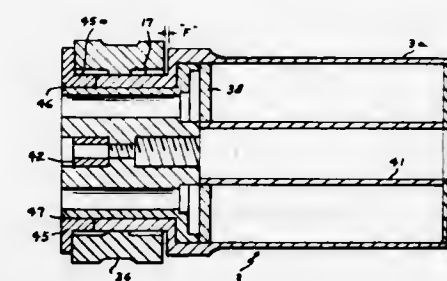
Phillip R. Eklund, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Sept. 7, 1972, Ser. No. 287,188

Int. Cl. F16j 15/32

U.S. Cl. 277-208

3 Claims



A cryogenic compressor-displacer piston seal device consisting of an unbonded slip-on type flexure bushing member incorporating an inner lip in an interference fit and forming a small gas chamber with the piston, and a pair of outer lips in a line and slidable fit with the piston cylinder wall. Gas pressure directed into the small gas chamber deforms or flexes the flexure bushing seal member in an outward direction to force the outer lips thereof into a gas-tight relation with the cylinder wall. Radial expansion of the piston is automatically absorbed, and therefore compensated for by the inherent ability of the bushing member to simultaneously flex or deform therewith.

3,823,952

**TANDEM WHEELED ROLLER SKATE**

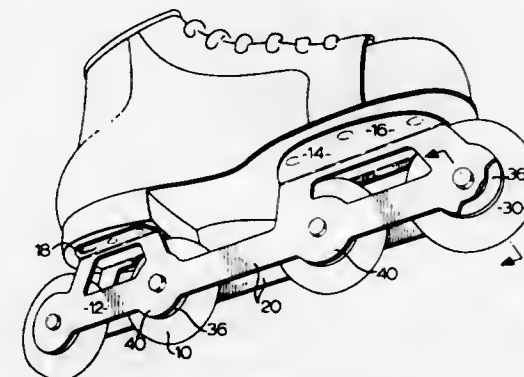
Adolph F. Kukulowicz, 801-Forest Manor, 10 Parkway Forest Dr., Willowdale, Ontario, Canada

Filed May 15, 1972, Ser. No. 253,500

Int. Cl. A63c 17/14

U.S. Cl. 280-11.2

1 Claim



A roller skate has wheels journaled in tandem and rubber-tired parallel coplanar solid sides for said wheels. The wheels are situated between enlarged annular press-plates stamped out of the wheel supporting structure, and floating friction



rings are provided between said solid sides and said pressure plates screw-threaded axles being provided to adjust the rotary resistance of said wheels and thereby provide leg strengthening exercise.

3,823,953

## SKI BINDING OF THE TOE BINDING TYPE

Bror With, Jarlsborgveien 1, Oslo 3, Norway

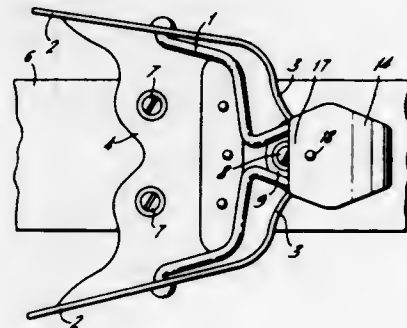
Filed July 19, 1972, Ser. No. 273,131

Claims priority, application Norway, July 27, 1971, 2830/71

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 B

10 Claims



In ski bindings of the toe binding type having a clamping bail pivoted in the toe iron lugs for resiliently pressing the rim of the sole down it is proposed to mount a spring-loaded connecting link pivotally on the bight portion of the bail and connect it releasably and adjustably to a forwardly facing tooth on fixed means on the ski in front of the boot, the link being shaped with an engaging hook. By exerting pressure on the link in front of its pivotal axis the bail is depressed and the link engaged, and by exerting pressure behind the said axis the link is released.

3,823,954

## SKI BINDING

Willy Suhner, Aarauerstrasse 38, 5200 Brugg, Switzerland

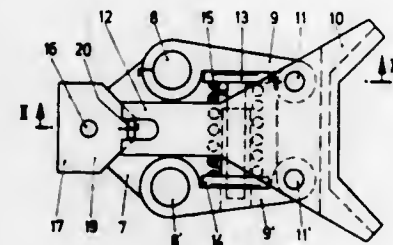
Filed Sept. 28, 1972, Ser. No. 293,163

Claims priority, application Switzerland, Oct. 1, 1971, 14329/71

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

8 Claims



A ski binding has a boot-engaging unit a displaceable member of which can be mounted on a ski for turning movement relative to the latter about an upright axis to a release position. A sole engaging member is pivotally mounted on the displacing member and can move relative to the latter to and from a laterally displaced position. A latching arrangement utilizes a pawl which is also pivotable and can be moved to and from a latching position in which its bifurcated end portion embraces a deep end fixedly mounted on the ski.

3,823,955

## RESILIENT ATTACHMENT FOR SKIS

Georges P. J. Solomon, 34, Avenue de Laverchy Annecy, Haute-Savoie, France

Division of Ser. No. 695,153, Jan. 2, 1968, Pat. No. 3,617,069.

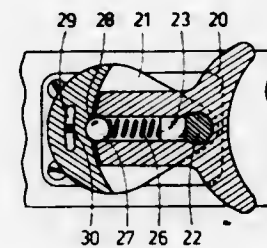
This application Jan. 19, 1970, Ser. No. 8,155

Claims priority, application France, Jan. 4, 1967, 67.89992

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

4 Claims



A resilient attachment for skis in which the resilient function of the attachment is obtained by means of a resilient assembly including a spring that ensures safety locking of the attachment. One of the ends of the spring receives, either directly or not, the mechanical action that ensures resiliency and the other end acts on the locking device of the attachment.

3,823,956

## SKI

Hartwin Zechmeister, Munich, and Hans Zeilinger, Puchheim, both of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Germany

Filed Dec. 22, 1971, Ser. No. 210,915

Claims priority, application Germany, Dec. 22, 1970, 2063167

Int. Cl. A63c 5/12

U.S. Cl. 280—11.13 L

5 Claims



A ski made of plastic or metal and has a core of highly flexible preferably fibrous material.

3,823,957

## STABILIZER FOR STEERABLE WHEELS OF A VEHICLE

Thomas M. Bishop, Tuck Rd., Cedartown, Ga. 30125

Filed Nov. 10, 1972, Ser. No. 305,563

Int. Cl. B60g 3/00

U.S. Cl. 280—94

3 Claims

A pair of stabilizers for vehicles exert inward forces on the steerable wheels of the vehicle. The stabilizers each include a plate fixed to the spindle of a steerable wheel, and springs are connected in series with each other and with a flexible con-

necting means between the plate and the frame of the vehicle. The springs can be placed in various arrangements in series



with the flexible connecting means and the assembly can be arranged to accommodate the contours of the vehicle's suspension system.

3,823,958

## HOUSE TRAILER STABILIZER AND JACK SYSTEM

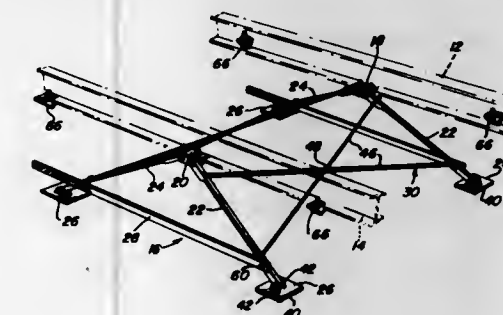
Earl A. Trejbal, Rt. 1, Sagle, Idaho 83860

Filed May 10, 1973, Ser. No. 358,938

Int. Cl. B60s 9/00

U.S. Cl. 280—150.5

8 Claims



A stabilizer assembly is provided for use in pairs to be used in supporting and stabilizing the opposite ends of a house trailer or the like. Each assembly includes a pair of horizontally spaced first and second mounting brackets for securement to corresponding opposite side portions of a house trailer and a pair of downwardly divergent front and rear legs are provided on each mounting bracket and pivotally secured at their upper ends to the corresponding bracket for angular displacement about transverse axes extending between the mounting brackets. An elongated tension member extends between the lower ends of each pair of legs and is pivotally secured thereto with one end of the tension member and the corresponding bracket legs including structure operative to releasably establish the pivot connection therebetween at a selected point of a plurality of predetermined points spaced along the tension member. Further, diagonal bracing members extend and are secured between the opposite side legs of the stabilizer assembly.

3,823,959

## TWO WHEEL DRIVE BICYCLE

R. F. Winters, P.O. Box 123 Rouse Station, Covington, Ky. 41014

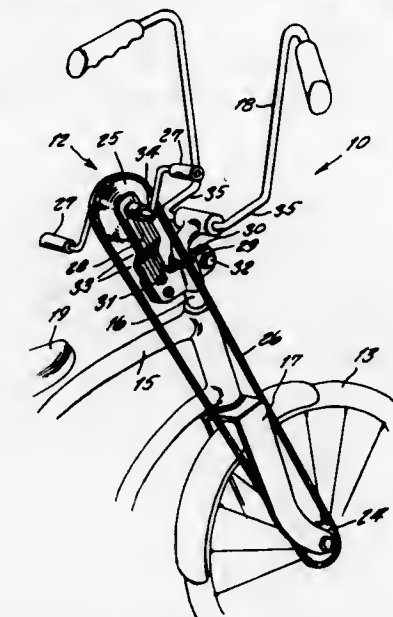
Filed Dec. 29, 1971, Ser. No. 213,689

Int. Cl. B62m 1/00

U.S. Cl. 280—234

1 Claim

A bicycle which includes a frame supported at its rear on a rear wheel, the front of the frame being supported on a steer-



ing post supported on a front wheel; the rear wheel being powered or braked by a foot pedal unit, and the front wheel

3,823,960

## FIFTH WHEEL SAFETY LOCK

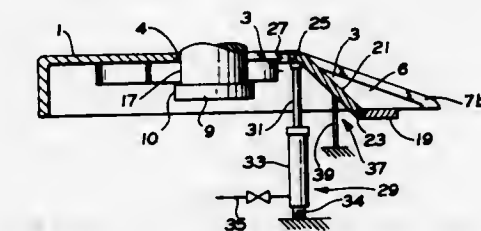
Jack L. Boggs, 1239 Chandler Ave., Akron, Ohio 44313

Filed Sept. 25, 1972, Ser. No. 292,180

Int. Cl. B62d 53/10

U.S. Cl. 280—432

15 Claims



A safety lock to prevent unwanted disengagement of vehicles connected by a fifth wheel coupling comprising a bolt reciprocally mounted under the radially opening slot in a fifth wheel plate, pressurized fluid driven means connected between the leading vehicle's brake system and the bolt for raising the bolt into the slot and holding it in the slot during operation of the vehicles wherein the bolt is capable of abutting engagement with the king pin of the trailing vehicle upon longitudinal movement of the pin along the slot and means for preventing the bolt from being pushed longitudinally out of the opened end of the slot.

3,823,961

## REMOVEABLE SAFETY PLUG FOR FIFTH WHEEL SLOT

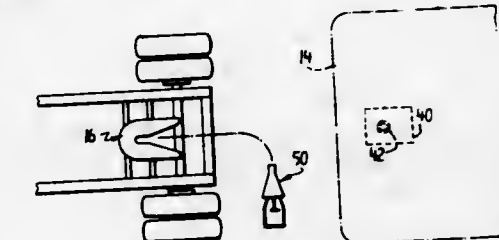
Miklos B. Korodi, 440 E. 79th St., New York, N.Y. 10021

Filed Feb. 9, 1973, Ser. No. 331,287

Int. Cl. B62d 53/10; B60d 1/12

U.S. Cl. 280—432

6 Claims



A safety lock for forward insertion into the rearward-opening, kingpin-receiving slot of a conventional fifth wheel plate,



behind an associated kingpin, to block the kingpin-slot rearward of the kingpin and limit rearward movement of the latter in the event of failure of the conventional kingpin-latching structure. The abutment body includes latch structure releasably engageable with the fifth wheel plate to lock the abutment body within the kingpin slot against rearward movement therein.

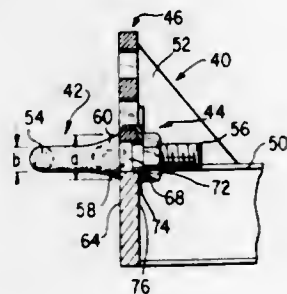
3,823,962

## LUNETTE ASSEMBLY

Raymond D. Martin, Jr., Centreville, Md., assignor to Centreville Tag-A-Long Trailers, Inc., Centreville, Md.  
Filed Aug. 24, 1973, Ser. No. 391,474  
Int. Cl. B60d 1/04, 1/14

U.S. Cl. 280-514

15 Claims



A lunette member having a forward eye portion, a rear shank, and an intermediate plug portion interconnecting the shank and the eye. The intermediate plug portion has a transverse cross sectional configuration of a square, and fits in a mating square through socket formed in a mounting member of a trailer tongue. The base of the eye portion is thickened in both transverse directions, forming a rearwardly facing shoulder that engages the forward face of the mounting member. A lock nut retains the lunette on the mounting assembly.

3,823,963

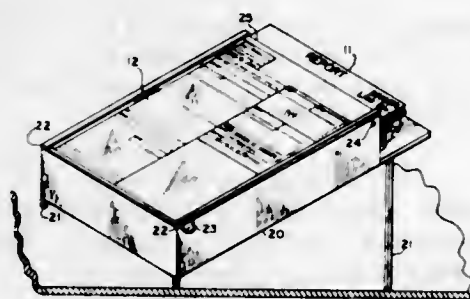
## INFORMATION SEGREGATION APPARATUS

Thomas Fitzgerald, and Rebecca M. Edwards, both of Takoma Park, Md., assignors to The Singer Company, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,943  
Int. Cl. B42d 15/00

U.S. Cl. 283-66

3 Claims



This invention comprises a simple device which serves as an overlay for reports or other document sources of information having prescribed formats. In abstracting information from such documents, the person performing the task must learn and then remember the order in which the information is to be used and where, in any particular format, the information is located. The overlay of this invention is a transparent sheet having areas thereon outlined to form boxes or bounded portions. When the sheet is placed over the document for which it was designed, the information which appears under each of the boxes is identified by appropriate instructions printed in the boxes so that an unskilled individual can properly abstract

the desired information. Also included is a special container which permits the loading of a plurality of similar documents for use with a single overlay sheet, and the utilization of one document after another, without disturbing the overlay sheet.

3,823,964

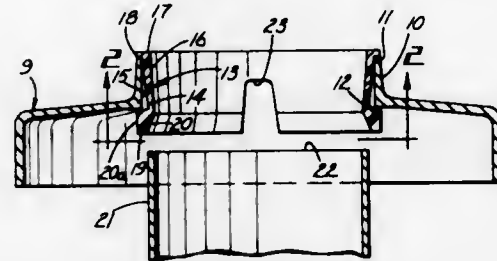
## ESCUTCHEON WITH POSITIONING MEANS

William E. Politz, Delphi, Ind., assignor to Stephen A. Young, Monticello, Ind.

Filed Jan. 5, 1973, Ser. No. 321,453  
Int. Cl. F16l 5/00

U.S. Cl. 285-46

6 Claims



There is disclosed escutcheon construction for use in conjunction with concealed plumbing fittings, and having grippings means of resilient form removably mounted therein, said grippings means including a taper area, notches related thereto and retaining means whereby the escutcheon may be slidably engaged with a sleeve and positioned therealong, the gripping action being such that the escutcheon is firmly and uniformly located.

3,823,965

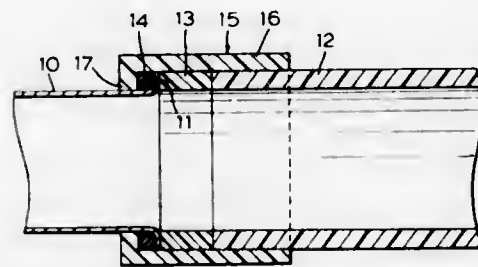
## PIPE JOINT

John Ernest Emberson, 25 Dogwood Cres., Scarborough, Ontario, Canada

Filed Feb. 26, 1973, Ser. No. 373,741  
Int. Cl. F16l 55/00

U.S. Cl. 285-174

7 Claims



Metal pipes and plastic pipes are joined together by means of an outwardly flanged metal pipe section and a cylindrical plastic connecting member with an inward flange. The metal flange, on the end of the metal pipe section, is located within the cylindrical body portion of the connecting member, the two flanges cooperating to compress a sealing ring in between, with the body of the metal pipe protruding through the flange on the plastic member. A retaining ring fits snugly within the body portion of the connecting member, bears against the metal flange, and holds the joint in assembled position.

3,823,966

## CLOSURE LATCH

Nozomu Torii, Hekinan, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

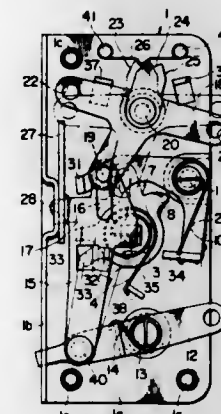
Filed Oct. 24, 1972, Ser. No. 300,295  
Int. Cl. E05c 3/26

U.S. Cl. 292-216

5 Claims

A closure latch having a latch bolt movable between latched and unlatched positions, a detent for holding the bolt against

movement to the unlatched position, inside release means, outside release means, an intermittent member movable to any one of at least two positions for selectively coupling both the inside and outside release means to the detent in the first position of the intermittent member and coupling only the outside release means to the detent in the second position of



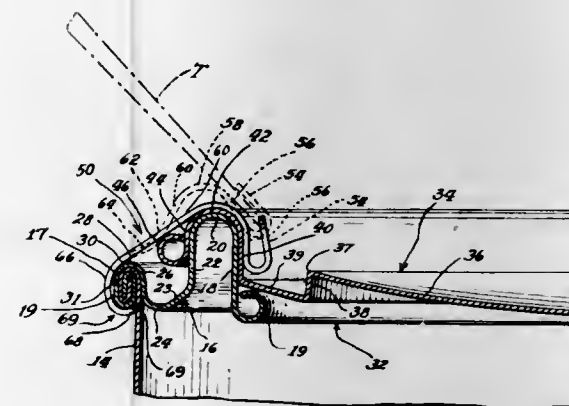
3,823,967

## CLIP FOR A CAN OR CONTAINER

Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.

Filed Dec. 20, 1972, Ser. No. 316,770  
Int. Cl. B65d 45/30

U.S. Cl. 292-258



A clip for detachable securement to a lid and a can or container for the purpose of retaining said lid locked with respect to said container, said container having a rim having a generally inverted U-shaped portion extending inwardly of the wall of the body of the container and upwardly thereof, with a lid having an inverted U-shaped portion which seats over the correspondingly shaped portion of the rim and with the clip comprising an integrally formed strip shaped to form a U-shaped inner end and an inwardly turned outer end, with an intermediate humped portion. The clip is applied so that the inner leg of the U-shaped inner end tangentially engages the curved U-shaped portion of the lid and applies an inward and downward force or pressure against that portion of the lid to hold same in locked position relative to said rim.

3,823,968

## ARRANGEMENT OF BUMPER IN MOTOR VEHICLES

Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz AG, Stuttgart, Germany

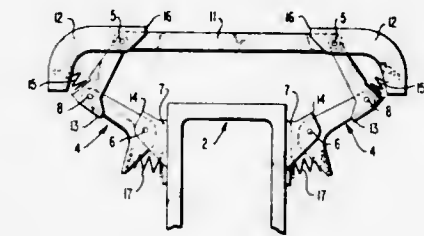
Filed Feb. 17, 1972, Ser. No. 227,133

Claims priority, application Germany, Feb. 8, 1971, 2107702

Int. Cl. B60r 19/06

U.S. Cl. 293-84

15 Claims



An arrangement of a bumper in vehicles, especially in motor vehicles, according to which the bumper is yieldingly supported at the support structure of the vehicle, such as the frame or chassis-frame, whereby the bumper is guided in the horizontal plane by scissor-like devices having vertical joints which are arranged between the support structure and the bumper.

3,823,969

## PNEUMATIC SHOCK ABSORBING BUMPER

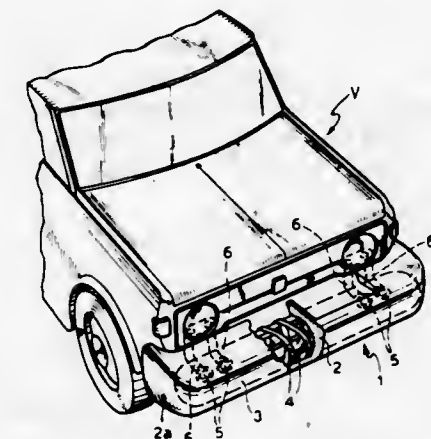
Richard Sapper, Stuttgart, Germany, and Sergio Marocco, Milan, Italy, assignors to Fiat Societa per Azioni and Industrie Pirelli S.p.A., Milan, Italy

Filed Oct. 20, 1972, Ser. No. 299,573

Claims priority, application Italy, Oct. 25, 1971, 70490/71  
Int. Cl. B60r 19/10, 21/02; B61f 19/04

U.S. Cl. 293-71 P

5 Claims



This invention provides a pneumatic collision guard for vehicles of the type comprising a flexible walled hollow body of inextensible material containing air under pressure. The hollow body has air discharge apertures which are normally closed but which are opened rapidly, for example by the breaking of brittle caps over the apertures when as a consequence of a collision, the deceleration of the vehicle or the deformation of the air filled body, reaches a given value corresponding to the desired deceleration.



responding to the maximum acceptable deceleration, thereby limiting the reaction force imparted to the vehicle through the collision guard.

to each other in a pole or handle for automatically imaling a fish on both sides of its body with gaff hooks by a simple manipulation of the pole.

3,823,970

## POLLUTION CONTROL DEVICE

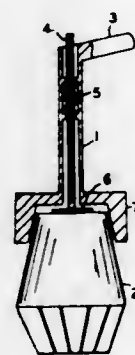
William Brenner, 105 Neil Ct., Port Washington, N.Y. 11756, and Herbert Cooper, 1 Tony Point Ln., Port Washington, N.Y. 11050

Filed Oct. 19, 1972, Ser. No. 299,067

Int. Cl. A47f 13/06

U.S. Cl. 294—19 R

1 Claim



A containerization device for picking up material comprising a container, a handle to hold the container for positioning the container during the operation of the device. A releasing means is in the handle to enable efficient ejection of the container for disposal purposes. The container is adapted to fit into the handle for holding purposes and is configured to enable the container to entrap and collect various materials. The container is also designed to lock in the closed position when used so that the material is enclosed and may be stored or disposed of in an efficient and sanitary manner.

3,823,971

## GAFF HOOK

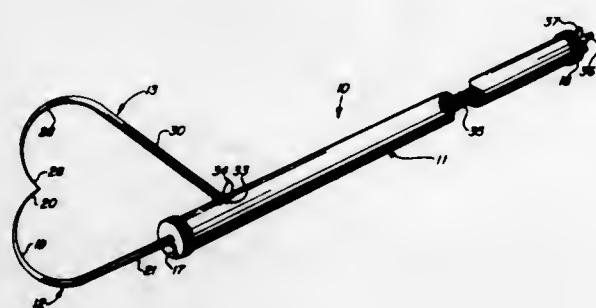
Alvin C. Golden, P.O. Box 942, Scottsdale, Ariz. 85252

Filed Aug. 8, 1973, Ser. No. 386,703

Int. Cl. A01k 97/14; B65g 7/12

U.S. Cl. 294—26

8 Claims



A fish landing implement comprising a pair of opposed gaff hooks which are secured in movable cooperating relationship

3,823,972  
REFUSE CONTAINER

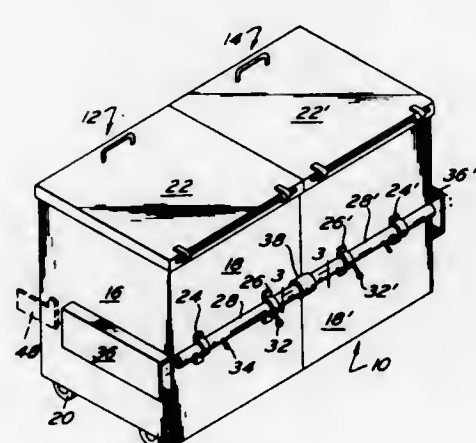
Leonard Ramer, 1137 E. 24th St., Brooklyn, N.Y. 11210

Filed June 14, 1972, Ser. No. 262,857

Int. Cl. B65d 21/02

U.S. Cl. 294—73

10 Claims



A refuse container of the type adapted to be lifted up by lifting tines on a front loader. Two or more containers may be removably coupled together so as to form one large container.

3,823,973

## REFUSE CONTAINER FOR REAR END LOADER

Leonard Ramer, 1137 E. 24th St., Brooklyn, N.Y. 11210

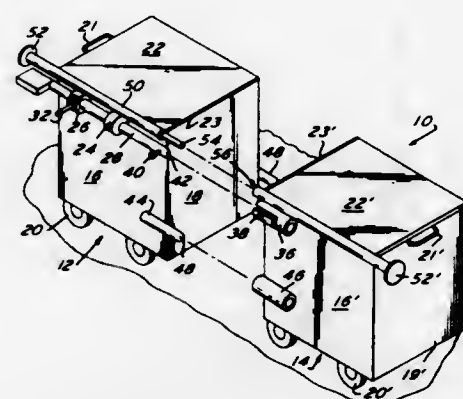
Continuation-in-part of Ser. No. 262,857, June 4, 1972. This

application Mar. 19, 1973, Ser. No. 342,651

Int. Cl. B65f 3/00

U.S. Cl. 294—73

9 Claims



A refuse container of the type adapted to be lifted up by lifting tines on a rear loader. Two or more containers may be removably coupled together so as to form one large container.

3,823,974

## FOLDING CAMPER

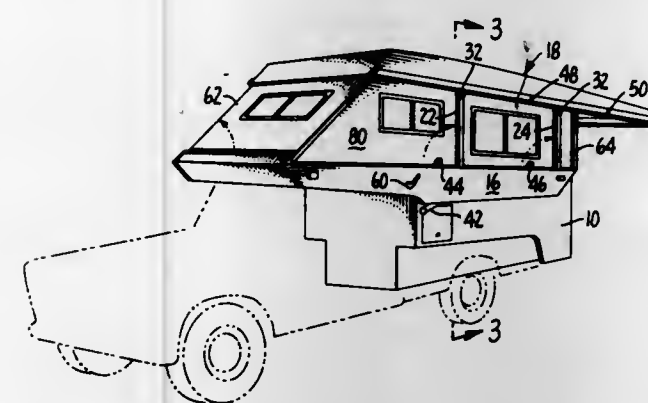
Le Roy K. Patnode, 920 Trout Gulch Rd., Aptos, Calif. 95003

Filed Jan. 22, 1973, Ser. No. 325,506

Int. Cl. B60p 3/34

U.S. Cl. 296—23 MC

4 Claims



A folding camper is described which is sturdy, light in weight and which can be erected easily by a single person. The structure permits maximum utilization of the space inside the camper.

3,823,975

## MOTORCYCLE TRAILER AND CAMPER

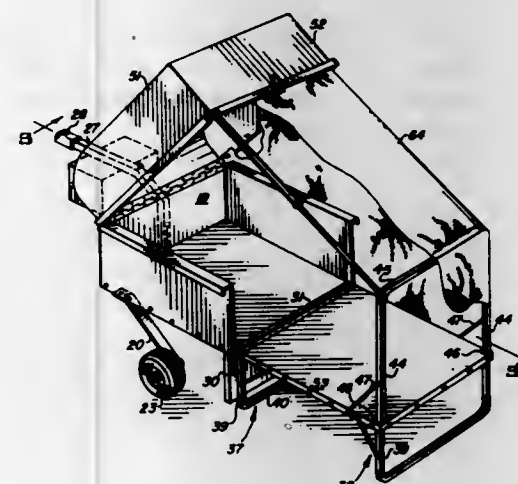
Gene W. Cooper, 915 E. Southern Ave., Phoenix, Ariz. 85040

Filed Aug. 20, 1973, Ser. No. 389,700

Int. Cl. B60r 7/02

U.S. Cl. 296—23 R

10 Claims



This specification discloses a trailer intended primarily for attachment to a motorcycle and which includes facilities which adapt it for use as a camper. The trailer comprises two box-like parts. The lower part consists of a bottom, side walls, a front wall and a tailgate. The upper box-like part comprises a top, side walls, a front wall, the lower edge of which is hingedly connected to the upper edge of the front wall of the lower part, and a rear wall. Seals are provided between the meeting edges of the side walls and the lower edge of the rear wall of the upper member and the tailgate. A platform is hingedly mounted on the rear edge of the bottom of the lower box-like member and carries two pairs of collapsible legs at the opposite ends thereof and a pivotally mounted vertical support. A pair of telescopic arms are pivotally mounted at the lower edge of the rear wall of the upper member and when extended are connected to the vertical support. A canopy in rolled form is stored in the upper member and when unfurled is secured in draped position over the extended telescopic arms and vertical support by snap fasteners.

A pair of leaf springs are secured to the bottom of the lower member and carry wheels at their free ends. A tongue extends forwardly from the front wall of the lower member and carries a hitch at its front end. Cooperating elements of a detachable connection are mounted on the tongue and top wall of the upper member to hold the upper member in an upraised, inclined position relative to the bottom member.

3,823,976

## LATCH MECHANISM

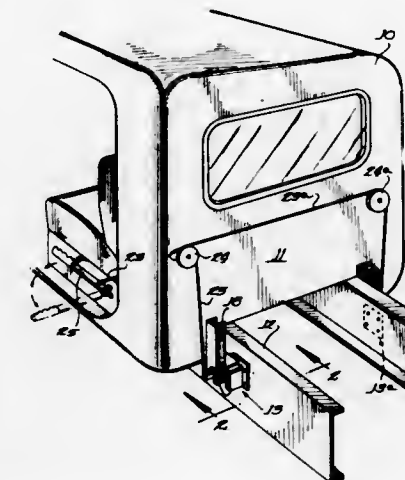
Russell G. McMillen, Fort Wayne, India, assignor to International Harvester Company, Chicago, Ill.

Filed May 1, 1972, Ser. No. 248,841

Int. Cl. B62d 27/06

U.S. Cl. 296—35 R

6 Claims



A latch mechanism for latching a movable body structure, such as a tilting truck cab, to a fixed body structure, such as a truck chassis, including a pivotally mounted latch lever engageable with a latch bracket, the latch lever being held in position by an over-center spring and adapted to be released by a lever-actuated cable attached thereto.

3,823,977

## MOTOR VEHICLE BODYWORK WITH RIGID SUNSHINE ROOF

Leonardo Fioravanti, Moncalieri (Turin), Italy, assignor to Carrozzeria Peninfarina S.p.A., Turin, Italy

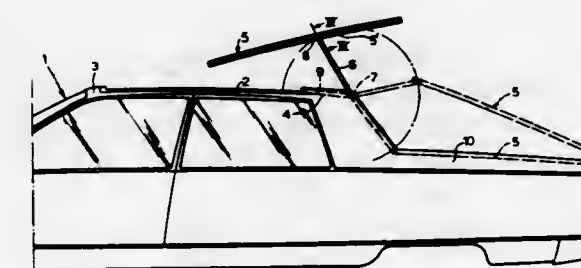
Filed Oct. 30, 1972, Ser. No. 301,924

Claims priority, application Italy, Nov. 3, 1971, 70604/71

Int. Cl. B60j 7/16

U.S. Cl. 296—137 B

2 Claims



A vehicle bodywork is provided with a rigid sunshine roof panel which, in accordance with this invention, extends almost the entire length of the roof and is connected to a rear cross member of the fixed roof structure by two pivoted rocker arms which can slide and rotate in longitudinal guides on each side of the roof panel, permitting the latter when released to be accommodated on the rear trunk lid of the vehicle, while allowing normal opening of said lid.



3,823,978

**VEHICLE SEAT HARNESSES OR SAFETY BELTS**  
 Ernest Baker Dove, Leigh-On-Sea, England, assignor to  
 Teleflex Limited, Essex, England  
 Filed Feb. 8, 1973, Ser. No. 274,013  
 Claims priority, application Great Britain, July 23, 1971,  
 34792/71

Int. Cl. B60r 21/10; A60b 35/00  
 U.S. Cl. 297—388

7 Claims



A seat harness or safety belt comprising a first assembly adapted to be mounted at one side of a seat and including a first part of a two-part fastening buckle. A second assembly adapted to be mounted at the other side of the seat and including a spring-loaded webbing retracting reel which supplies a variable length of webbing having at its free end the other part of said fastening buckle. Manually releasable snubbing device which normally engages the webbing leaving the reel to restrain the webbing from movement into and out of said reel, said second assembly further includes a flexible stalk through which said webbing passes. The reel and the snubbing device being located at respective opposite ends of said stalk, said first assembly further includes a flexible stalk at one end of which is attached said first part of the fastening buckle.

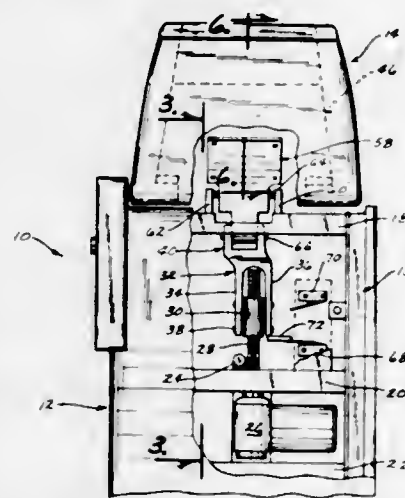
3,823,979

**DENTAL CHAIR**

Roderick W. Davis, Sr., Des Moines, Iowa, assignor to Den-Tal-  
 Ez Mfg. Co., Des Moines, Iowa  
 Filed Jan. 11, 1973, Ser. No. 322,756  
 Int. Cl. A47c 1/02, 1/06, 1/12

U.S. Cl. 297—330

9 Claims



A dental chair comprising a seat portion having a back portion pivotally secured thereto. A lever element is secured at its upper end to the lower center portion of the back portion and is pivotally secured at its lower end to the rearward end of a clevis element. The lever element is pivotally secured, above

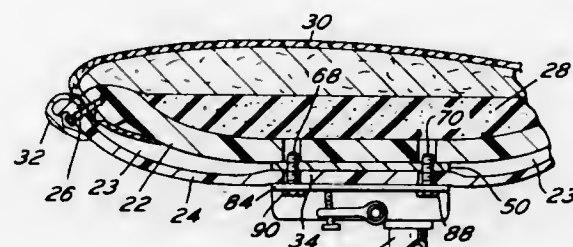
its lower end, to the seat portion. The forward end of the clevis element is secured to a sleeve which is threaded onto the screw shaft of an electric motor for longitudinal movement thereon. Movement of the sleeve by the screw shaft causes the clevis element to act upon the lower end of the lever element thereby causing the lever element and the back portion to pivot about the pivotal connection of the lever element and the seat portion.

3,823,980

**CHAIR**

Robert Harnick, Parlin, N.J., assignor to Blair Manufacturing  
 Co., Marietta, Ga.  
 Filed May 14, 1973, Ser. No. 359,819  
 Int. Cl. A47c 7/02, 23/00, 7/00  
 U.S. Cl. 297—455

11 Claims



A chair is disclosed having inner and outer shells joined together at the outer periphery with intermediate portions of the shell spaced from one another. The inner shell has padding secured to its upper surface over which lies a removable seat cover. A base is connected to a mounting plate which is disposed between the shells.

3,823,981

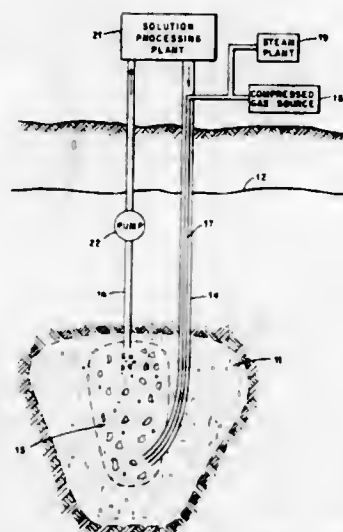
**SITU LEACHING SOLVENT EXTRACTION-PROCESS**  
 Arthur E. Lewis, Los Altos, Calif., assignor to The United  
 States of America as represented by the United States Atomic  
 Energy Commission, Washington, D.C.

Filed Apr. 4, 1973, Ser. No. 347,757

Int. Cl. E21b 43/28

U.S. Cl. 299—4

9 Claims



A nuclear explosive is detonated in an ore deposit below the water table to provide fragmented ore disposed in a nuclear chimney which serves as an in situ pressure vessel. The vessel is filled with water from external sources or by flow from the formation and oxidizing gas is bubbled through the ore to oxidize and dissolve metal values therein. An organic extractant solution is then contacted with the aqueous phase in the vessel and is circulated to the surface where the metal values are recovered therefrom. Following makeup the organic phase is recycled into the nuclear chimney.

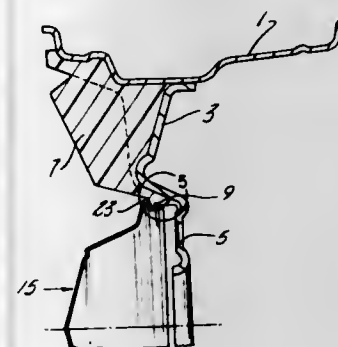
3,823,982

**HUB CAP FOR MOLDED VEHICLE WHEEL**

Edward G. Spisak, Westland, Mich., assignor to S & S Product  
 Engineering Service, Inc., Wyandotte, Mich.  
 Filed Aug. 2, 1973, Ser. No. 386,447  
 Int. Cl. B60b 7/04, 7/06

U.S. Cl. 301—37 P

4 Claims



A wheel and cap combination has a metal tire rim and metal wheel disc having wheel attaching holes. An ornamental plastic cover is molded or bonded to the rim and disc radially outward of the holes. The plastic cover has a groove that receives spaced peripheral ribs formed on the annular flange of a cap that extends into the plastic cover. A boss formed on the plastic cover is located between the edges of a cutaway section of the annular flange to prevent relative rotation.

3,823,983

**WHEEL CONSTRUCTION**

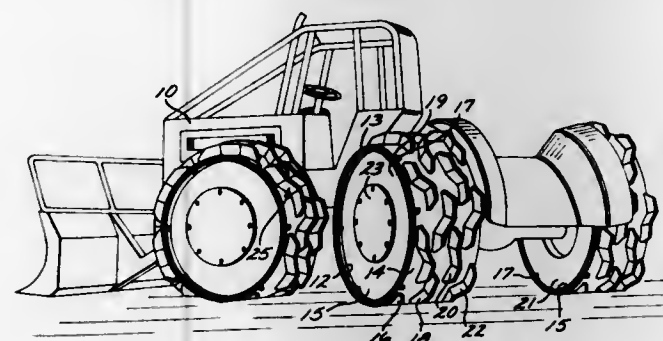
William B. Peterson, 2750 E. Spring St., Long Beach, Calif.  
 90806

Filed Nov. 3, 1972, Ser. No. 303,333

Int. Cl. E01d 19/25; B60b 15/08

U.S. Cl. 301—43

4 Claims



A wheel assembly is described which is usable with a vehicle such as a tractor or the like in compacting, spreading and dozing of rubbish, trash, refuse or garbage materials. The wheel assembly includes a steel, cylindrical rim which carries cleat means thereon in the form of radial projections disposed circumferentially about the wheel. Each projection comprises a major web which is aligned transversely to the direction of travel of the wheel with at least one gusset web dependent therefrom and oriented thereto at an obtuse angle in alignment with the direction of travel of the wheel. The webs are relatively thin in cross-section with a thickness of preferably about 1/4". The cleat means are disposed in two, three, four or more circumferential rows about the wheel. The wheel can have a hub and annular flange means extending from the hub to the substantially flat cylindrical rim or can comprise an open-ended drum adapted for mounting over the outer surface of a conventional pneumatic tire. In its preferred embodiment, the wheel comprises a plurality of circumferential rows of cleats, and each cleat has its major web aligned at about 45° to the direction of rotation of the wheel with a gusset web at

each end thereof which is aligned substantially parallel to the direction of rotation of the wheel. The aforementioned construction provides a self-cleaning wheel which does not provide any interstices, pockets or traps for the accumulation of dirt and debris, and the driving force of the tractor is sufficient to dislodge any dirt or debris from the wheel cleats.

3,823,984

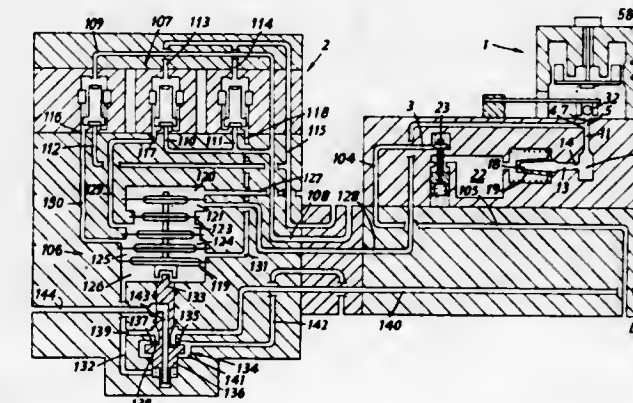
**BRAKING SYSTEMS**

Maurice Parfitt, and Keith William Langley, both of London,  
 England, assignors to Westinghouse Brake and Signal Com-  
 pany, Limited, London, England  
 Filed June 13, 1973, Ser. No. 369,543  
 Claims priority, application Great Britain, July 4, 1972,  
 31278/72

Int. Cl. B60t 13/74

U.S. Cl. 303—3

10 Claims



A braking system is proposed incorporating both a fluid-pressure controlled mechanical brake and an electric brake; the system having a source of fluid pressure, an output valve operative to derive from that source an output pressure which controls the degree of operation of the mechanical brake, a plurality of fluid-pressure responsive members operatively connected to the valve to operate the valve in accordance with the forces generated on the members by fluid pressures applied thereto and thus to derive said output pressure, a plurality of selectively-energisable electromagnetically-operated valves operable in accordance with their state of energisation to apply fluid-pressure to associated ones of the fluid-pressure responsive members accordingly to operate said output valve, a converter by which an electrical input signal indicative of the degree of effectiveness of the electric brake is converted into a fluid-pressure output signal the value of which corresponds to the value of the electrical input signal, and means for applying the fluid-pressure output signal of the converter to the stack of fluid-pressure responsive members, the output signal (when present) of the converter thus modifying the valve of the output pressure from the output valve derived by the selective energisation of the electromagnetically-operated valves from that which it would otherwise have been.

3,823,985

**TRANSDUCER DEVICE FOR ELECTRICALLY OPERATED BRAKES**

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel  
 Corporation, Lansing, Mich.

Filed Jan. 12, 1973, Ser. No. 322,946

Int. Cl. B60t 13/66

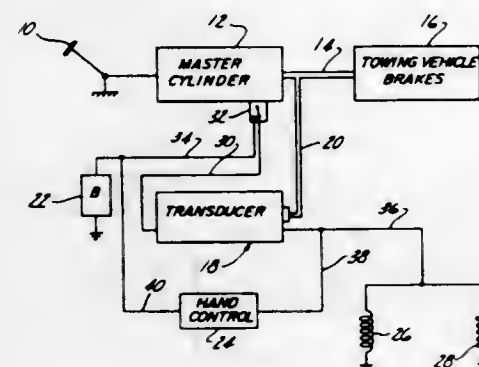
U.S. Cl. 303—7

13 Claims

An electro-mechanical pressure responsive control system and apparatus for controlling the current supplied to the actuating coils of electric brakes of a towed vehicle. The control includes a transducer having a flexible bellows with a powdered magnetic material received therein which, when com-



pressed by foreshortening of the bellows due to operation of the brake system of a towing vehicle, decreases in electrical resistance and thereby supplies greater current to the brakes



of the towed vehicle, and vice versa. A magnetic field prevents the powdered material from becoming permanently compacted by repeated cycling of the bellows.

3,823,986

**BRAKING DEVICE FOR RAILROAD VEHICLES**

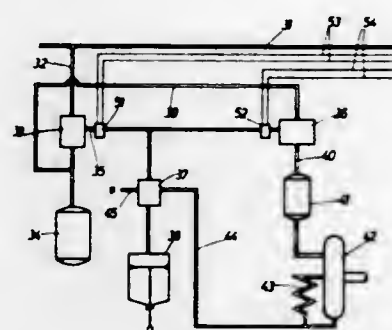
Hans Pollinger, and Erich Falke, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Continuation-in-part of Ser. No. 882,847, Dec. 8, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,202 Claims priority, application Germany, Dec. 9, 1968, 1813469

Int. Cl. B60e 8/06

U.S. Cl. 303—21 F

1 Claim



A railway vehicle having a friction braking system has a hydrodynamic braking unit enclosed in a housing mounted in the vicinity of a wheel and axle supporting the vehicle. The rotor of the braking unit is drivingly connected to the axle and a control system introduces fluid into the braking unit to achieve a braking effect. A common control device is employed for actuating the friction braking means and the hydrodynamic braking unit. The control device includes an anti-skid device and also operates to render the hydrodynamic braking unit inoperative when the vehicle is traveling at a sufficiently low speed or when the friction braking means exerts only a light braking action.

3,823,987

**AIR BRAKE ANTILOCK CONTROL**

Sham L. Kurichh, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed June 18, 1973, Ser. No. 370,599

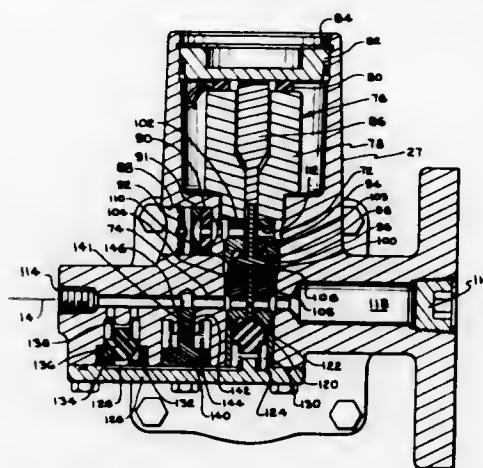
Int. Cl. B60t 8/12

U.S. Cl. 303—21 F

12 Claims

An antilock control valve for use with an air brake system on a vehicle which also includes an antilock control system capable of detecting actual or potential locking of the braked wheels and providing a signal to actuate the antilock valve.

The antilock valve provides for unrestricted operation of the brakes until a lock signal is received at which time the brakes are automatically released and further delivery of control air is



prevented until the braked wheels resume rotational speed. After the wheel lock condition is avoided, the brakes are reapplied at a controlled rate due to a restriction in the line delivery air for operation of the brakes.

3,823,988

**ANTI-LOCK BRAKE SYSTEMS**

Derek Robert Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 43,157, June 3, 1970, Pat. No. 3,708,213.

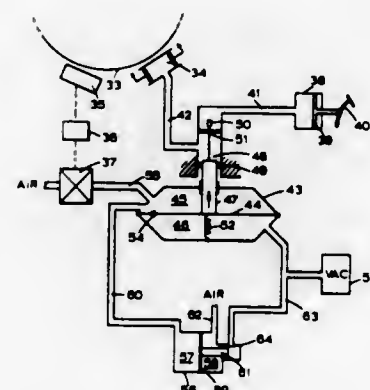
This application May 30, 1972, Ser. No. 257,961

Claims priority, application Great Britain, June 27, 1969, 32612/69; Aug. 6, 1969, 39417/69

Int. Cl. B60t 8/02

U.S. Cl. 303—21 F

6 Claims



An anti-lock vehicle brake system having a fluid pressure source for producing brake fluid under pressure at the wheel brake so as to apply braking pressure to the wheel in response to manual braking action by the operator. Also provided is a wheel movement sensing means for producing an output function in response to a related wheel rotational movement, and an anti-lock control valve actuatable in response to said output function and effective to divert brake fluid from the wheel brake so as to relieve braking pressure and thereby avoid wheel locking. A fail-safe arrangement is connected in the system for by-passing the anti-lock system in the event of malfunction of said anti-lock control valve so as to reapply full brake pressure to the wheel brake. The fail-safe arrangement includes a differential pressure member displaceable between a normal position and an operative position in response to a difference in fluid pressure acting on opposite ends thereof. Two different reference pressures act on different surface areas of the pressure member so that when the brake pressure falls to a critical low value the pressure member will be dis-

placed from its normal position to its operative position in which a by-pass connection is established and fluid pressure is permitted to increase at the brake to restore braking pressure as a result of fluid being passed through the actuated control valve.

3,823,989

**TRACK PIN WITH VENTED RUBBER PLUG**

Roger L. Boggs; David John Balzer, both of East Peoria, and Melvin Haslett, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

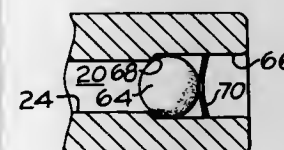
Division of Ser. No. 130,664, April 2, 1971, Pat. No.

3,762,778. This application Apr. 5, 1973, Ser. No. 348,064

Int. Cl. B62d 55/20

U.S. Cl. 305—14

2 Claims



An improved method and apparatus are provided for sealing hollow pins which are commonly used as lubricant reservoirs in, e.g., track chain assemblies of crawler tractors, and linkage joints of earthmoving vehicles. One embodiment of the invention comprises a plug of elastomer material which has a lubricant passage axially therethrough, which passage receives an auxiliary plug means for the purpose of obturating the passage as well as causing radial expansion of the elastomer plug into positive engagement with a receiving axial bore in a hollow pin. The auxiliary expansion means takes the form of a screw, a spherical ball, or a headless plug employing a plurality of annular serrations. Another embodiment comprises a spherical ball which is received in a stepped, axial bore of a hollow pin and is retained therein by a Belleville washer. The invention facilitates refilling in the field of the lubricant reservoir contained within the pin.

3,823,990

**CAPACITIVE-INDUCTIVE BRIDGE TYPE ELECTRICAL SUSPENSION**

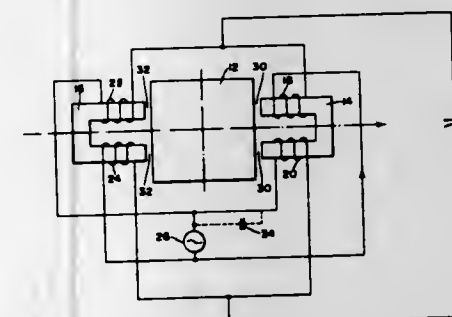
Philip J. Gillinson, Jr., Chelmsford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 10, 1972, Ser. No. 296,146

Int. Cl. F16c 39/06

U.S. Cl. 308—10

26 Claims



An electrical suspension for positioning an element with respect to a frame of reference without mechanical connection to the reference. The suspension includes a bridge circuit having opposite bridge leg impedances vary together in response to the gap between an armature attached to the element and a stator attached to the reference frame. The bridge includes a diagonal impedance which acts to redistribute bridge current when the bridge impedances vary with displacement of the element from a centered position. The redis-

tributed current results in an increased current flow through the legs corresponding to the increased gap and the increased current is used to create a restoring force on the element.

3,823,991

**FRICITION BEARING**

Heinrich Lamperski, Muhlheim, Germany, assignor to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Germany

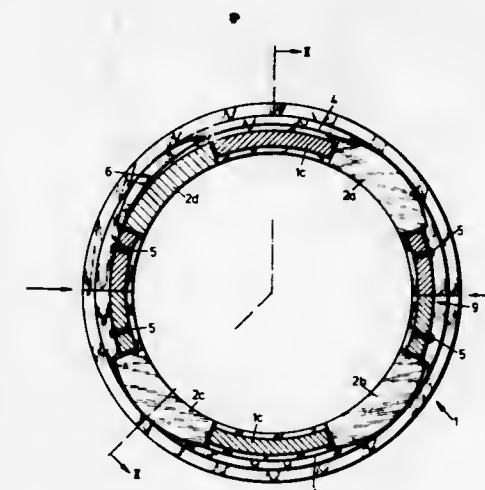
Filed Sept. 28, 1972, Ser. No. 292,938

Claims priority, application Germany, Oct. 1, 1971, 2149207

Int. Cl. F16c 17/06

U.S. Cl. 308—73

4 Claims



A friction bearing which comprises a housing and at least three radial segments arranged in a guiding cage and resting against the housing. Between the guiding cage and the radial segments on one hand and the housing on the other hand there is provided a lubricant receiving chamber, while between the guiding cage and the radial segments passages are provided for the passage of lubricant.

3,823,992

**SLIDE-IN CAMPER UNIT**

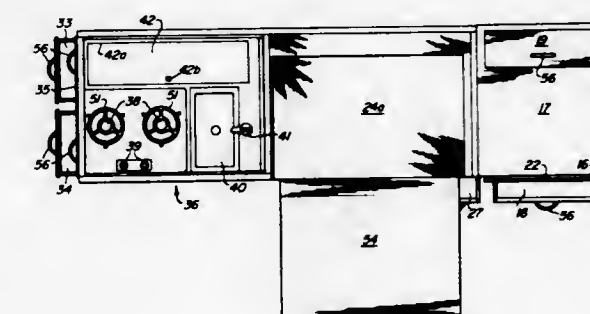
James C. Corbett, 83 E. Third Ave., Salt Lake City, Utah 84107

Filed Mar. 6, 1972, Ser. No. 232,108

Int. Cl. A47b 53/00, 77/08, 85/00

U.S. Cl. 312—201

8 Claims



A slide-in fold up type camper unit that is easily installed in a truck trailer, van or like vehicle. The compact unit includes a food cooler, a slide-in stove and sink combination, and numerous storage drawers. The unit also includes an eating table and seat and a bed.



### 3,823,993 SEWING MACHINE

Ryotchi Kakishima, Yokohama, and Yutaka Nomoto, Tokyo, both of Japan, assignors to Riccar Sewing Machine Co., Ltd., Tokyo, Japan

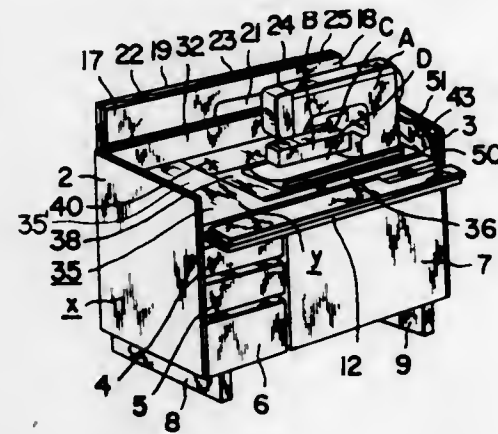
Filed Jan. 29, 1973, Ser. No. 327,481

Claims priority, application Japan, Jan. 31, 1972, 47-10516

Int. Cl. A47b 81/00, 57/00

U.S. Cl. 312-21

9 Claims



A cabinet box for housing and supporting a sewing machine of a free arm type, which is provided with a free arm projecting horizontally from the standing portion of the machine and used for sewing tubular pieces, etc. The cabinet box has a top cover composed of a plurality of elongated plates which are arranged in parallel with one another and connected pivotally so that they serve for a cover for completely closing the top portion of the cabinet and at the same time as a large area of a flat work support surface for sewing flat cloth in cooperation with the arm work support surface.

### 3,823,994

METHOD OF MAKING COMBUSTION FLASH BULB  
Wilhelmus Polycarpus De Graaf, Emmasingel, Eindhoven, and Jacob Dirk Baars, Terneuzen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1973, Ser. No. 332,119

Claims priority, application Netherlands, Feb. 19, 1972, 7202213

Int. Cl. H01j 9/00; F21k 5/02

U.S. Cl. 316-26

9 Claims



The ignition mass of combustion flash bulbs without an ignition wire is subjected to a breakdown by applying a relatively

high voltage at the instant when it is in a vacuum or in an inert gas during manufacture. The finished bulb may be ignited by applying a voltage of between 10 and 100 V.

### 3,823,995

METHOD OF FORMING LIGHT FOCUSING FIBER WAVEGUIDE

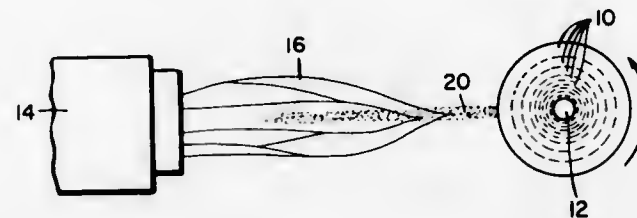
Larry L. Carpenter, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,626

Int. Cl. G02b 5/14; C03b 23/20, 25/00

U.S. Cl. 350-96 WG

29 Claims



A method of forming an article such as a light focusing fiber waveguide by applying to a substantially cylindrical starting member a plurality of layers of material, each layer having a progressively lower index of refraction. The assembly so formed is heated and drawn to reduce the cross-sectional area to form a fiber having a stepped radially varying composition. Alternatively, a plurality of layers of material, each having a progressively higher index of refraction are applied to the inner surface of a tubular member. The resulting substantially cylindrical hollow assembly is heated and drawn to reduce the cross-sectional area and to collapse the remaining inner hole to form a fiber having a solid cross-sectional area with a stepped radially varying composition.

### 3,823,996

MULTICORE, MULTIMODE OPTICAL WAVE TRANSMISSION LINE

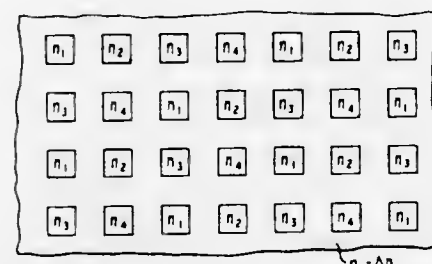
Rudolf Kompfner, Middletown, and Enrique Alfredo Jose Marcattili, Rumson, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1973, Ser. No. 348,158

Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

7 Claims



This application describes a multimode optical wave transmission line comprising a plurality of single mode fibers. To minimize the delay dispersion, the propagation constants of adjacent pairs of fibers are made to be different.

### 3,823,997

GRADED-INDEX OPTICAL FIBER

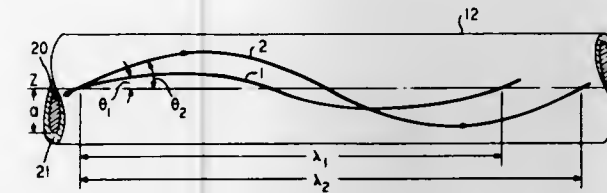
Detlef Christoph Gloge, Red Bank, and Enrique Alfredo Jose Marcattili, Rumson, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 18, 1973, Ser. No. 370,948

Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

9 Claims



It is shown that minimum delay distortion is realized in a graded-index multimode optical fiber comprising an inner core of radius  $a$  surrounded by a suitable cladding when the refractive index  $n(r)$ , at any radius  $r$  less than  $a$ , is given by

$$n(r) = n_0 [1 - 2\Delta(r/a)^2]^{1/2},$$

where  $n_0$  is the refractive index at the center of the fiber core,  $a$  is the core radius,  $n_c$  is the refractive index of the core at  $r = a$ , and  $\Delta = n_0 - n_c/n_0$ . A variety of suitable claddings are described.

### 3,823,998

LIGHT VALVE

Takehito Yazaki, Keiichi Kanatani, and Sadao Sakamoto, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi-shi, Osaka-fu, Japan

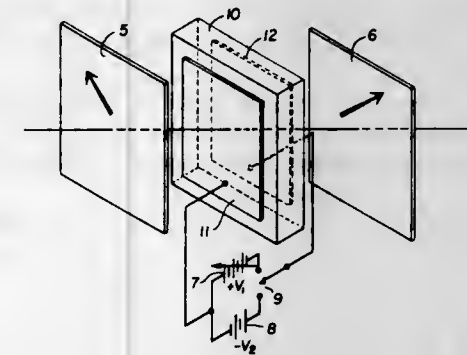
Filed May 23, 1973, Ser. No. 363,300

Claims priority, application Japan, June 1, 1972, 47-54837; June 1, 1972, 47-54838

Int. Cl. G02f 1/26

U.S. Cl. 350-150

16 Claims



A light valve of the present invention comprises an oblique cut single crystal plate of strontium barium niobate (SBN), which is placed in a plane vertical to a light transmission; a plurality of transparent strip electrodes which are placed, at right intersections with each other, on the front and back surfaces of the plate; means for generating an electric field within the single crystal, in parallel with a light transmission direction, in a given region of the plate to be addressed by selectively providing an electric potential to these electrodes; an SBN single crystal plate of the same thickness and orientation, which is juxtaposed with the single crystal plate so that the optical axes of them may be at right angles to each other; and polarizers which are each provided in positions before and behind these both single crystal plates so that light polarization plane thereof may be at right angles to each other. In the light valve of the present invention, the SBN single crystal plate is operated as a longitudinal operation mode electro-

optic material, and the birefringence shows a non-linear change and a hysteresis loop by a change in an applied electric field. The residual birefringence is used as an optical read/write memory. Also, a threshold of abrupt non-linear change region of the birefringence hysteresis loop may be used advantageously for selecting a voltage applied to the electrode, whereby cross-talk in addressing is avoided.

### 3,823,999

MAGNIFIER

Frits Johan Versteeg, Rotterdam, Netherlands, assignor to N. V. Optische Industrie, de Oude Delft, Delft, Netherlands

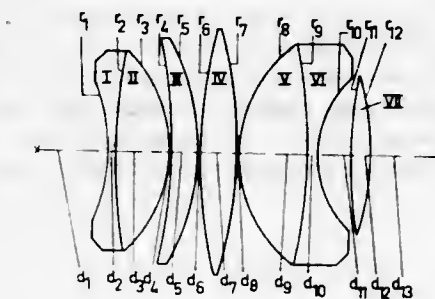
Filed Dec. 8, 1972, Ser. No. 313,331

Claims priority, application Netherlands, Jan. 14, 1972, 7200567

Int. Cl. G02b 25/04

U.S. Cl. 350-216

3 Claims



A magnifier for relative apertures exceeding  $f/1$ , an angular field larger than  $2 \times 25^\circ$  and a pupil distance larger than 0.9 for viewing the anode screen of an image intensifier tube, which forms part of a viewing device, which is mounted in a vehicle.

### 3,824,000

COILED SPRING MIRROR MOUNT FOR OPTICAL STABILIZER

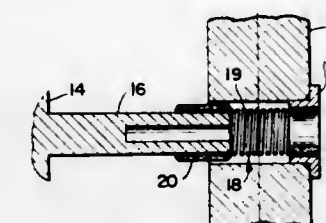
Richard H. Burns, Webster, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,894

Int. Cl. G02b 7/02

U.S. Cl. 350-245

7 Claims



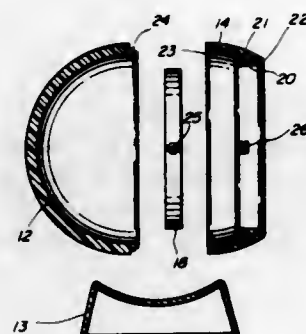
A device for mounting a stabilized optical element in a hydrostatic stabilizer cell utilizing a coiled, springy wire as the connection between the wall of the cell and the optical element.



### 3,824,001 COSMETIC MIRROR

Arthur Rosenberg, Evanston, Ill., assignor to Creative Concepts Corporation, Chicago, Ill.  
Filed Mar. 29, 1973, Ser. No. 345,835  
Int. Cl. G02b 5/08  
U.S. Cl. 350—305

2 Claims

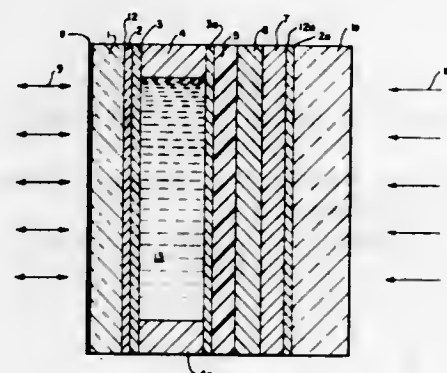


A cosmetic mirror comprising a hollow spherical shell and a pair of framed, back-to-back mirrors pivotally hinged within the shell to allow selection of either mirror by simple rotation. A cup-shaped base supports the shell and allows positioning of the mirrors in any desired direction. A distortable collar on the shell facilitates insertion and removal of the mirrors.

### 3,824,002 ALTERNATING CURRENT LIQUID CRYSTAL LIGHT VALVE

Terry D. Beard, Westlake Village, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.  
Filed Dec. 4, 1972, Ser. No. 312,097  
Int. Cl. G02f 1/16  
U.S. Cl. 350—160 LC

11 Claims

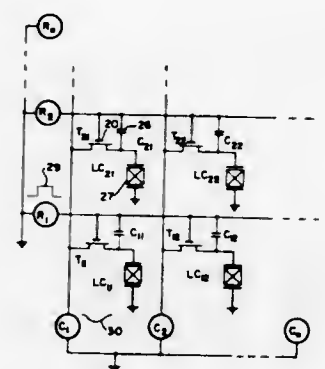


This invention is directed to improved photoactivated liquid crystal light valves or cells which exhibit extended lifetime. All electrically conductive elements of the light valve are separated from the liquid crystal layer by insulating layers. By thus separating all electrically conductive elements from direct contact with the liquid crystal layer, the life of the liquid crystal is significantly extended. To accomplish photoactivation in the presence of electrical insulating layers, the principle of impedance matching is applied to the photoconductor/liquid crystal combination. Three novel means of impedance matching are taught: 1) photoresponsive heterojunction; 2) low impedance liquid crystal; 3) metal grid.

### 3,824,003 LIQUID CRYSTAL DISPLAY PANEL

Nobuo J. Koda, Vista, and Lewis T. Lipton, Olivenhain, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.  
Filed May 7, 1973, Ser. No. 358,259  
Int. Cl. G02f 1/16  
U.S. Cl. 350—160 LC

6 Claims

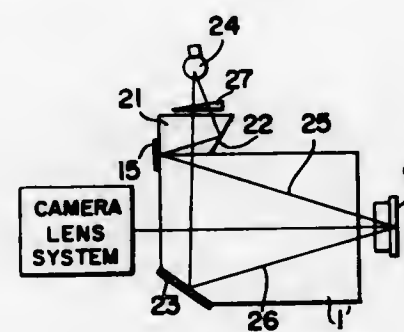


In a liquid crystal matrix display panel for line-at-a-time driving at TV rate, an array of field effect transistor switches enable inputs to respective storage capacitors thereby providing storage of signals for a sufficient time for the liquid crystal material to respond. The transistor's drain pad also serves as one plate of the associated storage capacitor and a portion of its gate electrode is effectively the second plate, thereby minimizing the number of drive lines required and facilitating the fabrication of a practical device using state-of-the-art thin film transistor technology.

### 3,824,004 COLOR SEPARATION PRISM FOR TELEVISION CAMERA

Yoshikazu Doi, and Toshio Kishikawa, both of Ohmiya, Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan  
Continuation of Ser. No. 136,118, April 21, 1971, abandoned.  
This application Apr. 26, 1973, Ser. No. 354,793  
Claims priority, application Japan, Apr. 27, 1970, 45-36072  
Int. Cl. G02b 27/10  
U.S. Cl. 350—173

6 Claims

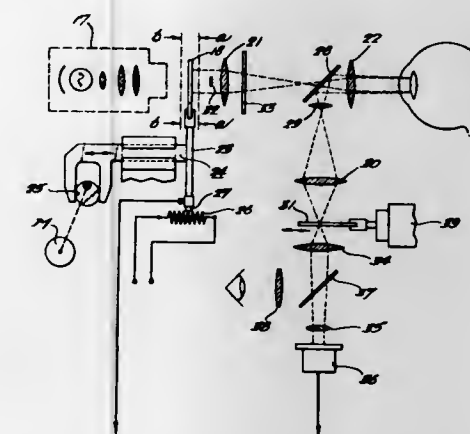


A color separation prism having a biased light source in a color television camera. This color separation prism further has a plurality of light reflecting surfaces, whereby the biased light from one light source is projected onto the photoelectric face of a pick up tube of the color television camera from a plurality of locations of the prism.

### 3,824,005 APPARATUS FOR REFRACTING EYES

John W. Woestman, Havertown, Pa., assignor to Joseph S. Zuritsky; Herman Zuritsky and Lee Zuritsky, all of Philadelphia, Pa., a part interest  
Filed Mar. 28, 1973, Ser. No. 345,679  
Int. Cl. A61b 3/10; G01n 21/46  
U.S. Cl. 351—8

10 Claims



Apparatus is provided to project a pattern of bars of light through a lens system into a subject's eye. The reflection of the pattern from the retina of the eye is passed back through the lens of the eye and through a second pattern system to a detector. The pattern of bars of light is continuously moved back and forth axially of the subject's eye to bring the pattern into focus on the retina once during its travel from one extreme to another. The second pattern system through which the reflected pattern passes is similar to the pattern of the bars of light in that it has a series of slots corresponding in size and position to the bars of light of the first pattern. This second pattern is vibrated sideways at a rapid speed to chop the pattern of light reflected from the retina so that a modulated light image which rises to a peak each time the pattern of bars of light is in focus on the retina of the subject's eye is supplied to the detector. The detector transmits an electric signal corresponding to the intensity of light received by it to electronic circuitry which determines the position of the primary pattern when it is in focus on the retina of the subject's eye and provides a readout in diopters indicating the refractive state of the subject's eye.

3,824,006  
OPTICAL SPECTACLES INCLUDING ADHESIVE BONDING MEANS BETWEEN METAL SPECTACLE FRAMES AND OPHTHALMIC LENSES  
Franz Voit, No. 6, Talstrasse, Eutingen/Baden, Germany  
Continuation-in-part of Ser. No. 818,245, April 22, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,665  
Claims priority, application Germany, Apr. 23, 1968, 1772266

Int. Cl. G02c 1/04, 13/00  
U.S. Cl. 351—106

6 Claims



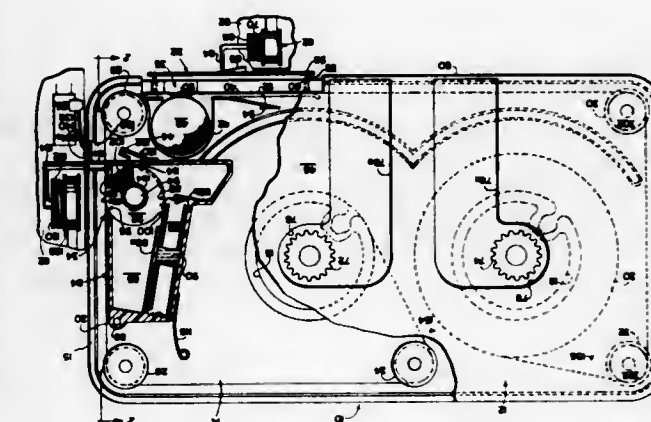
A pair of optical spectacles comprising metal frame parts and lenses of silicate glass bonded to the frame parts with a bonding agent and a method of producing same. The bonding

agent is a heat curable material disposed between and in direct contact with the metal parts and lenses. The heat curable material comprises a low melting powder metal mixed with a heat curable epoxy resin adhesive having a hardener which provides a source of hydrogen. In a specific embodiment of the invention, the bonding agent is placed on the frame parts and lenses initially before the final bonding is effected between the parts. The bonding of the parts is effected by heating the combination thereof to a temperature of up to above 300° C. More specifically, the combination of the frame parts, lenses and bonding agent is heated to a temperature within a range of from about 200° C to about 300° C.

3,824,007  
PHOTOGRAPHIC CASSETTE SYSTEM HAVING ROTARY CAPILLARY APPLICATOR OF PROCESSING FLUID  
Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,464  
Int. Cl. G03c 1/100  
U.S. Cl. 352—130

42 Claims



A multipurpose film handling cassette including an applicator system having processing fluid initially stored within a reservoir chamber. Extending between an interior of the chamber and the film is a, preferably cylindrical, applicator member having a plurality of capillary channels configured for conducting a metered amount of fluid to the film. In the preferred embodiment, the fluid is initially stored in a frangible pod, and the applicator cylinder includes a tang configured to tear open the pod and to subsequently cooperate with a stop so as to fixedly locate the channels in their functional location for fluid application. Tapered capillary channels are also disclosed which, responsive to variation in the rotational position of the cylinder, alter the rate of fluid flow to the film thereby permitting deposit of a uniform fluid layer on the film during non-uniform advancement of the latter.

3,824,008  
METHOD AND APPARATUS FOR CAPTURE AND RETENTION OF A TRANSIENT IMAGE  
Homer A. Smith, Jr., Ontario, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

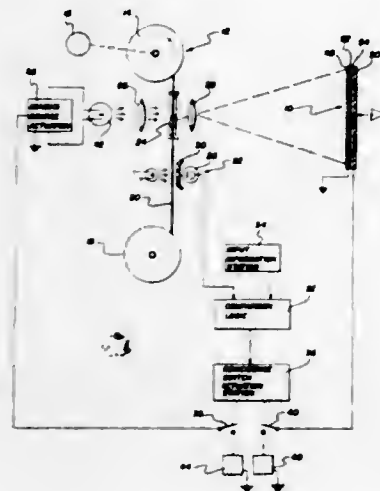
Filed July 28, 1972, Ser. No. 276,195  
Int. Cl. G03b 21/10  
U.S. Cl. 353—26

11 Claims

Apparatus for retention of an image of a transient source on a photoconductor-liquid crystal display panel whereby the image may be captured and stored for observation over a longer period of time than would be available with the transient source alone. An illumination device for illuminating



the transient source and presenting the image thereof to the photoconductor-liquid crystal display panel is connected to an actuation system set to trigger the illumination device when



the transient source desired to be viewed is in proper position (or assumed to be in the proper position) with relation to the display panel to be imaged thereon.

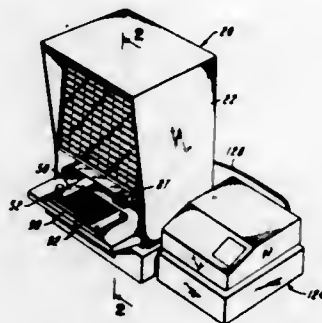
3,824,009

## FILM VIEWER AND CONTROL APPARATUS

George R. Spaleny; Edward W. McCalley, both of Dayton, and James H. DeYoung, Miamisburgh, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio  
Filed May 29, 1973, Ser. No. 364,229  
Int. Cl. G03b 21/10, 23/08

U.S. Cl. 353-27

16 Claims



Apparatus for viewing film, particularly microfilm, as the film is projected upon a screen, and for automatically controlling data collection mechanism in accordance with information carried upon a selected portion of the film. The apparatus includes means for establishing control circuitry, in accordance with a selected frame or page of an informational or data bearing film and in accordance with a selected item on the frame selected. The control circuit established may be employed to control the operation of any suitable data collection or data applicator mechanism.

3,824,010

## ELECTROSTATIC MODULATOR FOR CONTROLLING FLOW OF CHARGED PARTICLES

Gerald L. Pressman, San Jose, Calif., assignor to Electropint, Inc., Palo Alto, Calif.  
Division of Ser. No. 85,070, Oct. 29, 1970, Pat. No. 3,694,200.  
This application May 15, 1972, Ser. No. 283,781  
Int. Cl. G03g 15/00

U.S. Cl. 355-3 R

3 Claims

A system for controlling the flow of charged particles and for modulated aperture electrostatic printing. An apertured

screen having substantially the entire surfaces formed of a dielectric material is charged with like charges over substantially all its surfaces to develop fringing fields in the apertures. The charge distributed across one side of the screen is selectively dissipated in accordance with a pattern to be reproduced thereby establishing a bipolar electrostatic latent image as a modification of the fringing fields for density control of a flow of charged particles directed through the screen.



The screen may be formed with dielectric thicker on one face than the other to initially carry a higher potential and provide a uniform charge inequality or potential difference through the screen apertures, oriented to enhance the flow of charged particles through the screen. Full modulation control of particle flow is therefore possible with a single selective charge dissipation. For electrostatic reproduction a print-receiving medium is interposed in the modulated particle flow passing through the screen.

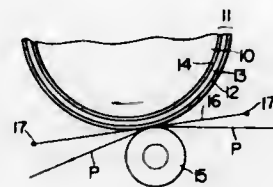
3,824,011

## TRANSFER PRINTING APPARATUS OF ELECTROPHOTOGRAPHIC APPARATUS

Ryuzo Suzuki, Tokyo-to; Seichi Miyakawa, Nagareyama, and Masanori Watanabe, Tokyo-to, all of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan  
Filed July 20, 1972, Ser. No. 273,425  
Claims priority, application Japan, July 28, 1971, 46-57078; July 28, 1971, 46-57079  
Int. Cl. G03g 15/00; G03b 27/10, 27/32

U.S. Cl. 355-3

2 Claims



In transfer printing apparatus of electrophotographic apparatus of the type wherein a receptor sheet is urged against a photosensitive element carried by a rotary drum by means of a transfer printing roller so as to transfer print an electrostatic latent image formed on the photosensitive element onto the receptor sheet there is provided a stationary separating member between the receptor sheet and the photosensitive element. Preferably, the separating member comprises a pair of strips which are disposed at an angle with respect to the direction of movement of the receptor sheet.

3,824,012

## PROCESS AND APPARATUS FOR TRANSFERRING ELECTROSTATIC LATENT IMAGES IN ELECTROPHOTOGRAPHY

Isao Iizaka, and Toshio Yamamoto, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1973, Ser. No. 330,772

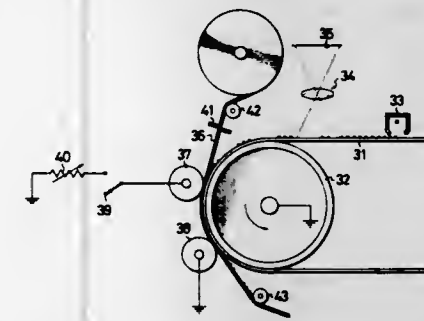
Claims priority, application Japan, Feb. 17, 1972, 47-16816; Feb. 21, 1972, 47-21364  
Int. Cl. G03g 15/00

U.S. Cl. 355-3 R

13 Claims

A dielectric layer of copy paper is brought into contact with an electrostatic latent image bearing surface of a photosensitive plate by a first roller having an electric resistance value

substantially higher than the rear face resistance value of the copy paper, the photosensitive plate having on its front face a dielectric layer for forming the latent image thereon and driven by a grounded roller. An electrically conductive lining element of the copy paper is substantially grounded by an



electrically conductive second roller to transfer the electrostatic latent image by air-breakdown discharge under the influence of the first and second rollers. The gap between the photosensitive plate and the copy paper has a width for air-breakdown discharge according to Paschen's law.

3,824,013

## LIGHT SOURCE ALIGNMENT DEVICE

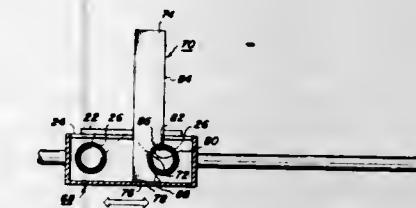
Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1972, Ser. No. 313,024

Int. Cl. G03b 27/54

U.S. Cl. 355-67

4 Claims



A device in which an apertured, substantially cylindrical light source is aligned relative to the support thereof for providing a substantially optimum illumination profile therefrom.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,824,014

## RELIEF MASK FOR HIGH RESOLUTION PHOTOLITHOGRAPHY

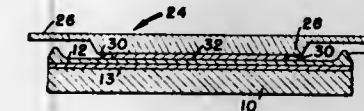
Joseph L. Abita, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 26, 1973, Ser. No. 383,023

Int. Cl. G03b 27/62; B44d 1/52; B05c 11/16

U.S. Cl. 355-75

2 Claims



A mask comprising a mask pattern disposed on the planar surface of a raised mound extending from a flat backing plate, the invention insuring intimate contact between the mask pattern and a substrate surface to be masked even though said substrate surface may have an excess deposit of photoresist or other material around the perimeter thereof.

3,824,015

## METHOD OF, AND APPARATUS FOR, THE OPTICAL MEASUREMENT OF THE SPEED AT A MOVING PRODUCT

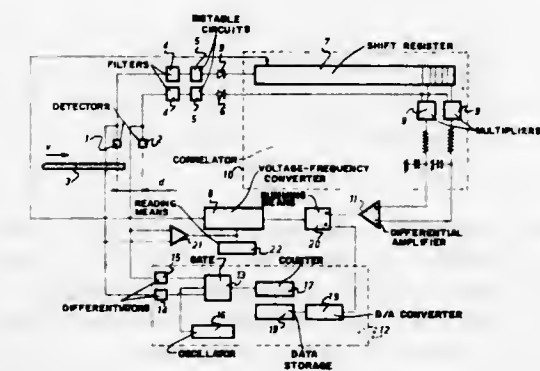
Pierre Petit, Metz, and Pierre Verjux, Semeccourt, both of France, assignors to Institut de Recherches de la Siderurgie Francaise (Irsid), St. Germain-en-laye, France

Filed Oct. 24, 1972, Ser. No. 300,161

Claims priority, application France, Oct. 3, 1972, 72.38963  
Int. Cl. G01p 3/36

U.S. Cl. 356-28

6 Claims



Two similar random time delayed signals representing common characteristics of moving discrete objects or products are picked up by detecting means arranged adjacent to the path of the objects and converted to digital signals. The digital signals are applied to a correlator provided with time delay means, the correlator generating two values of the correlation function of the two signals. These two values are compared to form a control signal for controlling the time delay means through a voltage frequency converter, the initial value of the time delay being fixed by means of a signal generated by an apparatus measuring the speed of the object extremity, said latter-named signal being applied to the input of the voltage frequency converter through summing means receiving the control signal of the time delaying means.

3,824,016

## COMBINED SAMPLE COLLECTION AND VAPORIZATION SYSTEM FOR SPECTRO-CHEMICAL ANALYSIS

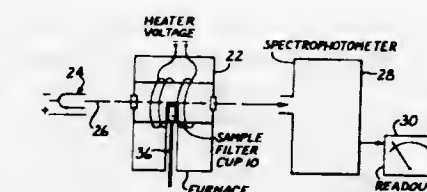
Ray A. Woodruff, 521 W. Grant St., and Jerome F. Lech, 305 N. Montana Ave., both of Bozeman, Mont. 59715

Filed June 16, 1972, Ser. No. 263,623

Int. Cl. G01j 3/30

U.S. Cl. 356-85

14 Claims



A porous spectroscopic sample holder is used for collection of a trace element in a fluid medium and the trace element is then vaporized directly from the sample holder. Measurement of the trace element is preferably accomplished by a nonflame atomic absorption method through electrothermal atomization.



3,824,017

**METHOD OF DETERMINING THE THICKNESS OF CONTIGUOUS THIN FILMS ON A SUBSTRATE**

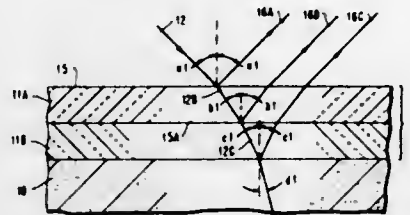
George Tipton Galyon, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,804

Int. Cl. G01b 9/02

U.S. Cl. 356—108

13 Claims



A method of determining the thickness of each of a plurality of contiguous films on a substrate, the films having known indices of refraction and being transparent to at least some portions of the electromagnetic spectrum. The process disclosed comprises the steps of scanning, at various wavelengths the surface of the composite film with a beam of light within the portion of the spectrum in which the films are transparent, and preferably at an angle of incidence greater than 0°. Either the incident or reflected beam is polarized (in a conventional manner) first in a plane either parallel or perpendicular to the plane of incidence and then in the other plane. The intensity of the reflected polarized beam in each of the perpendicular planes is then measured as the surface is scanned. A trace may then be made of the measured or observed intensity and wavelength and compared with a trace of calculated results of various intensity and wavelengths for various film thicknesses until an approximate coincidence is obtained between the trace of the observed measurements and the trace of the calculated results whereby the thickness of each of the films is established.

3,824,018

**COHERENT LIGHT SOURCE DETECTOR**

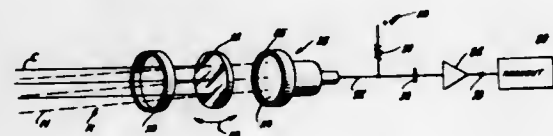
Robert Crane, Jr., Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 10, 1971, Ser. No. 179,439

Int. Cl. G01b 9/02

U.S. Cl. 356—112

3 Claims



An unequal path interferometer, in which the two optical paths travelled by the radiation beam components before recombination differ by an amount much longer than the coherence lengths of non-coherent radiation, but much shorter than coherence length of radiation from a coherent source (e.g., a laser). Scanning of the interferometer so as to cause a change in the difference in the two optical paths will modulate the intensity of the recombined coherence radiation by varying interference effects, while the recombined non-coherent radiation can thus be detected in the presence of non-coherent radiation. When a Fabry-Perot etalon, for example, is gradually tilted to cause such changing of the optical path length difference, the resulting coherent radiation intensity modulation pattern also yields information as to the direction and wavelength of the coherent radiation source.

3,824,019

**DEVICE FOR DETERMINING THE ANGLE BETWEEN TWO DIRECTIONS**

Rolf Lennart Staffors, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

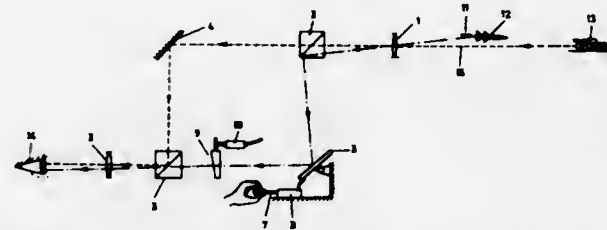
Filed Apr. 4, 1973, Ser. No. 347,760

Claims priority, application Sweden, Apr. 5, 1972, 4332/72

Int. Cl. G01c 1/00

U.S. Cl. 356—145

9 Claims



Apparatus for determining the angle between (a) the direction from the apparatus towards a first movable object provided with a light-emitting means and (b) the direction from the apparatus towards a point on a given second object. The apparatus includes means for dividing the light which enters the apparatus from both directions into two optical ray paths. A deflecting means is effective on the light travelling only along one of the ray paths and a further means provides a manifestation which is responsive to the magnitude of deflection of said one ray path by the deflecting means. In addition, a modulating means is provided which is effective on the light travelling along only one of the ray paths, such modulating means imparting to the light on such ray path a predetermined oscillatory motion at a preselected frequency. A viewing means provides superimposed images each respectively responsive to the light travelling along a respective one of the ray paths. The modulating means causes the preselected frequency of modulation to be sufficiently high to cause the respective corresponding image on said viewing means to be indistinct and to cause any given point on the object to be described as a specific pattern which is dependent upon the nature of the oscillatory motion while concurrently the image corresponding to the unmodulated ray path is distinct.

3,824,020

**RETROREFLECTIVE FINE POSITION SENSING MEANS**

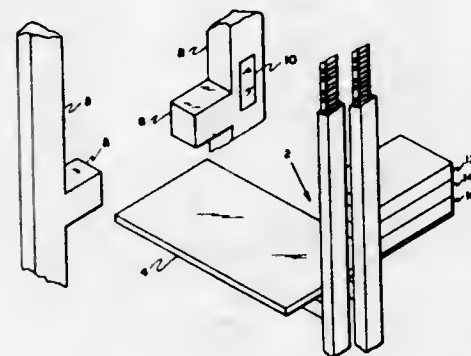
Logan L. Pease, Bountiful, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 19, 1971, Ser. No. 200,486

Int. Cl. G01b 11/26

U.S. Cl. 356—152

9 Claims



A position sensing method and apparatus for fine control of vehicles about a remote point comprising a strip of retroreflective material mounted adjacent the desired position and a plurality of sources of collimated light beams mounted on the vehicle together with means for sensing reflection of the light beams along the path of incidence.

3,824,021

**REDUNDANT IMPERFECTION DETECTION SYSTEM FOR MATERIALS**

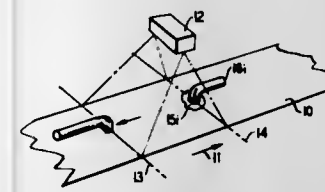
Norman Nathan Axelrod, 809 S. Springfield Ave., Springfield, N.J. 07081, and John David Greiman, 25 Woodland Dr., Woodcliff Lake, N.J. 07675

Filed June 14, 1973, Ser. No. 370,149

Int. Cl. G01n 21/16

U.S. Cl. 356—200

13 Claims



An optical inspection arrangement is organized to compare simultaneously corresponding unit sections of spaced linear widths of a material being transported along an axis. The resulting arrangement generates difference signals indicative only of imperfections. Variations due to patterns in the inspected material can be ignored thus leading to savings in information storage and processing costs.

3,824,022

**THERAPEUTIC HEADGEAR DEVICE**

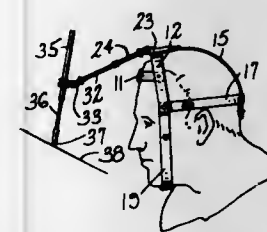
Pasquale M. Mancino, 182 Beach Ave., East Haven, Conn. 29912

Filed Sept. 27, 1972, Ser. No. 292,744

Int. Cl. B43k 29/00

U.S. Cl. 401—6

6 Claims



Manually handicapped persons are enabled to substitute for lack of manual dexterity by head movement control of implements attached to a headgear device. The headgear device has three arcuate semi-rigid bands and two adjustable straps interconnected to prevent undue horizontal and vertical movement of the device on the head. A support member is mounted on a band above the forehead. A rod is connected to the support member within view of the handicapped person. The implements are attachable to the rod and include a scribing instrument, an instrument for operating the keys of a typewriter, a pointer assembly, and a spotlight.

3,824,023

**VENTING DEVICE FOR STYLOGRAPHIC PENS**

William E. Danjczak; Jean Pierre Leuenberger, both of Easton; Fortunato J. Micale, and Ralph W. Wagner, both of Bethlehem, all of Pa., assignors to Koh-I-Noor Rapidograph, Inc., Bloomsburg, N.J.

Continuation-in-part of Ser. No. 185,020, Sept. 30, 1971, Pat. No. 3,741,668. This application June 21, 1973, Ser. No. 372,388

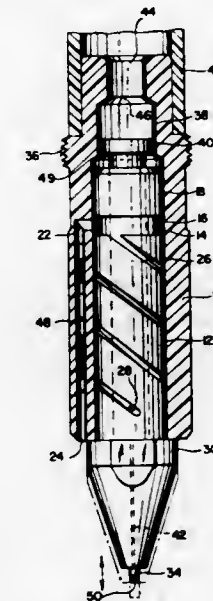
Int. Cl. B43k 8/00

U.S. Cl. 401—258

4 Claims

A vent system for a tube writing pen wherein the vent consists of a longitudinally adjustable threaded stem extending

within the writing fluid reservoir and venting at varying depths within the writing fluid. The upper end of the stem is open to



atmospheric pressure through a venting channel defined in the pen housing.

3,824,024

**PAINT ROLLER**

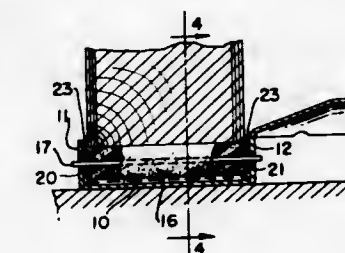
John F. Mason, Phoenix, Ariz.

Continuation-in-part of Ser. No. 158,705, July 1, 1971, abandoned. This application Nov. 15, 1972, Ser. No. 306,533

Int. Cl. B44d 3/28

U.S. Cl. 401—193

1 Claim



A unitary tray-handle paint roller for painting the bottom of doors without removing them from their hinges.

3,824,025

**EXPANSION GAP SEALING DEVICE**

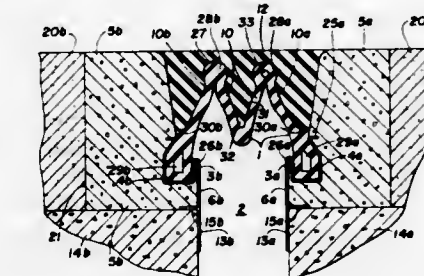
Hans Beutler, Munich, Germany, assignor to Friedrich Maurer Soehne, Frankfurter Ring, Germany

Filed Apr. 19, 1972, Ser. No. 245,506

Int. Cl. E01c 11/12

U.S. Cl. 404—48

16 Claims



The present sealing device for expansion gaps between adjacent structural members is connected to the side walls forming the gap by poured, hardening synthetic resin concrete. The



sealing strip proper is anchored in lost casing means embedded at least partially in said synthetic resin concrete. The lost casing means are formed so that the sealing strip proper may act as an anchor for a removable form body or core which is used to give the poured synthetic resin concrete the shape in which it is supposed to harden. Once the resin is hardened, the form body may be removed. Preferably, the sealing strip has an M-sectional shape or an inverted V-sectional shape whereby preferably the free ends are anchored to the lost casing and the tips are anchored to the form body.

3,824,026

## CUTTING LEAD TIPS FOR DRILL BITS

Thomas Gaskins, Palmdale, Fla. 33944

Filed Mar. 19, 1973, Ser. No. 342,381

Int. Cl. B23b 51/02

U.S. Cl. 408—210

22 Claims



Improved drill bit lead end constructions which more particularly provide for sharp cutting lead or center point constructions to enhance the efficiency and effectiveness particularly of relative small diameter bits. The sharpened lead points include an axially disposed cutting edge which axially offsets a pair of inclined radial cutting edges which normally correspond to or are disposed upon the usual cone segment lips of a regular twist drill. One of the inclined radial cutting edges may be considered a hypotenuse relative to the axial cutting edge to thereby form a generally right triangular shape or profile to the lead end in some forms. Drill bits with these improved cutting lead ends provide at least a generally centering action while assuring essentially instantaneous cutting commencing from the initial contact of the drill bit with the material being drilled.

3,824,027  
REAMER

John Janci, 1125 N. Karlov, Chicago, Ill. 60651

Filed July 25, 1973, Ser. No. 382,320

Int. Cl. B23b 51/10

U.S. Cl. 408—225

4 Claims



A reamer adapted to be driven by a rotary machine to enlarge a hole in a plate in a single pass to accommodate a socket-head screw having a head portion and a shank portion with a single pass of the reamer, includes an elongated rodlike member having a rear end portion adapted to be attached to the machine, and a front non-cutting cylindrical portion having a diameter slightly less than the diameter of the hole to

serve as a guide therein and having an axial length substantially less than the axial length of the hole. An intermediate enlarged cylindrical cutting portion has spirally-extending cutting edges thereon and spirally-extending material-guiding grooves therebetween, the diameter and the axial length of the intermediate portion being slightly larger than the corresponding diameter and axial length of the head portion of the screw to enlarge the hole to receive the head portion of the screw. A still further enlarged intermediate beveling portion is disposed to the rear of the cutting portion for shaping the plate surrounding the hole.

3,824,028

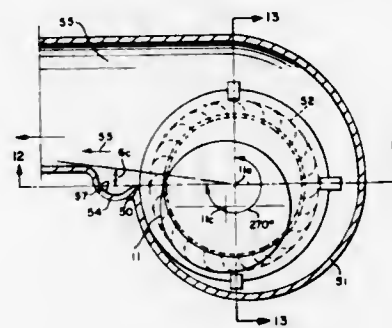
RADIAL BLOWER, ESPECIALLY FOR OIL BURNERS  
Kurt Zenkner, Ettlingen; Franz Kozel, Lippstadt, and Heike Thomsen, Schleswig, all of Germany, assignors to Punker GmbH Apparatebau und Wärmetechnik, Eckernförde, Germany

Continuation-in-part of Ser. No. 874,756, Nov. 7, 1969, abandoned. This application Nov. 12, 1971, Ser. No. 198,294  
Claims priority, application Germany, Nov. 7, 1968, 1807385

Int. Cl. F04d 17/08, 29/46

U.S. Cl. 415—53

5 Claims



A radial blade fan for use in connection with burners, in which a fan rotor is surrounded by a volute casing so as to form a gap therewith and has a blade exit angle of at least 90° while the volute housing has an inlet nozzle, said nozzle and the axis of said rotor being so located relative to each other that at least portions thereof are eccentrically located with regard to each other. The said volute or spiral housing has a sharp bend in the region of the beginning point of the volute or spiral from which departs on the one side the volute or spiral and on the other side a transition or connecting piece to the fan outlet.

3,824,029

## CENTRIFUGAL SUPERSONIC COMPRESSOR

Jean Fabri, Ville D'Avray; Jean Friberg, Bourg-la-Reine, and Raymond Siestrunk, Paris, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 12, 1972, Ser. No. 243,371

Claims priority, application France, Apr. 13, 1971, 71.12891

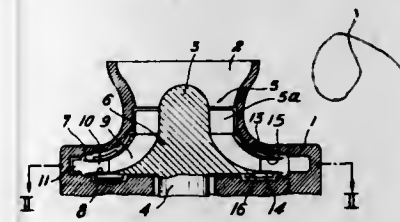
Int. Cl. F04d 17/00, 21/00, 29/42

U.S. Cl. 415—109

3 Claims

A centrifugal supersonic compressor construction enables a high pressure ratio between the output and the input to be ob-

tained. This compressor comprises an axial input stator, a rotor provided with a rotating diffuser, and a fixed diffuser which is a volute extended by a nozzle rectilinear in section. The rotating diffuser of the rotor consists of two coaxial discs



connected together by radial blades, the radial dimensions of the blades and of the discs being such that the speed at the output of the diffuser rotating alone is slightly supersonic thereby obtaining a shock wave at the inlet of the nozzle.

3,824,030

## DIAPHRAGM AND LABYRINTH SEAL ASSEMBLY FOR GAS TURBINES

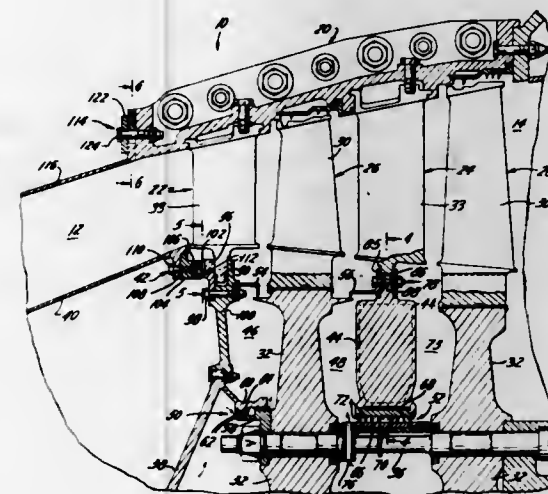
Angelo DeFeo, Passaic, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed July 30, 1973, Ser. No. 383,576

Int. Cl. F01d 25/24, 25/26; F02d 7/20

U.S. Cl. 415—136

3 Claims



The diaphragm member and labyrinth seal assembly for a gas turbine machine comprises an annular diaphragm or wall member disposed adjacent at least one of the rotor discs of a rotor blade assembly to define with the rotor disc a cooling fluid chamber. The chamber is in communication with a source of cooling fluid such as air, to receive cooling fluid from the latter. A labyrinth seal is disposed between the rotor blade assembly and the diaphragm member to provide a relatively fluid-tight joint between the stationary diaphragm member and the rotating rotor blade assembly. A slipjoint connecting means is disposed to connect together the diaphragm member to the turbine housing, which connecting means maintains concentricity of the diaphragm member and turbine housing and permits thermal differential movement of the diaphragm member and turbine housing without affecting the efficiency of the labyrinth seal.

3,824,031

## TURBINE CASING FOR A GAS TURBINE ENGINE

Ronald Albert Gilbert, Allestree, England, assignor to Rolls-Royce (1971) Limited, London, England

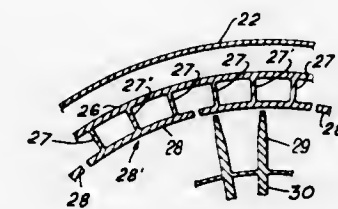
Filed Dec. 29, 1972, Ser. No. 319,763

Claims priority, application Great Britain, Jan. 12, 1972, 1365/72

Int. Cl. F01d 11/08, 25/14, 25/26

U.S. Cl. 415—135

8 Claims



A turbine casing for a gas turbine comprises a casing defining the boundary of part of the turbine flow duct and formed from a plurality of segments, each segment being mounted from fixed structure by a plurality of radially extending struts. At least some of the struts are arranged to deform to allow relative thermal expansion between the hot segments and the supporting casing with at least one of the struts interposed between the deformable struts being relatively rigid.

3,824,032

## CONTROL APPARATUS FOR HYDRAULIC MACHINES

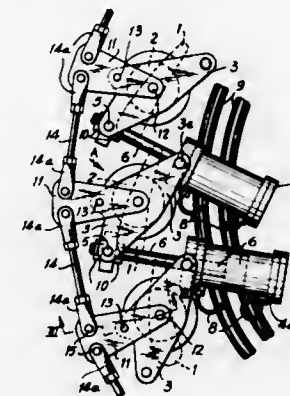
Gleb Stepanovich Schegolev, Sinyavinskaya ulitsa, 12/49, kv. 49; Mikhail Alexeevich Tsvetkov, Sinyavinskaya ulitsa, 26, kv. 64; Rady Kirillovich Fasulati, ulitsa Tukhachevskogo, 55, kv. 23; Sergei Fomich Budnikov, Gerasimovskaya ulitsa, 12, kv. 91; Grigory Abramovich Bronovsky, 7 Sovetskaya ulitsa, 7, kv. 6, and Semen Abramovich Granovsky, Bolshoi prospekt, 77, kv. 3, all of Leningrad, U.S.S.R.

Filed Mar. 13, 1972, Ser. No. 234,231

Int. Cl. F01d 17/00

U.S. Cl. 415—150

1 Claim



Control apparatus, for hydraulic pumps and reversible turbines, comprising adjustable vanes or blades and servomotors therefor, each blade being pivoted to a piston rod of a servomotor through the intermediary of a lever. The casings of the servomotor are kinematically connected with respective adjacent blades. This connection is effected through the intermediary of double-armed levers, one arm thereof being connected to the piston rods of the associated servomotors, and the other arms to the casings of the servomotors of the respective adjacent blades.



3,824,033

## HYDRAULIC TURBINE NOZZLE

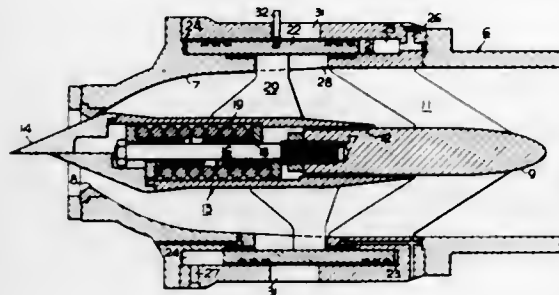
Selim A. Chacour, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 26, 1973, Ser. No. 344,989

Int. Cl. F01d 17/00

U.S. Cl. 415-151

2 Claims



A nozzle for an impulse hydraulic turbine including a needle valve slidably supported within the nozzle body for movement into and out of closing engagement with a nozzle orifice. A hydraulic piston in the form of an annular ring is slidably contained in a fluid tight chamber about the needle valve. The annular piston is connected to the needle valve to impart the desired sliding movement thereto.

3,824,034

## GUIDE BLADE RING

Werner Leicht, Stetten/Meersburg, Germany, assignor to Motoren-und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

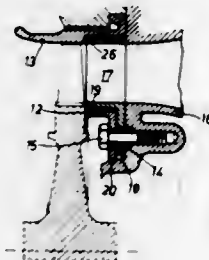
Filed Apr. 27, 1972, Ser. No. 248,094

Claims priority, application Germany, May 3, 1971, 2121707

Int. Cl. F01d 25/00, 13/02

U.S. Cl. 415-217

11 Claims



A guide blade ring which divided into segments is secured at the gas guide housing of an axial turbine, for example, of an exhaust-gas turbo-supercharger for a reciprocating internal combustion engine, in which the joints between the individual segments form in the cold condition air gaps that extend approximately in the direction of the blade inlet angle; each segment includes a radially inwardly extending flange at which the respective segment is secured by means of two bolts between an inner cover ring and the gas guide housing whereby the inner cover ring assumes the radial centering function of the segments and the sealing function for the inner joint gaps; a centering bushing is arranged in one of the two bolt bores which surrounds the respective bolt with a spacing and connects with each other the flange and the gas guide housing while simultaneously determining also the position of the segments in the circumferential direction; the bolt bore for the respective other bolt of each segment surrounds the same with a gap.

3,824,035

## HOUSING FOR CENTRIFUGAL PUMPS

Nikolaus Laing, Hofener Weg 35 bis 37, 7141 Aldingen bei Stuttgart, Germany

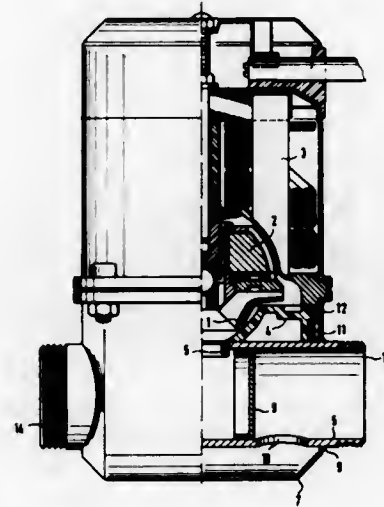
Filed May 22, 1972, Ser. No. 255,385

Claims priority, application Austria, May 27, 1971, 4577/71

Int. Cl. F04d 29/42, 17/00

U.S. Cl. 415-219 C

1 Claim



A centrifugal pump having a pump housing which communicates through a first bore in a pipe with the suction side thereof and through a second bore in the pipe with the pressure side thereof.

3,824,036

## GAS TURBINE ROTORS

Robert Noel Penny, Solihull; Peter Harry Parker, Redditch, and Calvin Eric Silverstone, Oversley Green, all of England, assignors to British Leyland Truck and Bus Division Limited, Leyland, England

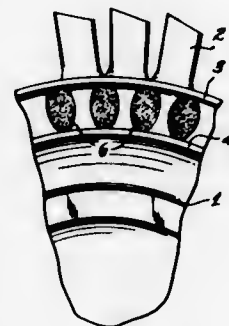
Filed Jan. 12, 1972, Ser. No. 217,205

Claims priority, application Great Britain, Feb. 15, 1971, 4657/71

Int. Cl. F01d 5/08

U.S. Cl. 416-95

4 Claims



An integrally cast gas turbine rotor, with a continuous rim existing at the roots of its blades, is characterized by having the blades rooted also to a second continuous rim situated at a smaller radius, such that this inner rim is subject to temperatures (and hence thermal stresses) significantly lower than those experienced by the existing outer rim.

3,824,037

## SUSPENSION OF ROTOR BLADES ON THE ROTOR HEAD OF A ROTORCRAFT WITHOUT THE USE OF FLAPPING OR DRAG HINGES

Karlheinz Mautz, and Alois Schwarz, both of Ottobrunn, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

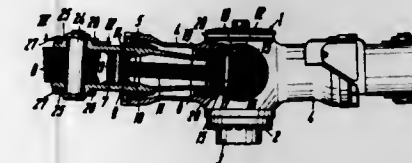
Filed Oct. 6, 1972, Ser. No. 295,730

Claims priority, application Germany, Oct. 12, 1971, 2150741

Int. Cl. B64c 27/48

U.S. Cl. 416-136

11 Claims



Vibration-free and wobble-free suspension of rotor blades in the rotor head of a helicopter. The invention is applicable to blade suspensions wherein the blades are received into a blade-base holding sleeve and same is then mounted on a central member in the rotor head through a compact bundle of elastic lamellae which are arranged parallel to the rotating plane of the rotor and whose radially inner ends are connected to a pin fixed in the central member and coaxially with the rotor axis. In the present invention there is additionally provided bands of stiffly resilient material encircling the central member and further similar bands are arranged around the holding sleeve. Thus, in case of breakage of the central member the rotor blade will not only be temporarily held in operational position but will be permitted to move radially outwardly sufficiently to slightly unbalance the rotor and thereby give the pilot warning of the occurrence of damage. On the sleeves holding the base of the blade, the resilient bands will in the event of breakage hold the parts in operating relationship for a sufficient period of time to maintain the rotor operational until the break is presumably discovered on a routine inspection.

3,824,038

## COOLING DEVICE FOR HYDRAULIC TORQUE CONVERTERS

Masayoshi Tokunaga, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Selsakusho, Osaka, Japan

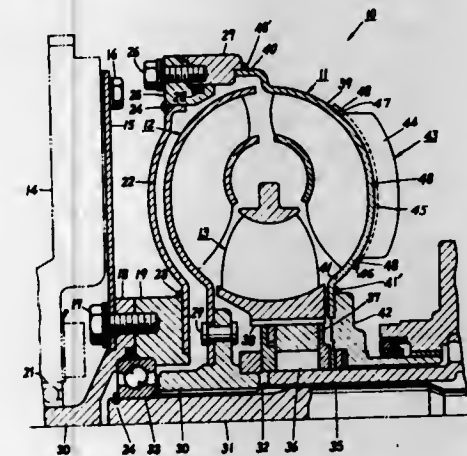
Filed Sept. 4, 1973, Ser. No. 393,815

Claims priority, application Japan, Sept. 11, 1972, 47-91612

Int. Cl. B23p 15/04; F01d 5/04

U.S. Cl. 416-180

4 Claims



A torque converter particularly adapted for automotive use is provided with novel and unitarily joined cooling means resulting in a more efficiently operating assembly.

3,824,039

## SUBLIMABLE TARGETS

Basil Dixon Power, Crawley, England, assignor to The British Oxygen Company Limited, London, England

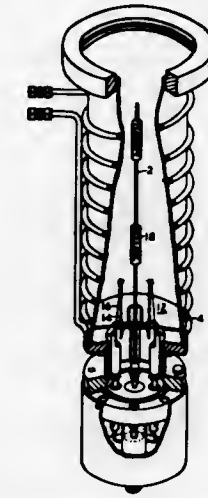
Filed Mar. 23, 1972, Ser. No. 237,335

Claims priority, application Great Britain, Mar. 24, 1971, 7745/71

Int. Cl. F04b 37/00

U.S. Cl. 417-48

11 Claims



A source of sublimable material is at least partially enclosed within a body or shield of nonsublimable material and in heat-exchange relation therewith. Both the sublimable material and the shield may be of various shapes and configurations, and both the sublimable and the non-sublimable material may be supported on a common support.

3,824,040

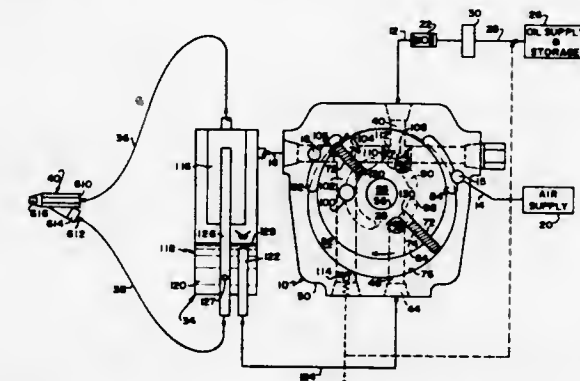
David Aronson, Upper Montclair, N.J., assignor to Compump Systems, Inc., Newark, N.J.

Filed Apr. 6, 1972, Ser. No. 241,745

Int. Cl. F04b 23/10; B05b 9/00; B01d 47/00

U.S. Cl. 417-204

13 Claims



A system is provided for regulating the level of output fluid of a pump, which system includes primary pumping means for pumping fluid from a supply source, recycle pumping means for pumping accumulated output fluid, means for combining the fluid output of the primary pumping means and recycle pumping means into a combined fluid output stream, means for accumulating combined fluid output stream, means for restricting said combined fluid output stream whereby pressure variations in the combined fluid output stream can be sensed, and fluid pressure responsive control means responsive to said pressure variations for regulating flow of the combined fluid output stream to the primary pumping means and to the means for accumulating combined fluid output stream. In addition, a system is provided for atomizing a liquid in a gas, such as oil in air, employing the above system for regulating the level of output fluid to a pump.



3,824,041

**POSITIVE DISPLACEMENT LIQUID PUMP**

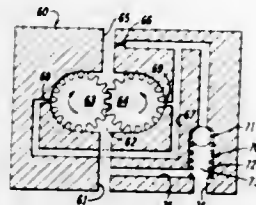
Charles H. Rystrom, 696 Ash St., Winnetka, Ill. 60093

Filed Aug. 1, 1972, Ser. No. 276,966

Int. Cl. F04b 49/00

U.S. Cl. 417-310

3 Claims



A positive displacement pump has a passageway connected between the outlet side of the pump and an intermediate location in the pumping mechanism for supplying liquid under pressure thereto for reducing cavitation in the pump.

3,824,042

**SUBMERSIBLE PUMP**

Edward Barnes, Speldhurst, and Ian Douglas Fergusson, Godstone, both of England, assignors to BP Chemicals International Limited, London, England

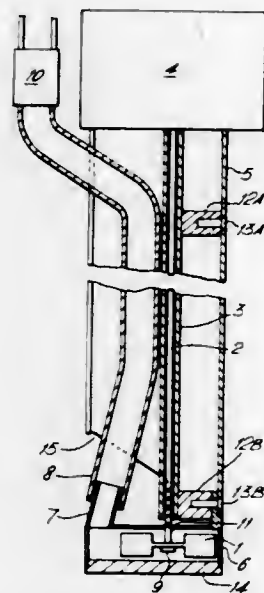
Filed Nov. 16, 1972, Ser. No. 306,987

Claims priority, application Great Britain, Nov. 30, 1971, 55555/71

Int. Cl. F04d 13/06, 17/00

U.S. Cl. 417-424

6 Claims



A submersible pump suitable for the transfer of liquid comprising a cylindrical shaft of mean radius  $R_1$  and length  $L$  connected at one extremity to a drive mechanism and at the other extremity to an impeller located within an impeller housing provided with a liquid inlet and outlet, the shaft being free to rotate within a guide tube of mean radius  $R_2$  such that the ratio of  $R_1$  to  $R_2$  is in the critical range 1:1.15 to 1:2.0 and the ratio of  $L$  to  $R_1$  is greater than 80:1.

3,824,043

**HYDRAULIC PUMP AND VALVE UNIT**

Randy J. Nordell, Salt Lake City, Utah, assignor to Time Commercial Financing Corporation, Salt Lake City, Utah

Filed June 7, 1973, Ser. No. 367,713

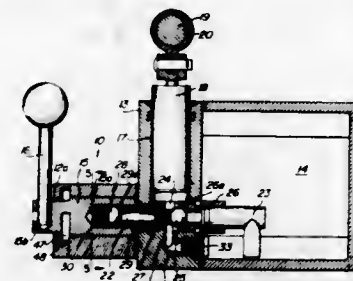
Int. Cl. F04b 21/02; F17d 3/00

U.S. Cl. 417-440

7 Claims

A hydraulic pump and valve unit for operating a hydraulically powered device, such as a hydraulic power cylinder for

raising and lowering the cab of an automotive truck, includes a pump portion closely coupled to a valve portion, the latter having a cylindrical valve spool with an axial bore adapted to receive hydraulic fluid from the pump portion of the unit. The valve spool is rotatably mounted and arranged so as to supply inflowing hydraulic fluid under pressure to one port of the



hydraulically powered device and to receive return fluid from another port of such device when in one position, and to reverse said supply and return in a rotated position. The pump is located between a hydraulic fluid reservoir and the valve, and the supply of hydraulic fluid from the former to the latter by the pump is through check-valved passage means providing a substantially direct and free flow path for the fluid.

3,824,044

**ENGINE**

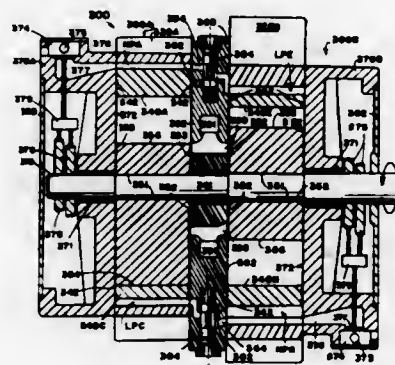
John N. Hinckley, Beloit, Wis.

Division of Ser. Nos. 860,684, Sept. 24, 1969, Pat. No. 3,684,413, and Ser. No. , which is a continuation-in-part of Ser. No. 812,656, April 2, 1969, abandoned. This application July 24, 1972, Ser. No. 274,202

Int. Cl. F01c 11/00

U.S. Cl. 418-12

3 Claims



A rotary fluid engine powered by externally pressurized working fluid including a rotor and a plurality of swinging arms positioned to engage with and impart a torque force to the rotor when the arms are driven sequentially inward by the selective admission of charges of externally pressurized working fluid. A first segment on the rotor surface engages the free end of each arm as the arm is driven inwardly and a second segment on the rotor surface operates to return the arm outwardly after the power impulse is completed. Valving and conduit means are provided to control the direction of the working fluid to the arms and exhaust means are provided to exhaust spent working fluid from the engine. In one embodiment, the valving and conduit means are adapted to direct charges of externally pressurized working fluid sequentially against said arms so that the engine operates as a simple engine. In a second embodiment, the valving and conduit means are adapted to direct charges of externally, pressurized working fluid first against one of said arms at a high pressure and secondly against another arm at a relatively lower pressure so that said engine operates as a compound engine. In a third em-

bodiment, transfer valve means are provided which permit said engine to be switchable between said simple and compound modes of operation. The rotor surface may include a plurality of said first and second segments so that each arm will transmit a corresponding plurality of power impulses to the rotor for each complete rotor revolution.

3,824,045

**VARIABLE-CAPACITY SLIDING-VANE PUMP**

Wladyslaw Wisniewski; Jan Piotrowski, and Zbigniew W. Szeler, all of Gdynia, Poland, assignors to Centrum Techniki Okretowej, Przedsiębiorstwo Państwowe Wyodrebnione, Gdansk, Waly Plastowkie, Poland

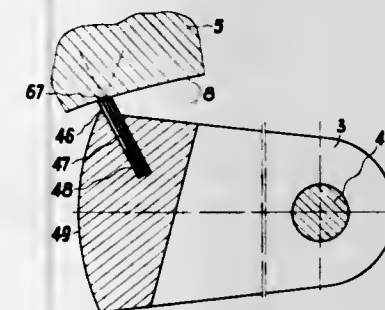
Filed Feb. 16, 1972, Ser. No. 226,681

Claims priority, application Poland, Feb. 22, 1971, 146413; Nov. 20, 1971, 151668; July 5, 1971, 149230

Int. Cl. F04c 15/04

U.S. Cl. 418-30

3 Claims



The invention relates to a technical solution of a double-acting, thus relieved, sliding-vane pump, its capacity being adjustable in a continuous way during operation of the pump.

The adjustment of the capacity of said pump is performed at constant speed of the pump rotor, by means of turning a movable cylinder, movable inlet and outlet chambers, or by deformation of a flexible cylinder, relatively to the modification of the pump.

Said pumps can have pendulous vanes mounted non-centrally on shafts, or rotatively, or artitutatively mounted in channels of the rotor, or rotatively and centrally mounted on shafts.

The vanes mounted in all the modification of the pump are provided with seals at the contact areas with the cylinder, and in channels of the rotor. The seal of the vane against the cylinder is realized by means of a plate pack, pushed out individually by an elastic and flexible material. The sealing of the vane in the rotor is secured by means of a rubber bar or elastic thin-walled seal with spread arms.

3,824,046

**SEQUENTIAL VALVE FOR ROTARY VANE AIR MOTORS**

John R. Hanning, Bryan, Ohio, assignor to The Aro Corporation, Bryan, Ohio

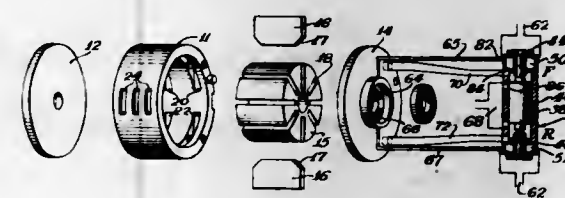
Division of Ser. No. 102,802, Dec. 30, 1970, Pat. No.

3,714,969, which is a continuation-in-part of Ser. No. 781,061, Dec. 4, 1968, abandoned. This application Jan. 24, 1973, Ser. No. 326,071

Int. Cl. F01c 21/00; F03c 3/00; F04c 15/00

U.S. Cl. 418-82

2 Claims



An improved valve assembly has one inlet and two outlets. The valve is operable to sequentially provide a fluid flow path

first between the inlet and one outlet and next between the inlet and both outlets. Utilization of the valve assembly for a rotary vane type air motor driven hoist is described as a preferred embodiment.

3,824,047

**FLOATING ROTARY RING MEMBER OF FLUID DISPLACEMENT DEVICE**

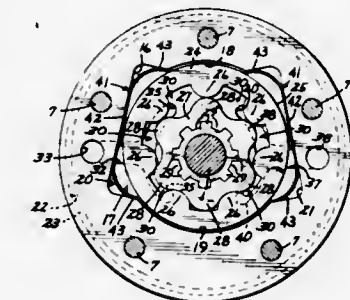
Hugh L. McDermott, 6101 Ashcroft Ave., Minneapolis, Minn. 55424

Filed Mar. 23, 1973, Ser. No. 344,362

Int. Cl. F01c 1/00

U.S. Cl. 418-171

8 Claims



A rotary fluid displacement device operable selectively as a fluid pump or a motor and utilizing a rotor having an outer cylindrical surface and comprising intermeshing internally and externally toothed members, each rotating on its own axis within a rotor chamber defined by a housing. The rotor chamber has opposite end walls and a peripheral wall, the peripheral wall including a pair of circumferentially spaced recesses and arcuate wall portions intermediate the recesses. The arcuate wall portions are spaced from the outer cylindrical rotor surface, and a pair of resilient mounting members in the recesses have sliding sealing engagement with the rotor.

3,824,048

**TIRE HOLDER AND HANDLER**

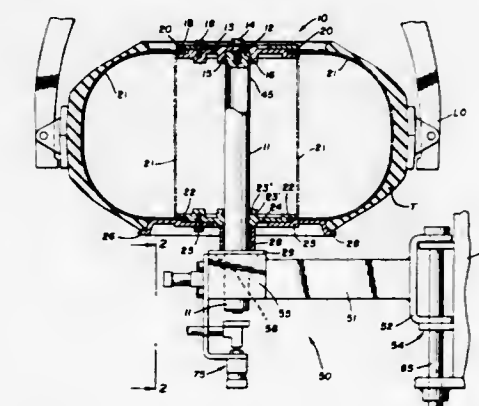
Gary R. Getz, Norton, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Aug. 2, 1972, Ser. No. 277,317

Int. Cl. B29h 5/02

U.S. Cl. 425-28 R

13 Claims



A holder for a radial or partially shaped tire having a support member or post which carries a plate for receiving the lower bead of the uncured tire. An expansible member is carried by the post in a manner such that the tire may be placed over the expansible member and onto the lower bead supporting plate. The expansible member is then inserted into the tire so that substantially the entire inner portion of the tire is contacted by the member. Means can be provided at each tire curing press to hold the post and actuate the expansible



member and/or such can be provided at the location where the tire is built so as to immediately hold the tire in the desired shape prior to transfer to the tire curing press.

3,824,049

## VESSEL FOR QUENCHING CAST SHEETING

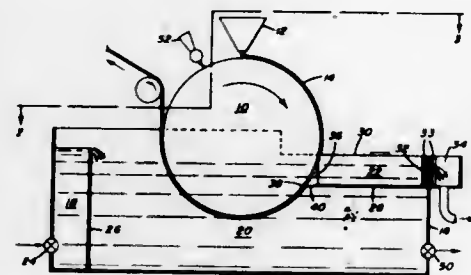
Roger N. Schindler, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,334

Int. Cl. B29d 7/00

U.S. Cl. 425-71

4 Claims



The surface of water used to quench cast polyethylene terephthalate sheeting is kept smooth by use of a weir tray which isolates all but a "slot of water" from the cast sheeting.

3,824,050

## APPARATUS FOR SPINNING SYNTHETIC-RESIN FILAMENTS

Hermann Balk, Troisdorf, Germany, assignor to Reifenhauser KG, Troisdorf, Germany

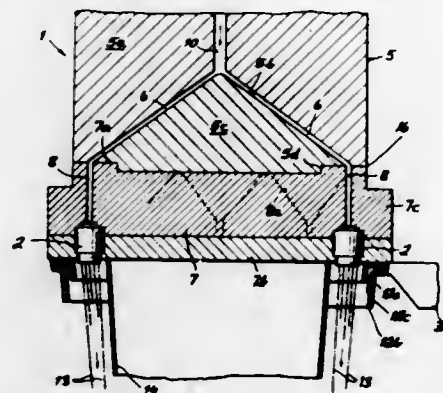
Filed Mar. 16, 1972, Ser. No. 235,197

Claims priority, application Germany, Mar. 19, 1971, 2113327

Int. Cl. D01d 3/00

U.S. Cl. 425-72

4 Claims



An apparatus for spinning synthetic-resin filaments has a distributing head formed with a conical passage into the apex of which a synthetic-resin melt is forced from a worm-type extruder machine. A manifold below the distributing head has a plurality of passages equispaced around the annular mouth constituting the base of the conical passage and each provided with a spinneret or nozzle having a plurality of filament-forming orifices. A stream of cooling air is directed along filaments in their direction of travel away from the spinnerets by an annular air guide surrounding each spinneret or surrounding all the spinnerets.

3,824,051

## MOLD APPARATUS FOR ISOSTATIC PRESSING OF HOLLOW PARTS

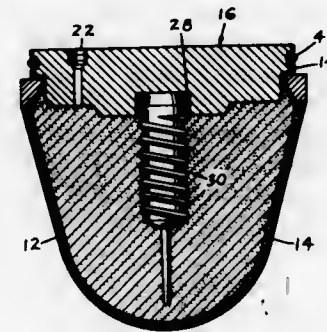
Hendrick Jozef Van Leemput, Duffel, Belgium, assignor to National Forge Company, Irvine, Pa.

Filed June 25, 1973, Ser. No. 372,904

Int. Cl. B29c 5/00; B30b 5/02, 11/32

U.S. Cl. 425-78

5 Claims



In manufacturing hollow parts by the application of isostatic pressure to powder particles a resiliently supported mandrel is used to permit relative movement between the mandrel and the support during the application of the isostatic pressure. The mandrel is removably received in the supporting structure to permit disengagement of the mandrel from the supporting structure following the application of isostatic pressure. The resilient mounting of the mandrel and its ability to be removed from the supporting structure permits the production of hollow compacted parts that are free from cracks.

3,824,052

## APPARATUS TO PRODUCE NONWOVEN FABRIC

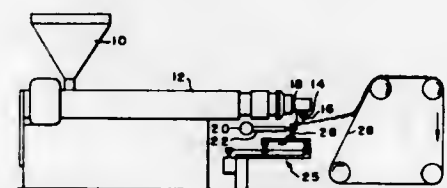
James E. Fowler, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 134,131, April 15, 1971, abandoned, which is a division of Ser. No. 11,725, Feb. 16, 1970. This application Dec. 10, 1973, Ser. No. 423,332

Int. Cl. B29c 13/00; B29d 7/00

U.S. Cl. 425-83

4 Claims



Process and apparatus to produce nonwoven fabric from a stream of liquid material having a high dielectric constant. The stream of liquid material is delivered past an air nozzle having a high electrical potential which attracts the liquid stream and shatters it into fine fibrous particles.

3,824,053

## MOLD FOR MOUNTING SWITCH BLADES AND THE LIKE

Stanley J. Styrkiewicz, Chicago, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed May 15, 1972, Ser. No. 253,173

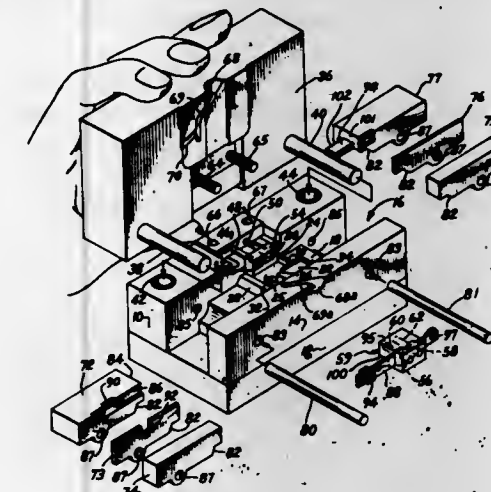
Int. Cl. B29f 1/10

U.S. Cl. 425-123

1 Claim

An improved mold for the manufacture of stacked contact blades provides a mold cavity with opposed sides of the cavity

having fingers that may extend partially into the cavity to define various configurations for the ultimate molded product.



The fingers also act to hold the contact blades in a rigid, discrete position during the molding operation.

3,824,054

## CONTROLLER FOR COMPACTING MACHINES

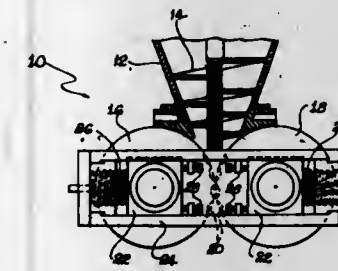
Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Filed Oct. 12, 1972, Ser. No. 296,821

Int. Cl. B29c 3/06

U.S. Cl. 425-149

10 Claims



A material compacting construction comprising a compacting means, a first drive for the compacting means, a feeding means, and a second drive for the feeding means. Control means are provided for varying the operation of the feeding means in accordance with the load applied to the drive for the compacting means. The control means includes means for sensing the load and a meter connected to the sensing means. When the meter records a limiting position, indicating that the load has increased or decreased to a limiting value, an electrical circuit associated with the meter is operated. This circuit in turn operates adjusting means for the drive of the feeding means whereby the rate of material fed to the compacting means is adjusted. This adjustment is calculated to maintain the energy level and product quality at desired values.

3,824,055

## SCREEDER

Theodore W. Shoe, Fletcher, and Mark J. Wise, Brookville, both of Ohio, assignors to The Flexicore Co., Inc., Dayton, Ohio

Filed Apr. 19, 1971, Ser. No. 135,325

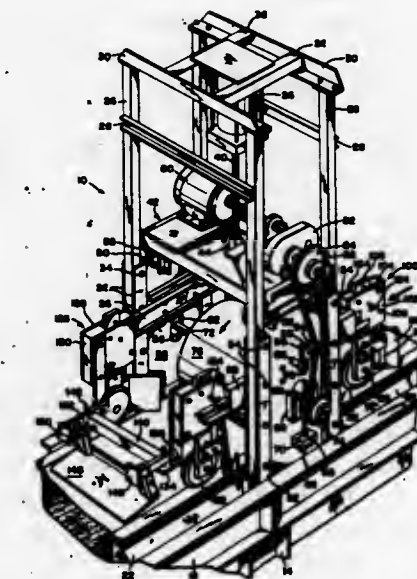
Int. Cl. B28b 3/12

U.S. Cl. 425-220

23 Claims

Screeding apparatus for smoothing and finishing the upper surface of freshly poured concrete in the manufacture of precast concrete slabs. The screeder comprises a base frame,

including a conveyor for carrying concrete filled forms through the screeder, and a vertically reciprocal screeder carriage upon which are mounted a rotatable drum, pairs of inwardly and outwardly directed scraper blades mounted downstream and upstream of the drum, rollers for engaging the upper flanges of the concrete forms passing through the screeder, wipers curved to the configuration of the drum surface and wiping the edges of the drum, and a final trowel posi-



tioned downstream of the drum and extending across the screeder to impart a final finishing and smoothing effect to the concrete as it passes through the screeder. All of the various components mounted on the screeder carriage are adjustable to permit the uncured slabs carried by the forms to be screeded level with the upper edge of the form or at depths below the upper edge of the form if somewhat thinner slabs are being manufactured.

3,824,056

## APPARATUS FOR SPONGING THE RIMS OF UNFIRED CERAMIC HOLLOW-WARE

Sidney Wedgwood, Newcastle-under-Lyme, England, assignor to Staffordshire Ceramic Systems Limited, Under-Lyme, England

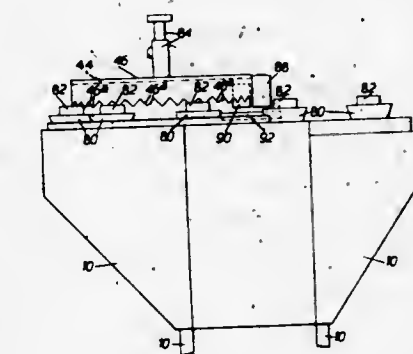
Filed Jan. 30, 1973, Ser. No. 327,974

Claims priority, application Great Britain, Feb. 1, 1972, 4553/72

Int. Cl. B28b 1/02, 1/29

U.S. Cl. 425-266

6 Claims



Apparatus for sponging the rims of articles of unfired ceramic hollow-ware includes a rotatable disc member having a band of sponge material detachably mounted round its



perimeter and depending from it as a skirt whose lower edge is formed with a pattern of alternate peaks and valleys, and a moving conveyor is arranged at a lower level than the sponge band so that during a portion of its travel its path coincides with the sponge band, the conveyor having upstanding from it at intervals a plurality of spigots on each of which a work-holder is rotatably fitted, each work-holder having associated with it a driving wheel and containing a loose interchangeable liner, drive means being provided for the disc member and the conveyor together with a moving band which acts to impart rotation to each work-holder about its own vertical axis while it is in a position for the article it contains to be acted upon by the sponge band, means being also provided for moistening the sponge band and for squeezing out excess moisture and clay fragments from it.

3,824,057

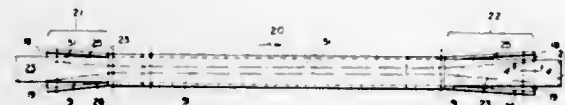
### CONTINUOUS MOLDING CONVEYOR WITH SIDE CLAMPING AND RELEASE

Andrew T. Kornylak, and Charles P. Tabler, both of Hamilton, Ohio, assignors to Kornylak Corporation, Hamilton, Ohio  
Filed Sept. 20, 1972, Ser. No. 290,744

Int. Cl. B29d 27/00

U.S. Cl. 425—329

17 Claims



Plastic is foamed in a pressure tunnel portion of a molding conveyor formed by opposed endless conveyor runs with side pieces defining the product cross section. One or both employed the endless runs, preferably the bottom conveyor run is laterally split into at least two separate endless shiftable conveyors respectively carrying the side pieces forming the sides of the pressure tunnel, which shiftable conveyors are laterally movable, with respect to the conveying or molding direction, at the tunnel entrance and the tunnel exit for clamping and unclamping respectively, that is for bringing the side pieces horizontally toward each other transverse to the molding direction to form the final configuration for the tunnel cross section and away from each other at the molding tunnel exit to release the sides of the molded product. This clamping and unclamping of the side pieces is particularly important with molded sheets having a configured edge so that the side pieces may be constructed with a corresponding configuration. Preferably, the two shiftable endless conveyors are constructed of a series of plates having pivotal connections therebetween to form a chain, which connections will allow additional sliding or shifting of the plates with respect to each other within a limited range, preferably under the control of guide means on the individual plates and stationary support structure. Preferably, the guide means are rollers on the plates engaging within stationary tracks. A flexible cover endless belt may be employed to bridge the joint between the shiftable endless conveyors and form the entire bottom surface for the tunnel portion. After the lower shiftable conveyors have been moved toward each other to their final tunnel configuration, a flexible endless belt may be tightly brought into contact with the tops of the side pieces and clamped by the upper rigid endless conveyor, so that through the unsupported tunnel portion, the upper belt will be tightly held at its opposite ends and not subject to sagging while forming a smooth continuous upper wall for the molding pressure tunnel.

### 3,824,058 APPARATUS FOR THE PRODUCTION OF PRESSED BOARD

Helmrich Axer, Nettetal-Lobberich, and Ernst Heckmanns, Straelen, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

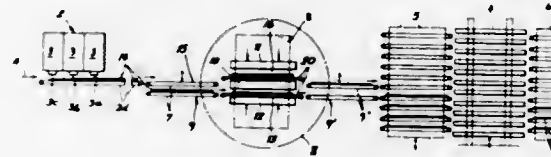
Filed Jan. 8, 1973, Ser. No. 321,796

Claims priority, application Germany, Jan. 8, 1972, 2200899

Int. Cl. B29j 5/08

U.S. Cl. 425—338

10 Claims



An apparatus or plant for making pressed board from particulate or fibrous material, comprises a dispensing station for depositing such material on a movable surface, e.g. a conveyor and/or tray, a prepress for compacting the mat of this material and a multiplaten press for the final pressing stage. The prepress has at least two stages and is operated to compact the mat in these stages alternately, i.e., one mat is compacted in one stage of the prepress while a previously compacted mat is removed from the other stage and a new layer of the material introduced therein by alternately operable service mechanisms for charging and discharging the prepress.

3,824,059

### MOLDING MACHINE FOR PRODUCING CONCRETE PRODUCTS

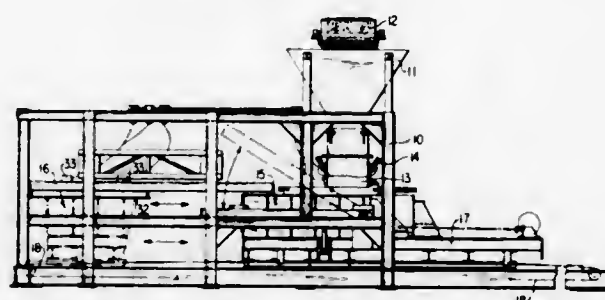
Robert E. Heltzel, 6922 Mines Rd., Warren, Ohio 44484

Filed June 16, 1972, Ser. No. 263,447

Int. Cl. B28b 1/00, 7/10

U.S. Cl. 425—424

15 Claims



The present disclosure is directed to an improved concrete product, method for the formation thereof and a molding machine for producing simultaneously a plurality of concrete products of the same external geometric configuration in a horizontally maintained mold box movable between a concrete charging station and a troweling and tamping station. The mold box employed is an elongated rectangular open top and open ended box having the forms set in the box which define a plurality of similar cross sections of products. The ends of the mold box are closed by end plates of complementary configuration to the cross section of the mold cavity. One set of end plates are mounted to be moved out of the way when the molded product is to be removed from the mold box and the other set of end plates at the opposite end of the mold box are mounted to be rammed through the cavities of the mold box to eject the products molded on the bottom mold plate or plates.

3,824,060

### APPARATUS FOR MAKING SHAPED BODIES

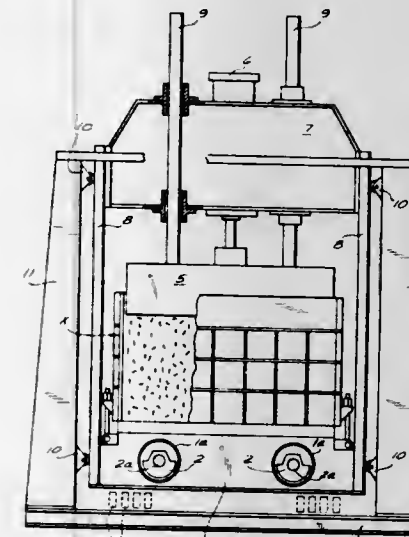
Gunter Helmrich, Grevenbroich, and Fritz Wulffing, Rheydt, both of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Postfach, Germany

Division of Ser. No. 167,126, July 29, 1971, which is a division of Ser. No. 854,184, Aug. 29, 1969, Division of Ser. No. 126,483, March 22, 1971, Pat. No. 3,743,468, which is a division of Ser. No. 854,184, Aug. 29, 1969, abandoned. This application Jan. 12, 1973, Ser. No. 323,314 The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.

Int. Cl. B28b 3/04

U.S. Cl. 425—425

6 Claims



An apparatus for producing coherent shaped bodies from granular material. The granular material is confined in a mold and the mold is subjected to vibratory motions requisite for compacting the granular material. In accordance with the invention the frequency of the vibratory motions is continuously varied.

3,824,061

### DEVICE FOR MAKING HOLLOW BODIES FROM THERMOPLASTIC MATERIAL BY ROTATION-MELTING

Herbert Giehler, Dautphe-Wilhelmshuette, Germany, assignor to Elkamet-Werk Lahn-Kunststoff GmbH, Biedenkopf/Lahn, Germany

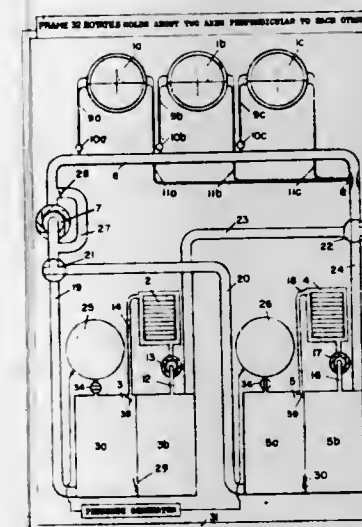
Filed July 7, 1972, Ser. No. 269,741

Claims priority, application Germany, July 7, 1971, 2133799

Int. Cl. B29c 5/04

U.S. Cl. 425—435

2 Claims



A device for making hollow bodies from thermoplastic material by rotation-melting, wherein either one or several

hollow molds which are to be filled partially with fluid or easily pourable plastic and which are composed of two mold halves, are rotatably positioned within a frame or base about two axes preferably position at right angle with respect to each other and are selectively heated or cooled controllably during the rotation, by means of a fluid heat transfer medium.

3,824,062

### TRACK-TYPE MOLDING APPARATUS AND CARRIAGE MEANS THEREFOR

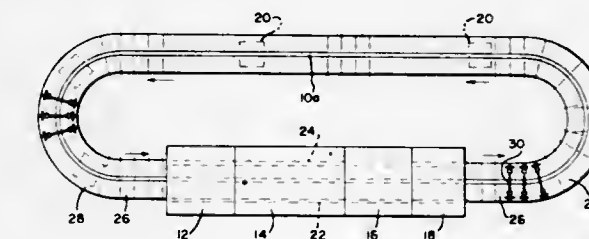
Robert E. Farrell, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Jan. 29, 1973, Ser. No. 327,300

Int. Cl. B29g 3/00

U.S. Cl. 425—451

15 Claims



Molding apparatus comprising track means defining a predetermined path or circuit, a plurality of work stations associated with the track means, and mold-carrying carriages driven along the track means and through the work stations. The carriages each include a plurality of relatively movable carriage platens which, during the carriage movement along the track means, are locked in closed positions by locking means including cooperative jaws and locking elements or collars mounted on axially movable locking rods. Also, the track means includes successive straight and curved sections which are in different planes to prevent their simultaneous engagement with a thereover passing carriage, thereby minimizing wear during the carriage movement.

3,824,063

### PIEZO-ELECTRIC CIGARETTE LIGHTER

Pierre Chevallier, Sainge-Foy-les-Lyon, France, assignor to Etablissements Genoud & Cie. Société Anonyme, Venissieux (Rhône), France

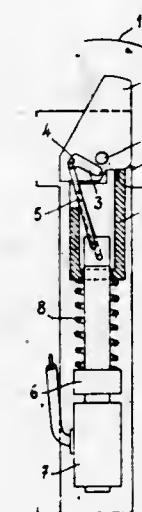
Filed Apr. 5, 1973, Ser. No. 348,107

Claims priority, application France, Apr. 7, 1972, 72.12862

Int. Cl. F23q 2/16

U.S. Cl. 431—255

4 Claims



A piezo-electric lighter wherein the control key thereof is adapted to actuate an intermediate sliding member for compressing the striker spring so that when the key is released the



spring expansion causes the assembly to resume automatically its reset position by virtue of the off-setting of the bearing point of this intermediate member in relation to fulcrum of said key.

3,824,064

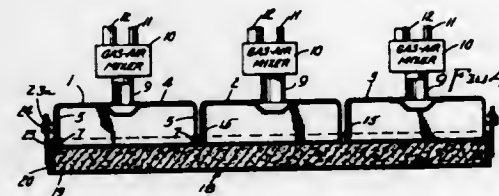
## INFRA-RED PROCESS BURNER

Rudolph S. Bratko, 10706 Harvard Ave., Cleveland, Ohio 44109

Filed May 25, 1973, Ser. No. 364,121

Int. Cl. F23d 13/18

U.S. Cl. 431-328



There is disclosed an infra-red process burner, comprised of individual sections rigidly fastened together to provide a generally elongated unit having a common continuous burner face, infra-red generation being controllable in each section and operable in unison to avoid longitudinal areas of material passing therebeneath from receiving less heat than adjacent areas, or individually operable to selectively heat along strips, the virtually instantaneous generation of infra-red heat and termination thereof because of the composition of the burner face, facilitating accurate control of the use of the burner for process treatment of material of widely varying types.

3,824,065

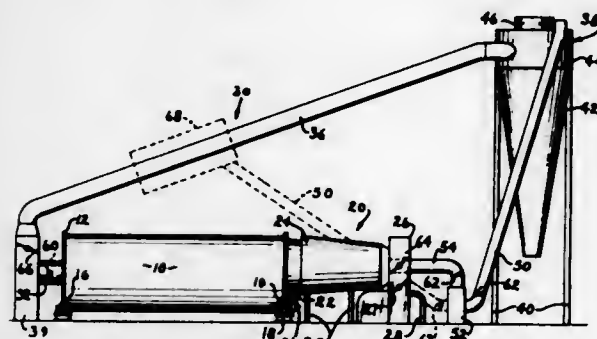
## METHOD OF DRYING A PRODUCT

Stanley P. Thompson, 2718 Osborn Rd., Topeka, Kans. 66614  
Continuation-in-part of Ser. No. 135,068, April 19, 1971, Pat. No. 3,749,382. This application Apr. 30, 1973, Ser. No. 355,713

Int. Cl. F27b 7/02, 15/00

U.S. Cl. 432-14

4 Claims



A method of drying a product utilizing a combustible fuel employs combustion gases as the medium for conveying the product through the dryer. The combustible fuel is burned in a combustion zone to produce heat and gases of combustion. The heat and gases are moved from one end of a drying zone to the opposite end along with the product being dried, which is pneumatically conveyed. A portion of the combustion gases are then separated from the dried product and directed along a path, which bypasses the combustion zone, to reintroduce the gases into the forward end of the drying zone. By recycling the combustion gases for use as the conveying medium, while bypassing the combustion zone, the oxygen content is reduced in the drying zone without affecting combustion in the combustion zone. Thus there is less likelihood of thermal decomposition occurring in the drying zone. The recycling of the

combustion gases which have a relatively high vapor content also increases the vapor pressure of the liquid water droplets in the drying zone. These droplets may therefore remain near the surface of the product being dried for a longer period of time and act as a barrier against thermal decomposition. The relatively high K value of the water droplets also facilitates heat transfer to the interior of the product thereby forcing additional moisture toward the surface.

3,824,066

## BAKING OVEN

Istvan Muranyi; Attila Voros; Janos Varga, and Ivan Orosz, all of Budapest, Hungary, assignors to Labor Mueszeripari Muevek, Esztergom, Hungary

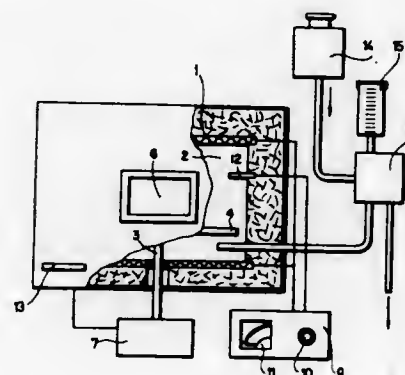
Filed Sept. 18, 1972, Ser. No. 289,633

Claims priority, application Hungary, Sept. 16, 1971, OE 2251

Int. Cl. F27b 5/04

U.S. Cl. 432-57

4 Claims



A baking oven for test-baking loaves of bread has a baking chamber heated by a heating element to a desired baking temperature, and a door through which to introduce the loaves. In response to closure of the door, water is passed through a pipe extending from the outside into the baking chamber and is allowed to fall on the heating element for immediate evaporation. The amount of water is metered so as to be sufficient to saturate the air in the baking chamber with water vapor at the baking temperature.

3,824,067

## OVEN CONVEYOR AND METHOD

Gerald Lee Voshel, Kentwood, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.

Filed Mar. 20, 1973, Ser. No. 343,122

Int. Cl. F27b 9/14

U.S. Cl. 432-74

9 Claims



A normally flat, flexible conveyor band is moved endlessly through a baking oven and conforms to the shape of a support in the oven which configures the band in a continuous downward direction from its lateral midpoint to each edge. A drain trough extends beneath each edge to catch cooking fluids produced during baking. The troughs are sloped toward a discharge outlet for removal of the fluids from the oven. At the outlet of the oven, the band resiliently resumes its flat configuration until its re-entry into the oven along its endless travel.

3,824,068

## CLINKER COOLING APPARATUS

Hiroshi Kobayashi, Yokohama, and Goro Okada, Tokyo, both of Japan, assignors to Babcock-Hitachi, Tokyo, Japan

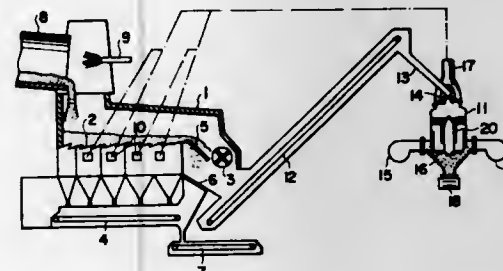
Filed May 18, 1973, Ser. No. 361,535

Claims priority, application Japan, May 19, 1972, 47-49097

Int. Cl. F27b 7/02

U.S. Cl. 432-80

7 Claims



This invention provides a clinker cooling apparatus which comprises a grate type clinker cooler connected with a rotary kiln for calcining clinker, a moving bed type clinker cooler connected with said grate type clinker cooler, a breaker disposed between said two clinker coolers to break large masses of the clinker, and screening equipment disposed before and after said breaker, respectively, to separate the large masses and fine granules from the clinker. This clinker cooling apparatus preferably comprises, in addition to the foregoing members, a heat exchanger having a heat transmission surface, which is mounted in said moving bed type cooler to cool the clinker indirectly.

This clinker cooling apparatus comprising a combination of grate type and moving bed type clinker coolers gives such high cooling effect and high heat recovery efficiency as will not be attainable by single use of either of the two coolers, and this clinker cooling apparatus is further advantageous in that the exhaust gas contains no dust or hardly any dust and it has a compact size.

3,824,069

## METHOD OF INCREASING THE COOLING EFFECT OF A ROTARY KILN-SATELLITE COOLER AND DEVICE FOR CARRYING OUT THE METHOD

Kunibert Brachthausen, Bensberg, and Jurgen Langmaack, Niederkassel, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

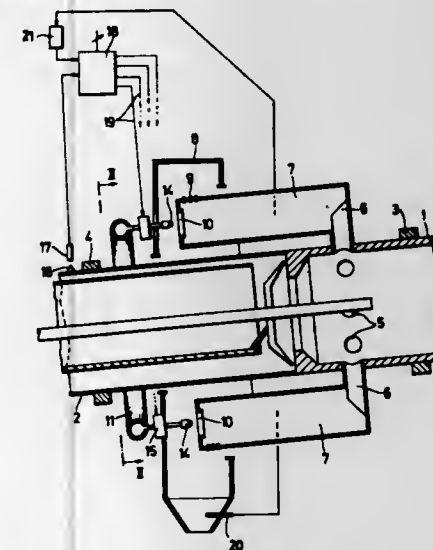
Filed Mar. 9, 1973, Ser. No. 339,582

Claims priority, application Germany, Mar. 9, 1972, 2211264

Int. Cl. F27b 7/02

U.S. Cl. 432-80

15 Claims



Method of increasing the cooling effect of a rotary kiln-satellite cooler includes periodically injecting a cooling liquid

from stationary nozzles, in synchronism with the rotary speed of the rotary kiln into the interior of the satellite tubes of the cooler through cooling air inlets formed at an end of the satellite tubes; and device for carrying out the method includes at least one cooling liquid supply line, at least one nozzle connected thereto and adapted to discharge a liquid jet having an axis spaced from the axis of rotation of the rotary kiln substantially equal to the spacing of the central axis of the satellite tubes therefrom, the nozzle having an outlet spaced slightly from the plane of rotation of air inlet ends of the satellite tubes, and at least one periodically operable valve connected to the liquid supply line.

3,824,070

## AIR HEATER WITH INTERNAL COMBUSTION CHAMBER

Friedrich-Wilhelm Drebes, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

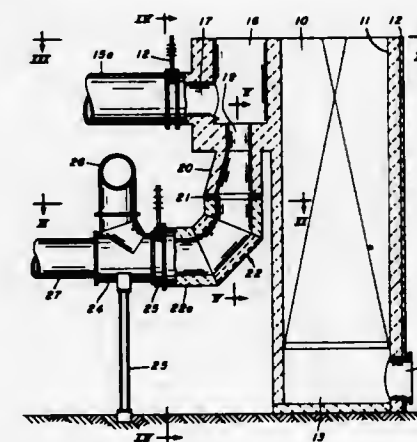
Filed Mar. 26, 1973, Ser. No. 345,211

Claims priority, application Germany, May 13, 1972, 2223442

Int. Cl. F23i 9/04

U.S. Cl. 432-214

7 Claims



An air heater with an internal combustion chamber is supplied with gas from an externally provided burner which can be shut off from the combustion chamber by means of a hot gas slide valve. This valve lies between the burner and an elbow, with a refractory lining. A water-cooled support ring provides a thermal barrier between the elbow and a transition pipe to couple the burner output to the combustion chamber. A hot air exhaust opening controlled by a slide valve is arranged in the combustion chamber to overlie the point of entry of hot gases from the burner.

3,824,071

## FURNACE PALLET

Clifford E. Lovold, Beaver Bay, Minn., assignor to Reserve Mining Company, Silver Bay, Minn.

Filed July 30, 1973, Ser. No. 383,486

Int. Cl. F27b 9/00, 21/02

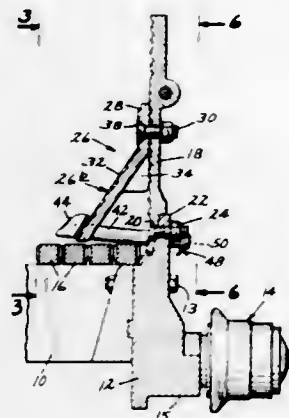
U.S. Cl. 432-241

7 Claims

A pallet of the type used in moving-grate furnaces, having sloping side plate members fastened in place across the internal angle formed by the substantially vertical side wall members mounted on the sides of the pallet for holding in the material-in-process, and the substantially horizontal grate-



bars, positioned on top of the frame of the pallet and on which the material-in-process sits. The sloping side plates have



3,824,072

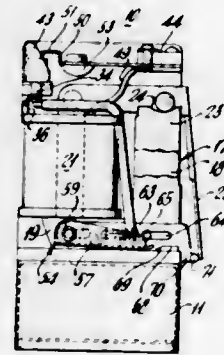
## GAS LIGHTER BURNER IGNITION DEVICE

Minoru Makino, Tokyo, Japan, assignor to Kabushiki Kaisha Tanita Seisakusho, Tokyo-to, Japan  
Division of Ser. No. 259,710, June 5, 1972. This application Nov. 15, 1973, Ser. No. 416,155

Claims priority, application Japan, June 11, 1971, 46-40957  
Int. Cl. F23q 3/01

U.S. Cl. 431—255

6 Claims



A lighter ignition mechanism includes a rectangular magnetic yoke, one leg of which is a permanent magnet, another leg of which is swingable to a yoke opening position, and a coil being wound upon another leg. A burner includes a metal top plate having a central nozzle opening communicating with a gaseous fuel source and defining a plate electrode and a needle electrode is resiliently biased to contact the plate electrode at a point offset from the nozzle, the electrodes being con-

nected to the winding with the needle electrode positive. A resilient arm is connected to the swingable leg to, upon depression, open a gas valve to the nozzle, open the yoke, and then separate the electrodes.

3,824,073

## FLARE STACK GAS BURNER

John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Aug. 13, 1973, Ser. No. 387,785

Int. Cl. F23q 9/00

U.S. Cl. 431—284

7 Claims



A flare stack gas burner for waste combustible gases at both low and high pressure from oil refineries and the like is disclosed with separate delivery systems for the combustion gases, which includes a stack with a top mounted burner tip, the stack carrying a centrally disposed high pressure gas supply pipe closed at the top and with a plurality of outwardly extending vanes with gas delivery slots, the tops of the vanes being angularly disposed in a plane with respect to radial lines through the center of the stack for a swirling action of the burning gas. A low pressure gas supply pipe is mounted to and extends upwardly along the outside of the stack to a ring manifold mounted to the burner tip with a plurality of inwardly extending vanes, with gas delivery slots, the vanes being interposed between the outwardly extending vanes and angularly disposed in the same direction. Air at variable controlled low pressure is delivered into the stack at the bottom and moves upwardly between the vanes for smokeless burning. Optional fluidic seals can be provided in both the low and high pressure gas supply lines to prevent flashback. Igniters and pilots are provided exteriorly of said stack.

## CHEMICAL

3,824,074

## HAIR DYE COMPOSITIONS CONTAINING SALTS OF MORPHOLINO(2,3-b)PHENOXAZONIUM

Andree Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Filed July 23, 1971, Ser. No. 165,740  
Claims priority, application Luxembourg, July 31, 1970, 61,452

Int. Cl. D06p 3/04

U.S. Cl. 8—10

12 Claims

Salts of morpholino-(2,3-b)phenoxazonium are incorporated into hair dye and hair setting lotion compositions.

3,824,075

## DYEING HUMAN HAIR WITH INDAMINE SALTS

Gregoire Kalopissis, Paris, Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

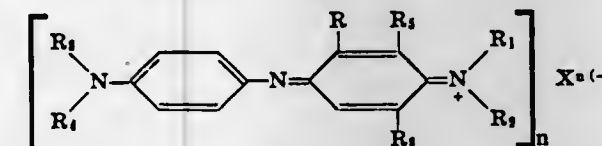
No Drawing. Filed Sept. 14, 1971, Ser. No. 180,456  
Claims priority, application France, Sept. 18, 1970, 7034043

Int. Cl. D06p 3/04

U.S. Cl. 8—10

12 Claims

Indamine salts, having the formula



wherein  $R_1$  and  $R_2$  are lower alkyl,  $R_3$  and  $R_4$  are lower alkyl which can be substituted with hydroxy, amino or acylamino,  $R_5$  and  $R_6$  are hydrogen, lower alkyl or lower alkoxy,  $R$  is amino, acylamino or hydroxy,  $n$  is 1–2 and  $X^{n-}$  is an anion, are useful for dyeing keratinous fibers and, in particular, human hair. These salts can be in a tautomeric form of that represented above.

3,824,076

## LIQUID AMMONIA-CAUSTIC DYE SOLUTION AND DYEING THEREWITH

Hans Orthell, Spartanburg, S.C., assignor to Kane and Company, Gastonia, N.C.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,887

Int. Cl. D06p 1/68

U.S. Cl. 8—82

12 Claims

A dye system in which materials are bathed in a dye-bath formed of a dye dissolved in substantially anhydrous liquid ammonia. A small amount of caustic is added as a fixative and to improve absorption.

3,824,077

## SO,SH DYES IN DRY HEAT DYEING

David Razavi, Paris, France, assignor to Uguine Kuhlmann, Paris, France

No Drawing. Application May 22, 1969, Ser. No. 828,441, which is a continuation of abandoned application Ser. No. 471,725, July 13, 1965. Divided and this application July 27, 1970, Ser. No. 58,744

Claims priority, application France, July 18, 1964, 982,217; July 22, 1964, 982,560

Int. Cl. D06p 1/30

U.S. Cl. 8—37

4 Claims

Water-soluble thiosulphonic phthalocyanine dyestuffs. These dyestuffs are useful in dyeing cellulosic fibres and are prepared by reacting a copper phthalocyanine sulphochloride in aqueous medium at a temperature between 0° C. and 100° C. with a member selected from the group consisting of alkali metal sulphides, alkali metal hydro-sulphides and thiourea.

3,824,078

## ALKALI SOLUBLE RAYON TEXTILE MATERIAL AND PROCESS FOR PRODUCING SAME

Daniel J. Egan, New Foundland, N.J., assignor to Londa Aetz Fabric Co., Elizabeth, N.J.

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,780

Int. Cl. D06m 11/02

U.S. Cl. 8—120

8 Claims

Alkali soluble textile materials produced without resorting to a carboxymethylation step by the impregnation of rayon with an aqueous solution of chromic acid or periodic acid, the resultant material being highly soluble in alkaline dissolving baths, such solution being free of gummy residues.

3,824,079

## BREATH TESTING SYSTEM

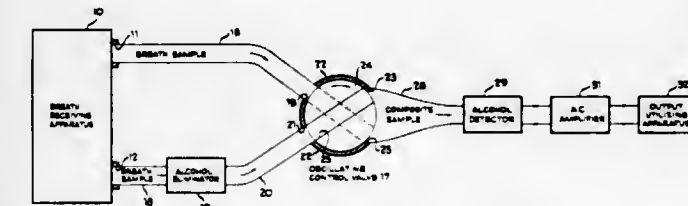
Harry J. Venema, Wheaton, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 5, 1972, Ser. No. 259,415

Int. Cl. A61b 5/08; G01n 33/16

U.S. Cl. 23—254 E

9 Claims



An alcoholic breath analyzer which effectively responds only to alcohol content of a subject's breath. It is immune to other breath constituents, as well as to temperature variations, that could otherwise have an adverse effect and lead to false test results. This immunity is achieved by alternately supplying to the input of an alcohol detector two breath samples identical to each other except that alcohol, if any, has been removed from one of them. In this way, the samples reaching the detector will be the same when the subject's breath is alcohol-free and any reaction to those samples will be constant. As a consequence, the instantaneous amplitude of the output signal from the detector remains substantially fixed (namely the signal will have a constant amplitude D.C. component) even though the detector may respond to and be affected by the non-alcohol constituents and by temperature changes. On the other hand, when breath alcohol is present, the chopping process effects delivery of that alcohol to the detector in time-spaced pulses or bursts and this causes the detector's output signal to vary in accordance with a square wave function and in step or synchronism with the switching between samples at the detector's input. The peak-to-peak amplitude of the resulting A.C. component will accurately represent the breath alcohol concentration.

3,824,080

## VERTICAL REACTOR

Randlow Smith, John C. Strickland, and John W. Sanwald, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,281

Int. Cl. B01j 9/04

U.S. Cl. 23—288 R

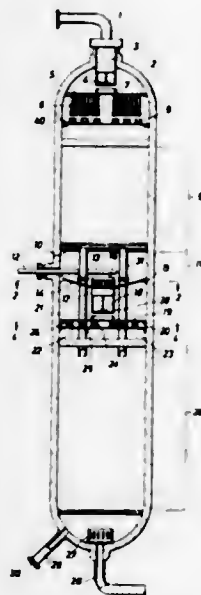
9 Claims

A vertical, downflow reactor for contacting a two-phase vapor-liquid reaction mixture with solid catalyst contained in two or more reactor vessel catalyst zones, where-



in such reactor has means for injecting quench fluid between succeeding catalyst zones. Such reactor comprises reactor internal parts located intermediate to two catalyst zones for intimately mixing vapor and liquid reaction

into a reactor vessel catalyst zone. Means are also provided for evenly distributing vapor and liquid components of the reaction charge mixture across the horizontal cross-sectional area of a reactor vessel catalyst zone.



effluents from a first catalyst zone and quench fluid to form a new two-phase vapor-liquid reaction mixture and reactor internal parts for evenly redistributing the new reaction mixture across the top horizontal cross-section of a second catalyst zone.

3,824,081

# VERTICAL REACTOR FOR TWO-PHASE VAPOR-LIQUID REACTION CHARGE

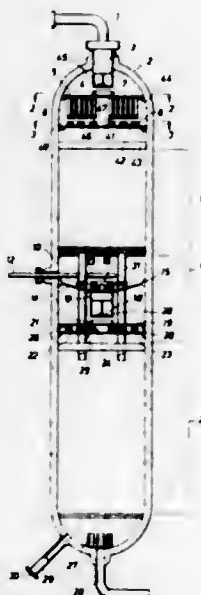
Randlow Smith, John C. Strickland, John W. Sanwald, and Henry B. Jones, Houston, Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,280

Int. Cl. B01J 9/04

U.S. Cl. 23—288 R

5 Claims



A vertical downflow reactor for contacting a two-phase, vapor-liquid reaction mixture with solid catalyst contained in one or more reactor vessel catalyst zones. Means are provided in the upper portion of such vertical reactor to separate any solid particulate contaminants from said reaction mixture prior to admitting the reaction mixture

## 3,824,082 PROCESS FOR PREPARING SUPERCONDUCTING NIOBIUM-GALLIUM ALLOY

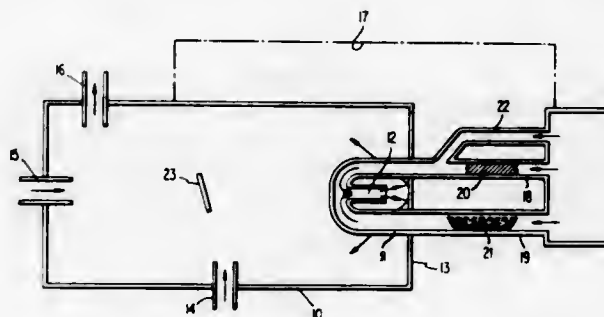
Leon Joseph Vieland, Princeton, and Arnold Wilbert Wicklund, Hopewell, N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,805

Int. Cl. B44d 1/14, 1/18

U.S. Cl. 29—194

9 Claims



An improved method for preparing superconducting niobium-gallium alloy having a high critical temperature whereby niobium-gallium alloy is deposited from its halides at temperatures of 640–700° C. onto a substrate coated with a first layer of a  $\beta$ -tungsten niobium-gallium alloy deposited at temperatures above 700° C.

3,824,083

# CLAD COMPOSITES AND ALUMINOUS METAL COMPOSITIONS FOR CLADDING

Thomas L. Fritzen, Phelps County, Mo., assignor to Reynolds Metal Company, Richmond, Va.

Continuation of application Ser. No. 838,013, June 17, 1969, which is a continuation of application Ser. No. 609,707, Dec. 23, 1966, both now abandoned, which in turn is a continuation-in-part of application Ser. No. 538,085, Mar. 14, 1966, now Patent No. 3,418,090.

This application June 1, 1971, Ser. No. 148,868

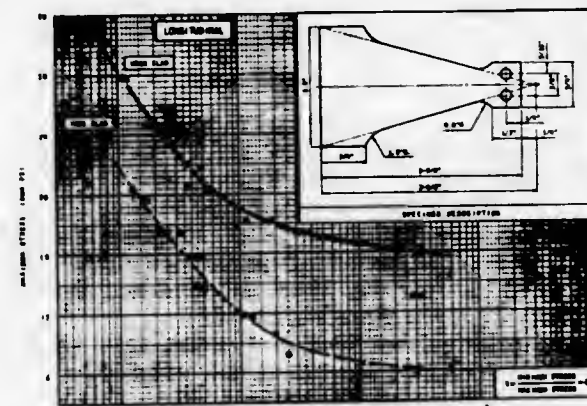
The portion of the term of the patent subsequent to

Dec. 24, 1985, has been disclaimed

Int. Cl. B32b 15/00

U.S. Cl. 29—197.5

10 Claims



Composite articles having a core and cladding composed of heat-treatable aluminum base alloys, in particular a core alloy containing zinc, magnesium and copper

as the principal allowing elements, clad with an alloy containing about 4–5.5% zinc and about 1–1.6% magnesium; and improved cladding alloys of that type.

3,824,084

## PRODUCTION OF LOW SULFUR COAL

Thomas J. Dillon, Elizabeth, and Abe Warshaw, Matawan, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,055

Int. Cl. C10I 9/00

U.S. Cl. 44—1 R

12 Claims

Coal containing pyritic sulfur is processed at elevated temperature and pressure with water and air to convert the pyritic sulfur to water-soluble ferrous and ferric sulfate. The resulting slurry is filtered to produce a coal product of diminished sulfur content which may be burned without causing air pollution due to sulfur dioxide emission.

3,824,085

## ESTERS OF POLYMERIC HYDROXYPROPYL CARBOHYDRATES AND METHOD OF USING SAME AS GELLING AGENT FOR ORGANIC SOLVENTS

James Teng, St. Louis County, Marcella C. Stubbs, St. Louis, and Richard E. Pyler and James M. Lucas, St. Louis County, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,660

Int. Cl. C10I 7/02

U.S. Cl. 44—7 B

14 Claims

This disclosure involves esters of hydroxypropyl cellulose and hydroxypropyl starch, specifically the acetate and laurate. These cellulose esters are useful as gelling agents for organic solvents. The hydroxypropyl cellulose acetate is prepared at low cost under mild conditions and is particularly useful in gelling methylene chloride (useful in paint stripping) and methyl and ethylene bromide (useful as soil fumigants). The hydroxypropyl cellulose laurate is particularly useful as a gelling agent for jet fuel.

3,824,086

## BY-PASS FIBER COLLECTION SYSTEM

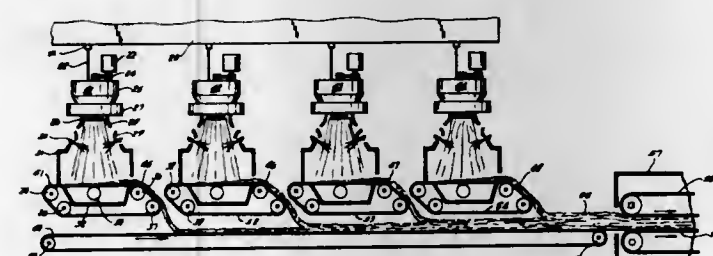
Walter Merton Perry and Walter Scott Perry, both of 76 Locust Hill Road, Darien, Conn. 06820

Filed Mar. 2, 1972, Ser. No. 231,345

Int. Cl. C03b 37/04

U.S. Cl. 65—9

9 Claims



An improved apparatus for the collection and formation into a blanket of the fine fiber glass fibers produced by a series of glass fiberizing units arranged progressively in line. It is particularly adaptable to the production of glass fibers by the well-known rotary centrifugal process. The fibers are spray coated with thermo-setting resinous binder, and collected on a foraminous conveyor with the assistance of a suction box underneath. In accordance with this invention, means are provided so the output of each individual fiberizing unit may be collected on a

clear section of foraminous conveyor, which is free of any previously deposited fibrous blanket, and subject to full vacuum from under the conveyor. This results in improved fiber orientation with most of the fibers lying horizontally in the blanket, and with fewer clumps and porous spots. The individual partial blankets are then continuously combined to form a blanket of full thickness, which is then sized and cured in an oven. The improved system produces a product of greater uniformity and strength, and permits using a lower density to obtain the desired heat flow rating when formed into an insulating blanket. The partial blankets from each fiberizing unit may be formed on separate foraminous conveyors, and then combined prior to feeding into the curing oven, or the individual blanket may be by-passed after collection on a common conveyor, leaving the conveyor open for the next fiberizing unit, and with the separate blankets combined before the oven. Other advantages includes means to partially cure the thin blanket layers individually, increasing the oven capacity, and provision for insertion of laminar material between adjacent layers. The system is also adaptable to other fiberizing methods besides rotary.

3,824,087

## METHOD OF MANUFACTURING A SOLID SEMICONDUCTOR GLASS

Jean Cornet, Limell-Brevannes, and Dominique Rossier, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.

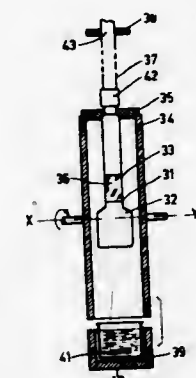
Filed Oct. 18, 1972, Ser. No. 298,623

Claims priority, application Netherlands, Oct. 29, 1971, 7138913

Int. Cl. C03b 29/00, 27/00, 5/16

U.S. Cl. 65—32

4 Claims



A method of manufacturing binary chalcogenide glass types from arsenic and tellurium in atomic ratios of from 30 to 60% of arsenic. According to this method a tempering treatment in stages is performed in a bath containing molten salt.

3,824,088

## WELDED MULTIPLE GLAZING UNITS

John Bryan and Frederick Harry Hart, St. Helens, England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Aug. 23, 1972, Ser. No. 283,022

Int. Cl. C03b 23/20, 23/24

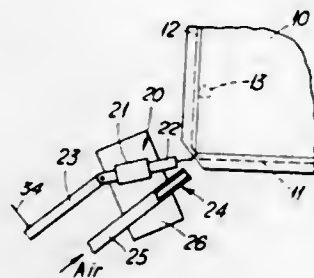
U.S. Cl. 65—40

12 Claims

A welded multiple glazing unit is manufactured by forming a continuous peripheral weld uniting the margins of assembled glass sheets by passing electrical heating currents to the glass sheets between marginal positions spaced apart around the periphery of the assembled glass sheets, and directing cooling gas at the peripheral weld



during passage of the electrical heating currents. The electrical currents and cooling gas may be supplied through a

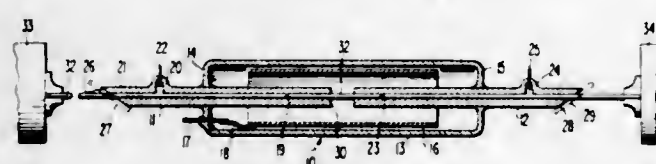


combined electrode and gas supply passage located on the corners of the unit.

**3,824,089**  
**METHOD OF ALIGNING A TWO-CAPILLARY TUBE GAS DISCHARGE DEVICE**  
William Eugene Riggie, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.  
Filed Aug. 20, 1973, Ser. No. 389,719  
Int. Cl. C03b 23/08

U.S. Cl. 65—109

4 Claims

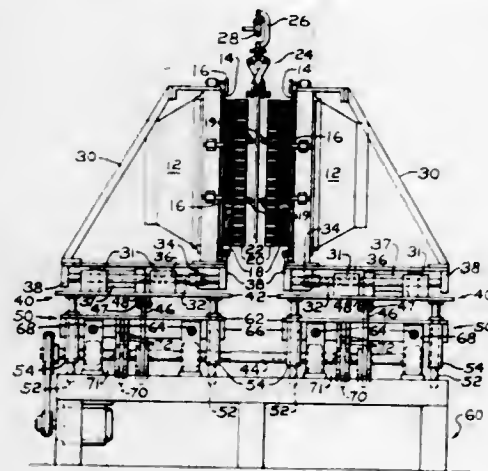


A metal rod is inserted through the left and right capillary tubes of a gas discharge device. One end of a coaxial bulb joining one capillary tube is heated until the glass thereof is softened. Then, the metal rod is rotated within the two capillary tubes until the bores thereof are axially aligned. Then, the softened end of the bulb is allowed to cool to fix the aligned capillary tubes. Then, the metal rod is removed from the discharge device.

**3,824,090**  
**TEMPERING GLASS SHEETS**  
Samuel L. Seymour, Oakmont, and Joseph A. Noca, Irwin, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.  
Filed Feb. 6, 1973, Ser. No. 330,145  
Int. Cl. C03b 27/00

U.S. Cl. 65—114

13 Claims



In tempering heat-softened glass sheets by quenching said glass sheets while supported in an upright position between spaced arrays of tempering nozzles through which tempering medium is applied under pressure to

rapidly chill the heat-softened glass sheets, rolling means adapted to make rolling contact with one or both major surfaces is interposed between the inner ends of the nozzles and the glass to limit the degree of buffeting the glass sheet experiences during quenching.

**3,824,091**  
**METHOD OF ANCHORING FINELY GRANULATED DUST MATERIAL FROM PURIFYING PLANTS FOR METALLURGIC WASTE GASES IN ORDER TO RENDER THE DUST DISPOSABLE OR UTILIZABLE**  
Harry Francis Holman, Kristiansand, Norway, assignor to Hunfos Fabrikker, Vennessla, Norway  
Filed July 19, 1972, Ser. No. 273,268  
Claims priority, application Norway, July 21, 1971, 2,781/71  
Int. Cl. A01g 7/00

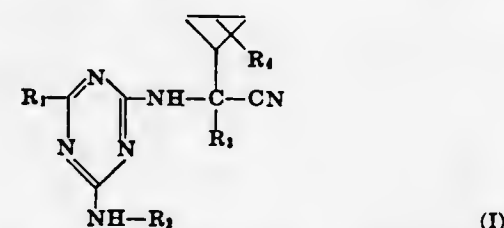
U.S. Cl. 71—12 4 Claims  
A method to render the dust material from purifying plants for metallurgic waste gases disposable or utilizable.

**3,824,092**  
**METHOD OF MANUFACTURING A SURFACE SOIL**  
Karl H. R. Wikstrom, 3 Taljstensvagen, 141 46 Huddinge, Sweden, and Per E. Ericson, 11 Plankvagen, 130 50 Vendelso, Sweden  
No Drawing. Continuation of abandoned application Ser. No. 52,756, July 6, 1970. This application Dec. 11, 1972, Ser. No. 314,074  
Claims priority, application Sweden, July 8, 1969, 9,638/69; Dec. 23, 1969, 17,858/69  
Int. Cl. C09f 3/00

U.S. Cl. 71—12 19 Claims  
A method of manufacturing a surface soil wherein sludge from sedimentation tanks having a dry solids content of approximately 10–90% is mixed with a sandy material and then compacted by pressing. Alternatively this surface soil may contain peat soil in addition to the sandy material.

**3,824,093**  
**CONTROL OF WEEDS WITH CYANO-CYCLO-PROPYL DERIVATIVES OF DIAMINO-S-TRIAZINES**  
Manfred Kuhne, Pfeffingen, Basel-Land, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
No Drawing. Original application May 26, 1971, Ser. No. 147,170, now Patent No. 3,766,182. Divided and this application June 25, 1973, Ser. No. 373,041  
Claims priority, application Switzerland, May 29, 1970, 8,079/70; Dec. 1, 1970, 17,772/70  
Int. Cl. A01n 9/22

U.S. Cl. 71—93 15 Claims  
Substituted diamino-s-triazine derivatives defined by the following structural formula:



wherein  $R_1$  is one selected from the group consisting of chlorine, the methoxy, methylthio or ethylthio radical;  $R_2$  is selected from the group consisting of hydrogen,  $C_1$ – $C_4$  alkyl and  $C_3$ – $C_5$  cyclo-alkyl;  $R_3$  is selected from the group consisting of  $C_1$ – $C_3$  alkyl and cyclopropyl;  $R_4$  is selected from the group consisting of hydrogen and the methyl radical.

Diamino-s-triazine derivatives represented by this structure have been found to possess herbicidal activity and are especially useful as pre- and post-emergent herbicides

JULY 16, 1974

for the selective control of weeds and wild grasses in culture crops such as wheat, sorghum, soya beans, cotton and rice.

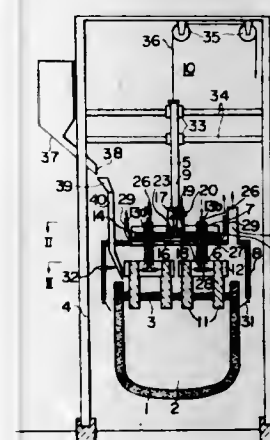
**3,824,094**  
**METHOD OF INHIBITING THE GROWTH OF TOBACCO SUCKERS**  
Tien C. Tso, Beltsville, and George L. Steffens, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of Agriculture  
No Drawing. Filed Mar. 26, 1965, Ser. No. 443,106  
Int. Cl. A01n

U.S. Cl. 71—78 11 Claims  
This invention relates to a method for controlling the growth of suckers in tobacco plants with certain  $C_8$  to  $C_{18}$  saturated fatty alcohols.

**3,824,095**  
**METHOD AND APPARATUS FOR THE PRETREATMENT OF MOLTEN PIG IRON**  
Ryo Ando, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan  
Filed Aug. 9, 1972, Ser. No. 279,183  
Claims priority, application Japan, Aug. 26, 1971, 46/65,460  
Int. Cl. C21c 7/00

U.S. Cl. 75—58

5 Claims



The method of pretreatment of molten pig iron comprises the steps of disposing four driving shafts at the respective corners of a square, each driving shaft driving a pair of horizontally spaced apart vertical driving members with their lower ends immersed in the portions of the molten pig iron to be treated near the upper surface thereof, incorporating a pretreating agent onto the upper surface, and rotating adjacent driving shafts in the opposite directions so as to stir the portions of the molten pig iron near the interface between the pretreating agent and the molten pig iron.

The apparatus for carrying out the method is constructed such that, the driving shafts, the stirring members and means for driving the shafts are supported by a non-rotating shaft and that the non-rotating shaft is adjusted in the vertical direction.

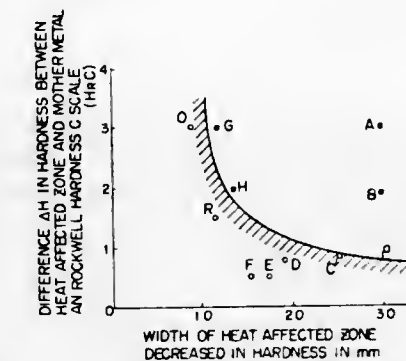
**3,824,096**  
**MANGANESE-NICKEL-ALUMINUM-COPPER-MOLYBDENUM SYSTEM AGE-HARDENABLE STEEL FOR PLASTIC MOLDS**  
Chiaki Asada, Nagoya, and Toshiyuki Watanabe, Nishio, Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya, Japan  
Filed June 21, 1972, Ser. No. 264,986  
Claims priority, application Japan, June 21, 1971, 46/44,933  
Int. Cl. C22c 37/10, 39/02

U.S. Cl. 75—124

4 Claims

The disclosed steels for use as materials for plastic molds consist essentially of 0.05–0.18% C, 0.15–1.0% Si,

1.0–2% Mn, 2.5–3.5% Ni, 0.5–1.5% Al, 0.7–1.7% Cu, 0.1–0.4% Mo and the balance, iron and are age-hardenable at about 500° C. for about five hours after build-up

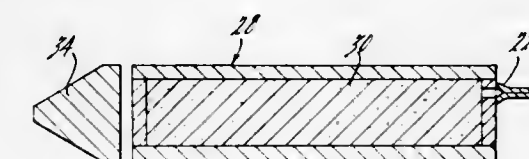


welding. To improve the machinability, toughness and grain refining property, the steels may be added, for example with up to 0.3% S, up to 2.5% Cr and up to 0.5% Ti respectively.

**3,824,097**  
**PROCESS FOR COMPACTING METAL POWDER**  
John W. Smythe and Steven H. Reichman, Ann Arbor, and Don M. Weaver, Birmingham, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.  
Filed Dec. 19, 1972, Ser. No. 316,490  
Int. Cl. B22f 3/14

U.S. Cl. 75—226

10 Claims



A process for producing billets of metals and metal alloys employing powder metallurgical techniques wherein the resultant consolidated powder masses are characterized as having a wrought-type grain structure possessed of excellent high temperature physical properties. The process relies on the use of two sequentially-phased compaction steps, whereby the metal powder packed within a sealed ductile container is first hot isostatically pressed to a density of at least about 90% of theoretical density and thereafter is extruded at an elevated temperature at an extrusion ratio greater than about 2:1 to produce a billet which approaches 100% theoretical density and is of substantially uniform grain structure throughout.

**3,824,098**  
**PYROELECTRIC COPYING DEVICE**  
John George Bergman, Jr., Rumson, and Glen Robert Crane, Scotch Plains, N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.  
Filed June 23, 1972, Ser. No. 265,569  
Int. Cl. G03c 5/08

U.S. Cl. 96—1.5

7 Claims

There is disclosed an electrostatic copying device based upon the phenomenon of pyroelectricity in suitable materials such as polymeric polyvinylidene fluoride. Localized temperature changes caused by an intense light source generate electrostatic charge patterns on the material when exposed to the image of an object interposed between the light source and the material. By using thin pyroelectric films to minimize thermal diffusion, it is possible to obtain sufficient resolution to allow the charge







airfield runways and the like. The method comprises the steps of (a) forming a mixture of a granular aggregate, a solid bonding material, and water, the granular aggregate and bonding material being present in specified proportions and sizes and having specified compositions, (b) compacting the mixture under a pressure of at least  $\frac{1}{2}$  long ton per square inch to form a coherent body, (c) hardening the coherent body, and (d) crushing the hardened coherent body to form the desired artificial road-stone.

3,824,110

## ADDITIVE COMPOSITION

Alfred Pelz, Linz-Pucheanu, and Franz Jilek, Gallneukirchen, Austria, assignors to Österreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,954

Claims priority, application Austria, Mar. 29, 1972, A 2,702/72

Int. Cl. C08f 45/52; C08h 13/08

U.S. Cl. 106—284

7 Claims

Thermoplastic plastics materials such as polyolefines are rendered metallisable by admixing them with an additive composition comprising 40 to 80% by weight of lithopone, calcium carbonate or calcium phosphate as inorganic filler, 20 to 60% by weight of a coal tar pitch an 0 to 25% by weight of an amorphous completely or predominantly saturated hydrocarbon polymer, whereby the inorganic filler has a particle size of at most  $5\mu$ .

3,824,111

## NOVEL PIGMENT DISPERSANT

Robert D. Jerabek, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 193,590, Oct. 28, 1971. This application Apr. 28, 1972, Ser. No. 248,752

Int. Cl. C09c 3/02

U.S. Cl. 106—308 N

4 Claims

It has been found that basic nitrogen-containing adducts of glycidyl ethers or esters containing an acyclic hydrocarbon chain of at least eight carbon atoms with secondary amine or a tertiary amine salt are useful as grinding media in preparing stable pigment dispersions useful in water-soluble coating systems, for example, electrodepositable compositions.

3,824,112

## PERMEABLE WOLLASTONITE CERAMIC MASS

Willis G. Lawrence, Alfred, and Leon B. Coffin, Andover, N.Y., assignors to Research Corporation, New York, N.Y.

Application July 1, 1970, Ser. No. 56,104, now Patent No. 3,641,229, which is a continuation of application Ser. No. 735,161, Feb. 23, 1968, which is a continuation-in-part of application Ser. No. 511,407, Dec. 3, 1965, which in turn is a continuation of application Ser. No. 194,048, May 11, 1962, the latter all now abandoned. Divided and this application Nov. 13, 1971, Ser. No. 195,509

Int. Cl. B28b 7/34; C04b 21/00, 35/22

U.S. Cl. 106—38.3

1 Claim

A permeable ceramic structure is prepared by forming a uniform admixture comprising finely divided, high melting point refractory ceramic material, finely divided fluxing material and hydrated silica gel, the melting point of the fluxing material being below the melting point of the refractory ceramic material. The resulting admixture is

then heated to a temperature to dehydrate the silica gel and to fuse the fluxing material to provide a resulting permeable ceramic structure wherein the components thereof are held together by means of a glassy bond derived by fusing said fluxing material.

3,824,113

## METHOD OF COATING PREFORMED CERAMIC CORES

Ted A. Loxley, Mentor, Harold L. Wheaton, Kensington, and John M. Webb, Chagrin Falls, Ohio, assignors to Sherwood Refractories Inc., Cleveland, Ohio

No Drawing. Filed May 8, 1972, Ser. No. 251,252

Int. Cl. B22c 3/00; B44d 1/20

U.S. Cl. 117—5.2

29 Claims

This invention relates to a method of coating preformed ceramic cores with a thin layer of a refractory oxide, said oxide serving as a reaction barrier between the ceramic core and molten metals containing reactive alloying elements. More specifically, this invention relates to a method of forming a continuous in situ coating on a ceramic core by immersing said core in a molten metal bath consisting of a non-reactive base of a solvent metal, such as nickel or cobalt, and at least one solute metal whose free energy of oxide formation is less than minus 160 kilocalories per mole of oxygen at 1260° C., such as aluminum, zirconium or hafnium.

3,824,114

## METHOD OF APPLYING GRAFT COPOLYMER TO CELLULOSIC SUBSTRATE AND RESULTANT ARTICLE

Anthony E. Vassiliades, Deerfield, and David N. Vincent, Glenview, Ill., and Shrenik Shroff, Bombay, India, assignors to Champion International Corporation

No Drawing. Filed May 12, 1971, Ser. No. 142,772

Int. Cl. B44d 1/094

U.S. Cl. 117—21

22 Claims

Discrete, substantially spherical microcapsules having a solid polymeric shell and a solid, non-tacky polymeric core, which is grafted to the polymeric shell, are provided. Such microcapsules may be coated onto cellulosic substrates or incorporated into such substrates and subsequently fused to provide cellulosic substrates having a polymeric film bonded thereto and increased strength, respectively. The grafting of the normally nonadherent core material to the shell of the microcapsules provides a means of forming a bond between a normally nonadherent polymer and a cellulosic material. The microcapsules may also be employed as load bearing agents and/or opacifying agents.

3,824,115

## POLYVINYLIDENE FLUORIDE COMPOSITION AND COATING THEREOF

Masahiro Segawa and Yukichika Kawakami, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Original application June 3, 1970, Ser. No. 43,235, now abandoned. Divided and this application Oct. 20, 1971, Ser. No. 191,066

Claims priority, application Japan, June 12, 1969, 44/46,265

Int. Cl. B32b 15/08; B44d 1/16

U.S. Cl. 117—21

4 Claims

A metal surface is protectively powder coated with an undercoat and then with an overcoat of a polyvinylidene

fluoride, the ratio of the thicknesses of the overcoat and the undercoat being from 0.25 to 4, the undercoat being a composition prepared by mixing from 10 to 100 parts by weight of at least one inorganic substance having resistance to acids and alkalis with 100 parts by weight of at least one polyvinylidene fluoride which has an inherent viscosity from 0.6 to 1.4 and is a homopolymer or a copolymer containing at least 90 mol percent of vinylidene fluoride.

3,824,116

## STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, Arlington Heights, and Margery L. Schick, Mount Prospect, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Continuation-in-part of application Ser. No. 27,135, Apr. 9, 1970, now Patent No. 3,704,155. This application May 15, 1972, Ser. No. 253,358

Int. Cl. B41m 1/24

U.S. Cl. 117—35.5

17 Claims

A stencil sheet of the type including an ink-impervious coating of a heat-flowable composition of thermoplastic film-forming material comprising a cellulose organic ester, and plasticizing material partially but incompletely compatible with the film-forming material, incorporates a polymeric hydrocarbon resin in the coating thereof for minimizing oil transfer from the stencil. The stencil sheet may be imaged thermographically and also mechanically in preferred embodiments.

3,824,117

## STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, Arlington Heights, Margery L. Schick, Mount Prospect, and Janis E. Wedyck, Arlington Heights, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Filed May 15, 1972, Ser. No. 253,394

Int. Cl. B41m 1/24

U.S. Cl. 117—35.5

19 Claims

A stencil sheet of the type including an ink-impervious coating of a heat-flowable composition of thermoplastic film-forming material comprising a cellulose organic ester, and plasticizing material partially but incompletely compatible with the film-forming material, incorporates an alkylene oxide ester of a fatty acid or an alkylene oxide ether of a fatty alcohol in the coating thereof for enhancing stencil sheet durability. Preferably, a polymeric hydrocarbon resin also is included for minimizing oil transfer from the stencil. The stencil sheet may be imaged thermographically, and mechanically in preferred embodiments.

3,824,118

## PROCESS OF PRODUCING INK SHEET

Masayoshi Tsuboi, Yasushi Yano, and Yoshiaki Suzuki, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Kanagawa, Japan

No Drawing. Continuation of abandoned application Ser. No. 840,501, July 9, 1969. This application Jan. 14, 1972, Ser. No. 218,008

Claims priority, application Japan, July 9, 1968, 43/48,022

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2

2 Claims

Process for producing ink sheet to be employed as the ink source in a stencil printing process comprising forming an organic solvent solution of a high molecular weight compound and a colorless leuco dye which is capable of forming a colored dye upon contact with an acidic material and applying said solution to a support.

3,824,119

## PRESSURE SENSITIVE COPY PAPER EMPLOYING DIBENZYLAMINO FLUORAN COMPOUNDS

Mutsuo Terayama and Kenji Yamamoto, Yao, Japan, assignors to Yamamoto Kagaku Gosei K.K.

No Drawing. Original application Mar. 10, 1971, Ser. No. 123,069. Divided and this application Sept. 14, 1972, Ser. No. 288,993

Claims priority, application Japan, July 8, 1970, 45/59,711

Int. Cl. B41c 1/06; B41m 5/00

U.S. Cl. 117—36.2

15 Claims

New fluoran compounds containing a dibenzylamino group or a nuclear substituted derivative thereof are provided by a novel method involving the reaction of an aminofluoran and a benzyl chloride in the presence of alkali in an inert non-polar organic solvent. The dibenzylamino fluorans are incorporated as a remarkably effective color former in pressure sensitive copying paper.

3,824,120

## SILICON NITRIDE ARTEFACTS

Roger William Davidge, Wantage, and Anthony Glyn Evans, Didcot, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 25, 1971, Ser. No. 156,712

Claims priority, application Great Britain, July 1, 1970, 32,011/70

Int. Cl. C23c 11/08; C23d 5/00

U.S. Cl. 117—98

5 Claims

Increased strength is imparted to porous silicon nitride by subjecting the silicon nitride to controlled oxidation such that the surfaces of the internal pores are oxidized.

3,824,121

## PRODUCTION OF SILICON METAL FROM DICHLOROSILANE

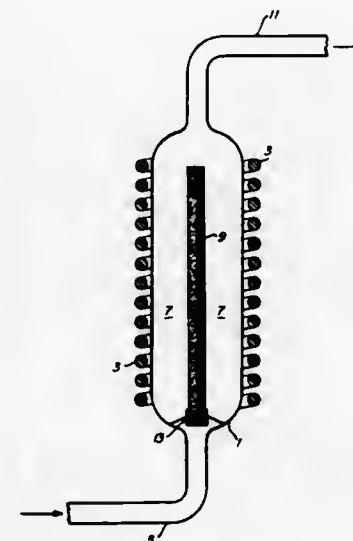
Howard B. Bradley, St. Marys, W. Va., and Maurice H. Jellinek, Stamford, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of application Ser. No. 80,645, Oct. 14, 1970, which is a continuation-in-part of applications Ser. No. 874,444 and Ser. No. 874,445, both Nov. 6, 1969, all now abandoned. This application Aug. 21, 1972, Ser. No. 282,107

Int. Cl. C23c 11/00

U.S. Cl. 117—106 A

7 Claims



The process of producing silicon metal from a chlorosilane whereby to obtain improved yields and rates of production of silicon metal, based on the amount of silicon in the chlorosilane used to produce the silicon metal, which comprises providing dichlorosilane gas in



admixture with hydrogen gas in a reaction zone having a temperature sufficient to effect the reduction and decomposition of said dichlorosilane to silicon metal and maintaining the temperature at which said reaction is effected and the residence time of said dichlorosilane in said reaction zone sufficient to provide yields of silicon metal of at least 50 percent. In addition, this process provides a substantial reduction in the amount of by-product  $\text{SiCl}_4$  as compared with silicon metal making processes which employ trichlorosilane as the silicon source.

3,824,122

## CONTINUOUS DIFFUSION COATING

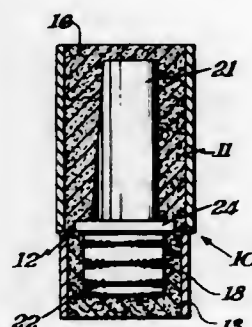
George H. Cook, 803 D Cloister Road, Wilmington, Del. 19809, and Alfonso L. Baldi, 1100 Turner Ave., Drexel Hill, Pa. 19026

Filed July 2, 1971, Ser. No. 159,175

Int. Cl. C23c 13/02

U.S. Cl. 117—107.2 P

16 Claims



Workpieces are diffusion coated by packing them singly in individual snugly fitting retorts with a diffusion coating pack, heating the packed retorts to diffusion coating temperature for a time adequate to effect the desired coating, and then rapidly cooling the retorts. The small amount of pack surrounding the workpiece permits very rapid cooling without the need to apply a cooling liquid to these small retorts, and entire coating operation is accordingly well suited for coating nickel-base superalloys that should before use be subjected to solution heat treatment and rapid cooling with or without subsequent aging. The diffusion coating can then be conducted under solution heat treating conditions. Tubular retorts can be used.

3,824,123

## NOVEL GLASSES AND PROCESSES FOR THE PREPARATION THEREOF

Herbert D. Kivlighan, Jr., Bethpage, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y. No Drawing. Continuation-in-part of abandoned application Ser. No. 71,427, Sept. 11, 1970. This application Dec. 5, 1972, Ser. No. 311,962

Int. Cl. C03c 17/00, 17/06, 21/00

U.S. Cl. 117—124 C

10 Claims

A process disclosed for producing a thin film of elemental germanium on the surface of a germanate glass composition.

3,824,124

## PROCESS FOR IMPROVING THE THERMAL SHRINKAGE RESISTANCE OF LEATHER AND PRODUCT PRODUCED THEREBY

Alfred O. Minkler, Grand Island, and John A. Peterson, Niagara Falls, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 4, 1972, Ser. No. 250,208

Int. Cl. C14c 9/00; C09k 3/28

U.S. Cl. 117—138

17 Claims

Leather having durable resistance to shrinkage on exposure to high temperatures as occasioned by flash fires is

produced by pretreating the leather by immersion in an aqueous alkali metal or ammonium salt solution and thereafter impregnating the pretreated leather with a salt of a metal selected from the group consisting of the transition metals of the 4th and 5th periods of the Periodic Table and magnesium. Preferably a solution of sodium bicarbonate, disodiumphosphate, diammonium phosphate or tetra sodium pyrophosphate is used to pretreat the leather and nickel or magnesium salts, especially the sulfates, are used to impregnate the pretreated leather.

3,824,125

## SOIL RELEASE COMPOSITION

Everett H. Hinton, Jr., Raleigh, N.C., and Larry E. Avery, Cheraw, S.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

No Drawing. Continuation-in-part of application Ser. No. 747,473, July 25, 1968, now Patent No. 3,650,801. This application July 28, 1971, Ser. No. 176,368

The portion of the term of the patent subsequent to Mar. 21, 1969, has been disclaimed

Int. Cl. D06m 15/36

U.S. Cl. 117—138.8 F

14 Claims

Two hydrophilic acrylic polymers, preferably together with a higher trialkyl trimellitate, are employed in the washing of textiles in a laundry to improve the soil release properties. If desired a durable press resin can also be incorporated.

3,824,126

## OIL- AND WATER-REPELLENT COMPOSITION CONSISTING OF A FLUORINE CONTAINING POLYMER, SELECTED SALTS AND AN ANTI-STATIC AGENT

Atsuo Katsushima, Iwao Hisamoto, Shoshin Fukui, Takahisa Kato, Masayuki Nagai, and Akitoshi Iwatani, Osaka-fu, Japan, assignors to Daini Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 816,082, Apr. 14, 1969. This application Aug. 9, 1971, Ser. No. 170,363

Claims priority, application Japan, Apr. 16, 1968,

43/25,671, 43/25,672

Int. Cl. C08f 29/16, 45/56; C09k 3/16

U.S. Cl. 117—139.5 R

12 Claims

An oil-repellent and water-repellent composition which consists of an aqueous composition containing a fluorine-containing polymer having a side chain containing perfluoroalkyl group of 3 to 21 carbon atoms in the concentration of 0.1 to 10 weight percent, a water-soluble salt in the range of 0.01 to 10 times the weight of said fluorine-containing polymer and an external permanent antistatic agent in an amount of from 0.1 to 20 times the weight of said fluorine-containing polymer; and a process for imparting oil- and water-repellent properties to fibrous materials, which comprises the step of wetting the fibrous material with said aqueous composition and drying the treated fibrous material.

3,824,127

## DISC CAPACITOR SILVER COMPOSITIONS

Joel Alfred Conwicks, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,079

Int. Cl. H01b 1/02; H01g 1/00

U.S. Cl. 117—227

6 Claims

In silver metallizing compositions useful in producing electrodes for disc capacitors, the improvement of adding nickel, tantalum or mixtures thereof to prevent sticking between electrodes of contiguous capacitors during firing. A process using such improved compositions and disc capacitors made therewith.

3,824,128

## MAGNETIC RECORDING MEDIUM

Goro Akashi, Tatsuji Kitamoto, and Masaki Fujiyama, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of abandoned application Ser. No. 864,482, Oct. 7, 1969. This application May 24, 1972, Ser. No. 256,245

Claims priority, application Japan, Nov. 6, 1968,

43/81,068

Int. Cl. H01j 1/26

U.S. Cl. 117—235

9 Claims

A magnetic recording medium having a magnetic recording layer in which is dispersed in a binder a ferromagnetic powder comprising a mixture of an iron oxide powder and a chromium dioxide powder in a weight ratio of 1:4 to 4:1 respectively, and possessing improved sensitivity to short wave-length signals, particularly even after being subjected to heat.

3,824,129

## HEART PACER RECHARGEABLE CELL AND PROTECTIVE CONTROL SYSTEM

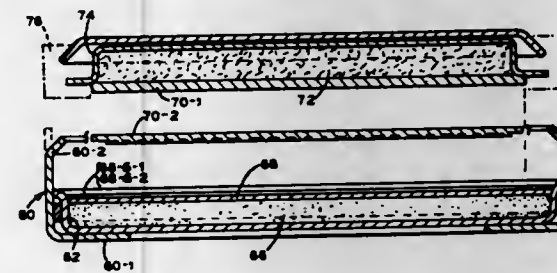
Franklin G. Fagan, Jr., Ossining, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 14, 1973, Ser. No. 341,205

Int. Cl. H01m 43/00

U.S. Cl. 136—6 R

9 Claims



A heart pacer system having an electric cell with improved internal cell structure and control system, with relatively high-conductivity depolarizer to accept recharging, in place as implanted, by induction and through a rectification system, at relatively fast rate, with protective control system to prevent harmful effects in the cell, and thereby to assure safety to the wearer during recharging, with an end result of service from the implanted cell in excess of ten years, without need for an incision to replace implanted cell by a new cell.

3,824,130

## CATHODE MATERIAL FOR SOLID STATE BATTERIES

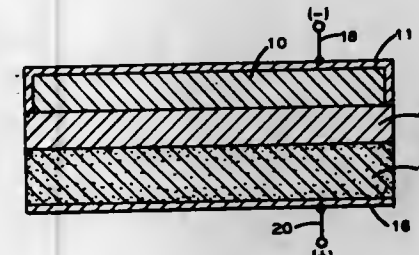
Charles Chi Liang, Andover, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 2, 1972, Ser. No. 303,181

Int. Cl. H01m 11/00

U.S. Cl. 136—83 R

15 Claims



High energy density solid electrolyte cells are provided employing light metal anodes and metal sulfate cathodes. These cells employ lithium anodes, and the cathodes comprise a metal sulfate selected from the group consisting

of the sulfates of lead, tin, copper, mercury, silver, calcium, and lithium. The preferred electrolyte comprises a composition containing lithium iodide, lithium hydroxide and aluminum oxide, although the alkali metal halides are also suitable for such use.

3,824,131

## NEGATIVE ELECTRODE OF TITANIUM-NICKEL ALLOY HYDRIDE PHASES

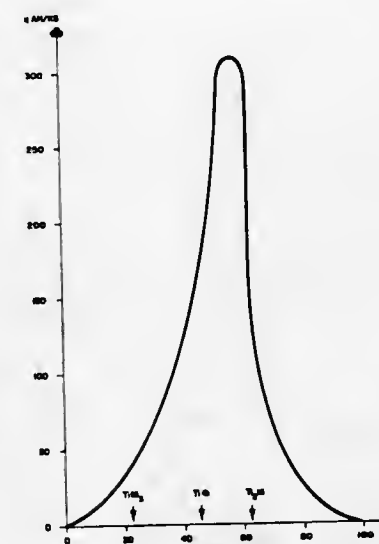
Klaus Beccu, 46 Chemin Sous-le-Cret, Troinex, Geneva, Switzerland

Continuation-in-part of application Ser. No. 29,740, Apr. 24, 1970, now Patent No. 3,669,745, which is a continuation of abandoned application Ser. No. 726,234, May 2, 1968. This application Apr. 6, 1972, Ser. No. 241,525

Int. Cl. H01m 35/02

U.S. Cl. 136—20

7 Claims



An improved negative electrode in an electrochemical energy storage cell for generating electric current, comprising the negative electrode, an alkaline electrolyte and a positive oxygen or oxide electrode. The negative electrode comprises a porous body with a current conducting support and an active component providing reversible hydride formation by electrochemical charge and discharge. The active component consists essentially of two coexistent alloy hydride phases in mutual contact along extensive phase boundaries throughout the component. Both phases have a lattice structure formed essentially from the titanium-nickel system, one phase having a body-centered cubic structure and the other a face-centered cubic structure. Improved electrochemical discharge and recharge is provided by hydrogen transfer between the two phases.

3,824,132

## METHOD FOR IMPROVING WEAR CHARACTERISTICS OF BRONZE

Robert L. Wolfe and Augustine Trebnik, Columbus, Ind., assignors to Reliance Electric Company, Cleveland, Ohio

Continuation-in-part of abandoned application Ser. No. 66,391, Aug. 24, 1970. This application July 21, 1972, Ser. No. 274,114

Int. Cl. C22f 1/08

U.S. Cl. 148—13.2

13 Claims

The method of improving the wear or durability characteristics of bronze by heating the bronze to a temperature between approximately 968° F. and 1470° F., holding the attained elevated temperature for a period of time, and then subsequently cooling the bronze. The bronze may be held at the elevated temperature for a relatively short period of time such as, for instance, 15



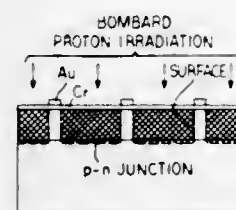
seconds. The cooling step may include air cooling the bronze down to approximately 700° F. to 800° F. and then liquid quenching the bronze down to room temperature.

### 3,824,133 FABRICATION OF ELECTRICALLY INSULATING REGIONS IN OPTICAL DEVICES BY PROTON BOMBARDMENT

Lucian Arthur D'Asaro, Madison, John Cameron Dymant, Chatham, Matthew Kuhn, Warren, and Stuart Marshall Spitzer, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Dec. 2, 1971, Ser. No. 204,222  
Int. Cl. H01l 7/54

U.S. Cl. 148—1.5

33 Claims



A method of fabricating electrically insulating regions of low optical absorption in optical devices, such as junction lasers and incoherent light emitting diodes, is described. The technique includes the steps of (1) irradiating the desired regions with high energy protons which advantageously produce high resistivity but disadvantageously also produce high optical absorption and (2) subsequently annealing these regions for a time and at a temperature effective to reduce substantially the proton-induced optical absorption while retaining the proton-induced resistivity at a level sufficient for electrical insulation. Detailed parameters for irradiating and annealing are given for GaAs and GaP. Specifically described are applications of this technique in the passivation of p-n junctions and in the fabrication of stripe geometry junction lasers.

3,824,134  
METALLIZING PROCESS  
Maynard R. Chance, Houston, Tex., assignor to Thornhill-Craver Company, Houston, Tex.  
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,524  
Int. Cl. C23c 11/12

U.S. Cl. 148—6 2 Claims  
A metallizing process for producing extremely hard metallic boride surface layers on steel bodies wherein the steel is carburized and treated with a nonferrous metal to produce a barrier layer of metallic carbide and boronized to produce the surface layer of metallic borides. This abstract is neither intended to define the invention of the application, which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,824,135  
COPPER BASE ALLOYS  
Michael J. Pryor, Woodbridge, Stanley Shapiro, New Haven, and Richard D. Lanam, Hamden, Conn., assignors to Olin Corporation  
No Drawing. Filed June 14, 1973, Ser. No. 369,914  
Int. Cl. C22c 9/06; C22f 1/08

U.S. Cl. 148—32.5 6 Claims  
The disclosure teaches novel copper base alloys having improved toughness and outstanding resistance to stress corrosion. The copper alloys contain, in weight percentages, from 15 to 30% nickel, from 15 to 30% manganese, an element selected from the group consisting of alumi-

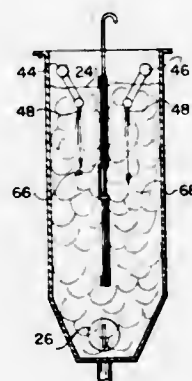
num from 0.01 to 5%, magnesium from 0.01 to 5%, boron from 0.001 to 0.1%, zinc from 0.1 to 3.5%, tin from 0.01 to 3%, zirconium from 0.01 to 2%, titanium from 0.01 to 2%, chromium from 0.01 to 1%, iron from 0.1 to 5%, cobalt from 0.05 to 1%, and mixtures thereof, together with 0.005 to 0.1% of an element selected from the group consisting of arsenic and antimony, and mixtures thereof.

3,824,136  
ETCHING OF ALUMINUM FLUIDIC DEVICES  
Kenneth E. Gilbert, Port Jervis, N.Y., assignor to the United States of America as represented by the Secretary of the Army  
No Drawing. Filed Oct. 6, 1972, Ser. No. 295,784  
Int. Cl. C23f 1/02

U.S. Cl. 156—8 5 Claims  
A method for chemical milling of thin aluminum sheets, such as wafers for fluidic control systems, which produces smoother cuts and minimizes rough edges and undercutting, utilizes an aqueous etching solution of about 8°–15° Baumé containing about 75–150 grams FeCl<sub>3</sub> and about 6.5–11.5 gram HCl per liter.

3,824,137  
SOLUTION AGITATION PROCESS  
Hendrik F. Bok, Fairhaven, and Eugene St. Onge, Free-town, Mass., assignors to In-Line Technology, Inc., Assonet, Mass.  
Filed Apr. 18, 1973, Ser. No. 352,399  
Int. Cl. B08b 3/00; C23b 5/02; C23f 1/00

U.S. Cl. 156—18 10 Claims



A solution agitation process and system to provide a uniform and controlled turbulent flow of treatment liquid over both sides of a flat substrate which is suspended in a treatment solution, wherein a directed liquid spray pattern below the treatment solution level creates parallel, flowing walls of solution running downward through the tank and on each opposite side of the substrate.

3,824,138  
PROCESS AND APPARATUS FOR JOINING A TUBULAR THERMOPLASTIC CONTAINER JACKET, BY MEANS OF ULTRASONICS, TO A THERMOPLASTIC END CAP TO FORM A LIQUID-TIGHT SEAL  
Ernst Karobath, Leopold Rippel, Hans Schmidinger, and Wolfgang Pulitzer, Vienna, Austria, assignors to Firma Telefon- und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne, Wien, Austria  
Filed Dec. 7, 1971, Ser. No. 205,583  
Claims priority, application Austria, Dec. 10, 1970, A 11,131/70; Apr. 5, 1971, A 2,907/71  
Int. Cl. B29c 27/08

U.S. Cl. 156—69 7 Claims  
In a process and apparatus for joining a tubular thermoplastic container jacket, by means of ultrasonics, to

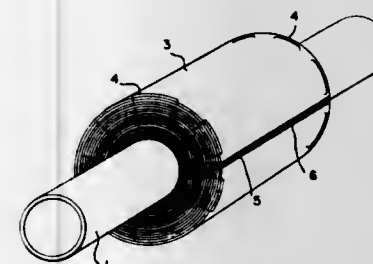
a thermoplastic end cap to form a liquid-tight seal, the end cap is inserted into the jacket so that the jacket rim projects beyond the cap, and an axially-oscillating sonotrode is advanced axially against the jacket rim to soften the jacket rim and roll it inwardly over the rim of the cap. The softened jacket rim is trapped in an annular chamber formed between the sonotrode and the cap, and further advancement of the sonotrode applies welding pressure to the softened jacket rim.

3,824,139  
PLASTICS LAMINATE  
Gareth Jay, Ware, and Edward Wardman, Hitchin, England, assignors to Imperial Chemical Industries Limited, London, England  
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,798  
Int. Cl. B32b 5/18

U.S. Cl. 156—79 6 Claims  
Making foam/film laminates by coextruding a layer of plastics material forming a non-foamed film and a layer containing water as a foaming agent, preferably with the addition of a small proportion of a gas-generating substance, and bringing the layers into contact while still in a heat-softened state, preferably before extrusion.

3,824,140  
METHOD OF INSULATING DUCTS  
Albert Hofmann, Grunwald, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany  
Filed June 12, 1972, Ser. No. 261,692  
Claims priority, application Germany, June 11, 1971, P 21 29 071.1  
Int. Cl. B32b 33/00

U.S. Cl. 156—90 19 Claims

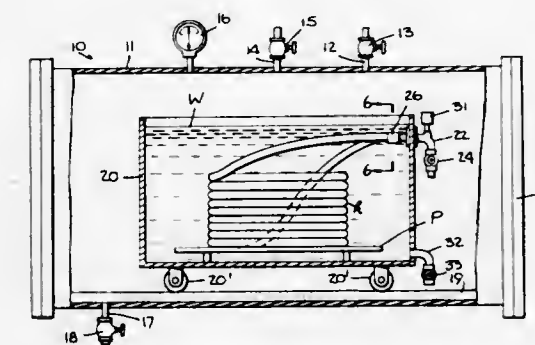


A method of insulating ducts, e.g. pipes adapted to constitute or carry cryogenic conductors and a duct-insulating system wherein a multilayer laminated insulation is prepared, preferably around a mandrel, is longitudinally split for removal from the mandrel and then is applied around the duct to be insulated. The layers may alternate metal foil with insulating layers, e.g. of a fabric composed of filaments of thermally nonconductive material. The insulation is preferably enclosed in an evacuated pipe.

3,824,141  
MANUFACTURE OF VULCANIZED ELASTOMERIC HOSE  
Robert Miller, Woodbridge, and Carl Derderian, Cheshire, Conn., assignors to Untroyal, Inc., New York, N.Y.  
Filed Aug. 29, 1972, Ser. No. 284,563  
Int. Cl. B29c 25/00

U.S. Cl. 156—143 32 Claims  
A batch process for vulcanizing reinforced elastomeric hose, which avoids the use of the lead press method, is disclosed. The process basically entails annularly clamping the opposite ends of the uncured hose so as to prevent

entry of fluid pressure into the space between any two proximate layers of elastomeric material occupied by a layer of reinforcement, immersing the hose in a bath of liquid, e.g. water, sufficient to cover the hose substantially completely, and then in a pressurized heating environment, e.g. in a steam-filled vulcanizer or autoclave, subjecting the uncured hose at both its inner and its outer surfaces to the action of a pressurized heating fluid at the desired vulcanizing temperature. The process may be practiced with the hose either filled with a liquid such as water or empty, and so that either the same pressure is



applied to both said hose surfaces or a higher pressure is applied to the inner hose surface than to the outer one. The hose interior may be opened or closed at its opposite ends to the autoclave interior. If closed, the hose is filled with liquid and a pressure relief valve is preferably provided to ensure that the pressure within the hose cannot exceed the pressure around the hose by more than a predetermined amount. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,824,142  
METHOD OF PREPARATION OF A SUPPLE SHEET COMPOSITION  
Lawrence W. Healy, Johnsonville, S.C., and Wu Lan Wang, Newark, and Joseph I. Gross, Short Hills, N.J., assignors to Tenneco Chemicals, Inc., New York, N.Y.  
Division of application Ser. No. 89,223, Nov. 13, 1970, now Patent No. 3,764,454. Continuation-in-part of abandoned applications Ser. No. 719,219, Apr. 5, 1968, and Ser. No. 49,964, June 25, 1970, said application Ser. No. 49,964 being a division of said application Ser. No. 719,219. This application Dec. 22, 1972, Ser. No. 317,727

Int. Cl. B32b 7/08 9 Claims  
U.S. Cl. 156—148



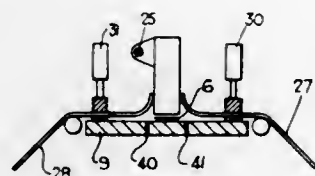
Leather replacement products are prepared by needling a fleece into a polyurethane foam, needling a second fleece



onto the resulting web and depositing a polyurethane elastomer into the void spaces and interstices of the resulting products.

3,824,143

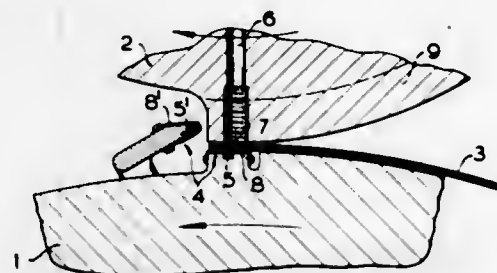
**METHOD OF SPLICING OF WEB MATERIAL**  
 Ronald Charles Cooper and Alan Albert Aldridge, Ilford, England, assignors to Ilford Limited, Essex, England  
 Filed Jan. 21, 1972, Ser. No. 219,668  
 Claims priority, application Great Britain, Jan. 27, 1971, 3,307/71  
 Int. Cl. B31f 5/00; B65h 19/00, 69/02; G03d 15/04  
 U.S. Cl. 156—157 1 Claim



A method of splicing together the ends of two abutted webs is described. In this method a tape dispensing device which contains a roll of pressure-sensitive adhesive tape wound together with a release-surface backing tape is traversed across the abutted ends of the webs laying down a strip of adhesive tape and at the same time separating the backing tape and rolling it up.

3,824,144

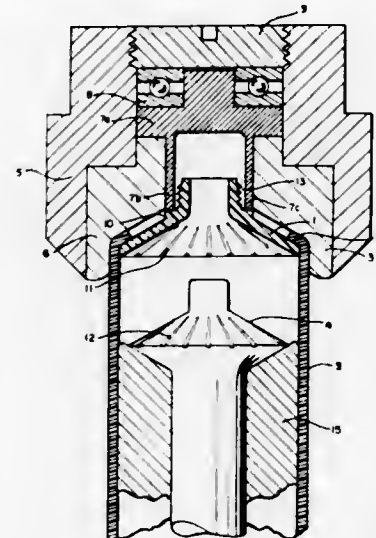
**METHOD OF IMPULSE WELDING LAYERS OF PLASTIC MATERIAL**  
 Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany  
 Filed Oct. 19, 1971, Ser. No. 190,644  
 Claims priority, application Germany, Oct. 22, 1970, P 20 51 997.5  
 Int. Cl. B32b 31/20; C09j 5/00  
 U.S. Cl. 156—306 2 Claims



A method of welding layers of plastics bag material in which heat is applied to welding jaws in impulses, the welded portion being removed from the jaws before the weld has solidified, preferably after termination of each heat impulse and within a time equal to the duration of one impulse. In apparatus for performing this method, one of a pair of welding jaws is controlled to open and close by a cam designed so that said one jaw remains closed for no longer than twice the duration of one impulse. Suction means may be employed to facilitate removal of each welded bag from the jaw that is not cam-controlled.

3,824,145

**APPARATUS FOR BONDING A THERMOPLASTIC TUBULAR PART TO THE PERIPHERY OF A THERMOPLASTIC TUBE HEAD**  
 Valer Flax, Vic-Fezensac, France, assignor to Continentalplastic AG., Zug, Switzerland  
 Original application June 4, 1970, Ser. No. 43,428, now abandoned. Divided and this application Oct. 25, 1972, Ser. No. 300,792  
 Claims priority, application Switzerland, June 4, 1969, 9,526/69  
 Int. Cl. B29c 27/08  
 U.S. Cl. 156—580 2 Claims



In a method of manufacturing a tube of thermoplastic material, a head and a tubular part of thermoplastic material are bonded together by friction welding, i.e. by a very rapid rotation of the head caught between a rotary tool and a cap.

3,824,146

**PROCESS FOR BONDED FIBROUS STRUCTURE AND PRODUCT THEREOF**  
 Vincent Simon Ellis, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England  
 No Drawing. Filed Dec. 20, 1971, Ser. No. 210,118  
 Claims priority, application Great Britain, Dec. 23, 1970, 61,169/70  
 Int. Cl. D04h 3/14, 1/54  
 U.S. Cl. 161—150 11 Claims

Manufacture of adherent fibrous structure from fibers with a proportion of the surface being potentially adhesive, activation of the potential adhesive to form bonds, followed by chemical treatment of the adhesive to render it no longer potentially adhesive.

3,824,147

**WEATHER-RESISTANT, SAND COATED EXTERIOR GYPSUM BOARD AND WALL**  
 James W. Baird, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.  
 No Drawing. Filed May 26, 1972, Ser. No. 257,211  
 Int. Cl. B32b 3/26  
 U.S. Cl. 161—162 12 Claims

Exterior gypsum wallboard and wall assembled therefrom made weather-resistant by a coating of sand aggregate, emulsion binder, and optionally a filler or pigment.

3,824,148

**ADHESION PROCESS AND ARTICLE OBTAINED THEREBY**  
 George Lopatin, Orinda, Calif., assignor to Shell Oil Company, Houston, Tex.  
 No Drawing. Filed May 11, 1972, Ser. No. 252,396  
 Int. Cl. B32b 27/32, 31/12  
 U.S. Cl. 161—188 5 Claims

An adhesively bonded article is obtained by depositing certain anionically substituted block copolymers on one

substrate, depositing a cationically substituted block copolymer on a second substrate and contacting the two polymers in the presence of water whereby an adhesively bonded article is formed.

3,824,149

**METHOD OF HALOGENATING AND ADHERING THERMOPLASTIC ELASTOMERIC BLOCK COPOLYMERS**  
 James T. Harlan, Jr., Torrance, Calif., and Donald Pettit, Isham, Frederick B. Blackwell, Seagrave, and Alan R. Carter, Kettering, England, assignors to Shell Oil Company, New York, N.Y.  
 No Drawing. Continuation of abandoned application Ser. No. 852,483, Aug. 22, 1969. This application July 7, 1972, Ser. No. 269,657  
 Claims priority, application Great Britain, Aug. 22, 1968, 40,166/68  
 Int. Cl. A43b 9/12; B32b 27/40; C09j 5/02  
 U.S. Cl. 161—190 5 Claims

An improved method of adhering unvulcanized thermoplastic elastomeric block copolymers of monovinyl arenes and conjugated dienes with adhesives based upon polychloroprene or polyurethane comprising a preliminary surface halogenation treatment of the block copolymer.

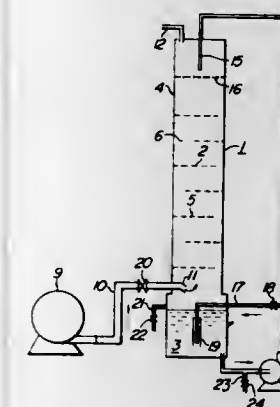
3,824,150

**ENZYME BOUND TO POLYMERIC SHEET WITH A TRIAZINE BRIDGING GROUP**  
 Malcolm Douglas Lilly, Garth Kay, Richard John Hugh Wilson, and Alister Kimball Sharp, London, England, assignors to National Research Development Corporation, London, England  
 Filed July 5, 1968, Ser. No. 742,901  
 Claims priority, application Great Britain, July 14, 1967, 32,541/67; Apr. 10, 1968, 17,322/68  
 Int. Cl. C07g 7/02  
 U.S. Cl. 195—63 9 Claims

A method of carrying out an enzymatic reaction which comprises contacting a liquid medium containing a substance which is capable of being chemically altered by an enzyme with a permeable or impermeable sheet that comprises an enzyme chemically bonded to an insoluble support and recovering a product of the reaction.

3,824,151

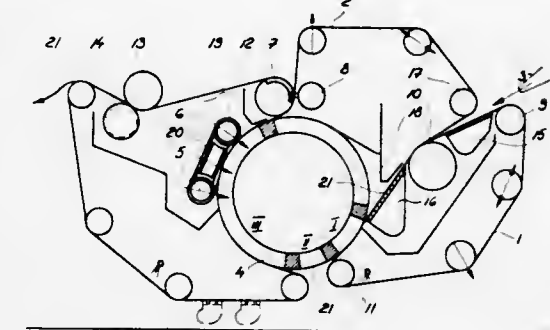
**APPARATUS FOR AEROBIC FERMENTATION**  
 Tokuji Iijima, Yohji Odawara, Tetsuo Yamaguchi, and Hayao Yahagi, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed July 7, 1971, Ser. No. 160,304  
 Claims priority, application Japan, July 13, 1970, 45/60,636; Mar. 19, 1971, 46/15,135  
 Int. Cl. C12b 1/14  
 U.S. Cl. 195—142 14 Claims



Supply of oxygen to microorganisms and removal of the heat of fermentation in the fermentation of aerobic microorganisms are carried out by gas-liquid contact of a culture medium dispersed in a droplet state or film state with the air, whereby the oxygen can be dissolved into the culture medium and at the same time the heat of

3,824,152

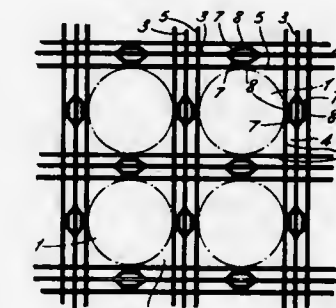
**TWIN WIRE PAPER FORMING WITH ONE WIRE WRAPPING A SUCTION CYLINDER**  
 Pentti Nevalainen, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtiö, Noormarkku, Finland  
 Filed Mar. 21, 1973, Ser. No. 343,401  
 Claims priority, application Finland, Mar. 24, 1972, 832/72  
 Int. Cl. D21f 1/00, 2/00  
 U.S. Cl. 162—301 5 Claims



Apparatus for forming a fibrous web wherein a head-box discharges fibrous suspension between a first endless forming wire and a second endless forming wire which together form a nip upstream of a suction cylinder. The first wire wraps around a large portion of the surface of the suction cylinder whereas the second wire proceeds with the first wire around only a portion of the suction cylinder. An endless felt is supported to wrap around the suction cylinder in conjunction with the first wire downstream of the second wire to press and dewater the web. At least one suction box is positioned adjacent the second wire upstream of the suction cylinder, and a pressing mat employed in conjunction with a pressure box may be provided adjacent the suction cylinder for applying pressure to the felt as it wraps the suction cylinder.

3,824,153

**NUCLEAR REACTOR FUEL ASSEMBLY SPACER GRID**  
 Bernard Leaver, Atherton, and Thomas Seddon, St. Annes, England, assignors to United Kingdom Atomic Energy Authority, London, England  
 Filed June 26, 1972, Ser. No. 266,042  
 Claims priority, application Great Britain, July 7, 1971, 32,004/71  
 Int. Cl. G21c 3/34  
 U.S. Cl. 176—78 2 Claims



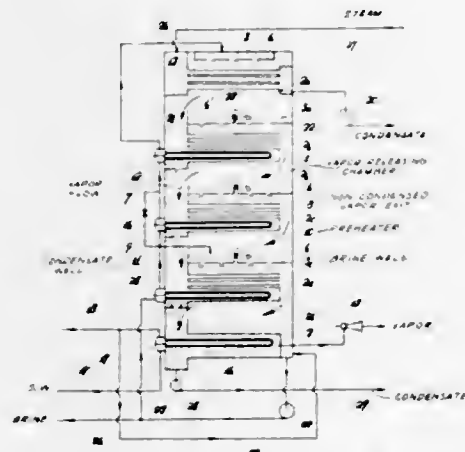
A spacer grid in a fuel element assembly including a plurality of elongate fuel pins supported in a bundle with their longitudinal axes parallel comprises a rigid grid structure of intersecting cross members defining cells each of which is penetrated by a fuel pin of the assembly and



resilient strip members slotted through the grid structure parallel to the cross members, the resilient strip members providing transverse support for the fuel pins in the cells of the grid structure and stop means being formed projecting from the cross members inside the cells and underlying the strip members in the cells.

**3,824,154**  
**EVAPORATING METHOD AND APPARATUS**  
Masaharu Takada, Toyonaka, Koichi Yamada, Nishino-miya, and Kozo Hamahata, Takarazuka, Japan, assignors to Sasakura Engineering Co., Ltd., Osaka, Japan

Filed July 6, 1971, Ser. No. 159,831  
Claims priority, application Japan, July 8, 1970, 45/60,049  
Int. Cl. B01d 1/26, 3/02  
U.S. Cl. 202—174 8 Claims

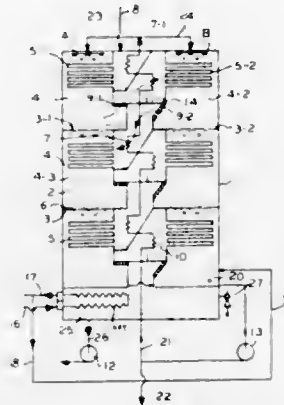


An evaporating system, characterized in that a shell is sectioned with substantially horizontal partition walls, with a plurality of effective units which operate under different pressures are arranged in the vertical direction in the order of pressure, with the unit of higher pressure located upwardly. Brine remained in the bottom of an upper effective unit is spread over the next effective unit of lower pressure from jet holes provided at the partition wall by the head of the brine and pressure difference between the two effective units. A part of the brine is flash-evaporated and the remainder is distributed to the outer surface of a heat transfer tube in the effective unit of lower pressure. The brine is heated by steam generated in the upper effective unit and is partly condensed.

**3,824,155**  
**MULTIPLE EFFECT EVAPORATING APPARATUS**  
Masaharu Takada, Osaka, Japan, assignor to Sasakura Engineering Co., Ltd., Osaka, Japan  
Filed May 12, 1972, Ser. No. 252,764  
Claims priority, application Japan, May 14, 1971, 46/32,690  
Int. Cl. C02b 1/06  
U.S. Cl. 202—174 8 Claims

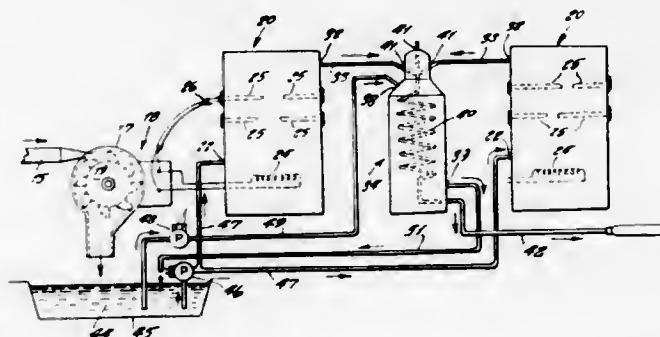
A multiple effect evaporating apparatus has a plurality of vertical columns of effects, each column having an effect on the same level as each of the adjacent columns. Each effect has (1) a bundle of horizontal tubes above the bundle of tubes in the next lower effect, (2) a raw material liquid collecting means below the bundle of tubes having means therethrough for passing the collected liquid to the next lower effect, (3) a vapor inlet passage at one end of the bundle of tubes into which the tubes of the bundle open for permitting vapor to flow from the vapor inlet passage into the tubes, (4) a vapor outlet passage at the other end of the tubes into which the tubes open, and (5) a mist separator adjacent and along the bundle of tubes one side of which is in communication with the raw material liquid collecting means and the other

side of which is in communication with the vapor outlet passage. The effects at the same level in the columns are positioned with the vapor inlet passages of all but one of the effects immediately adjacent and in communication with the vapor outlet passage. The effects at the level in the columns are positioned with the vapor inlet passages of all but one of the effects immediately adjacent and in communication with the vapor outlet passage of the next preceding effect in the direction of vapor flow through the effects. The vapor inlet of the one of the effects in each



stage is immediately adjacent, when viewed in plane view and immediately below, when viewed in elevation, and in communication with the vapor outlet passage of the next preceding effect in the next higher level of effects in said apparatus. Means is provided for feeding steam to the vapor inlet passage of the one effect in the highest level of effects and for feeding raw material liquid to each of the bundles of each of the effects in the highest level of effects, and means is provided for collecting from the successive vapor inlet passages the condensate which condenses from the vapor therein.

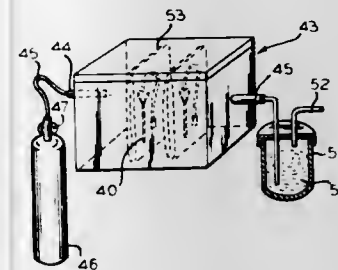
**3,824,156**  
**DESALINIZATION SYSTEM**  
Alphonso Griffin, 1308 Seldon Ave., Norfolk, Va. 23523  
Filed Feb. 8, 1972, Ser. No. 224,541  
Int. Cl. B01d 3/02  
U.S. Cl. 202—180 6 Claims



A system and apparatus for removing salt from sea water so to render it into fresh water for drinking, washing and other practical purposes; the apparatus consisting of a station to which salt sea water is piped, the station having electric generators driven by a turbine powered by the incoming salt water, the station including boiler tanks in which the salt water is boiled so that steam therefrom is piped to a condenser from which distilled, pure fresh water is piped to a fresh water storage reservoir, and the electric generator supplying energy to electric heaters for boiling the salt water, driving pumps and powering all the equipment at the station.

**ERRATUM**  
For Class 203—18 see:  
Patent No. 3,824,177

**3,824,157**  
**METHOD OF EQUILIBRATING AND CALIBRATING A PARTIAL PRESSURE GAS SENSOR**  
Robert A. Macur, Milwaukee, Wis., assignor to General Electric Company  
Original application Jan. 29, 1971, Ser. No. 110,957, now Patent No. 3,719,576. Divided and this application Sept. 18, 1972, Ser. No. 290,020  
Int. Cl. G01n 27/00  
U.S. Cl. 204—1 T 8 Claims



A sensor of the partial pressure of carbon dioxide in blood, other fluid, or gaseous mixture comprises a reference half-cell and a sensing half-cell immersed in a common electrolyte comprising chloride and bicarbonate ions. The sensing half-cell may be palladium-palladium oxide (Pd-PdO) or iridium-iridium oxide (Ir-IrO) and the reference half-cell may be silver-silver halide. The sensing half-cell is a wire coated at its distal end with its own oxide. The reference half-cell may be a silver tube which is coated on its tip with silver halide and slipped over an insulated section of the wire. The distal ends of the tube and wire are dipped into electrolyte which adheres and then into a polymer which forms a carbon dioxide permeable and ion-impermeable membrane or barrier on the whole assembly when the polymer cures. The proximal ends of the silver tube and wire are connected by means of a coaxial cable to a high impedance voltmeter which is calibrated in terms of partial pressure of carbon dioxide in millimeters of mercury. Means are provided for standardizing the sensor and keeping it equilibrated during storage.

**3,824,158**  
**COMPOSITION OF BATHS FOR ELECTRODEPOSITION OF BRIGHT ZINC**  
William E. Rosenberg, Parma, Ohio, assignor to R. O. Hull & Company, Inc., Cleveland, Ohio  
No Drawing. Filed Jan. 26, 1973, Ser. No. 327,016  
Int. Cl. C23b 5/10, 5/46  
U.S. Cl. 204—55 R 6 Claims

It has been found that the addition of the epihalohydrin quaternary salt of aminated polyepichlorohydrin to aqueous, alkaline electroplating baths containing zinc ions, provides smooth, bright deposits of zinc.

**3,824,159**  
**METHOD OF ANODICALLY COATING ALUMINUM**  
Felix Wehrmann, Vienna, Austria, assignor to Isovolta Österreichische Isolierstoffwerke Aktiengesellschaft, Wiener, Neudorf, Austria  
No Drawing. Filed May 10, 1972, Ser. No. 251,917  
Claims priority, application Austria, May 18, 1971, A 4,295/71  
Int. Cl. C23b 9/02  
U.S. Cl. 204—58 30 Claims

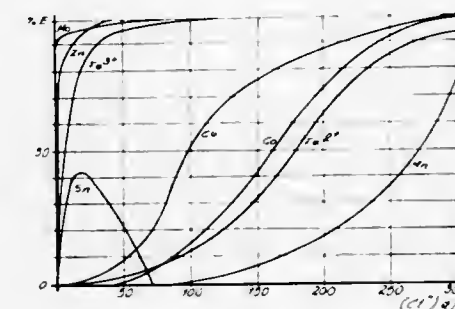
Describes a method of coating objects made entirely or partly of aluminum or an aluminum alloy, in which the part to be coated is anodically oxidized in an electrolyte bath containing at least one alkaline silicate solu-

ble in the electrolyte bath and at least one organic complex-forming substance, by the application of direct current, alternating current or pulsating current.

**3,824,160**  
**MANUFACTURE OF COPPER DICHROMATE AND RELATED MATERIALS**  
Winslow H. Hartford, Charlotte, N.C., assignor to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed May 26, 1972, Ser. No. 257,294  
Int. Cl. B01k 1/00; C01g 3/00, 37/14  
U.S. Cl. 204—89 10 Claims

An electrolytic method of manufacturing copper dichromate employing a copper anode and an inert cathode in an aqueous chromic acid electrolyte. The method lends itself to the use of scrap copper and spent chromic acid liquors, such as waste chromium plating liquors, as raw materials. By adjusting the pH of the solution obtained, unwanted impurities such as iron and trivalent chromium can readily be separated, thus providing a solution particularly suited to the economical production of wood preservative concentrates.

**3,824,161**  
**METHOD OF SEPARATING METALLIC CHLORIDES FROM AN AQUEOUS MIXTURE THEREOF**  
Alexander I. Aue, Gullspang, Hans Reinhardt and Jan Helge Arnold Rydberg, Västra Frolunda, and Lars Skjutare, Gullspang, Sweden, assignors to Gullspangs Elektrokemiska AB, Gullspang, Sweden  
Filed Oct. 8, 1971, Ser. No. 187,845  
Claims priority, application Sweden, Oct. 8, 1970, 13,640/70  
Int. Cl. B01d 11/00; C01g 49/10, 51/08  
U.S. Cl. 423—139 6 Claims



A method for separating one or more metallic chlorides from an acid aqueous mixture thereof, by a multi-stage, selective extraction process with a water immiscible extraction agent consisting of a solution of an amine capable of forming extractable compounds with the metallic chlorides, and subsequently washing out the metallic chloride or chlorides.

**3,824,162**  
**METHOD FOR ELECTROREFINING CRUDE COPPER HAVING HIGH ANTIMONY CONTENTS**  
Kenichi Sakai and Morimasa Sumida, Takehara, Japan, assignors to Mitsui Mining & Smelting Co., Ltd.  
No Drawing. Filed Oct. 24, 1972, Ser. No. 299,744  
Claims priority, application Japan, Oct. 29, 1971, 46/85,534  
Int. Cl. C22d 1/16  
U.S. Cl. 204—108 6 Claims

A method for electrorefining crude copper including antimony in a high concentration comprising subjecting the crude copper to electrolysis as the anode in an electrolyte containing sulfuric acid and copper ion to thus deposit refined copper on the thin copper cathode, where-in the anode and the cathode are connected to a direct-current power unit provided with a polarity converting device and direct-current is fed to both electrodes of said cathode and said anode while periodically reversing the di-



rection of the current flow between both electrodes at selected times, with the proviso that the period of time during which positive polarity is applied to the anode in each cycle of the total impression cycles necessary to complete refinement of the crude copper is controlled in the range of not greater than 200 seconds and that the ratio of the durations for impression of both polarities is regulated so as to satisfy the following equation:

the period of time for impression of negative polarity to the anode (seconds)/period of time for impression of positive polarity to the anode (seconds) = not less than 0.025.

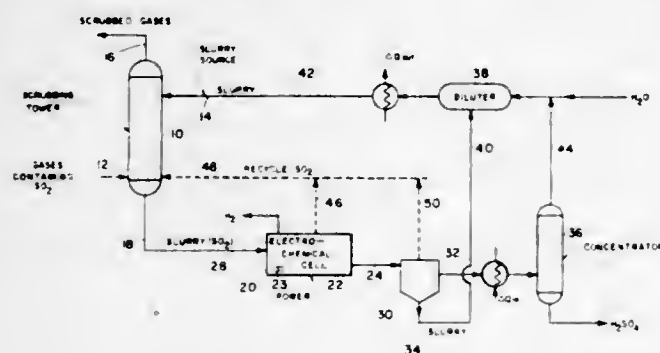
The crude copper includes from 0.1 to 3.0 wt. percent of antimony and at least 0.1 wt. percent of arsenic.

### 3,824,163 ELECTROCHEMICAL SULFUR DIOXIDE ABATEMENT PROCESS

Henri J. R. Maget, Los Altos, Calif., assignor to  
Electronic Associates, Inc., Long Branch, N.J.  
Filed July 19, 1972, Ser. No. 273,213  
Int. Cl. C01d 7/34

U.S. Cl. 204—130

5 Claims



A process is provided for removing pollutant(s) from waste gases and electrochemically converting such pollutant(s) into desired form, wherein a waste gas stream containing pollutant(s) is scrubbed with a slurry of pollutant-adsorbent particles suspended in slightly acidic aqueous solution, thereby causing pollutant(s) to be adsorbed by the particles. The slurry of said particles is then electrochemically treated employing said slurry as a dispersed electrode, to convert the pollutant(s) into desired material, such as a useful product or into a less-toxic or less-noxious material. This process is particularly applicable to the removal of sulfur dioxide from waste gases by scrubbing such gases with an aqueous slurry of particulate carbon causing sulfur dioxide to be adsorbed by the carbon particles and electrochemically converting the sulfur dioxide to sulfuric acid, employing the slurry of carbon particles having sulfur dioxide adsorbed thereon as a dispersed electrode.

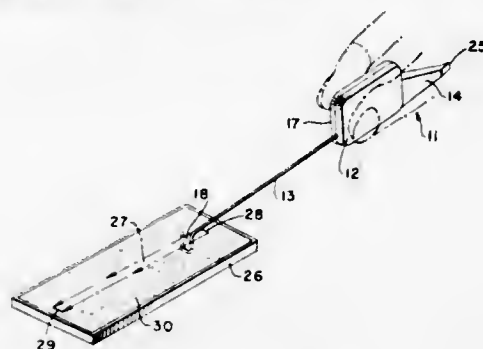
Apparatus for carrying out the above process is also provided.

### 3,824,164 PHOTOCURABLE PRINTING INKS DERIVED FROM 1-AZA - 5 - HYDROXYMETHYL-3,7- DIOXABICYCLO [3.3.0] OCTANE

Richard J. Himics, Lake Hiawatha, N.J., assignor to  
Sun Chemical Corporation, New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 44,534, June 8, 1970, now Patent No. 3,759,942, dated Sept. 18, 1973. This application Nov. 29, 1972, Ser. No. 310,428

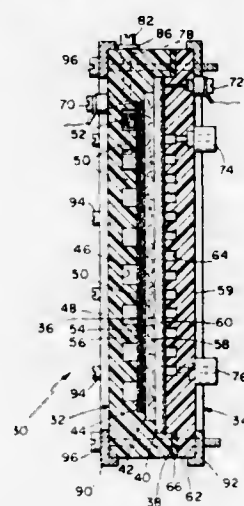
Int. Cl. C08d 1/00; C08f 1/00  
U.S. Cl. 204—159.23  
Printing inks and coating compositions comprising derivatives of 1-aza-5-hydroxymethyl-3,7-dioxabicyclo [3.3.0] octane are photopolymerizable.

3,824,165  
GEL TROUGH REMOVING DEVICE  
Eduardo V. Miranda and Lamont J. Seltz, Huntington  
Beach, Calif., assignors to Baxter Laboratories, Inc.,  
Morton Grove, Ill.  
Filed Oct. 3, 1973, Ser. No. 402,950  
Int. Cl. B01k 5/00  
U.S. Cl. 204—180 G  
6 Claims



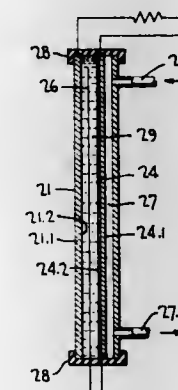
Gel troughs in electrophoretic gel media are removed with an implement comprising a finger grippable handle, an elongated flexible narrow gauge wire extending outwardly from one end and a reduced blade portion at the other end, said wire terminating in a short U-shaped, downwardly disposed bend transverse to the axis of said wire, said bend having an inner width between its vertical legs slightly less than the width of said trough and the height of the vertical legs of said bend being greater than the depth of said trough.

3,824,166  
TRACE GAS ANALYZER  
Max C. Diebert, Needham Heights, Mass., assignor to  
Anacone, Inc., Ashland, Mass.  
Filed Dec. 30, 1971, Ser. No. 214,240  
Int. Cl. G01n 27/46  
U.S. Cl. 204—195 R  
13 Claims



A trace gas analyzer for detecting and measuring amounts in the range of from 0 to 1000 p.p.m. of a trace gas in a gaseous stream. The detection cell has a first electrically conductive, non-consumable gas diffusion electrode of microporous, hydrophobic material dividing the interior of the cell into two chambers, a gas chamber on one side closed to ambient atmosphere and having a gas inlet and a gas outlet for the gas to be analyzed and an electrolyte chamber on the other side, having a second electrode, and a liquid electrolyte in the electrolyte chamber contacting both electrodes, including a substantial volume of unadsorbed free electrolyte confined in the electrolyte chamber by the microporous hydrophobic electrode. A reservoir communicating through the second electrode to the space between the electrodes is featured.

3,824,167  
GAS DETECTING AND MEASURING DEVICE  
Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossin-  
ing, N.Y., assignors to Energetics Science, Inc., New  
York, N.Y.  
Continuation-in-part of application Ser. No. 88,267, Nov.  
10, 1970, now Patent No. 3,776,832. This application  
Aug. 17, 1971, Ser. No. 172,486  
The portion of the term of the patent subsequent to Dec.  
4, 1990, has been disclaimed and dedicated to the  
Public  
Int. Cl. G01n 27/46  
U.S. Cl. 204—195 R  
16 Claims

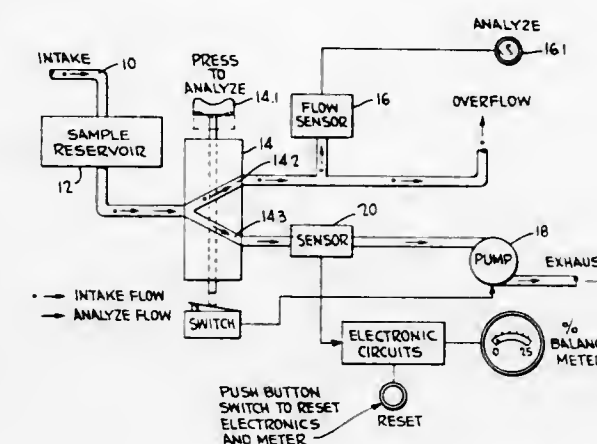


A device for the detection of and quantitative measurement of a gas in a given environment, such as alcohol in the breath or carbon monoxide in the atmosphere, is described. The device comprises intake and flow control means for the gas sample, and an electrochemical cell having an anode which provides a site for electrochemical reaction of the gas being detected, a cathode, a reference electrode, and an electrolyte in contact with the anode, cathode, and reference electrode. The anode, to ensure that the current production is a result of the gas being detected and not other gases, including oxygen, is maintained at a fixed potential in relation to the potential of the reference electrode. The device provides an accurate and inexpensive means of detecting and quantitatively measuring a gas contained in a given environment, i.e., alcohol in the breath of the subject being tested or carbon monoxide in the atmosphere.

3,824,168  
GAS DETECTING AND QUANTITATIVE  
MEASURING DEVICE  
Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossin-  
ing, N.Y., assignors to Energetics Science, Inc., New  
York, N.Y.  
Continuation-in-part of applications Ser. No. 88,267, Nov.  
10, 1970, and Ser. No. 172,486, Aug. 17, 1971. This  
application June 16, 1972, Ser. No. 263,531  
Int. Cl. G01n 27/46; A61b 5/00  
U.S. Cl. 204—195 R  
3 Claims

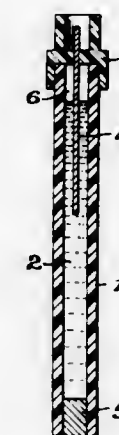
An improved device for the detection of, and quantitative measurement of a gas in a given environment, such as alcohol in the breath, is described. The device comprises intake means, reservoir means, and flow control means for a gas sample; an electrochemical cell having a low resistance anode, a cathode, a reference electrode, and an electrolyte in contact with the anode, cathode, and reference electrode which electrochemically measures the gas being detected; valve means for splitting the gas flow from the gas reservoir into fractions, and pump means for drawing the gas sample from the intake means through the reservoir, through the valve means, and to the electrochemical cell. The anode, to ensure that the current production is a result of the gas being detected and not other gases

including oxygen, is maintained at a fixed potential in relation to the potential of the reference electrode. The device provides an accurate, rapid and inexpensive means of detecting and quantitatively measuring a gas contained in



a given environment, i.e., alcohol in the breath of the subject being tested or carbon monoxide in the atmosphere, utilizing small gas samples thereby permitting the use of compact, portable units.

3,824,169  
ION SELECTIVE ELECTRODE COMPRISING GOLD  
Gerardus Wouter Serge van Osch, Utrecht, Jan Van  
Houwelingen, Leersum, and Anton Maarten Herman  
Weelink, Lichtenvoorde, Netherlands, assignors to Con-  
trol Data Corporation, Minneapolis, Minn.  
Filed Jan. 15, 1973, Ser. No. 323,696  
Int. Cl. G01n 27/46  
U.S. Cl. 204—195 M  
23 Claims



An electrode assembly for detecting ions in solution having an ion-sensitive imporous membrane consisting of a compressed pellet comprising a mixture of finely divided gold as the conductive matrix material distributed through a salt containing ions to which the assembly is sensitive, such as silver chloride when chloride ions are detected, is disclosed. In the ion-sensitive electrode assembly the membrane is exposed at one surface to the solution in which the electrode is immersed and the selected ion content thereof is to be measured, the other surface being in contact with an occluded electrolyte in which a contact wire is immersed to provide a fixed contact potential. The ion-sensitive electrode and a standard reference electrode are both contacted with the solution of ions to be measured and are connected to a potential measuring device such as a voltmeter.



3,824,170

**ION SELECTIVE ELECTRODE COMPRISING CUPROUS SULFIDE AND METHOD OF MAKING SAID ELECTRODE**

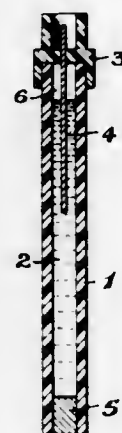
Anton Maarten Herman Weelink, Lichtenvoorde, Gerardus Wouter Serge van Osch, Utrecht, and Jan Van Houwelingen, Leersum, Netherlands, assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 15, 1973, Ser. No. 323,697

Int. Cl. G01n 27/30

U.S. Cl. 204—195 M

24 Claims



An electrode assembly for detecting ions in solution having an ion-sensitive imporous membrane consisting of a compressed pellet comprising a mixture of cuprous sulfide as the conductive matrix material distributed through a salt containing ions to which the assembly is sensitive, such as silver chloride when chloride ions are detected, is disclosed. In the ion-sensitive electrode assembly the membrane is exposed at one surface to the solution in which the electrode is immersed and the selected ion content thereof is to be measured, the other surface being in contact with an occluded electrolyte in which a contact wire is immersed to provide a fixed contact potential. The ion-sensitive electrode and a standard reference electrode are both contacted with the solution of ions to be measured and are connected to a potential measuring device such as a voltmeter.

3,824,171

**NOVEL ELECTROCHEMICAL ELECTRODE ASSEMBLY**

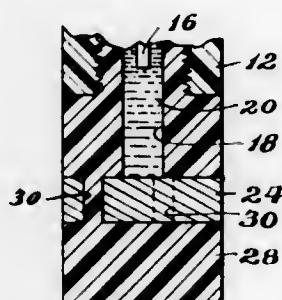
Jan van Houwelingen, Leersum, Gerardus Wouter Serge van Osch, Utrecht, and Anton Maarten Herman Weelink, Lichtenvoorde, Netherlands, assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 15, 1973, Ser. No. 323,698

Int. Cl. G01n 27/46

U.S. Cl. 204—195 M

18 Claims



An ion-sensitive electrode assembly is disclosed having a tubular body of an insulating material, a cavity within the body containing a reference electrolyte, an electrically

conductive reference electrode partially contained in the cavity and in electrochemical communication with the electrolyte and a compressed, substantially impervious pellet of an ion-sensitive material embedded in the body to a solution of ions to be measured and another surface in contact with the electrolyte.

Preferred is a pellet arrangement containing several holes in the pellet securing the pellet on one end to the body and providing a protective, dielectric barrier on the other. The electrode provides for improved contact with the solutions of ions to be measured, is easy to clean and is well adapted to withstand mechanical shock.

3,824,172

**ELECTROLYTIC CELL FOR ALKALI METAL CHLORATES**

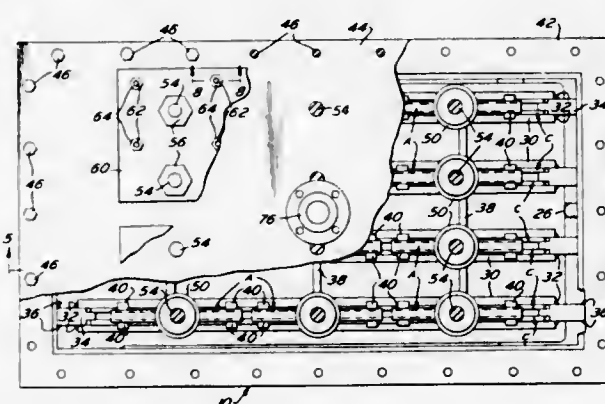
Jimmie Ray Hodges, Benton, Ky., assignor to Penn-Olin Chemical Company, Wilmington, Del.

Filed July 18, 1972, Ser. No. 272,830

Int. Cl. B01k 3/00

U.S. Cl. 204—269

10 Claims



Electrolytic cell includes pairs of flat perforate cathodes assembled in fixed spaced apart disposition outside the cell to define modules of open-ended boxlike configuration which are then welded to the cell tank walls. A coated metal anode is received between each cathode pair, chemically resistant insulative guides and spacers providing slidable interelectrode contact to assure exact gap symmetry for the headboard suspended anodes. Electrode power buses of thin section and extended surface intimately contact the headboard and tank surfaces. Flooded cell operation effects cooling of the buses.

3,824,173

**DISMANTLEABLE BIPOLAR ELECTRODES INCLUDING ELECTRICAL CONTACT MEANS BETWEEN THE ELECTRODE PORTIONS**

Pierre Bouy, 36 Bld Sadi Carnot, Enghien-les-Bains, France, and Guillaume Malzac, Residence Le San Marco, Quai Alsace Lorraine T5, Martigues, France

Filed Dec. 13, 1972, Ser. No. 314,783

Claims priority, application France, Dec. 22, 1971, 7146072

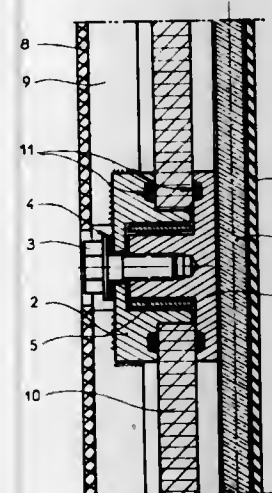
Int. Cl. B01k 3/04

U.S. Cl. 204—284

14 Claims

Dismantleable bipolar electrodes are provided of which the anodically active portion comprises titanium or other film-forming metal or alloy of similar anodic properties covered with a conducting layer, and of which the cathodically active portion comprises a common metal such as mild steel. Said electrodes are characterized by the separation in space of said active portions, at least one of which is apertured or foraminous, and by the electrical connection between said portions, which is achieved by

means of two series of parts, each of said series being mechanically and electrically secured to one of said portions, the corresponding parts of each series being of shapes such that once connected in order to form pairs of parts, said pairs have a sealed cavity for housing a device or means for establishing electrical contact between the two parts of each pair.



These electrodes are particularly suited for being mounted in cells of the filter-press type, for the electrolysis of brines.

3,824,174

**BIPOLAR ELECTRODE**

Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 25, 1973, Ser. No. 364,197

Int. Cl. B01k 1/00, 3/06; C01b 11/26

U.S. Cl. 204—290 F

7 Claims

An improved dimensionally stable bipolar electrode for use in electrochemical applications comprising a central valve metal layer, suitable anodic material on the anode side of the valve metal and a barrier layer of a metal silicide on the cathode side of the valve metal layer. Such electrodes function at low hydrogen permeability rates during use in electrolytic processes.

3,824,175

**BIPOLAR ELECTRODE**

Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 25, 1973, Ser. No. 364,199

Int. Cl. B01k 1/00, 3/06; C01b 11/26

U.S. Cl. 204—290 F

10 Claims

An improved dimensionally-stable bipolar electrode for use in electrochemical processes comprising a valve metal layer, suitable anodic material on the anode side of the valve metal, a barrier layer of carbon on the cathode side of the valve metal protected by a layer of common metal cathodic material. Such electrodes function at low hydrogen permeability rates during use in electrolytic processes.

3,824,176

**MATRIX HOLDER**

Patrick B. Crowe, Eden Prairie, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed Aug. 28, 1972, Ser. No. 284,333

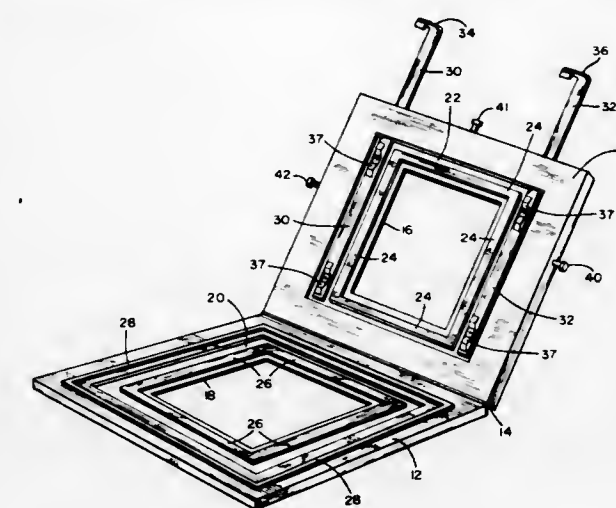
Int. Cl. B01k 3/00

U.S. Cl. 204—297 R

7 Claims

A hinged frame for holding a matrix base for electroforming in an electroplating bath, which frame includes

suitable rubber gasket material to define and isolate the central area of the electroforming matrix for plating. The



frame includes one or more spring loaded electrical connectors for conducting current to the edges of the electroforming matrix.

3,824,177

**METHOD AND SYSTEM FOR RECONCENTRATING SOLUTE-RICH LIQUID ABSORBENT**

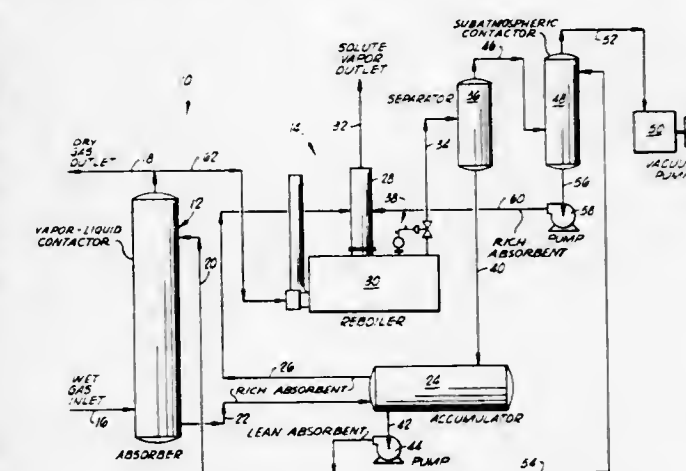
Joseph D. Honerkamp and Paul M. Tournoux, Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Filed Mar. 26, 1973, Ser. No. 344,768

Int. Cl. B01d 1/00, 3/00, 3/34, 45/00, 47/00, 53/02

U.S. Cl. 203—18

13 Claims



The present invention relates to an improved method and system for reconcentrating solute-rich liquid absorbent wherein the liquid absorbent is heated at super-atmospheric pressure to vaporize a portion of the solute contained therein and the resultant partially reconcentrated liquid absorbent is subjected to sub-atmospheric pressure so that additional solute contained therein is vaporized and the liquid absorbent is further reconcentrated.

3,824,178

**HYDROCRACKING PETROLEUM AND RELATED MATERIALS**

Milton M. Wald, Houston, Tex., assignor to Shell Oil Company

No Drawing. Filed Apr. 27, 1973, Ser. No. 354,967

Int. Cl. C10g 13/08; B01j 11/78

U.S. Cl. 208—108

5 Claims

Higher molecular weight hydrocarbonaceous materials containing polynuclear substances, such as heavy petroleum



crudes and higher boiling petroleum fractions, including residual fractions, shale oil, tar sand oil, oil and tar from coal and coal itself are hydrocracked at an elevated temperature ranging from 250° C. to 500° C. and in the presence of hydrogen at a pressure of 200 to 3000 p.s.i.g., while intimately mixed with a homogeneous continuous liquid phase catalyst system comprising predominately one or more phosphoric acids thermally stable under the hydrocracking conditions, such as, pyrophosphoric acid and polyphosphoric acids having an empirical ratio of  $H_2O:P_2O_5$  of 3 or less, and a minor proportion, e.g., 10% by weight of certain metal polyhalides which are active hydrocracking catalysts, e.g., especially zinc, gallium and antimony halides.

3,824,179

### HYDROCRACKING PETROLEUM AND RELATED MATERIALS BY HOMOGENEOUS CATALYSIS

Thomas E. Kivsky, Houston, Tex., assignor to Shell Oil Company

No Drawing. Filed Apr. 27, 1973, Ser. No. 354,966

Int. Cl. C10g 13/08; B01j 11/78

U.S. Cl. 208—108

5 Claims

Higher molecular weight hydrocarbonaceous materials containing polynuclear substances, such as heavy petroleum crudes and higher boiling petroleum fractions, including residual fractions, shale oil, tar sand oil, oil and tar from coal and coal itself are hydrocracked at an elevated temperature ranging from 200° C. to 500° C. and in the presence of hydrogen at a pressure of 200 to 3000 p.s.i.g., while intimately mixed with a homogeneous continuous liquid phase catalyst system comprising predominately one or more phosphoric acids thermally stable under the hydrocracking conditions, such as pyrophosphoric acid and polyphosphoric acids having an empirical ratio of  $H_2O:P_2O_5$  of 3 or less, and a minor proportion, e.g., less than 20% by weight of certain iodine compounds, e.g., specially HI, NaI or  $NH_4I$ .

3,824,180

### HYDROCRACKING PROCESS

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Jan. 27, 1972, Ser. No. 221,450. Divided and this application Mar. 1, 1973, Ser. No. 337,220

Int. Cl. C10g 13/06, 31/14

U.S. Cl. 208—111

8 Claims

A process for hydrocracking a hydrocarbonaceous charge stock with a catalytic composite of an alumina-containing carrier material, a nickel component and a Group V-B metallic component. The catalyst is prepared via coextrusion which inhibits the formation of nickel aluminate to the extent that less than about 0.1% thereof appears in the final catalytic composite.

3,824,181

### THERMALLY STABLE JET FUEL

Harry C. Stauffer, Cheswick, and Robert A. Titmus, Pittsburgh, Pa., and James R. Murphy, Houston, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Aug. 6, 1973, Ser. No. 385,827

Int. Cl. C10g 23/02

U.S. Cl. 208—143

5 Claims

Thermally stable jet fuel is produced by contacting a jet fuel feed with a catalyst composition comprising from 15 to 25 weight percent of a Group VI metal and from 15

to 25 weight percent of a Group VIII metal composited with a halogen enriched alumina support under hydrogenation conditions.

3,824,182

### PROCESS FOR SIMULTANEOUSLY REMOVING ADSORBABLE COMPONENTS FROM TWO LIQUID STREAMS

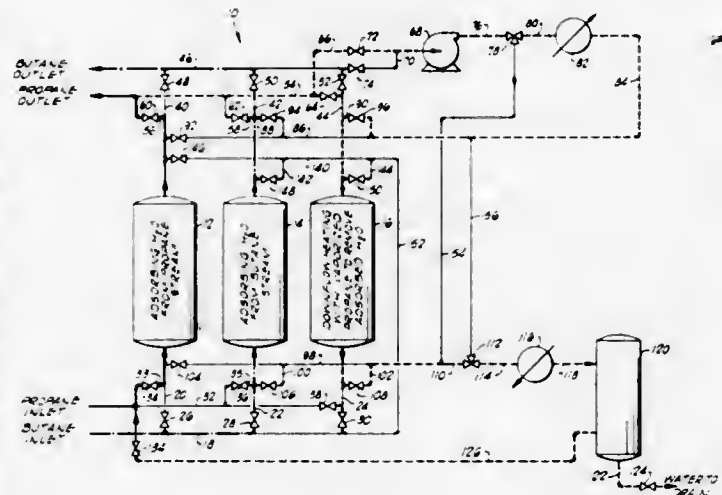
Adrian J. Peterson, Tokyo, Japan, assignor to Black Sivalls & Bryson, Inc., Oklahoma City, Okla.

Continuation-in-part of abandoned application Ser. No. 243,351, Apr. 12, 1972. This application Oct. 30, 1972, Ser. No. 301,881

Int. Cl. C10g 33/04

U.S. Cl. 208—188

15 Claims



The present invention relates to an improved process for simultaneously removing desired adsorbable components from two liquid streams. The first of the liquid stream is contacted with a bed of solid adsorbent material so that desired adsorbable components contained therein are adsorbed on the bed. When the bed is partially loaded with such components, the second liquid stream is flowed into contact with another bed of solid adsorbent material so that desired adsorbable components contained therein are adsorbed on the second bed. A third bed of solid adsorbent material is regenerated during the period of time required for the partially loaded bed contacting the first liquid stream to become fully loaded with adsorbable components. The flow pattern of the first liquid stream is changed when the bed in contact therewith becomes loaded so that the first stream flows into contact with the bed just regenerated. Thereafter, the flow patterns of the first and second liquid streams are periodically changed so that the liquid stream contacting the bed just becoming loaded with adsorbed components is flowed into contact with the bed just regenerated and the bed becoming loaded with adsorbed components is regenerated.

3,824,183

### ACID NUMBER REDUCTION OF HYDROCARBON FRACTIONS USING A SOLID CATALYST AND $NH_3$

Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 5, 1973, Ser. No. 376,526

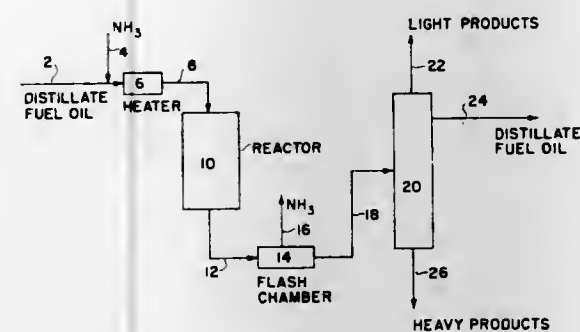
Int. Cl. C10g 17/00, 29/00

U.S. Cl. 208—263

17 Claims

The acid number of a hydrocarbon fraction is reduced

by contacting the hydrocarbon fraction and a nitrogen containing compound such as ammonia with a solid cat-



alyst having a surface area greater than 15 m.<sup>2</sup>/g., such as titanium oxide on alumina.

3,824,184

### SLIME CONTROL IN INDUSTRIAL WATERS

Herbert J. Hatcher, Bloomington, Robert J. Truda, St. Paul, Thomas G. Lechner, Lake Elmo, and Charles R. McDuff, St. Paul, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,933

Int. Cl. C02b 1/18

U.S. Cl. 210—1

4 Claims

Slime formation is controlled (e.g. retarded or removed) by the intentional addition to industrial waters (e.g. white water in pulp and paper mills) of slime controlling amounts of the enzyme levan hydrolase.

3,824,185

### AMMONIA ELIMINATION SYSTEM

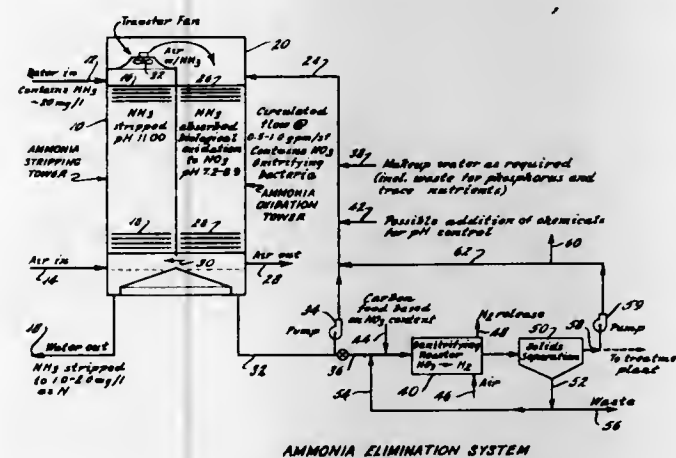
David H. Caldwell, Lafayette, Calif., and Edwin F. Barth, Cincinnati, Ohio, assignors to the United States of America as represented by the Administrator of the Environmental Protection Agency

Filed Sept. 5, 1972, Ser. No. 286,353

Int. Cl. C02c 1/02

U.S. Cl. 210—3

10 Claims



The nitrogen content of waste water is removed by air stripping ammonia from waste water. The ammonia is then absorbed in water containing nitrifying microorganisms, so that the ammonia is oxidized in the absorber water. The absorber and nitrifier water becomes far more concentrated in nitrogen than the original waste water and can be denitrified by denitrifying microorganisms in a small reactor. Air and water can be recycled in the system.

3,824,186

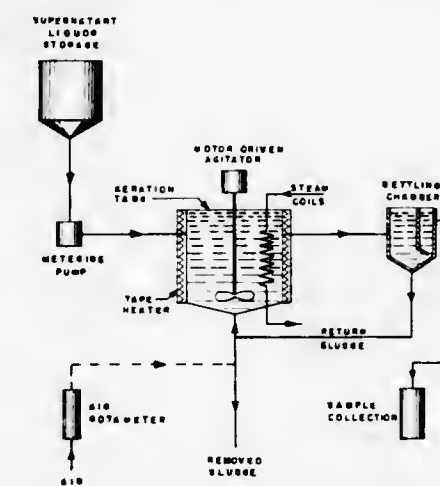
### BIOTREATMENT PROCESS

Allen H. Erickson, Wausau, Edmunds M. Pogainis, Mosinee, and Gerald H. Teletzke, Wausau, Wis., assignors to Sterling Drug Inc., New York, N.Y. Continuation-in-part of abandoned application Ser. No. 48,070, June 22, 1970. This application Jan. 24, 1972, Ser. No. 219,948

Int. Cl. C02c 1/06

U.S. Cl. 210—7

5 Claims



The liquors obtained by dewatering thermally conditioned organic sludge are subjected to separate biotreatment in undiluted form, thereby removing more than 90% of the biological oxygen demand from the liquors. The biotreatment is carried out in an aeration vessel containing biological sludge.

3,824,187

### TRI-n-AMYL LEAD SALT OF SATURATED ALIPHATIC MONOCARBOXYLIC ACID

Richard D. Gorsich, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Jan. 24, 1962, Ser. No. 168,508

Int. Cl. C01f 7/00

U.S. Cl. 252—1

7 Claims

1. A tri-n-amylead salt of a saturated aliphatic monocarboxylic acid containing 1-20 carbon atoms.

6. As a composition of matter, a tri-n-amylead salt of a saturated aliphatic monocarboxylic acid containing 1 to 20 carbon atoms dissolved in a hydrocarbon solvent containing from about 4 to about 8 carbon atoms and containing only carbon and hydrogen atoms in the molecule.

3,824,188

### HALOGEN-SUBSTITUTED AZINE COMPOUNDS AS PEROXYGEN BLEACH ACTIVATORS

Frank Fred Loffelman, Somerville, and Thomas Eugene Brady, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 21, 1973, Ser. No. 343,312

Int. Cl. C11d 7/54

U.S. Cl. 252—95

10 Claims

Halogen-substituted azine compounds selected from pyrimidine, pyrazine, quinoxaline and pyridine compounds, carrying as ring substituents at least one halogen selected from chlorine, bromine or fluorine and at least one substituent selected from halogen, cyano, nitro, lower alkyl and lower alkoxy groups, are effective as bleach activators for peroxygen bleaching compositions.

3,824,189

### DETERGENT COMPOSITIONS AND METHODS FOR MAKING SAME

Giuseppe Borello, 9 Via Fanculla, Anzio, Italy

No Drawing. Filed May 11, 1972, Ser. No. 252,274

Int. Cl. C11d 7/56

U.S. Cl. 252—99

5 Claims

The present invention relates to new detergent compositions and methods for preparing such compositions and



more particularly to new detergent compositions in extruded form and methods for producing same.

### 3,824,190 PHENOLIC SYNTHETIC DETERGENT-DISINFECTANT

Murray W. Winkov, Flushing, and William Schmidt, Sea Cliff, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 205,346, Dec. 6, 1971, which is a continuation of application Ser. No. 887,748, Dec. 23, 1969, both now abandoned. This application Apr. 5, 1973, Ser. No. 348,112 Int. Cl. C11d 3/48

U.S. Cl. 252—106 17 Claims

Unique and novel phenolic synthetic detergent-disinfectant compositions are provided wherein the detergent component is an anionic detergent and the phenolic components thereof consist essentially of ortho phenylphenol in admixture with high activity and intermediate activity phenolics; the ratio of ortho phenylphenol to the high and intermediate activity phenolics being from about 4:1-1:1. When prepared as a use dilution, the ortho phenylphenol is present in an amount of at least about 450 p.p.m.

When the ortho phenylphenol is employed only with the high activity phenolics, the preferred minimum amount of ortho phenylphenol should be at least about 600 p.p.m. and the ratio of the ortho phenylphenol to the high activity phenolics can then be from about 2.5:1-1.5:1 and, when used with intermediate activity phenolics at the same preferred minimum level, the ratio of the ortho phenylphenol to the intermediate activity phenolics can be from about 2.1:1-1.25:1.

The novel phenolic synthetic detergent-disinfectant compositions of the invention are effective not only against Staphylococcus and Salmonella but also against the troublesome Pseudomonas species in hard water.

### 3,824,191 PROCESS OF PREPARING SILICATES OF HIGH POROSITY AND SILICATES OBTAINED BY SAID PROCESS

Raymond Wey, Mulhouse Dornach, Pierre Guisen, Mulhouse, and Ronan Le Dred, Riedisheim, France, assignors to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,142 Claims priority, application France, Jan. 20, 1971, 7101794

Int. Cl. C04b 31/22, 31/26 U.S. Cl. 252—378 R 10 Claims

Novel processes, compositions (of the type of the resulting product), and uses therefor; concerning formation of exfoliated vermiculite from commercial vermiculite by successive treatments with a saline solution, with water, and with an acid followed by washing with water until neutral, resulting in an expanded product having a greatly increased specific surface, pore volume, and average pore radius (the values of which can be substantially controlled to give a desired tailor-made product by variation of the time, heat, concentration, pressure and like parameters), the usefulness of said products including that of a desiccant.

### 3,824,192 STABILIZED SYSTEM CONTAINING METAL HYDROXYALKYL PHOSPHONIC ACID OR PHOSPHINIC ACID

Anthony Dominic DiBattista, 19 Douglas Place, Eastchester, N.Y. 10707, and John Deman Spivack, 1 Blue Jay St., Spring Valley, N.Y. 10977

No Drawing. Continuation of abandoned application Ser. No. 854,281, Aug. 29, 1969. This application Dec. 21, 1971, Ser. No. 210,584

Int. Cl. C08k 1/58, 1/60 U.S. Cl. 252—400 A 15 Claims

Organic materials normally subject to oxidative deterioration are stabilized by incorporating therein a metal

derivative of monobasic or dibasic hindered phenol substituted phosphonic acid and one or more of the additional additives selected from phenolic antioxidants, synergists, ultraviolet light absorbers, ultraviolet light stabilizers, buffers, pigments, or delustering agents, dyes, dyesites and phosphites.

### 3,824,193 ALKALINE REACTIVATION OF ALUMINA SUPPORTED PALLADIUM CATALYSTS

James E. Williams and Jean C. Fleischer, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,783 Int. Cl. B01j 11/18

U.S. Cl. 252—412 5 Claims

A process is disclosed for reactivating alumina supported hydrogenation catalysts by treating the catalyst with either an alkali metal hydroxide or alkaline earth metal hydroxide in dilute aqueous solution to thoroughly wet the catalyst, then heating the treated catalyst to a temperature of between about 100° C. and about 500° C., and allowing the catalyst to cool.

### 3,824,194 CATALYST FOR USE IN CONVERSION OF GASES AND METHOD FOR PREPARING THEREOF

Yutaka Ushimaru, Hachioji, Koichi Matsuo, Mitaka, and Yukihiro Tochio, Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,344 Claims priority, application Japan, Aug. 5, 1971, 46/59,165

Int. Cl. B01j 11/06, 11/32 U.S. Cl. 252—458 8 Claims

A molded catalyst obtained through a process comprising the steps of mixing manganese oxide(s) or a mixture of manganese oxide(s) and metal oxide(s), such as bismuth oxide(s), copper oxide(s), iron oxide(s), zinc oxide, lead oxide(s), alumina, silica and magnesia, with at least one metal powder selected from a group consisting of copper, iron and zinc powder; forming the chromate film onto the surface of said metal powder by dipping the thus prepared mixture in an aqueous solution containing chromic acid; molding the thus treated mixture into a suitable shape; and then subjecting the thus molded product to heat treatment in order to dehydrate said chromate film, is effective in conversion of carbon monoxide, hydrocarbons and nitrogen oxides, particularly in conversion of said gaseous components contained in exhaust emissions from vehicles.

### 3,824,195 OXIDATIVE DEHYDROGENATION CATALYST

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,614 Int. Cl. B01j 11/82

U.S. Cl. 252—437 18 Claims

An improved oxidative dehydrogenation catalyst comprising a lithium-tin-phosphorus-oxygen composition is disclosed. Also disclosed is a method of reactivating a composition of a similar nature. The improved catalyst and the reactivated catalyst, both, are formed by procedures involving phosphorus deposition.

### 3,824,196 CATALYST SUPPORT

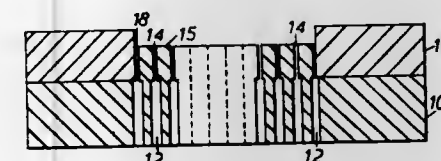
John Jones Benbow and Leslie Waddington Lord, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 1, 1972, Ser. No. 248,887 Claims priority, application Great Britain, May 7, 1971, 13,721/71

Int. Cl. B01j 11/06 U.S. Cl. 252—455 R 9 Claims

A catalyst support in the form of a multi-tubular refractory module is made by forming a plastic composition

containing the material of the support or a compound thermally decomposable or retractable thereto, a liquid



and a viscosity-controlling substance, forcing the said composition successively through a zone comprising a plurality of discrete primary channels within a solid block and then a unifying zone comprising secondary channels within the same block, the secondary channels being interlinked in the configuration of continuous curves transverse to the direction of flow of the plastic composition, drying the module thus produced and calcining it to cause the formation of ceramic bonds.

### 3,824,197 PROCESS FOR PREPARING POLY-CATIONICALLY ACTIVE POLYMERS FROM PREFORMED POLYMERS

Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application Feb. 10, 1966, Ser. No. 527,399, which is a continuation-in-part of abandoned application Ser. No. 290,218, June 24, 1963. Divided and this application June 23, 1970, Ser. No. 51,448

Int. Cl. C08g 39/00 U.S. Cl. 260—2 D 7 Claims

Process for preparing poly-cationically active polymers by reacting a preformed polymer having hydroxyl, thiol, alkali metal alkoxide, alkali metal mercaptide, carboxylic acid or sulfonic acid terminal radicals with (a) a monobasic acid which is stronger than 100% sulfuric acid and which is capable of effecting the cationic polymerization of tetrahydrofuran without chain transfer, (b) an acyl halide thereof, (c) an anhydride thereof, or (d) an alkylene biester of the structure



where Z is oxygen or sulfur, n is 0 or 1, A is a divalent organic radical which is devoid of acetylenic and olefinic unsaturation and of alkylatable groups containing Zerewitinoff hydrogen atoms and D is the residue remaining after deletion of —OH from the acid group of (a). If the preformed polymer has acyl bromide or acyl chloride terminal radicals, a protonic acid which is stronger than 100% sulfuric acid and which is capable of effecting the cationic polymerization of tetrahydrofuran without chain transfer, or a salt thereof, can be used as the coreactant. The products of the process are cationically active and "living" at each end of the polymer chain.

### 3,824,198 PROCESS FOR REACTING ACTIVE HYDROGEN CONTAINING COMPOUNDS WITH POLYCATIONICALLY ACTIVE POLYMERS

Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application Feb. 10, 1966, Ser. No. 527,399, which is a continuation-in-part of abandoned application Ser. No. 290,218, June 24, 1963. Divided and this application June 23, 1970, Ser. No. 59,772

Int. Cl. C08g 39/00 U.S. Cl. 260—2 D 14 Claims

A process for reacting active hydrogen containing compounds, such as ammonia, with polycationically active polymers, resulting in alkylation or acylation. An acid

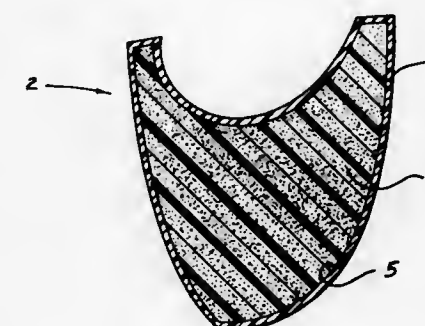
acceptor is preferably used to neutralize the acid by-product of the reaction. When ammonia is the active hydrogen compound, an amine or amide terminated polymer is the product of the reaction.

### 3,824,199 PROCESS FOR PREPARING SELF-SKINNED POLYURETHANE FOAM

Herbert G. Nadeau, North Haven, and Robert A. Stengard, Bethany, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of abandoned application Ser. No. 657,348, July 31, 1967. This application Feb. 10, 1971, Ser. No. 114,356

Int. Cl. B29d 27/00; C08g 22/44 U.S. Cl. 260—2.5 AZ 5 Claims



Novel resilient cellular polyurethanes, characterized by integrally formed tough skins completely surrounding a cellular core, are disclosed. These self-skinned flexible foams are obtained using novel foam mixes so formulated that the cells proximating the surface of the advancing foam collapse on contact with alien surfaces such as mold walls. Such foam mixes require the use of conventional polyisocyanates and polyols, the absence of added water, the use of halogenated aliphatic hydrocarbon blowing agents and, in place of conventional surfactant requirements, the use of no surfactant or the use of a peripheral foam destabilization agent which is either (a) a conventional antifoaming agent employed in excess of proportions normally recommended or (b) a conventional polyurethane foam surfactant employed in lower proportions than normally recommended. The novel resilient foams are useful in all energy-absorbing applications e.g. safety padding in automobiles, trucks, aircraft etc. as well as in upholstery, packaging, and like industries.

### 3,824,200 FLAMEPROOF AND FIREPROOF RESINOUS FOAMS

Ralph Matalon, 432 Cherry Hill Blvd., Camden, N.J. 08034

No Drawing. Filed Oct. 6, 1971, Ser. No. 187,179 Int. Cl. C08g 51/76, 51/78, 53/08

U.S. Cl. 260—2.5 R 13 Claims

Flameproof and fireproof resinous foams are produced by reacting together the following admixed components: (1) the liquid polymeric products of a heated blend of a reducing sugar, phosphoric acid, one or more fluidifiers and, preferably, a polyhydric phenol having at least two hydroxy groups in a meta position; (2) at least one foaming, gelling and hardening agent, such as an organic polyisocyanate and/or a powder of a polyvalent metal above cadmium in the electromotive series; and, preferably, (3) an additional hardener, such as formaldehyde, furfuryl alcohol, or blends or polymers of furfuryl alcohol and formaldehyde.



3,824,201

**MATURATED POLYESTER POLYURETHANE COMPOSITIONS**

Francis R. McGranaghan, Stow, and Henry Shanoski, Cuyahoga Falls, Ohio, assignors to The General Tire &amp; Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 176,290, Aug. 30, 1971. This application Apr. 11, 1973, Ser. No. 350,107

Int. Cl. C08g 41/04, 22/42

**U.S. Cl. 260—18 TN** 10 Claims

A moldable fiber-filled matured thermosetting polyester resin-containing composition is achieved by reacting (A) a hydroxy-terminated, polyester resin having a hydroxyl functionality of between 3.0 and 1.8 in a standard molding formulation with (B) a polyisocyanate in an amount of at least about 85% but not more than 99% of the quantity necessary to cause the resin to reach its gel point and in contact with (C) a suitable catalyst for the reaction of isocyanate and hydroxyl groups, (D) an aliphatically-unsaturated monomer and a free radical polymerization catalyst.

3,824,202

**HIGH TEMPERATURE POLYVINYL CHLORIDE COMPOSITIONS**

Edward L. White, Freehold, and Edward J. Augustyn, Yardville, N.J., assignors to NL Industries, Inc., New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,630

Int. Cl. C08f 45/04, 45/38

**U.S. Cl. 260—23 XA** 9 Claims

A combination of components useful as additives in polyvinyl chloride resin compositions for producing thermoplastic compounds having superior resistance to chemical and physical degradation at high temperatures comprises a stabilizer, including one or more anti-oxidants, and an inert filler, the latter being selected from Group II-A metal sulfates. A flexible, heat resistant thermoplastic compound is prepared by adding the individual components separately, or optionally as a homogeneous mixture, hereinafter referred to as a stabilizer/filler additive, to a polyvinyl chloride resin of high molecular weight and a plasticizer of relatively low volatility.

3,824,203

**POLYCHLOROPRENE FOR NON-PHASING SOLVENT CEMENTS**

Richard M. Tabibian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,124

Int. Cl. C08c 11/72; C08d 9/14; C08f 21/04

**U.S. Cl. 260—23.7 H** 4 Claims

Chloroprene polymers, useful in non-phasing solvent cements having good tack, are produced by polymerizing chloroprene, optionally with another copolymerizable monomer, in an aqueous alkaline emulsion in the presence of water-soluble salts of:

- About 0.5 to 1.5 percent of a rosin acid,
- About 1 to 2 percent of a  $C_{12}$  to  $C_{20}$  unsaturated fatty acid, and
- About 0.5 to 1.5 percent of a condensation product of formaldehyde with a naphthalene sulfonic acid,

all percentages being by weight based on the weight of chloroprene and any other copolymerizable monomer present, the percentage of (a) and (b) being based on the free acid and of (c) being based on the salt; the total percentage of (a) and (b) being at least 2, and the conversion of monomer to polymer being at least about 85 percent; and optionally having present during polymerization from 1 to 4 percent by weight of a methyl ester of a naturally occurring rosin acid based on the weight of chloroprene.

3,824,204

**STABILIZATION OF VINYL RESIN FOAM SYSTEMS**

Elwood E. Huntzinger, Springfield, and Nelson N. Schwartz, Broomall, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed June 2, 1971, Ser. No. 149,325

Int. Cl. C08f 45/28

**U.S. Cl. 260—29.1 R** 1 Claim

Vinyl resin foam products having desirable characteristics including fine uniform cellular structure and low density are prepared with extended processing latitude from a foamable precursor composition which includes as stabilizing agent an effective amount of a composition comprising the reaction product, having an intrinsic viscosity,  $[\eta]$ , in deciliters per gram, determined in chloroform at 30° C., of less than about 0.35, of the polymerization of the monomeric esters of methacrylic acid and alcohols having from 3 to 5 carbon atoms, effected in the presence of chain transfer agents.

3,824,205

**METHOD FOR STABILIZING ELASTOMERS AND THE ELASTOMERS WHICH ARE PRODUCED ACCORDING TO THIS METHOD**

Michel Démarcq, Lyon, and Raymond Petitjean, Hermes, France, assignors to Produits Chimiques Ugine Kuhlmann, Saint-Denis, France

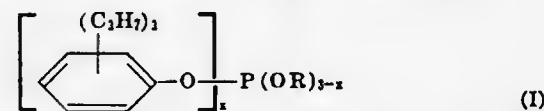
No Drawing. Filed Mar. 7, 1972, Ser. No. 232,508

Claims priority, application France, Mar. 10, 1971, 7108209

Int. Cl. C07f 9/08

**U.S. Cl. 260—29.7 P** 20 Claims

This invention relates to a method for stabilizing elastomers or mixtures based on elastomers which comprises adding thereto alone or in combination with one or more other nonphosphorous stabilizing agents, an effectively stabilizing amount of at least one hydrolysis stable phosphorous ester corresponding to the general formula



wherein the group  $\text{C}_6\text{H}_7$  is an isopropyl radical,  $x$  is the integer 1, 2 or 3 and R is an aryl or alkaryl radical containing from 6 to about 30 carbon atoms or an aliphatic, cycloaliphatic or arylaliphatic radical containing from 2 to about 30 carbon atoms and from 0 to 2 chlorine atoms, 0 or 1 bromine atom and 0 to 6 oxygen atoms.

This invention also relates to elastomers and mixtures based on elastomers stabilized according to the above method.

3,824,206

**RUBBER TREAD COMPOSITIONS**

Krishna C. Baranwal, Stow, and Richard G. Bauman, Berea, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,908

Int. Cl. C08d 13/22

**U.S. Cl. 260—33.6 AQ** 4 Claims

Rubber compositions which contain reinforcing pigments such as carbon black, and which are especially suitable for tire treads, are made in an unexpectedly high quality and low cost from synthetic rubber of very high molecular weight and a very narrow range of molecular weight dispersed in a liquid medium, by mixing the rubber in liquid form with an extending oil in a quantity about equal to or greater than the quantity of rubber, the reinforcing pigment, and all other ingredients, removing the dispersing medium, and producing essentially no permanent deformation of the dry rubber except that necessary to shape it to the form of the final product.

3,824,207

**MANUFACTURE OF HIGH MOLECULAR WEIGHT SYNTHETIC LINEAR POLYAMIDES**

John Anthony Carter, Coytre, near Pontypool, England, assignor to ICI Fibres Limited, Pontypool, England

No Drawing. Continuation-in-part of application Ser. No. 89,017, Nov. 12, 1970, which is a continuation of application Ser. No. 676,649, Oct. 19, 1967, both now abandoned. This application Sept. 21, 1972, Ser. No. 290,921

Claims priority, application Great Britain, Nov. 9, 1966, 50,214/66

Int. Cl. C08f 45/04

**U.S. Cl. 260—37 N** 11 Claims

The invention comprises a method which uses a single stage continuous process to produce a pigmented high molecular weight linear polyamide. The pigment is injected into the reaction mass of monomers used to prepare the polyamide substantially at the mid-point of the reaction chamber for producing the pigmented polyamide. The process is performed at elevated pressures and temperatures.

3,824,208

**PROCESS FOR FORMING A FREE-FLOWING PARTICULATE POLYMER MIXTURE FROM A VISCOUS TACKY POLYMER**

Ernest A. Link, Utica, Mich., and Marcel P. Scarbel, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 5, 1973, Ser. No. 338,380

Int. Cl. C08g 51/04

**U.S. Cl. 260—375 B** 36 Claims

A process for producing a free-flowing particulate polymer mixture comprising adding from 15 and more preferably from 20 to 900 parts of a filler to 100 parts of a viscous tacky polymer having a viscosity of anywhere from 1000 centipoise to 200,000,000 centipoise at 25° C., and acting on that mixture until the ingredients are formed into a free-flowing particulate mixture. Prior to the application of reducing means to said mixture of filler and polymer so as to break it up into a free-flowing particulate mixture, there may be added various ingredients to the composition. In addition, these ingredients can be added to the filler and polymer simultaneously as the filler and polymer are being acted upon by various means so as to form the particulate mixture. The preferred means for acting upon the polymer and filler mixture so as to break it or reduce it to a free-flowing particulate mixture is mechanical shear means. The foregoing process is especially directed to the forming of a free-flowing particulate mixture from a diorganopolysiloxane polymer having a viscosity of 100,000 centipoise to 200,000,000 centipoise at 25° C. and a filler.

3,824,209

**POLYESTER PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL FLAME RETARDANTS**

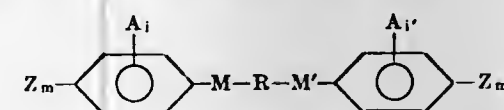
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,773

Int. Cl. C08g 51/60

**U.S. Cl. 260—45.9 R** 29 Claims

Plastic compositions containing polyesters and halo-genated aryl compounds having the formula



wherein Z is bromine or chlorine,  $m$  and  $m'$  are integers having a value of 1–5,  $i$  and  $i'$  are integers having a value

of 0–2, R is herein defined, M and M' are each independent and are from the group oxygen, nitrogen or sulfur with the proviso that M and M' cannot concurrently be oxygen in both cases, and A is chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo-benzyl.

3,824,210

**ORGANOTIN SALTS OF HYDROXY-SUBSTITUTED ALKANOIC ACIDS: STABILIZERS FOR POLY-VINYL CHLORIDE**

Laurence F. King, Mooretown, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed Jan. 12, 1972, Ser. No. 217,268

Int. Cl. C08f 45/62

**U.S. Cl. 260—45.75 K** 7 Claims

An improved polyvinyl chloride and a process for preparing said polymer which comprises including in the reactant mixture a stabilizer lubricant comprising an alkyl tin hydroxystearate.

3,824,211

**POLYESTERS OF 4,4'-HEXAFLUOROISOPROPYL-IDENE DIPHENOL**

William W. Howerton, 55 Todmorden Drive, Wallingford, Pa. 19086

No Drawing. Continuation-in-part of application Ser. No. 89,516, Nov. 13, 1970, which is a continuation-in-part of application Ser. No. 612,299, Jan. 26, 1967, both now abandoned. This application July 6, 1972, Ser. No. 269,374

Int. Cl. C08g 17/08

**U.S. Cl. 260—47 C** 6 Claims

This disclosure relates to a unique thermally stable polymer that is particularly useful in protective coating compositions and paint systems. The polymer is prepared by an interfacial polymerization process at room temperature wherein hexafluoroacetone Bisphenol A is mixed in one phase and iso and/or terephthaloyl chloride is mixed in the other phase in the presence of a suitable terminator. Various proportions of the hexafluoroacetone Bisphenol A and the phthaloyl chloride are optionally replaced by various specified difunctional intermediates.

3,824,212

**PROCESS FOR PREPARING HIGHER MOLECULAR WEIGHT POLYEPOXIDE PRODUCTS BY REACTING A POLYEPOXIDE WITH A PHENOL IN PRESENCE OF TETRAALKYLAMMONIUM HALIDES**

Feije H. Sinnema and Henry van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 18, 1973, Ser. No. 324,698

Int. Cl. C08g 30/04

**U.S. Cl. 260—47 EP** 13 Claims

A process for preparing higher molecular weight polyepoxide compounds from lower molecular weight polyepoxides by condensing said lower molecular weight polyepoxides (i.e., below about 3500) with a polyhydric phenol in the presence of a tetraalkylammonium halides catalysts employed within a certain critical range and at a certain critical temperature range is disclosed. More particularly, solid epoxy resins are prepared by the fusion of diphenylol propane with a low molecular weight epoxy resin at 140 to 190° C. in the presence of 0.05 to 2 meq. of a tetraalkylammonium chloride or bromide per 100 g. of epoxy resin in the presence of less than 1% by weight of a high boiling solvent.



3,824,213

**ACID-INTERCHANGE REACTION FOR FORMING HALOGENATED AROMATIC POLYESTERS**

Robert W. Stackman, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

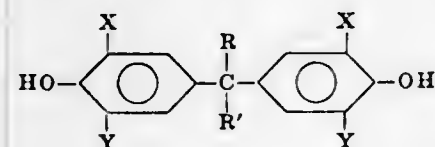
No Drawing. Filed Apr. 16, 1973, Ser. No. 351,206

Int. Cl. C08g 17/003

U.S. Cl. 260—47 C

15 Claims

An acid interchange reaction adapted to form halogenated aromatic polyesters is disclosed. An aliphatic carboxylic acid ester of a bisphenol of the structural formula:



wherein X is chlorine or bromine, Y is hydrogen, chlorine or bromine with the provision that when X is chlorine, Y is hydrogen or chlorine and when X is bromine, Y is hydrogen or bromine, R and R' be the same or different and represent lower alkyl groups or hydrogen or may, together, constitute a cyclic hydrocarbon group; is reacted at a temperature of about 220° C. to about 350° C. with an aromatic acid mixture of from about 10 to about 60 percent of the mixture of terephthalic acid and, correspondingly, from about 90 to about 40 percent of the mixture of isophthalic acid in a common solvent for the reactants to form the polyester. The reaction is performed in the presence of a catalytically effective amount of a cobalt, nickel or manganese salt of an aliphatic carboxylic acid.

3,824,214

**HALOVINYLDENE ARYLENE POLYMERS AND PROCESS FOR MAKING THE SAME**

Tohru Takakoshi, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 20, 1973, Ser. No. 343,139

Int. Cl. C08g 5/00

U.S. Cl. 260—52

12 Claims

Halovinyldene arylene polymers are prepared from the dihydrohalogenation of the polymeric reaction product of an aromatic compound containing nuclearly-bonded hydrogen and either chloral or bromal, in the presence of a strong acidic catalyst.

3,824,215

**CROWN ETHER POLYMERS PREPARED FROM CHLORAL, BROMAL OR GLYOXYLIC ACID**

Tobru Takakoshi, Scotia, and Jimmy L. Webb, Ballston Lake, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 20, 1973, Ser. No. 343,140

Int. Cl. C08g 5/00

U.S. Cl. 260—52

4 Claims

Crown ether polymers are prepared from the reaction of a crown ether containing nuclearly bonded hydrogen and either chloral, bromal, or glyoxalic acid in the presence of a strong acidic catalyst.

3,824,216

**POLYMER CATALYST**

Jack Ernest Schweitzer, 2 Sinclair St., Kingston, Ontario, Canada

Filed May 8, 1972, Ser. No. 251,120

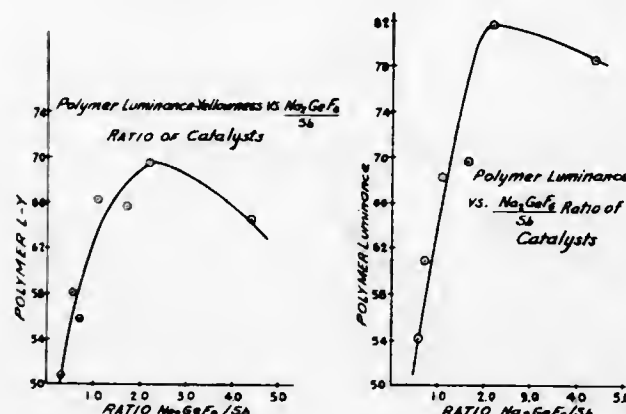
Int. Cl. C08g 17/015

U.S. Cl. 260—75 R

12 Claims

A process for manufacturing a linear fibre- and film-forming polyester which comprises reacting a diol with a

dicarboxylic acid or an ester-forming derivative thereof and polycondensing the resulting dicarboxylate in the presence of a polycondensation catalytic material selected



from alkali metal hexafluorogermanates, alkaline earth metal hexafluorogermanates, mixtures of alkali metal hexafluorogermanates with antimony and mixtures of an alkaline earth metal hexafluorogermanate with antimony.

3,824,217

**POLYISOCYANATE-ARYL DIOXIME ADDUCTS**

Wilson A. Barker, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

No Drawing. Filed Nov. 22, 1972, Ser. No. 308,778

Int. Cl. C08g 22/00

U.S. Cl. 260—77.5 R

11 Claims

Adducts of aryl dioximes and polyisocyanates are described containing from one to two moles of polyisocyanate per mole of dioxime and in which all of the oxime groups are reacted with isocyanate. These adducts are incorporated in conventional rubber-to-metal adhesive compositions to provide single-package, shelf-stable adhesives having improved adhesion.

3,824,218

**PROTECTIVE SKIN CREAM**

Lawrence W. McKenna, Jr., Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 12, 1970, Ser. No. 45,912

Int. Cl. A61k 7/00

U.S. Cl. 424—78

7 Claims

Disclosed herein is a skin cream which, when applied topically to the skin, provides an invisible protective coating which is a barrier against aqueous and polar organic solvents. The barrier component ingredient in the skin cream is a copolymer of a vinyl ester and a monoalkyl ester of maleic anhydride where the alkyl group contains from 14 to 22 carbon atoms.

3,824,219

**PROCESS FOR PREPARING POLYCATIONICALLY ACTIVE POLYMERS OF TETRAHYDROFURAN**

Samuel Smith, Roseville, and Allen J. Hublin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application Feb. 10, 1966, Ser. No. 527,399. Divided and this application June 23, 1970, Ser. No. 59,770

Int. Cl. C08f 1/74, 1/70, 5/04

U.S. Cl. 260—79.3 R

8 Claims

A process for polymerizing cationically polymerizable cyclic ether monomers to prepare terminally polycationically active polymers is described.

3,824,220

**POLYCATIONICALLY ACTIVE POLYMERS**

Samuel Smith, Roseville, and Allen J. Hublin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation of abandoned application Ser. No. 290,218, June 24, 1963. This application Feb. 10, 1966, Ser. No. 527,399

Int. Cl. C08f 1/74, 5/04, 27/06

U.S. Cl. 260—79.3 R

8 Claims

Polymers which are free of alkylatable groups and which are cationically active at at least two ends, each of which ends have bonded thereto only a radical which in anionic form is a non-terminating anion in the polymerization of tetrahydrofuran and is an anion of a protonic acid stronger than 100% sulfuric acid are described.

3,824,221

**METALLATED POLYMERS**

Pudens Leonard Ragg, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 2, 1970, Ser. No. 456

Claims priority, application Great Britain, Jan. 9, 1969, 1,320/69; June 24, 1969, 13,889/69

Int. Cl. C07c 45/02; C08f 3/00, 3/02

U.S. Cl. 260—80 PS

4 Claims

Metallated polymers and copolymers and styrylphosphine containing a plurality of PR<sub>2</sub> groups (where R is a hydrocarbyl group) as substituents of the benzene rings, transition metal atoms being co-ordinated to the phosphorus atoms. Several methods of preparation are described. The metallated polymers may be used to catalyze a variety of liquid or gas phase organic reactions, such as hydroformylation, olefin oligomerisation, hydrogenation and disproportionation, the reactions for which they are effective depending on the choice of metal and polymer. Copolymers, especially with styrene, are also included.

3,824,222

**FLAMEPROOF MODACRYLIC FIBERS**

Yoshihisa Shichijo, Hideo Sato, Toshio Iwasa, and Yasuo Uchida, Fujii, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

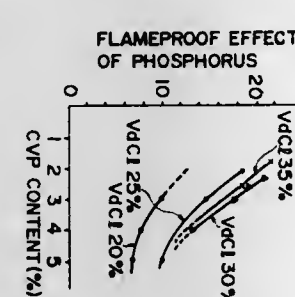
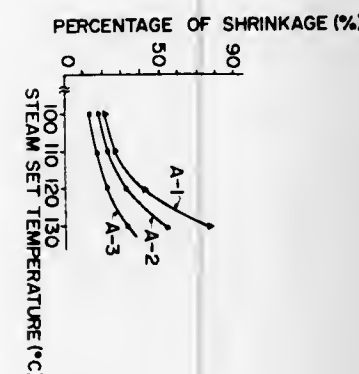
Filed Nov. 5, 1971, Ser. No. 196,100

Claims priority, application Japan, Nov. 5, 1970, 45/96,831

Int. Cl. C08f 15/40

U.S. Cl. 260—80.71

7 Claims



Modacrylic fibers having excellent flameproof property and retaining the superior whiteness, heat-stability, etc. of

acrylonitrile polymer fibers are produced from the polymers containing, as principal components, 50% by weight or more of acrylonitrile, 25% by weight or more of vinylidene chloride and 0.1–3% by weight of bis(2-chloroethyl)vinylphosphonate, and if necessary, as additional component, at least one copolymerizable ethylenically unsaturated compound.

3,824,223

**PROCESS FOR PREPARING A COPOLYMER OF A CONJUGATED DIENE AND ETHYLENE**

Kiyoshige Hayashi, Tokyo, and Akihiro Kawasaki and Isao Maruyama, Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed May 27, 1971, Ser. No. 147,418

Claims priority, application Japan, June 10, 1970, 45/49,470, 45/49,471, 45/49,472, 45/49,473

The portion of the term of the patent subsequent to June 5, 1990, has been disclaimed

Int. Cl. C08d 3/04, 1/14

U.S. Cl. 260—85.3 R

14 Claims

Alternating copolymers and/or ethylene rich random copolymers of a conjugated diene and ethylene are formed by reacting the conjugated diene and ethylene in the presence of a catalyst comprising (A) an organoaluminum compound having the formula AlR<sub>3</sub> wherein R represents a hydrocarbon radical selected from the group consisting of a C<sub>1</sub>–C<sub>12</sub> alkyl, cycloalkyl, aryl and aralkyl radical and (B) an organotitanium compound having



structure wherein R is the same as defined above and X is a halogen.

3,824,224

**PROCESS FOR PREPARING ALTERNATING COPOLYMERS OF BUTADIENE AND ALPHA-OLEFINS**

Akihiro Kawasaki and Isao Maruyama, Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Original application Apr. 17, 1970, Ser. No. 29,678, now Patent No. 3,700,638. Divided and this application June 5, 1972, Ser. No. 259,593

Claims priority, application Japan, Apr. 25, 1969, 44/31,429; May 13, 1969, 44/36,162; June 19, 1969, 44/47,913; July 3, 1969, 44/52,149; Aug. 15, 1969, 44/54,143; Sept. 10, 1969, 44/71,260; Sept. 25, 1969, 44/75,828; Sept. 30, 1969, 44/77,410, 44/77,411; Oct. 9, 1969, 44/80,281; Oct. 31, 1969, 44/86,898, 44/86,899; Dec. 4, 1969, 44/96,888

The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed

Int. Cl. C08d 1/14, 3/02, 3/06

U.S. Cl. 260—85.3 R

7 Claims

A process for preparing an alternating copolymer of butadiene and  $\alpha$ -olefine having the formula of CH<sub>2</sub>=CHR, wherein R represents phenyl or a normal or branched chain lower alkyl radical, which comprises contacting butadiene and the  $\alpha$ -olefine in liquid phase with a catalyst system of an organoaluminum compound, a vanadium compound having V—X linkage (X is halogen) and a compound having M—OR linkage (M is an atom whose electro negativity (H. O. Pritchard, Chem. Rev., 55, 745 (1955)) is lower than 2.2 and R is a hydrocarbon radical of alkyl, aryl, cycloalkyl or halogenated ether radical) or a compound having (O—M)<sub>x</sub>—(O—M')<sub>y</sub>—OR linkage (M is defined as above and M' can be defined by the same definition given in M). Optionally, a halogen atom, a halogen containing compound, a metal oxide or a metalloid oxide can be added to the above mentioned three component catalyst system as the fourth component to further improve the catalytic properties. The alternating copolymers obtained by this invention are rubber-like in



character and can be used as polymeric plasticizers, in adhesives and can be vulcanized with sulfur or a sulfur compound to produce vulcanized elastomers.

### 3,824,225 NON-CYCLOPOLYMERIZED POLY-1-VINYLRACILS

Howard Kaye, College Station, Tex., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,928

Int. Cl. C08f 7/12

U.S. Cl. 260—88.3 R 2 Claims

It has been discovered that stereoregular non-cyclopolymerized poly-1-vinylluracils are produced under conditions wherein cyclopolymerization is substantially completely repressed by carrying out  $\gamma$ -radiation initiated polymerization of a vinyluracil, such as the compound 1-vinylluracil, under conditions wherein,

- (1) polymerization is carried out at a low temperature;
- (2) polymerization is carried out at high concentration of the monomer;
- (3) polymerization is carried out in the solid state;
- (4) polymerization is carried out employing negatively charged monomers and/or
- (5) polymerization is carried out wherein the monomers, the 1-vinylluracils, contain bulky substituent groups.

Combinations of the aforesaid polymerization conditions are usefully employed to produce the desired stereoregular non-cyclopolymerized poly-1-vinylluracils.

3,824,226

### PROCESS FOR THE PRODUCTION OF TRANS-1,2-POLY-1,3-PENTADIENE

Peter Gunther, Opladen, Wolfgang Oberkirch, Cologne, Gottfried Pampus, Leverkusen, Friedrich Haas, Cologne, and Gunter Marwede, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Mar. 4, 1971, Ser. No. 121,202, now abandoned. Divided and this application Mar. 7, 1973, Ser. No. 338,857

Claims priority, application Germany, Mar. 28, 1970, P 20 15 153.5

Int. Cl. C08d 1/14, 3/04

U.S. Cl. 260—94.3 11 Claims

A catalyst system for the stereospecific polymerisation of 1,3-pentadiene into trans-1,2-poly-1,3-pentadiene, comprising

- (a) an anhydrous cobalt salt
- (b) an acid amide or an ether and
- (c) an organoaluminium compound

and a process for polymerising 1,3-pentadiene in an inert solvent at temperatures of from  $-50^{\circ}$  to  $+100^{\circ}$  C. using the catalyst.

3,824,227

### DECAPEPTIDE [D-Phe]<sup>2</sup> ANALOG OF LUTEINIZING HORMONES RELEASING FACTOR AND INTERMEDIATES THEREOF

Richard W. Rees, Bryn Mawr, and Sie Yearl Chai, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Apr. 11, 1973, Ser. No. 350,302

Int. Cl. A61k 27/00; C07c 103/52

U.S. Cl. 260—112.5 9 Claims

[D-Phe]<sup>2</sup>-LRF, an analog of the decapeptide luteinizing hormone release factor (LRF) is described as well as

its synthesis by solid phase techniques and novel intermediates formed by such synthesis. The novel decapeptide is an antagonist of LRF *in vitro*.

3,824,228

### OLIGOPEPTIDE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF USING GLYCIDYL ESTERS OF CARBOXYLIC ACIDS TO REACT WITH PROTEIN-DIAMINE AMINOLYZATES

Hans Werner Eckert, Dusseldorf, and Peter Nikolaus, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,187

Claims priority, application Germany, Oct. 18, 1971, P 21 51 739.5

Int. Cl. C07g 7/00; C08h 1/00

U.S. Cl. 260—117 9 Claims

The invention relates to a process for the preparation of novel oligopeptide derivatives which can be used in hair conditioning and cosmetic preparations.

3,824,229

### 3-OXO-1,2,4-TRIAZINE NUCLEOSIDES

Gabor L. Szekeres and Roland K. Robins, Santa Ana, and Robert A. Long, Costa Mesa, Calif., assignors to International Chemical and Nuclear Corporation, Pasadena, Calif.

No Drawing. Filed July 20, 1972, Ser. No. 273,464

Int. Cl. C07d 51/52, 55/10

U.S. Cl. 260—211.5 R 9 Claims

3-Oxo-1,2,4-triazine nucleosides are disclosed which have demonstrated antitumor, antimicrobial and antiviral activity. 3-Oxo-1,2,4-triazine N<sub>1</sub>-oxide is also disclosed which is an intermediate in the synthetic process. Antitumor efficacy has been demonstrated with respect to KB, Hep-2, Hela, and RK-13 cells.

3,824,230

### 1,2,4,5 - TETRAHYDROPYRROLO[3,2,1-jk][1,4]BENZODIAZEPIN-7(6H)-ONES AND 1,2,4,5 - TETRAHYDROPYRROLO[1,2,3 - ef][2,5]BENZODIAZEPIN-6(7H)-ONES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,720, now Patent No. 3,642,822. Divided and this application June 21, 1971, Ser. No. 155,283

Int. Cl. C07d 53/02

U.S. Cl. 260—239.3 T 6 Claims

1,2,4,5,6,7 - Hexahydropyrrolo[3,2,1-jk][1,4]benzodiazepines, 1,2,4,5,6,7 - hexahydropyrrolo[1,2,3 - ef][1,5]benzodiazepines, processes for preparing the same and intermediates used to prepare said benzodiazepines. The benzodiazepines have central nervous system stimulant and depressant activity.

3,824,231

### RESOLUTION OF $\alpha$ -AMINOCAPROLACTAM

Anne Marie Kubanek, Basking Ridge, Stylianos Sleniades, Madison, and Robert Fuhrmann, Hanover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,409

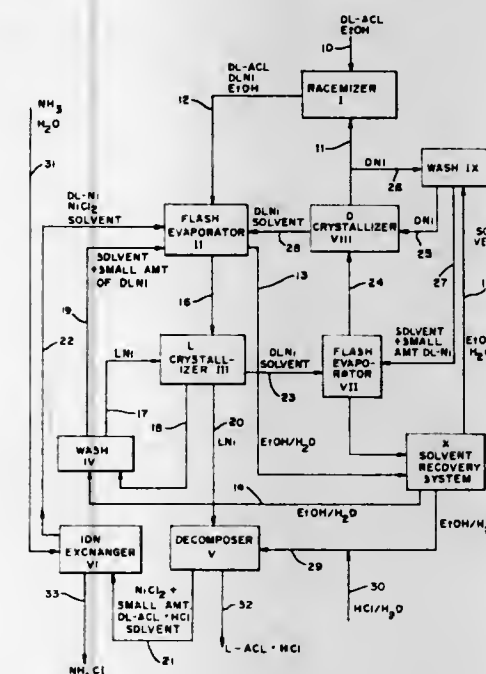
Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 R 11 Claims

L- $\alpha$ -aminocapro lactam is obtained by a process comprising the steps of:

- (a) Forming a complex of D,L- $\alpha$ -aminocapro lactam with a metal ion selected from the group consisting of Ni<sup>++</sup>, Co<sup>++</sup>, Cu<sup>++</sup>, Fe<sup>++</sup>, Fe<sup>+++</sup> and Zn<sup>++</sup>;

- (b) Optically resolving said D,L- $\alpha$ -aminocapro lactam metal complex whereby separate phases rich in D and L- $\alpha$ -aminocapro lactam metal complex, respectively, are obtained;

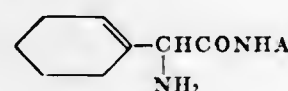




in which

R<sub>1</sub> represents hydrogen, alkyl, aralkyl or aryl,  
R<sub>2</sub> denotes hydrogen, alkyl or aralkyl,  
R<sub>3</sub> represents substituted alkyl radical,  
R<sub>2</sub> and R<sub>3</sub> together with the N atom form a non-aromatic heterocyclic ring, and  
the phenyl radicals A optionally carry further substituents, as well as their preparation and their use as optical brighteners

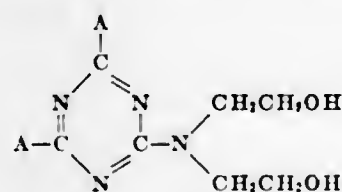
**3,824,237**  
**CEPHALOSPORANIC AND DESACETOXY-CEPHALOSPORANIC ACID COMPOUNDS**  
Tsunechiko Asako, Kyoto, Takenobu Soma, Suita, Hiro-tomo Masuya, Kobe, Tadatsugu Harukawa, Kyoto, and Takuichi Miki, Amagasaki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan  
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,622  
Claims priority, application Japan, Oct. 12, 1970, 45/89,918; May 24, 1971, 46/35,382; Aug. 3, 1971, 46/58,905; Aug. 28, 1971, 46/66,104  
Int. Cl. C07d 99/16, 99/24  
U.S. Cl. 260—243 C 2 Claims  
Compounds of the formula:



wherein A is a group which forms 7-aminocephalosporanic acid or 7-aminodesacetoxycephalosporanic acid are provided, which have both a broad spectrum antibacterial action and strong activity against *Escherichia coli*.

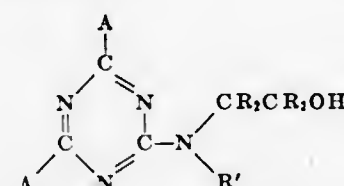
**3,824,238**  
**METHOD FOR THE PURIFICATION OF 7-AMINO-DESACETOXYCEPHALOSPORANIC ACID**  
Friedrich Dursch, Hopewell, and Theodore Michael Slewarga, Parlin, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.  
No Drawing. Filed Apr. 5, 1972, Ser. No. 241,425  
Int. Cl. C07d 99/24  
U.S. Cl. 260—243 C 9 Claims  
Purified 7-aminodesacetoxycephalosporanic acid may be obtained as a crystalline, free flowing white powder with an iron content of less than 10 p.p.m. by reprecipitation from a mildly basic aqueous solution from which impurities have been removed by treatment with a selective solvent, adsorbent or the like.

**3,824,239**  
**DISUBSTITUTED DIETHANOL-AMINO-S-TRIAZINES**  
Thirumurti L. Narayan, Riverview, Moses Cenker, Trenton, Peter T. Kan, Plymouth, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
No Drawing. Filed Dec. 29, 1972, Ser. No. 319,906  
Int. Cl. C07d 55/18  
U.S. Cl. 260—249.5 6 Claims  
Novel trisubstituted triazines corresponding to the formula:



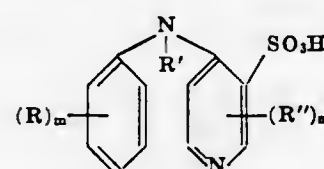
wherein A is alkoxy, aryloxy, alkyl or aryl. These compounds are useful as catalysts for preparing rigid cellular foams.

**3,824,240**  
**UNSYMMETRICALLY-SUBSTITUTED-s-TRIAZINES**  
Thirumurti L. Narayan, Riverview, Moses Cenker, Trenton, Peter T. Kan, Plymouth, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
No Drawing. Filed Dec. 29, 1972, Ser. No. 319,930  
Int. Cl. C07d 55/18  
U.S. Cl. 260—249.5 5 Claims  
Novel unsymmetrically-substituted triazines corresponding to the formula:



wherein R is hydrogen or lower alkyl, R' is lower alkyl or hydroxyalkyl, A is alkoxy, aryloxy, alkyl, aryl or —NR<sub>2</sub>'' wherein R'' is lower alkyl. These compounds are useful as catalysts for preparing rigid cellular foams.

**3,824,241**  
**PYRIDINESULFONIC ACIDS**  
Renat Herbert Mizzoni, Long Valley, N.J., and Herbert Morton Blatter, Basalt, Colo., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 67,205, Aug. 26, 1970, which is a continuation-in-part of application Ser. No. 20,833, Mar. 18, 1970, now Patent No. 3,674,794, dated July 4, 1972, which in turn is a continuation-in-part of abandoned application Ser. No. 876,038, Nov. 12, 1969. This application June 30, 1972, Ser. No. 267,775  
Int. Cl. A61k 27/00; C07d 31/48  
U.S. Cl. 260—294.8 R 3 Claims  
New 4-arylamino-3-pyridinesulfonic acids, e.g. those of the formula

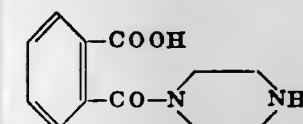


R=H, alkyl, alkanoyl, free, esterified or etherified OH or SH, CF<sub>3</sub>, NO<sub>2</sub>, an amino, free or functionally converted carboxy or sulfo  
R'=H, alkyl or acyl  
R''=H or alkyl  
m=1-5  
n=1 or 2

the N-oxide, esters or salts thereof are diuretic agents.

**3,824,242**  
**SYNTHESIS OF MEPERIDINE**  
Robert Levine and Vance Bell, Pittsburgh, Pa., assignors to Research Corporation, New York, N.Y.  
No Drawing. Filed Jan. 26, 1973, Ser. No. 326,641  
Int. Cl. C07d 31/36  
U.S. Cl. 260—295 R 7 Claims  
There is provided a method of synthesis of the analgesic meperidine, otherwise known as 1-methyl-4-phenyl-4-carbethoxypiperidine which comprises sequentially treating 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine with a lithiumalkyl and an ethyl haloformate or diethyl carbonate to yield 1-methyl-4-phenyl-4-carbethoxy-1,2,3,4-tetrahydropyridine which is reduced by catalytic hydrogenation to yield the desired meperidine.

**3,824,243**  
**MONO-o-PHTHALYL PIPERAZINE AND MONO-PIPERAZINE MONO-PHTHALATE DI-SALTS**  
Edward Henderson, deceased, late of New York, N.Y., by Kathryn S. Henderson, executrix, 220 Central Park S., New York, N.Y. 10019  
No Drawing. Continuation-in-part of abandoned application Ser. No. 83,602, Oct. 23, 1970. This application Nov. 24, 1972, Ser. No. 309,199  
Int. Cl. C07d 51/70  
U.S. Cl. 260—268 C 1 Claim  
Mono-o-phthalyl piperazine,



and salts thereof with physiologically acceptable acids, useful as anthelmintics; a method for making mono-phthalyl piperazine by reacting phthalic anhydride and piperazine between 0° C. and 50° C.; mono-piperazine di-salts of o-, m-, and p-phthalic acids, useful as anthelmintics; a method for making said di-salts by reacting a phthalic acid with piperazine between 0° C. and 50° C.

**3,824,244**  
**3-(4-HALOPHENYL)-3-(2-PYRIDYL)-3,4-DIHYDRO ISOCOUMARINS**  
William J. Houllhan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.  
No Drawing. Filed Apr. 21, 1972, Ser. No. 246,352  
Int. Cl. C07d 31/34  
U.S. Cl. 260—295 F 2 Claims  
Phenyl and substituted phenyl pyrido benzazepines and benzoquinolizines, e.g. 11(4-chlorophenyl)-1,3,4,11a-tetrahydro-2H-benzo-[b]-quinolizine-6-(11h)-one, and 12-hydroxy-12-phenyl-pyrido-[1,2-b][2]-benzazepin-6-one, are useful as major tranquilizers.

**3,824,245**  
**MANUFACTURE OF BIPYRIDYLUM SALTS AND RELATED COMPOUNDS**  
John Edward Colchester, John Francis Cairns, and John Gerard Carey, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England  
No Drawing. Application July 28, 1970, Ser. No. 59,030, now Patent No. 3,696,113, dated Oct. 3, 1972, which is a continuation-in-part of abandoned application Ser. No. 811,617, Mar. 28, 1969. Divided and this application July 11, 1972, Ser. No. 270,634  
Claims priority, application Great Britain, Apr. 16, 1968, 17,893/68  
Int. Cl. C07d 31/44  
U.S. Cl. 260—295 AM 16 Claims  
There is provided a method of converting disubstituted tetrahydrobipyridyls to the corresponding bipyridinium salt by treating the tetrahydrobipyridyl with a dehydrogenating agent such as platinum metals and oxides to convert the tetrahydrobipyridyl to the corresponding dihydrobipyridyl and subsequently oxidizing the dihydrobipyridyl to the corresponding salt.

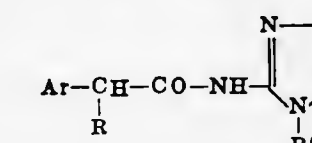
**3,824,246**  
**PROCESS FOR THE PREPARATION OF 2-SUBSTITUTED-1,3,4-THIADIAZOLE-5-THIOLS**  
George W. Hoffman, Carmel, and Bryan B. Molloy, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.  
No Drawing. Filed Sept. 5, 1972, Ser. No. 285,972  
Int. Cl. C07d 91/62  
U.S. Cl. 260—302 SD 5 Claims  
A new and more efficient process for the preparation of 2-substituted-1,3,4-thiadiazole-5-thiols which produces yields of 85-90% or higher comprises sequentially treat-

ing a thioamide with hydrazine, carbon disulfide, an alkali-metal hydroxide and acid. The thiols are useful intermediates for certain cephalosporin antibiotics.

**3,824,247**  
**2-(1,3,3-TRIMETHYLLUREIDO)-1,3,4-THIADIAZOLE-5-N,N-DIMETHYLSULFONAMIDE**  
William C. Doyle, Jr., Leawood, and Loren W. Hedrich, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.  
No Drawing. Continuation-in-part of application Ser. No. 119,417, Feb. 26, 1971. This application Sept. 1, 1971, Ser. No. 177,178  
Int. Cl. C07d 91/62  
U.S. Cl. 260—306.8 D 1 Claim  
The industrial herbicide 5-(1,3,3-trimethylureido)-N,N-dimethyl-1,3,4-thiadiazole-2-sulfonamide and other compounds of similar structure may be made by a novel procedure in which the first step is the oxidative chlorination of a 2-alkylamino-5-mercapto-1,3,4-thiadiazole to yield the corresponding sulfonyl chloride. The subject compound which possesses five methyl substituent groups is more effective as a herbicide than compounds which contain other alkyl substituents or a lesser number of methyl substituents.

**3,824,248**  
**POLY-HYDROXY-BIS-OXAZOLINES WITH HYDROXY GROUPS SUBSTITUTED WITH URETHANE GROUPS LINKED TO BETA-ETHYLENIC UNSATURATED GROUPS**  
Jean-Claude Milleo, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Français du Pétrole, des Carburants et Lubrifiants et Commissariat à l'Energie Atomique  
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,336  
Claims priority, application France, Feb. 3, 1971, 7103684  
Int. Cl. C07d 85/36  
U.S. Cl. 260—307 F 12 Claims  
Poly-hydroxy-bis-oxazolines may have their hydroxy groups substituted with urethane groups linked to α,β-ethylenic unsaturated groups. The resulting new compounds may be admixed with vinyl monomers to provide coating compositions which may be applied onto supports and hardened by irradiation with ionizing rays.

**3,824,249**  
**ACYLAMINO TETRAZOLES**  
Gilbert Regnier, Chateau-Malabry, Roger Canevari, Villebon-sur-Yvette, and Jean-Claude Le Douarec, Royat, France, assignors to Societe en nom Collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France  
No Drawing. Filed May 24, 1972, Ser. No. 256,520  
Claims priority, application Great Britain, June 15, 1971, 28,004/71  
Int. Cl. C07d 55/56, 57/00  
U.S. Cl. 260—308 D 3 Claims  
Acylamino tetrazoles of the formula:



wherein

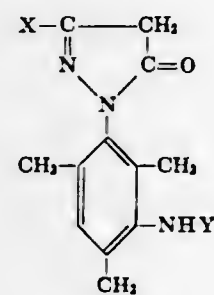
Ar is p-lower-alkylphenyl, p-cycloalkylphenyl, p-dialkylaminophenyl, p-cycloalkylaminophenyl, biphenyl, halobiphenyl, lower-alkylbiphenyl, lower-alkoxybiphenyl, or lower-alkoxy-β-naphthyl;

R is hydrogen, methyl or ethyl, and R' is hydrogen, pyridyl, phenyl, halophenyl, lower-alkylphenyl or lower-alkoxyphenyl.

These compounds possess anti-inflammatory properties.

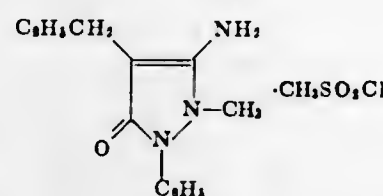


**3,824,250**  
**1-MESITYL-3-SUBSTITUTED PYRAZOLONES AS MAGENTA COLOR COUPLERS**  
 Masao Sawahara and Kazuya Sano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
 No Drawing. Filed Nov. 16, 1971, Ser. No. 199,337  
 Claims priority, application Japan, Nov. 16, 1970, 45/100,911  
 Int. Cl. C07d 49/14, 49/16  
 U.S. Cl. 260—310 A  
 Magenta color couplers of the formula



wherein X represents an acylamino group or an ethoxy group, Y represents a hydrogen atom or an acyl group, and one of X or Y has a ballasting group with 17 to 25 carbon atoms. A process for preparing such couplers.

**3,824,251**  
**COMPLEX COMPOUND OF A SUBSTITUTED 3-AMINO-3-PYRAZOLIN-5-ONE AND METHODS OF PRODUCING AND FURTHER REACTING THE SAME**  
 Hans von Castelmur, Basel, Switzerland, assignor to Solco Basel AG, Basel, Switzerland  
 Continuation-in-part of abandoned application Ser. No. 840,030, July 8, 1969. This application Feb. 15, 1972, Ser. No. 226,400  
 Claims priority, application Switzerland, July 12, 1968, 10,459/68  
 Int. Cl. C07d 49/16  
 U.S. Cl. 260—310 A  
 Complex compound of the formula



This complex compound is prepared by reacting 3-amino-4-benzyl-2-methyl-1-phenyl-3-pyrazolin-5-one (II) with methanesulfonyl chloride. Also provided is a process for preparing 4-benzyl-3-methanesulfonamido-2-methyl-1-phenyl-3-pyrazolin-5-one by reacting the complex compound with an alkaline agent. Finally, a process for preparing compound II is provided.

**3,824,252**  
**PROCESS FOR PREPARING INDOLE**  
 Marcello Massi Mauri, San Donato Milanese, and Pietro Antonio Moggi and Ugo Romano, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy  
 No Drawing. Filed Sept. 3, 1971, Ser. No. 177,866  
 Claims priority, application Italy, Sept. 7, 1970, 29,423/70  
 Int. Cl. C07d 27/56  
 U.S. Cl. 260—319.1  
 Process for producing indole and its derivatives by oxidizing aromatic amines with an organic nitrocom-

pound at temperatures ranging from 300° C. to 700° C. in the vapor phase in the presence of contact masses.

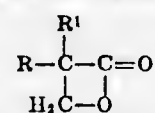
**3,824,253**  
**PROCESS FOR MANUFACTURING PROPANE SULTONE**  
 Eiji Uematsu, Kunio Ishii, Masayuki Maehara, Hiroshi Takahashi, and Keiichi Tsuji, Arai, Japan, assignors to Daicel Ltd., Osaka, Japan  
 No Drawing. Filed Dec. 28, 1971, Ser. No. 213,220  
 Claims priority, application Japan, Dec. 29, 1970, 46/126,395  
 Int. Cl. C07d 89/06  
 U.S. Cl. 260—327 S  
 A process for preparing propane sultone from a hydroxypropane sulfonic acid containing solution which is characterized by concentrating the solution until the concentration ratio within a specific range is reached and then subjecting the obtained concentrated solution to a continuous distillation in an agitated-film evaporator under a high vacuum of lower than 15 mm. Hg to distill and recover propane sultone.

**3,824,254**  
**METHOD OF PRODUCING Δ<sup>1</sup>-TESTOLACTONE**  
 Lev Natanovich Volovelsky, ulitsa Klochkovskaya 65, kv. 10, and Maya Yakovlevna Yakovleva, ulitsa Girshmana 19, kv. 44, both of Kharkov, U.S.S.R.  
 No Drawing. Filed July 17, 1972, Ser. No. 272,662  
 Int. Cl. C07d 7/06  
 U.S. Cl. 260—343.2 S  
 A method of producing Δ<sup>1</sup>-testolactone resides in that Δ<sup>1,4</sup>-androsta-3,17-dien-3-one is oxidized with hydrogen peroxide in an acetic acid medium, and the final product is isolated.

The thus-obtained Δ<sup>1</sup>-testolactone finds application in medicine for treating of metastasizing mammary carcinoma.

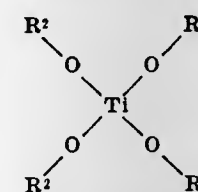
**3,824,255**  
**PROCESS FOR THE PRODUCTION OF TETRONIC ACID**  
 Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Basel, Switzerland  
 No Drawing. Filed Sept. 2, 1971, Ser. No. 177,448  
 Claims priority, application Switzerland, Sept. 4, 1970, 13,264/70  
 Int. Cl. C07d 5/06  
 U.S. Cl. 260—343.6  
 Preparation of tetronic acid from γ-haloacetoacetic acid by reaction with alkaline reagent in aqueous solution followed by evaporation to dryness and sublimation of the residue at elevated temperature and high vacuum.

**3,824,256**  
**PURIFICATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES**  
 William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.  
 No Drawing. Filed Dec. 16, 1971, Ser. No. 208,904  
 Int. Cl. C07d 3/00  
 U.S. Cl. 260—343.9  
 Polymerization grade α,α-disubstituted-β-propiolactone monomer having the general formula



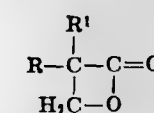
wherein R and R<sup>1</sup> are selected from the group consisting of straight- or branched-chain alkyl groups of from

1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R<sup>1</sup> join to form a ring of from 6 to 10 carbon atoms, is effectively obtained from impure monomer containing residual manufacturing impurities by treating the impure lactone monomer with an alkyl orthotitanate having the formula



wherein R<sup>2</sup> is a straight- or branched-chain alkyl group of from 1 to 8 carbon atoms, and distilling the purified monomer from the resultant solution at reduced pressure. The procedure yields a very pure polymerization grade α,α-disubstituted-β-propiolactone monomer which has a low polymerization index and from which polymer having a high inherent viscosity can be formed.

**3,824,257**  
**STABILIZATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES**  
 Windell C. Watkins, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.  
 No Drawing. Filed Dec. 2, 1971, Ser. No. 204,294  
 Int. Cl. C07d 3/00  
 U.S. Cl. 260—343.9  
 α,α-Disubstituted-β-propiolactones having the general formula:



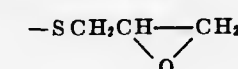
wherein R and R<sup>1</sup> are selected from the group consisting of hydrogen, straight- or branched-chain alkyl groups of from 1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R<sup>1</sup> join to form a ring of from 6 to 10 carbon atoms, are effectively stabilized against premature polymerization under extreme conditions such as, for example, high temperatures, by including in admixture therewith a stabilizing amount of a borate ester having the general formula:



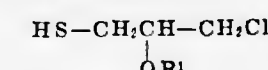
wherein each R<sup>2</sup> is selected from the group consisting of a straight- or branched-chain alkyl group of from 1 to 8 carbon atoms, a substituted or unsubstituted benzyl group, or a substituted or unsubstituted phenyl group.

**3,824,258**  
**3-OXABICYCLO-[10.3.0]PENTADECENE(6) AND ITS PREPARATION**  
 Erich Klein and Albrecht Roth, Holzminnen, Germany, assignors to Dragoco Spezialfabrik Konz. Riech- und Aromastoffe Gerberding & Co. GmbH  
 No Drawing. Filed June 30, 1972, Ser. No. 268,091  
 Claims priority, application Germany, Feb. 28, 1972, P 22 09 372.7  
 Int. Cl. C07d 5/32  
 U.S. Cl. 260—346.2 R  
 The novel compound 3-oxabicyclo-[10.3.0]pentadecene-(6) is prepared by reacting cyclododecene with paraformaldehyde in the presence of a Lewis acid as the catalyst. The product is useful as an odorant per se and in perfume compositions.

**3,824,259**  
**SULPHUR-CONTAINING EPOXIDES**  
 Richard Alan Oswald, Sawston, and Bernard Peter Stark, Stapleford, England, assignors to Ciba-Geigy Limited, Basel, Switzerland  
 No Drawing. Continuation-in-part of abandoned application Ser. No. 769,390, Oct. 21, 1968. This application Dec. 9, 1970, Ser. No. 96,676  
 Claims priority, application Great Britain, Oct. 26, 1967, 48,798/67  
 Int. Cl. C07d 1/20  
 U.S. Cl. 260—348 R  
 Compounds containing, per molecule, at least one end at most three groups of formula

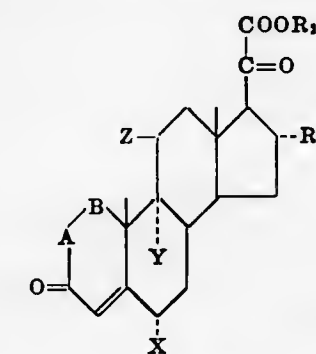


attached to a carbon atom of an aliphatic chain or a cycloaliphatic nucleus. The compounds are prepared by reaction of a monothiol (I) of formula



where OR<sup>1</sup> is a hydroxyl group or an ester group, with a compound (II) containing at least one ethylenic double bond, when OR<sup>1</sup> represents an ester group hydrolysing this group to a hydroxyl group; and dehydrochlorinating the intermediary 1,2-chlorohydrin so obtained to form the 1,2-epoxide. These compounds may be used to stabilize chlorine-containing organic resins such as polyvinyl chloride against the degradative effects of heat and light. When used in conjunction with a curing agent, these compounds may be used to prepare coating and adhesive resins.

**3,824,260**  
**NOVEL PREGNANOIC ACID DERIVATIVES**  
 Henry Laurent, Rudolf Wiechert, Klaus Prezewowsky, Helmut Hofmeister, Erich Gerhards, Karl Heinz Kolb, and Klaus Mengel, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany  
 No Drawing. Filed Aug. 30, 1972, Ser. No. 284,710  
 Claims priority, application Germany, Oct. 1, 1971, P 21 50 268.1; Jan. 27, 1972, P 22 04 358.9, P 22 04 361.4  
 Int. Cl. C07c 169/36  
 U.S. Cl. 260—397.1  
 Pregnanoic acid derivatives of the formula



wherein X is hydrogen, halogen, or methyl; Y is hydrogen or halogen; Z is hydroxy or halogen having an atomic weight no greater than Y; R<sub>1</sub> is hydrogen or methyl; R<sub>2</sub> is hydrogen, alkali metal or saturated or unsaturated hydrocarbon of 1-18 carbon atoms which is unsubstituted or substituted by hydroxy, halo, alkoxy, carboxy, carbalkoxy, amino, alkylamino, dialkylamino, nitro or sulfato, wherein alkyl in each instance contains 1-4 carbon atoms; and —A—B— is —CH=CH—, —CCl=CH— or, when at least one of X, Y and R<sub>1</sub> is other than hydrogen, —CH<sub>2</sub>—CH<sub>2</sub>; possess pronounced topical anti-inflammatory activity.



3,824,261

**BIOLOGICALLY ACTIVE MIXED ANHYDRIDES**  
Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.  
No Drawing. Filed Oct. 25, 1972, Ser. No. 300,554  
Int. Cl. A23j 7/00; C07f 9/02

U.S. Cl. 260—403 8 Claims  
Mixed anhydrides of aliphatic substituted diolefinic carboxylic acids and dialkyl phosphoric acid, useful as insect control agents, bactericides and fungicides.

3,824,262

# PROCESS FOR PREPARING ETHYLENIC CARBOXYLIC ACIDS

Lammert Heslinga, Maassluis, and Hendrix Jacob Johannes Pabon and David Adrian van Dorp, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.  
No Drawing. Filed Mar. 20, 1972, Ser. No. 236,234  
Claims priority, application Great Britain, Mar. 25, 1971, 7,775/71

Int. Cl. C08h 17/36  
U.S. Cl. 260—409 9 Claims

Ethylene acids of the structure  $RCH_2-R^1-COOH$ , where R is an aliphatic hydrocarbon radical containing from 1 to 5 *cis*-ethylene bonds and  $R^1$  is an ethylene or ethylene group, are prepared by selectively hydrogenating an acid  $R_1CH_2CH=CHCOOH$  where  $R_1$  contains from 1 to 5 acetylenic or *cis*-ethylene bonds. The resulting polyenoic acids, for instance arachidonic acid, are useful as intermediates, especially in the preparation of prostaglandins.

3,824,263

# PROCESS FOR THE PRODUCTION OF ALKYLENEGLYCOL ESTERS

Wilfried Umbach, Langenfeld, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 889,753, Dec. 31, 1969. This application Aug. 17, 1972, Ser. No. 281,432  
Claims priority, application Germany, Jan. 14, 1969, P 19 01 535.1

Int. Cl. C07c 67/00

U.S. Cl. 260—410.6 8 Claims  
In the process of producing an alkylene glycol ester of organic carboxylic acid which comprises reacting a higher organic carboxylic acid with an alkylene oxide in the presence of an oxyalkylation catalyst under oxyalkylation conditions and recovering said alkylene glycol ester, the improvement which comprises using a high molecular weight amine-oxide or a diamine dioxide of said oxyalkylation catalyst in the reaction of a higher organic carboxylic acid with the alkylene oxide.

3,824,264

# PREPARATION OF MONOHYDROCARBYL TIN TRIHALIDES

Eric Jan Bulten, Bilthoven, Netherlands, assignor to Cosan Chemical Corporation, Clifton, N.J.  
No Drawing. Filed June 8, 1972, Ser. No. 261,020  
Int. Cl. C07f 7/22

U.S. Cl. 260—429.7 7 Claims  
Monohydrocarbyl tin trihalides are produced in high yields by a process in which a stannous halide and a halohydrocarbon having at least one halogen bound to an aliphatic carbon atom are reacted in the presence of a catalytic amount of an organoantimony compound having at least one hydrocarbyl group bound to the antimony. The monohydrocarbyl tin trihalides prepared according to the process of this invention and their derivatives (such as hydrocarbyl stannonic acids) are important for the preparation of many biocides, polymer stabilizers and catalysts.

3,824,265

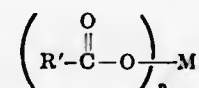
# PREPARATION OF TRIALKYL LEAD SALTS OF ALIPHATIC MONOCARBOXYLIC ACIDS

Richard D. Gorsich, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.  
No Drawing. Filed Dec. 21, 1961, Ser. No. 161,293  
Int. Cl. C01f 7/00

U.S. Cl. 260—436 10 Claims  
1. A process for the production of trialkyllead salts of aliphatic monocarboxylic acids which comprises reacting a trialkyllead halide with a metal salt of an aliphatic monocarboxylic acid in an ether solvent; said trialkyllead halide being represented by the formula



wherein R is an alkyl group having 1–20 carbon atoms and X is a halogen, said metal salt being represented by the formula



wherein R' is selected from the group consisting of hydrogen and an alkyl group containing 1–20 carbon atoms, M is an atom of a reactive metal capable of forming salts with aliphatic monocarboxylic acids, and n is valence of the metallic atom and said ether solvent is selected from the group consisting of tetrahydrofuran and ring alkylated derivatives thereof wherein each alkyl group contains from 1 to about 6 carbon atoms.

3,824,266

# POLYISOCYANATES WHICH CONTAIN BIURET GROUPS

Werner Dietrich, Cologne, Kuno Wagner, Karl Hartwig Richert, and Helmut Kleimann, Leverkusen, and Christian König, Dormagen, Germany, and Walter Meckel, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,121, Dec. 14, 1970. This application Feb. 5, 1973, Ser. No. 329,919  
Claims priority, application Germany, Dec. 17, 1969, P 19 63 190.4

Int. Cl. C07c 119/04

U.S. Cl. 260—453 AB 5 Claims  
Polyisocyanates which contain biuret groups are prepared by a process which comprises reacting a polyisocyanate with a diprimary aromatic diamine the reactivity of which amines with isocyanates are attenuated by electrophilic substituents or substituents which sterically hinder the amino groups such that intimate mixing of the reactants is possible with no immediate reaction such as, for example, the formation of polyureas taking place.

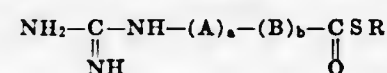
3,824,267

**THIOLESTERS OF GUANIDINO ORGANIC ACIDS**  
Hiroyuki Ito, Saita, Yutaro Sasaki, Takatsuki, Shigetoshi Miyamoto, Osaka, Naohiro Kayama and Ikuko Kajiwara, Takatsuki, Yoichi Iguchi, Amagasaki, Kimiko Sakaguchi, Osaka, Kazuaki Hama, Ibaraki, Ikuko Yo, Osaka, Hiroko Tsutsui, Kawachinagano, Fusako Nishi, Nishinomiyu, and Setsuro Fujii, Tokushima, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,485  
Claims priority, application Japan, Aug. 19, 1971, 46/63,277; June 28, 1972, 47/64,761

Int. Cl. C07c 129/00

U.S. Cl. 260—455 R 6 Claims  
A compound having the general formula



in which A is a straight chain or branched alkylene group having 1 to 10 carbon atoms, B is a bivalent aliphatic or alicyclic group, a is 0 or 1, b is 0 or 1, a+b is 1 or 2 and R is any one of the straight chain or branched alkyl group and carbethoxyalkyl group having 1 to 10 carbon atoms, alicyclic group, aromatic group and phenylalkyl group, each of the above-mentioned alicyclic group and aromatic group may be substituted by a lower alkyl group, carbethoxy group, carbethoxy lower alkyl group, carboxy lower alkyl group, halogen, alkoxy group, acylamide group, alkylsulfonyl group, carboxy group, thiocarboxy group, mercaptocarbonyl group, nitro group or carbonyl group.

3,824,268

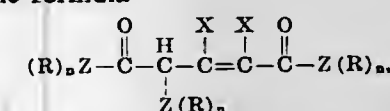
# PERHALOCOUMALIN DERIVATIVES

Victor Mark, Ransomville, and Leon Zengierski, North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Oct. 12, 1966, Ser. No. 586,056, now Patent No. 3,528,995. Divided and this application Dec. 10, 1969, Ser. No. 876,223

Int. Cl. C07c 53/07

U.S. Cl. 260—455 R 11 Claims  
A compound selected from the group consisting of compounds of the formula



wherein X is a halogen chosen from the group consisting of fluorine, chlorine, bromine, and iodine, and mixtures thereof. (R)<sub>n</sub>A is a substituent in which the following relationship exists:

If n is—	Z may be—
0	Bromine, iodine, fluorine.
1	Oxygen, sulfur, selenium.
2	Nitrogen, arsenic.
3	Carbon.

and wherein R is selected from the group consisting of hydrogen; alkyl groups of 1 to 18 carbon atoms in any of their isomeric forms, provided that when Z is oxygen the alkyl groups from which R may be selected contain from 6 to 18 carbon atoms; substituted alkyl groups of 1 to 18 carbon atoms wherein the substituents are selected from the group consisting of fluorine, chlorine, bromine, iodine, sulfur, oxygen, phosphorus, nitrogen, and silicon; alicyclic groups containing from 5 to 18 carbon atoms; heterocyclic groups containing from 5 to 18 carbon atoms wherein the hetero atom(s) is selected from the group consisting of oxygen, sulfur, nitrogen, phosphorous, and silicon; and aromatic and aralkyl groups containing from 6 to 18 carbon atoms.

The above described compounds have utility as fungicides, bactericides, insecticides and pesticides.

3,824,269

# AMINOALKYLATION OF ALCOHOLS USING AN AZIRIDINE-SULFUR DIOXIDE COMPLEX

Donald A. Tomalia, James L. Brewbaker, and Narayanlal D. Ojha, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,661

Int. Cl. C07c 137/00, 93/02

U.S. Cl. 260—456 A 10 Claims

Alcohols are aminoalkylated in the novel process which comprises reacting (a) an alcohol with (b) a complex of an aziridine and sulfur dioxide. As an example, methanol reacts with a complex of aziridine and sulfur dioxide at 25° C. to produce an ammonium salt of 2-methoxyethylamine as the major product. The aminoalkylated products thus produced are easily converted to

the corresponding free amino compounds by treatment with base. These compounds are useful, for example, as epoxy curing agents.

3,824,270

# PROCESS FOR THE MANUFACTURE OF TETRACHLOROCYANOBENZENE OR TETRABROMOCYANOBENZENE

Jost von der Crone, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,003

Claims priority, application Switzerland, Nov. 13, 1970, 16,793/70

Int. Cl. C07c 121/52

U.S. Cl. 260—456 B 2 Claims

Process for the manufacture of 1-cyano-2,3,4,5-tetrachlorobenzene or 1-cyano-2,3,4,5-tetrabromobenzene, characterized in that the ammonium salt of 2-cyano-3,4,5,6-tetrachlorobenzoic acid or 2-cyano-3,4,5,6-tetrabromobenzoic acid is decarboxylated by warming in an aprotic solvent or in a mixture of such solvents.

3,824,271

# 3-ALKYL-3-(BENZOYL)PROPIONITRILES

George Rodger Allen, Jr., Old Tappan, N.J., and Francis Joseph McEvoy, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 20, 1972, Ser. No. 273,585

Int. Cl. C07c 121/76

U.S. Cl. 260—465 D 4 Claims

This disclosure describes compounds of the class of 3-alkyl-3-(substituted-benzoyl)propionitriles useful as intermediates for the preparation of certain long-acting hypotensive agents of the 6-(substituted-phenyl)-5-alkyl-4,5-dihydro-3(2H)-pyridazinone class.

3,824,272

# INTERMEDIATES FOR THE PREPARATION OF ALKYL SUBSTITUTED RESORCINOLS

Arnold Bossi, Verona, and Antonino Focella and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191, now abandoned. Divided and this application Sept. 16, 1971, Ser. No. 181,258

Int. Cl. C07c 61/36, 69/71

U.S. Cl. 260—468 J 6 Claims

Preparation of 5-alkyl substituted resorcinols such as olivetol from aliphatic aldehydes and intermediates in this process.

3,824,273

# UV ABSORBENT, LIGHT STABLE COMPOUNDS

Rudolf Kirchmayr, Binningen, Basel-Land, Hans Jakob Peterli, Fullinsdorf, Basel-Land, and Hansjorg Heller, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 565,725, July 18, 1966, now Patent No. 3,546,270. This application Aug. 31, 1970, Ser. No. 68,473

Claims priority, application Switzerland, July 23, 1965, 10,355/65

The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed

Int. Cl. C07c 69/76

U.S. Cl. 260—473 R 6 Claims

Certain bis-methylene malonic acid derivatives are useful as improved UV absorbers. They have slight self-color,







3,824,284

## BUTYRIC ACID DERIVATIVES

Hans Rudolph, Krefeld-Bockum, Hans-Georg Heine and Karl Fuhr, Krefeld, and Hermann Schnell, Krefeld-Urdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,939

Claims priority, application Germany, Nov. 6, 1968, P 18 07 301.3

Int. Cl. C07c 103/22

U.S. Cl. 260—559 R

7 Claims

The invention relates to  $\gamma$ -hydroxy- $\gamma$ -phenyl- $\gamma$ -benzoyl-butyric acids, the esters and amides thereof, which are useful photosensitisers for the photopolymerisation of polymerisable compounds or compound mixtures including mixtures of unsaturated polyesters and copolymerisable monomeric compounds.

3,824,285

## 4-OXO-4-DEDIMETHYLAMINOTETRACYCLINE-4,6-HEMIKETALS

Robert K. Blackwood, Gales Ferry, and Charles R. Stephens, Jr., East Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Sept. 13, 1967, Ser. No. 667,357, now Patent No. 3,622,627, which is a continuation-in-part of application Ser. No. 360,435, Apr. 16, 1964, which in turn is a continuation-in-part of application Ser. No. 247,874, Dec. 28, 1962, both now abandoned. Divided and this application Feb. 9, 1971, Ser. No. 114,038

Int. Cl. C07c 103/19

U.S. Cl. 260—559 AT

5 Claims

4-Dedimethylaminotetracyclines and the corresponding 5a,6-anhydro derivatives having an oxo, hydroxy, substituted imino, amino or substituted amino group other than dimethylamino at the C-4-position useful as antimicrobial agents. The 4-oxo-4-dedimethylaminotetracyclines are prepared by oxidation of tetracyclines with a hydrocarbon dicarboxylic acid haloimide and then converted by reduction to the corresponding 4-hydroxy compounds or by reaction with a primary amine to 4-substituted imino derivatives. The latter compounds are reduced to 4-amino derivatives which are reductively methylated or alkylated to 4-substituted-4-dedimethylaminotetracyclines. Dehydration of the tetracycline compounds affords the corresponding 5a,6-anhydro compounds.

3,824,286

## PREPARATION OF POLYACETYLALKYLENE DIAMINES

Jan Christiaan Grimmelikhuisen, Rotterdam, and Arnold Schroeder, Deventer, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed June 28, 1971, Ser. No. 157,687

Claims priority, application Great Britain, July 7, 1970, 32,850/70

Int. Cl. C07c 103/30

U.S. Cl. 260—561 R

12 Claims

An improved process for the preparation of polyacetylalkylene diamines in good yields is provided, which process comprises reacting a compound having the general formula:



in which R represents an alkylene or substituted alkylene group having 2 to 6 carbon atoms in a straight chain con-

necting both nitrogen atoms, with acetic acid to obtain the diacetyl compound. The product thus obtained is directly suitable for further acetylation, preferably using acetic anhydride as the acetylating agent.

3,824,287

## PRODUCTION OF N,N,N',N'-TETRAACETYL-ETHYLENEDIAMINE

Guenther Matthias, Ludwigshafen, Christoph Palm, Mannheim, and Gerhard Schulz, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 20, 1971, Ser. No. 190,818

Claims priority, application Germany, Oct. 28, 1970, P 20 52 822.7

Int. Cl. C07c 103/30

U.S. Cl. 260—561 R

5 Claims

Production of N,N,N',N'-tetraacetyl ethylenediamine by reaction of diacetyl ethylenediamine with acetic anhydride and ketene. The products are starting materials for the production of textile auxiliaries, cleaning agents and pesticides.

3,824,288

## SUBSTITUTED HYDRAZINE DERIVATIVES AND PROCESS FOR THE MANUFACTURE THEREOF

Werner Bollag, Basel, Hugo Gutmann, Reinach, Balthasar Hegedus, Binningen, Ado Kaiser, Lausen, Basel-Land, Albert Langemann, Binningen, Marcel Muller, Frenken-dorf, and Paul Zeller, Allschwil, Basel-Land, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 4, 1970, Ser. No. 43,572, now Patent No. 3,711,543, which is a division of application Ser. No. 571,690, Aug. 11, 1966, now Patent No. 3,534,100, dated Oct. 13, 1970, which in turn is a division of abandoned application Ser. No. 200,059, June 5, 1962. Divided and this application Nov. 21, 1972, Ser. No. 308,627

Claims priority, application Switzerland, June 9, 1961, 6,734/61

Int. Cl. C07c 129/08

U.S. Cl. 260—565

2 Claims

Benzene-ring substituted (2-methylhydrazino)-methylbenzene compounds and intermediates therefor are described. The former compounds are useful as cytostatic agents and, particularly, inhibit the growth of transplantable tumors in both mice and rats. Thus, they are active, for example, against Walker tumors, Ehrlich carcinoma and Ehrlich ascites carcinoma.

3,824,289

## METHOD FOR THE MANUFACTURE OF TETRAKIS (DIMETHYLAMINO) ETHYLENE

Thomas Liggett, Indian Head, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,560

Int. Cl. C07c 85/00, 85/16

U.S. Cl. 260—583 P

13 Claims

An improved method for the manufacture of tetrakis (dimethylamino) ethylene (TMAE), which comprises the step of reacting chlorotrifluoroethylene (CTFE) with dimethylamine (DMA) wherein the reaction is performed by the under surface addition of CTFE in an excess of

3,824,294

## COSMETIC EMULSIFIERS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Montjay-la-Tour, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 780,299, Nov. 29, 1968, which is a continuation-in-part of application Ser. No. 677,047, Oct. 23, 1967, now Patent No. 3,595,924. This application Feb. 26, 1971, Ser. No. 119,363

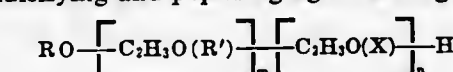
The portion of the term of the patent subsequent to May 11, 1988, has been disclaimed

Int. Cl. C07c 43/18

U.S. Cl. 260—611 B

3 Claims

An emulsifying and peptizing agent having the formula

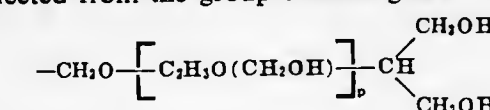


wherein

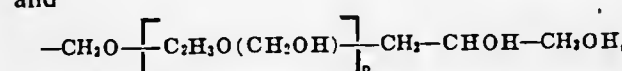
R is a lipophilic hydrocarbon residue of a member selected from the group consisting of alcohols, sterols and their mixtures derived from a member selected from the group consisting of (a) hydrogenated lanolin, and (b) cyclic fatty acids,

R' is selected from the group consisting of methyl and ethyl,

X is selected from the group consisting of  $-CH_2OH$ ,



and



m has a statistical average value between 1-10 inclusive, n has a statistical average value between 1-5 inclusive, p is an integer between 0-10 inclusive and the product  $n(p+2)$  lies between 2-12 inclusive.

3,824,295

## PREPARATION OF ETHERS

Ronnie D. Gordon, Richardson, Tex., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,771

Int. Cl. C07c 41/00

U.S. Cl. 260—614 R

5 Claims

Symmetrical ethers are prepared by reacting an organic compound containing a halogen or alkyl sulfate group with an alkali metal hydroxide, in aqueous solution, in the presence of a catalytic amount of an organic quaternary salt and recovering from the reaction mixture the desired symmetrical ether. Typical examples of materials used are: 3-chloropropene, sodium hydroxide and triethyl methyl ammonium chloride. The ethers are useful as solvents.

3,824,296

## PROCESS FOR THE MANUFACTURE OF 1,1,2,2-TETRAHYDRO-PERFLUORO-ALKANOLS

Erich Schuierer and Klaus Ulm, Burghausen, Siegfried Rebsdatt, Altötting, and Ignaz Wimmer, Unteran (Neuotting Post Office), Germany, assignors to Farbwerke Hoechst AG, Frankfurt am Main, Germany

No Drawing. Filed June 7, 1971, Ser. No. 150,770

Claims priority, application Germany, June 10, 1970, P 20 28 459.7

Int. Cl. C07c 31/34

U.S. Cl. 260—633

10 Claims

2-Perfluoroalkyl ethanols are obtained by reacting 2-perfluoro-alkyl ethyl iodides with at least the two-fold molar

3,824,290

## ALIPHATIC HYDROCARBON 2,4-DIENAMINES

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 187,898, Oct. 8, 1971, now Patent No. 3,752,843, which is a continuation-in-part of abandoned application Ser. No. 111,673, Feb. 1, 1971. This application Dec. 9, 1971, Ser. No. 206,519

Int. Cl. C07c 87/24

U.S. Cl. 260—583 H

9 Claims

Aliphatic hydrocarbon 2,4-diene amines, intermediates therefor, syntheses thereof and their use for the control of insects.

3,824,291

## 4-(3-HYDROXY-1,5-DIMETHYLHEX-1-YL)-1-CYCLOHEXENE-1-CARBOXALDEHYDE

Beverly Ann Pawson, Montclair, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Mar. 3, 1969, Ser. No. 803,964, now Patent No. 3,641,156, which is a continuation-in-part of abandoned application Ser. No. 725,208, Apr. 29, 1968. Divided and this application Feb. 25, 1971, Ser. No. 118,971

Int. Cl. C07c 47/42, 47/46

U.S. Cl. 260—598

3 Claims

This invention is directed to a method of synthesizing Juvabione and novel derivatives thereof which are useful in killing and preventing proliferation of insects by upsetting their hormone balance including intermediates in this process.

3,824,292

## BROMINATION PROCESS

John A. Kirby, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 16, 1972, Ser. No. 298,054

Int. Cl. C07c 47/14, 47/20

U.S. Cl. 260—602

5 Claims

A process for brominating a 1,1,3,3-tetraalkoxypropane, which process yields a mixed reaction product wherein a 2-bromo-3-loweralkoxyacrolein is the major constituent.

3,824,293

## BISTHIOETHERS

George L. Brode, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 7, 1972, Ser. No. 304,542

Int. Cl. C07c 147/06

U.S. Cl. 260—607 A

10 Claims

A new class of bisthioethers has been prepared by condensing an alkali metal salt of an hydroxyalkyl or hydroxyaryl mercaptan with reactive aromatic halogen compounds such as hexachlorobenzene, hexachlorobenzene-bisphenol adducts, multichlorinated polyphenyls, and dichlorodiphenyl sulfone. Similar bisthioethers can be prepared by substituting salts of amino or carbalkoxy mercaptans for the hydroxy mercaptan.



amount of nitric acid of about 70 to 98% strength and hydrogenating the intermediates, which are the nitrates of the desired ethanols. The products are useful as starting materials for the production of hydrophobic and oleophobic textile finishing agents, e.g. the polymer acrylates and methacrylates of said 2-perfluoroalkyl-ethanols.

3,824,297

# METHOD FOR MANUFACTURING A MOLDED ARTICLE OF EXPANDED VERMICULITE

Takeo Wada, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,495

Claims priority, application Japan, Dec. 29, 1970, 46/128,948

The portion of the term of the patent subsequent to Sept. 11, 1990, has been disclaimed

Int. Cl. C04b 2/02, 31/26

U.S. Cl. 264—25 5 Claims

A new expanded vermiculite molded article is produced by a process which comprises subjecting vermiculite to heating or irradiation with electromagnetic waves in the presence of urea or thiourea and, during or after this process, allowing the vermiculite to contact with formaldehyde.

3,824,298

# METHOD FOR REMELTING SPRUE MATERIAL

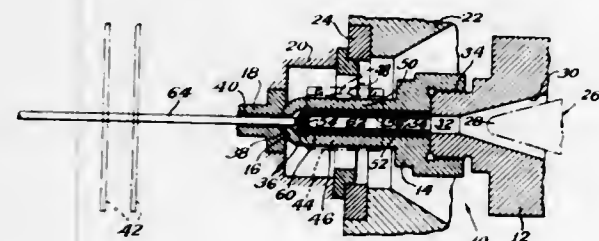
Kenneth E. Sherer, Richmond, Ind., assignor to National Automatic Tool Company, Inc.

Original application June 1, 1971, Ser. No. 148,630.

Divided and this application Oct. 30, 1972, Ser. No. 301,974

Int. Cl. B29f 1/05

U.S. Cl. 264—161 3 Claims



A method for remelting plastic sprue material remaining adjacent a mold in an injection molding machine after an injection molding cycle of operation. Pressure is applied in a conventional manner to heated plastic for passage through a heated nozzle member in an injection molding machine. The nozzle contains a shuttle member which is moved to an injection position as the melted heated plastic is passed through the nozzle and the shuttle member, through a sprue line and then to the mold cavity. After the plastic solidifies in the mold cavity, a sprue removal pin is passed through the sprue line so as to remove the waste material or sprue material from the sprue line. This movement of the sprue removal pin moves the sprue back towards the nozzle and the sprue moves the shuttle member to a retraction position. The sprue then passes through a second path of travel which is past the heated portion of the nozzle for reheating and remelting the sprue material for later use thereof in an injection molding cycle.

3,824,299

# SIMPLIFIED PROCESS FOR MANUFACTURING CELLULOSE ACETATE REVERSE OSMOSIS MEMBRANES

Barry M. Brown and Elbert L. Ray, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,811

The portion of the term of the patent subsequent to Feb. 12, 1991, has been disclaimed

Int. Cl. B29d 27/03

U.S. Cl. 264—41 14 Claims

Cellulose acetate "reverse osmosis" membranes having excellent "flux" and "rejection" properties can be manufactured via a simplified process if (a) formic acid constitutes the organic fraction of the solvent portion of the formulation from which the membrane is manufactured, and (b) a very hot (>100° F.) initial aqueous quench step is utilized in the manufacturing process.

3,824,300

# METHOD FOR CONTINUOUSLY PRODUCING TUBULAR BODIES OF FOAMED MATERIAL

Hermann-Josef Raffenberg, Ludinghausen, Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Application Feb. 23, 1971, Ser. No. 118,127, now Patent No. 3,730,660, which is a continuation-in-part of abandoned application Ser. No. 760,280, Sept. 17, 1968. Divided and this application Dec. 25, 1972, Ser. No. 318,031

Claims priority, application Germany, Apr. 26, 1968, P 17 78 407.5

Int. Cl. B29c 27/16, 27/28

U.S. Cl. 264—47 6 Claims

A method for continuously making a tubular polyurethane foam insulation adapted to be installed about a pipe or the like by convolutely winding a continuous web about a mandrel disposed in a stationary mold, the free end of the web extending out through a slot in the mold wall, convolutely winding a second web about the first web having its free end also extend out through the same slot, placing a foamable polyurethane mixture between the two webs while pulling the exposed portions of the webs longitudinally and thereby moving the two radially spaced webs through the mold while the foamable reaction mixture forms longitudinally split tubular bodies having the first web as a liner and the second web as a cover.

## ERRATUM

For Class 423—139 see:  
Patent No. 3,824,161

3,824,301

# CADMIUM SULFIDE INFRARED TRANSMITTING OPTICAL ELEMENTS

Edward Carnall, Jr., and William F. Parsons, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

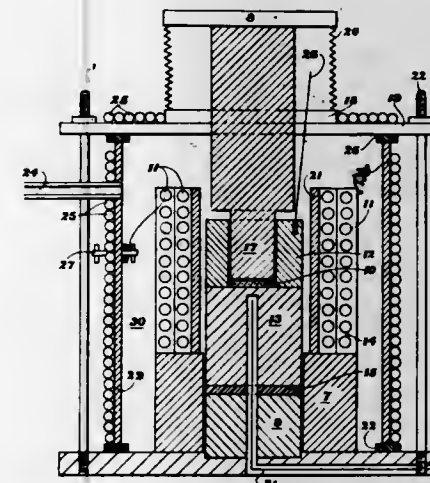
Continuation of abandoned application Ser. No. 141,426, Sept. 28, 1961. This application Nov. 30, 1970, Ser. No. 93,898

Int. Cl. C01g 11/02, 1/12

U.S. Cl. 423—561 2 Claims

An article which transmits radiation in the infrared region of the electromagnetic spectra consisting of par-

ticles of cadmium sulfide joined by hot pressing powdered particles, said article being a unitary polycrystal-



line solid having substantially homogeneous crystalline areas and a density of at least 99% of theoretical density.

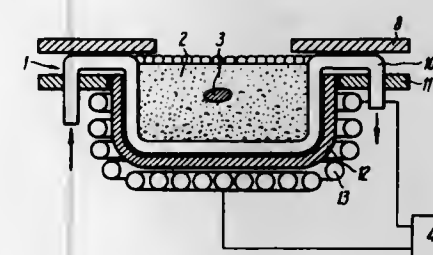
3,824,302

# METHOD OF GROWING MONOCRYSTALS OF RUBY FROM A MOLTEN CHARGE

Vladimir Ilich Alexandrov, ulitsa Krupskoi 4, korpus 3, kv. 48; Vyacheslav Vasilievich Osiko, ulitsa Vavilova 48, kv. 63; and Vladimir Mikhailovich Tatarintsev, Leninsky Prospekt 45, kv. 112, all of Moscow, U.S.S.R.

Filed Jan. 28, 1971, Ser. No. 109,366

Int. Cl. B01j 17/18; C04b 35/10; H05b 5/00  
U.S. Cl. 423—625 3 Claims



The invention relates to methods of obtaining monocrystals of ruby.

The invention resides in a method of growing monocrystals of ruby by drawing a monocrystal of ruby from a molten charge by means of an initiation piece, comprising the steps of placing the charge into a container vessel, heating this charge for melting same by using the energy of a high-frequency electric field, in which method, in accordance with the invention, the process of growing a monocrystal of ruby is carried out within an oxidizing gas atmosphere inside a positively cooled container, with an amount of aluminum metal being initially placed into the charge, this amount of aluminum metal being subsequently molten and superheated under the action of the high-frequency electric field, in order to effect melting of the charge and to transmit the energy of the said field directly to the molten charge, bypassing the container.

3,824,303

# COLLAPSIBLE FOAM PRE-ELECTRIC SHAVE LOTION CONTAINING DIESTER LUBRICANTS

Monroe Lanzet, Pine Brook, and Eugene Mavroudis, Bogota, N.J., assignors to Yardley of London, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 297,228, July 24, 1963. This application May 15, 1969, Ser. No. 825,045

Int. Cl. A61k 1/14

U.S. Cl. 424—47 23 Claims

The invention relates to lubricant compositions to facilitate shaving with electric razors, which compositions contain certain diester lubricants and surfactants. Methods of using the compositions are also disclosed.

3,824,304

# HAIR CONDITIONER

Antonio F. Villanueva, 69 Naguillan Road, Baguio City, Philippines

No Drawing. Filed June 5, 1972, Ser. No. 259,454

Int. Cl. A61k 7/06

U.S. Cl. 424—74 1 Claim

A hair conditioner comprising of coconut oil, oil of capicum, *Citrus aurantium* juice and a non-metallic halogen combined to provide a liquid that cleans the hair and gives a feeling of comfort and freshness to the scalp.

## ERRATUM

For Class 424—78 see:  
Patent No. 3,824,218

3,824,305

# ANTIBIOTIC A-287 AND PROCESS FOR PRODUCTION THEREOF

Robert L. Hamill, New Ross, and W. Max Stark, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 22, 1973, Ser. No. 325,264

Int. Cl. A61k 21/00

U.S. Cl. 424—118 5 Claims

Antibiotic mixture A-287, comprising microbiologically active, structurally related factors A and B, produced by cultivation of *Actinoplanes utahensis* NRRL 5614 under submerged aerobic conditions, is isolated by extraction of the broth. The individual factors are separated and isolated by chromatography and countercurrent distribution. The A-287 mixture and the individual factors have antibacterial, antifungal, parasitocidal, and growth-promoting activity.

3,824,306

# INSECTICIDAL AND FUNGICIDAL COMPOSITION

Hiroshi Tsuchiya, Ashiya, Kunio Mukai, Nishinomiya, Akio Kimura, Ikeda, Suminori Kawano, Minoo, Keimei Fujimoto, Kobe, Toshiaki Ozaki, Sigeo Yamamoto, and Yositosi Okuno, Toyonaka, Katsutoshi Tanaka, Takarazuka, and Tadashi Oishi and Hisami Takeda, Minoo, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,503, now Patent No. 3,725,514. Divided and this application Jan. 15, 1973, Ser. No. 323,714

Claims priority, application Japan, Nov. 12, 1968, 43/82,963; Nov. 14, 1968, 43/83,366

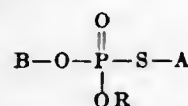
Int. Cl. A01n 9/36

U.S. Cl. 424—225 6 Claims

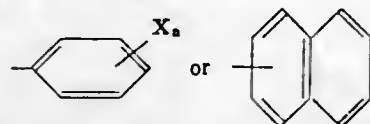
An insecticidal or fungicidal composition which has strongly insecticidal or fungicidal activity and low toxicity



to mammals, containing an organic phosphorothiolate having the formula,



wherein R is lower alkyl; A is alkyl, haloalkyl or phenyl-alkyl; B is a group of the formula,



X being phenyl, phenylalkyl, or halogen, provided that at least one X is a group other than halogen atom, and n being an integer of 1-5 is disclosed.

### 3,824,307

#### METHOD OF CONTROLLING BACTERIA, YEAST AND FUNGAL SPECIES WITH PHENYLBISMUTH BIS(2-PYRIDINETHIOL-1-OXIDE)

John Downing Curry, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Application Jan. 17, 1972, Ser. No. 218,584, now Patent No. 3,753,990, which is a continuation-in-part of abandoned application Ser. No. 98,086, Dec. 14, 1970. Divided and this application Mar. 30, 1973, Ser. No. 346,395

Claims priority, application Netherlands, Apr. 4, 1972, 7204437; France, Apr. 7, 1972, 7212388; Germany, Apr. 7, 1972, P 22 16 725; Sweden, Apr. 10, 1972, 4,611/72

Int. Cl. A61k 27/00; A61l 13/00; A01n 9/22

U.S. Cl. 424-245

3 Claims

A method of controlling a broad spectrum of bacteria, yeast and fungal species by contacting said species with an effective amount of phenylbismuth bis(2-pyridinethiol 1-oxide).

### 3,824,308

#### THIAZOLIUM SALT COMPOSITION AND METHOD FOR TREATMENT OF POULTRY COCCIDIOSIS THEREWITH

Akira Takamizawa, Ibaraki-shi, Osaka, and Kentaro Hirai, Kyoto-shi, Kyoto, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Original application Oct. 12, 1970, Ser. No. 80,163, now Patent No. 3,734,913. Divided and this application Aug. 11, 1972, Ser. No. 279,809

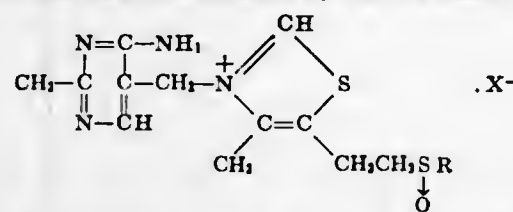
Claims priority, application Japan, Oct. 24, 1969, 44/85,578; Dec. 18, 1969, 44/101,829

Int. Cl. A61k 27/00

U.S. Cl. 424-251

3 Claims

Thiazolium salts represented by the formula:



wherein R represents a lower alkyl group, an aryl group, or an ar(lower)alkyl group, and X represents an acid residue or its acid addition salt, being useful as poultry anti-coccidial agents, are prepared by two routes.

### 3,824,309

#### METHODS OF COMBATING BACTERIA AND FUNGI USING BICYCLIC OXAZOLIDINES

Harald Schnegelberger, Leichlingen, Rhineland, and Horst Bellinger, Düsseldorf, Germany, assignors to Henkel & Cie GmbH, Düsseldorf-Holthausen, Germany

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,312. Claims priority, application Germany, Apr. 15, 1972, P 22 18 348.8

Int. Cl. A01n 9/22, 9/28

U.S. Cl. 424-272

8 Claims

Bicyclic oxazolidines are useful as antimicrobial agents

in cosmetic and pharmaceutical preparations to prevent the growth of microorganisms.

### 3,824,310

#### BIS-IMIDAZOLYL-BISPHENYLMETHANE AND SALTS THEREOF AS ANTIFUNGAL AGENTS

Erik Regel, Wuppertal-Cronenberg, and Karl Heinz Buchel and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Oct. 31, 1969, Ser. No. 873,098. Divided and this application Oct. 8, 1971, Ser. No. 187,814

Int. Cl. A61k 27/00

U.S. Cl. 424-273

65 Claims

Bis-imidazolyl-bisphenylmethane and pharmaceutically acceptable non-toxic salts thereof are useful as antimicrobials especially against dermatomycosis caused by *Trichophyton* and *Microsporum* species and also against yeast infections of the skin and internal organs.

### 3,824,311

#### METHOD OF TREATMENT

Lewis R. Mandel, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Feb. 4, 1972, Ser. No. 223,721, now Patent No. 3,749,781, dated July 31, 1973, which is a continuation-in-part of abandoned application Ser. No. 80,176, Oct. 12, 1970. Divided and this application Apr. 20, 1973, Ser. No. 353,043

Int. Cl. A61k 27/00

U.S. Cl. 424-267

1 Claim

A composition for and a method of inhibiting indoleamine-N-methyl transferase comprising the administration to a host of a therapeutically effective amount of a compound selected from the group consisting of 2,3-dimercapto - quinoxaline, 2,3,4,6,7,8-hexahydropyrrolo-[1,2-a]pyrimidine, mono-lower alkyl derivatives of 2,3,4,6,7,8 - hexahydropyrrolo - [1,2-a]pyrimidine, quinuclidine, 1 - pyrrolidinecarboxamide, 3,4,6,7,8,9-hexahydro - 2H-pyrido[1,2 - a]pyrimidine, 2,3,4,6,7,8,9,10 - octahydropyrimido[1,2 - a]azepine, 1-methyl-2-trans-styryl - 1,4,5,6-tetrahydropyrimidine, (2,4 - dihydroxy-5-pyrimidyl) - disulfide, 2,3-dimethoxy-5-methyl - 6 - bromobenzoquinone and the pharmaceutically acceptable salts thereof.

### 3,824,312

#### 1,2,4-H-TRIAZOLE DERIVATIVES

Michael C. Seidel, Levittown, William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

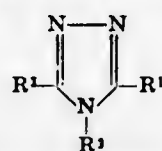
No Drawing. Application Aug. 26, 1970, Ser. No. 67,198, now abandoned, which is a continuation-in-part of application Ser. No. 847,481, July 3, 1969, now Patent No. 3,701,784, which in turn is a continuation-in-part of application Ser. No. 757,490, Sept. 4, 1968, now Patent No. 3,769,411. Divided and this application Oct. 16, 1972, Ser. No. 297,865

Int. Cl. A01n 9/00, 17/00

U.S. Cl. 424-269

10 Claims

Fungicidal compositions containing as the active ingredient 1,2,4-H-triazoles of the formula



or a tautomeric form thereof. These fungicides are particularly useful for the control of rusts. Certain of these compounds are systemic in action, giving excellent control of cereal rusts, notably wheat rust, and are particularly effective as seed treatments.

### 3,824,313

#### TOPICAL OPHTHALMIC COMPOSITION AND METHODS OF USE

John R. Smythies, Edinburgh, Scotland, assignor to Nelson Research & Development Company, Irvine, Calif. No Drawing. Filed Mar. 16, 1973, Ser. No. 341,732

Int. Cl. A61k 27/00

U.S. Cl. 424-274

9 Claims

A therapeutic composition comprising a topically administrable ophthalmic pharmaceutical carrier and Oxotremorine or its pharmaceutically acceptable acid addition salts. The foregoing composition temporarily alleviates the symptoms of glaucoma when topically administered to the eye.

### 3,824,314

#### ANTI-INFLAMMATORY PREPARATIONS

Bernard Lacoume, Eragny-sur-Epte, France, assignor to Akzona Inc., Asheville, N.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 169,803, Aug. 6, 1971. This application May 30, 1972, Ser. No. 257,542

Claims priority, application Netherlands, Aug. 20, 1970, 7012303

Int. Cl. A61k 27/00

U.S. Cl. 424-274

4 Claims

It was found that 1,2,3,4-tetrahydro-6-methoxy-carbazole-2-carboxylic acid and salts, esters and amides thereof have a very good anti-inflammatory activity, comparable with the known highly active anti-inflammatory substances. Surprisingly, however, these compounds do not induce any ulcerogenic activity, so that they can be administered in much higher dosages. It was further found that the said compounds have a more prolonged activity in comparison with phenylbutazone, especially on par-enteral administration.

### 3,824,315

#### METHOD OF TREATMENT

Lewis R. Mandel, 27 Merker Drive, Edison, N.J. 08817  
No Drawing. Application Feb. 4, 1972, Ser. No. 223,721, now Patent No. 3,749,781, which is a continuation-in-part of abandoned application Ser. No. 80,176, Oct. 12, 1970. Divided and this application Apr. 20, 1973, Ser. No. 353,042

Int. Cl. A61k 27/00

U.S. Cl. 424-251

1 Claim

A composition for and a method of inhibiting indoleamine-N-methyl transferase comprising the administration to a host of a therapeutically effective amount of a compound selected from the group consisting of 2,3-dimercaptoquinoxaline, 2,3,4,6,7,8 - hexahydropyrrolo[1,2-a]pyrimidine, mono-lower alkyl derivatives of 2,3,4,6,7,8-hexahydropyrrolo-[1,2-a]pyrimidine, quinuclidine, 1-pyrrolidinecarboxamide, 3,4,6,7,8,9 - hexahydro-2H-pyrido-[1,2-a]pyrimidine, 2,3,4,6,7,8,9,10 - octahydropyrimido-[1,2-a]azepine, 1 - methyl-2-trans-styryl-1,4,5,6-tetrahydropyrimidine, (2,4-dihydroxy - 5 - pyrimidyl)-disulfide, 2,3-dimethoxy-5-methyl - 6 - bromobenzoquinone and the pharmaceutically acceptable salts thereof.

### 3,824,316

#### COMPOSITIONS AND THEIR USE AS SLIME CONTROL AGENTS

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,555

Int. Cl. A01n 9/02

U.S. Cl. 424-275

22 Claims

The present invention relates to certain processes and compositions useful for inhibiting and/or controlling the growth of slime in water and, in particular, water employed for industrial purposes. Water employed in the manufacture of pulp paper and water employed in cool-

ing water systems, as well as other industrial waters, provide environments which are conducive to slime formation. The novel compositions of the present invention are mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems. The slime, of course, is objectionable from an operational and/or an aesthetic point of view. Specifically, the invention is directed to and the use of compositions comprising a combination of 3,3,4,4 - tetrachlorotetrahydrothiophene - 1,1 - dioxide and organo - bromine compounds (or mixtures thereof). The inventive compositions inhibit the growth of slime in water, or more specifically, possess biocidal activity against bacteria, fungi and/or algae. The organo-bromine compounds contemplated for use in accordance with the present invention may be exemplified by: bis - 1,4 - bromoacetoxy - 2 - butene; alpha-bromo-p-methylacetophenone and beta-bromo-beta-nitrostyrene.

### 3,824,317

#### THIOSEMICARBAZONE FUNGICIDES

Roger Williams Addor, Pennington, and Glentworth Lamb, Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

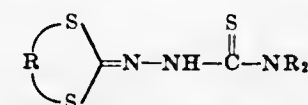
No Drawing. Original application Feb. 17, 1972, Ser. No. 227,287, now Patent No. 3,761,492, dated Sept. 25, 1973. Divided and this application Apr. 13, 1973, Ser. No. 351,109

Int. Cl. A01n 9/12, 9/20

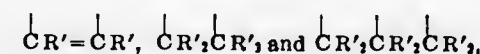
U.S. Cl. 424-277

7 Claims

The present invention relates to compounds of the formula:



wherein R is a member selected from the group consisting of



and the R's are independently hydrogen or lower alkyl of C1-C4. It further relates to controlling fungi and protecting crops from attack by fungus organisms with the above compound.

### 3,824,318

#### COMPOSITION AND METHOD FOR CONTROLLING AEROBACTER AEROGENES

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, Paul Swered, Philadelphia, and Roger L. Justice, Cornwells Heights, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,387

Int. Cl. A01n 9/02

U.S. Cl. 424-277

10 Claims

The present invention relates to certain processes and compositions useful for inhibiting and/or controlling the growth of slime in water and, in particular, water employed for industrial purposes. Water employed in the manufacture of pulp paper and water employed in cooling water systems, as well as other industrial waters, provide environments which are conducive to slime formation. The novel compositions of the present invention are mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae which produce slime in aqueous systems. The slime, of course, is objectionable from an operational and/or an aesthetic point of view. Specifically, the invention is directed to and the use of compositions comprising a combination of 5-chloro-4-phenyl-1,2-dithiole-3-one or derivatives thereof and sorbitan mono oleate or derivatives thereof. The inventive compositions inhibit the growth of slime in water, or more specifically, possess biocidal activity against bacteria, fungi and/or algae. The deriva-



tives contemplated for use in accordance with the present invention are those which possess the capacity to kill or inhibit the growth of slime-forming microorganisms such as bacteria, fungi and algae.

3,824,319

**ARTHROPOD MATURATION INHIBITION EMPLOYING CERTAIN EPOXY COMPOUNDS**  
Meyer Schwarz, Kensington, Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, Md., assignors to the United States of America as represented by the Secretary of Agriculture  
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,781  
Int. Cl. A01n 9/28

U.S. Cl. 424-278 10 Claims  
A number of terpenoid compounds and their epoxides were synthesized and found to prevent insect maturation when applied to insects in an immature stage of growth.

3,824,320

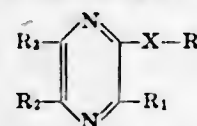
**SUBSTITUTED O-CARBAMYLHYDROXAMATE INSECTICIDES**  
James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Application Apr. 2, 1970, Ser. No. 32,410, now Patent No. 3,693,633, which is a continuation-in-part of application Ser. No. 670,494, Aug. 31, 1967, now Patent No. 3,576,834, which is a continuation-in-part of application Ser. No. 602,134, Dec. 16, 1966, which in turn is a continuation-in-part of application Ser. No. 361,277, Apr. 20, 1964, both now abandoned. Divided and this application Sept. 9, 1971, Ser. No. 179,236  
Int. Cl. A01n 9/20

U.S. Cl. 424-298 10 Claims  
Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamyl)thiolacetohydroxamate are useful in controlling insects, other arthropod pests and pestiferous mollusks.

3,824,321

**SELECTED MERCAPTOPYRAZINES AS FLAVORING AGENTS**  
Thomas H. Parliment, Valley Cottage, Martin F. Epstein, Pearl River, William P. Clinton, Monsey, Richard Scarpelling, Ramsey, and Robert J. Soakup, New York, N.Y., assignors to General Foods Corporation, White Plains, N.Y.  
No Drawing. Original application Aug. 29, 1969, Ser. No. 854,306, now Patent No. 3,767,425, dated Oct. 23, 1973. Divided and this application Aug. 7, 1972, Ser. No. 278,691  
Int. Cl. A23l 1/26

U.S. Cl. 426-65 17 Claims  
Enhancement of coffee flavored foodstuffs is achieved by the addition of a small but effective amount of one or more compounds corresponding to the general formula



wherein X is oxygen or sulfur, R is a lower alkyl, preferably having one to three carbon atoms, and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are hydrogen or an alkyl of one to twelve carbon atoms provided that at least one of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> is alkyl of two to twelve carbon atoms.

3,824,322

**FLAVORED STIRRER FOR ALCOHOLIC BEVERAGES**  
John J. Florella, 181 Richmond Ave., Buffalo, N.Y. 14222  
Filed Dec. 20, 1971, Ser. No. 209,737  
Int. Cl. C12g 3/06

U.S. Cl. 426-134 9 Claims  
A flavored stirring implement for alcoholic beverages contains flavoring means held to a stirring portion of the

implement and communicable with the alcoholic beverage through or at an exterior surface of the implement so that when the stirrer is moved through the alcoholic beverage flavoring is dispensed to and dissolved in the beverage. In a preferred form of the invention the flavoring is held to a plastic tubular stirrer by being deposited

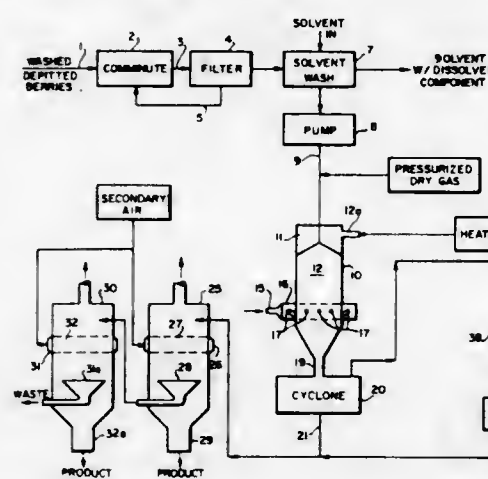


in perforations in the middle third of the stirrer in the hollow of the tube, with crimps in the tube also serving to hold the flavoring in place and with additional perforations being provided through the tube to circulate beverage into contact with the flavoring during stirring. Also disclosed are methods for the manufacture of such stirrers.

3,824,323

**METHOD OF PREPARING TASTE-MODIFYING COMPOSITION**  
Robert Joseph Harvey and John Richard Fennell, Sudbury, Mass., assignors to Mirlin Corporation, Hudson, Mass.  
Continuation-in-part of application Ser. No. 28,981, Apr. 15, 1970, now Patent No. 3,676,149, dated July 11, 1972, and a continuation-in-part of abandoned application Ser. No. 130,481, Apr. 1, 1971. This application July 10, 1972, Ser. No. 269,972  
Int. Cl. A23l 1/26

U.S. Cl. 426-429 25 Claims



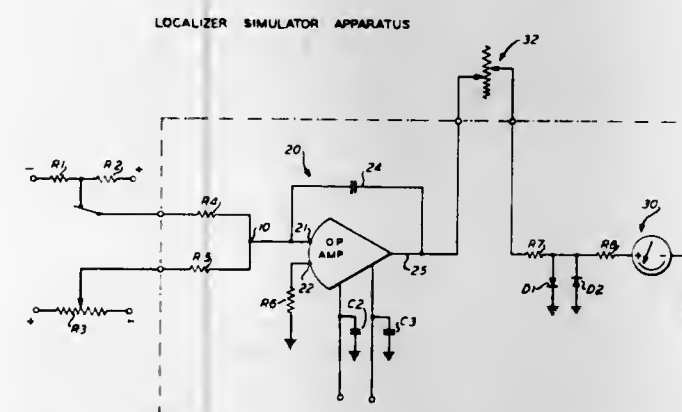
A process for obtaining a dry powdered concentrate containing the taste modifying principle from *Synsepalum dulcificum* Daniell, in a stable form which is useful in conjunction with foods such as confections, desserts, jellies, jams, canned fruit, beverages, and coatings to render sour-tasting foods sweet tasting, and to improve the flavor of certain foods while maintaining this taste modifying characteristic for long periods under normal atmospheric conditions. The concentrate is obtained by comminuting the ripe fruit of *Synsepalum dulcificum* Daniell, spray drying the comminuted slurry to reduce the moisture content between 0.5 to about 5% by weight, and separating the spray dried powder obtained on a density basis to recover a high density fraction. Carbohydrates, fats and pigments can be removed from the stable taste-modifying principle by solvent extraction to obtain concentrated compositions of the stable taste-modifying principle which are employed to form unit dosage forms thereof.

## ELECTRICAL

3,824,324

**LOCALIZER SIMULATOR APPARATUS**  
James R. Patmore, Neptune, and Joseph E. Sidoti, Red Bank, both of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.  
Filed Apr. 25, 1973, Ser. No. 354,370  
Int. Cl. G09b 9/08

U.S. Cl. 35-10.2 6 Claims



Localizer simulator apparatus for simulating a localizer approach of an aircraft to a runway at an airport, said runway having a predetermined heading and a localizer beam being provided along said runway, comprising a first voltage divider network for providing a first predetermined voltage indicative of a predetermined runway heading; a second voltage divider network for providing a variable second predetermined voltage indicative of a compass heading simulating the actual heading of the aircraft, the second voltage divider network being operable to simulate a change in the compass heading whereby the second predetermined voltage is varied to indicate the change in compass heading; a current summing network for receiving the first and the second predetermined voltages and for developing respective currents therefrom and for summing the developed currents to provide a summed current signal which is indicative of any difference between the first and second predetermined voltage; analog integrator means having an input for receiving the summed current signal and for providing a voltage output signal which is proportional to the integral of the summed current and which is indicative of any difference between the first and second predetermined voltage; course deviation indicator means for receiving the voltage output signal and for providing a visual display which is indicative of any difference between the predetermined runway heading and the simulated compass heading and which also is indicative of the amount of time there was any difference between the first and the second predetermined voltages.

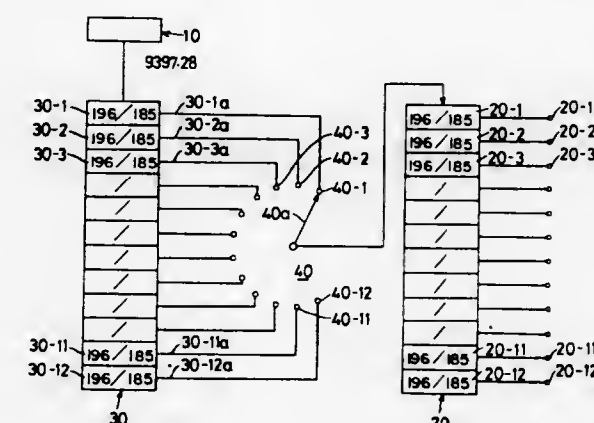
3,824,325

**ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF TRANSPOSING**

Nobuharu Obayashi, Hamana-gun, and Tetsuzi Sakashita, Hamamatsu, both of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan  
Filed Apr. 19, 1973, Ser. No. 352,628  
Claims priority, application Japan, Apr. 20, 1972, 47-39102  
Int. Cl. G10h 1/02

U.S. Cl. 84-1.01 3 Claims  
A transposing electronic musical instrument wherein a high frequency oscillator is provided on its output side with an oc-

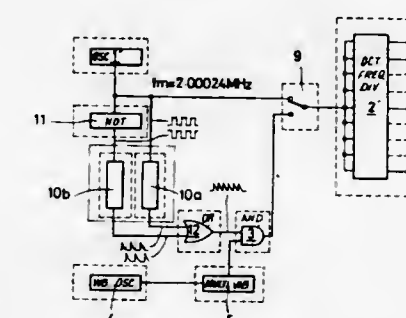
tave frequency divider comprising twelve counter circuits to generate twelve tone signals based on a twelve tempered scale. These tone signals are respectively frequency-divided by counter circuits to obtain octave tone signals. A frequency di-



3,824,326

**VIBRATO SIGNAL GENERATING APPARATUS FOR AN ELECTRONIC MUSICAL INSTRUMENT**  
Nobuharu Obayashi, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan  
Filed June 6, 1973, Ser. No. 367,399  
Claims priority, application Japan, June 9, 1972, 47-56841  
Int. Cl. G10h 1/04

U.S. Cl. 84-1.25 9 Claims



A vibrato signal generating apparatus for an electronic musical instrument characterized in that an AND gate circuit is interposed in a circuit connected between a high frequency oscillator and an octave frequency divider, and an astable multivibrator modulated by a vibrato oscillator is provided and is so arranged that the AND gate circuit is controlled by the output signal of the astable multivibrator.



3,824,327

## LIQUID FILLED CAPACITOR CASING WITH SEALED ALUMINUM COVER

Norman H. Barker, South Glens Falls, and Edward A. Barlow, Glens Falls, both of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,158

Int. Cl. H05k 5/03

U.S. Cl. 174-17 LF

4 Claims



Electrical capacitor sealing means for the fill hole in an aluminum cover capacitor casing is disclosed wherein a dissimilar metal sealing member having a head and shank part has its shank passing through the fill hole and engaging the underside of the cover member. The head part is spaced from the external surface of the cover by means of a suitable sealing gasket to prevent corrosion therebetween. A preferred sealing member is a tin coated eyelet. The inner end of the eyelet is peened over to engage the cover while the enlarged head end is spaced from the cover by a gasket. Tin-lead solder applied to the eyelet seals said eyelet and the casing.

3,824,328

## ENCAPSULATED PTC HEATER PACKAGES

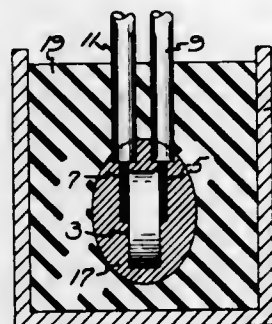
Youn H. Ting, Attleboro, Mass., and Hans Adolf Stoeckler, Pawtucket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1972, Ser. No. 300,022

Int. Cl. H05k 5/06

U.S. Cl. 174-52 PE

4 Claims



Packaged PTC heater elements wherein the package includes an outer material such as a phenolic resin in the form of a casing and an inner potting material which is thermally conductive and electrically insulated and does not deteriorate the PTC material. The potting material is one that does not include nucleophiles such as amines and the like and therefore excludes the epoxy resins. The potting material used is a silicone resin, polyamides, polyimides and ceramics which are not amine initiated. The PTC device can be completely potted in one of the above noted potting materials or a barrier layer of one of the above potting materials can be placed around the PTC material to separate it from an external potting material and then the PTC material with the barrier layer therearound can be potted with the well known epoxy resin.

3,824,329

## HOUSING FOR ELECTRICAL DEVICE HAVING CONDUCTOR OPENINGS WITH STRAIN RELIEF

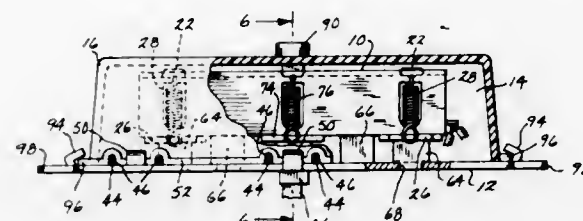
Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis. 53151

Filed Nov. 15, 1972, Ser. No. 306,638

Int. Cl. H05k 5/02

U.S. Cl. 174-65 R

5 Claims



Two relays and a push-to-start switch are mounted together on a common frame within a common housing. The cores and coils for the devices are mounted in spaced parallel relationship on the frame. Three legs which extend from one side of the frame are supported adjacent an edge of an insulated terminal strip which latter supports the terminals, contacts, and contact arms for the devices. Two legs which extend at right angles to the first-mentioned legs and which are bent from spaces therebetween are received by slots in a base plate which is also slotted to receive portions of the terminal strip and the frame to support the same. Recesses are formed in the housing member adjacent to the base plate to allow insulated conductors to enter the housing. The recesses contain teeth that bite into the insulation over the conductors to prevent them from being moved longitudinally.

3,824,330

## CORRUGATED SHEATH CATV DROP WIRE

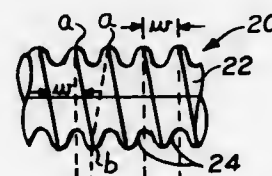
Fred Lang, Hillside, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 363,814

Int. Cl. H01b 7/18

U.S. Cl. 174-102 D

12 Claims



This electrical cable construction has an insulated center conductor with a metal strip longitudinally folded around the insulated conductor, and with the strip having corrugations extending in directions at a substantial angle to the edges of the strip. The shield formed by the metal strip may serve as a shield or as the outer conductor of a coaxial cable. Since the major stiffening caused by corrugations is in the direction in which the corrugations extend, this invention makes the corrugation shield bend more easily around the insulated conductor; and the greater ease in folding the strip around the conductor is an important advantage with small wires. In the preferred embodiment, corrugations extend at acute angles and come together at a mid region in a herringbone pattern. The invention is useful for CATV drop cords with the shield serving as the outer conductor.

3,824,331

## RESILIENT COVER HAVING A REMOVABLE EXTERNAL SUPPORT MEMBER

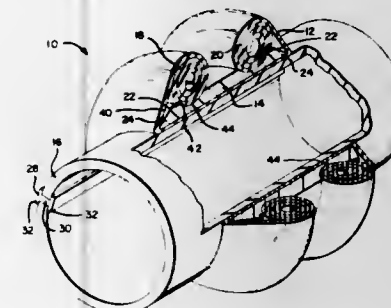
James Lenhart Mixon, Jr., and Ernest Lloyd Beinhaus, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 25, 1973, Ser. No. 373,528

Int. Cl. H01r 5/00

U.S. Cl. 174-135

6 Claims



This invention pertains to a resilient tubular cover being supported in a stretched condition by an easily removable one piece support member positioned around the outside of the cover. More particularly, the invention resides in a hollow member through which the resilient cover passes and on which the rolled portions of the resilient cover are received and removably retained.

3,824,332

## PAY TELEVISION SYSTEM

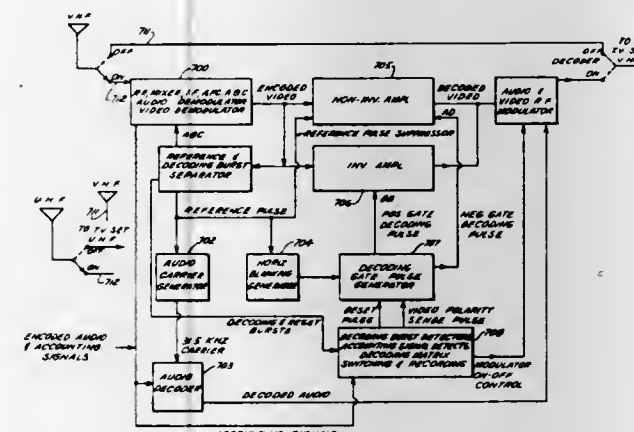
Irving Horowitz, Eatontown, N.J., assignor to Telelobe Pay TV System Inc., New York, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,582

Int. Cl. H04n 1/44

U.S. Cl. 178-5.1

45 Claims



Reference pulses of opposite polarity to the horizontal sync pulses are added to the composite television signal just preceding each horizontal sync pulse. The video portion of the signal is inverted for randomly selected fields. Coding bursts are added to the composite signal to indicate whether subsequent field is inverted. Transmitter clamped to reference pulse level. Reference pulse used for AGC in decoder. Video portion of received signal inverted in accordance with coding bursts. Audio program signals encoded by modulation on suppressed carrier centered above audio range. Barker signals transmitted on normal audio frequencies.

3,824,333

## AUDIO OUTPUT STAGE

Antonius Boekhorst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

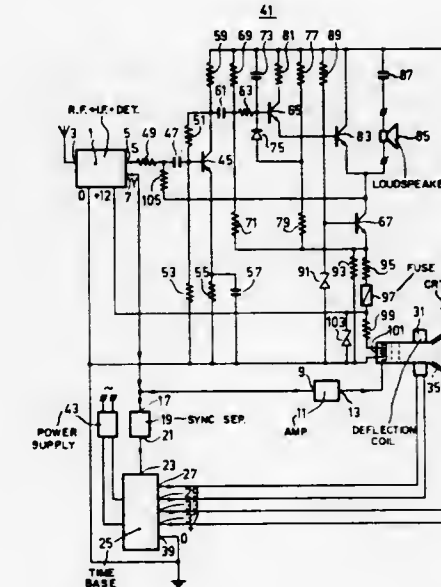
Filed Nov. 29, 1972, Ser. No. 310,672

Claims priority, application Netherlands, Dec. 23, 1971, 7117711

Int. Cl. H04n 5/44

U.S. Cl. 178-5.8 R

5 Claims



An audio output amplifier powered from a television horizontal circuit has a constant current source series coupled to the audio output stage. As the audio signal varies, the constant current divides between the output stage and a loudspeaker coupled in parallel with it in accordance with the strength of the audio signal. Thus a constant load is presented to the horizontal circuit, which does not affect the deflection.

3,824,334

## DATA COMMUNICATIONS NETWORK

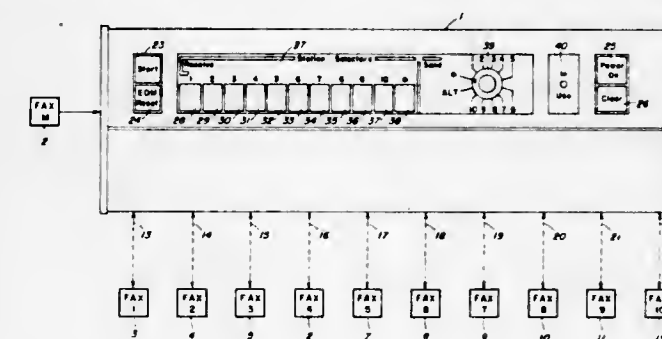
Charles L. Jacobson, Pittsford; John Tambert, Rochester, and Stanley J. Zurakowski, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 23, 1971, Ser. No. 165,527

Int. Cl. H04n 1/32

U.S. Cl. 178-6

33 Claims



A method of establishing data communication between a data transmitting device and one or more data receiving devices and the apparatus therefor are provided in accordance with the teachings of the present invention. One of a predetermined number of data transmitting devices is selected to transmit data information. The capability of each of a predetermined number of data receiving devices to receive data information is determined and one or more of said predetermined number of data receiving devices is selected to receive data information. The data transmitting device selected to transmit data information is enabled to commence data information



transmission and the data information received therefrom is transmitted to those data receiving devices selected to receive and capable of receiving data information. Indications of the selection of data transmitting and data receiving devices are provided as well as indications of the selection of data receiving devices not capable of receiving data information. The transmission of data information to a data receiving device that is not capable of receiving data information although said data receiving device has been inadvertently selected, is prevented.

3,824,335

## RECORDING TELEVISION SIGNALS

George Henry Hart, Cambridge, England, assignor to Pye Limited, Cambridge, England

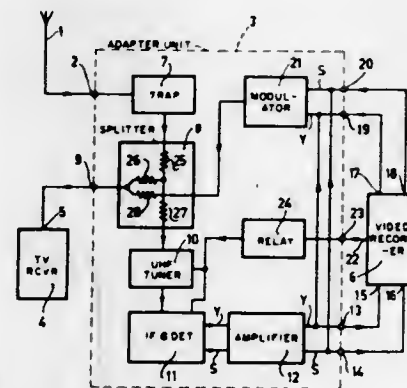
Filed Apr. 17, 1972, Ser. No. 244,448

Claims priority, application Great Britain, Apr. 28, 1971, 11897/71

Int. Cl. H04n 5/22

U.S. Cl. 178-6.6 A

10 Claims



For recording television signals on a video tape recorder having an input of video frequency and displaying the signals on a television receiver having an RF input, an adaptor is provided which has demodulating means for enabling incoming RF signals to be recorded on said recorder and modulating means for modulating the output of the tape recorder at a suitable carrier frequency for the RF input of the television receiver.

3,824,336

## EDITING SYSTEM AND METHOD

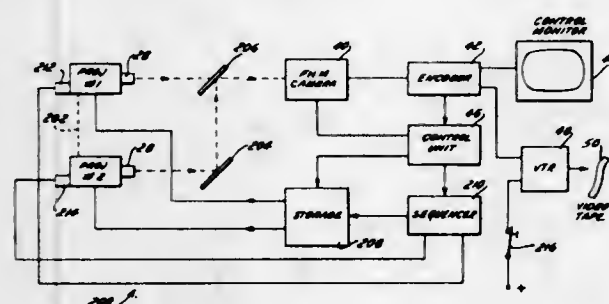
George K. Gould, Roslyn, and Armando Belmares Sarabia, Long Beach, both of N.Y., assignors to Teletronics International, Inc., New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,507

Int. Cl. G02b 15/00; H04n 5/78, 7/18

U.S. Cl. 178-6.8

18 Claims



Images on motion picture film are converted into electrical video signals by means of a motion picture projector and a film camera. The video pictures are displayed sequentially on a video receiver screen. The film is stopped so that a selected frame is displayed on the screen. The stationary image on the screen then is enlarged as much as necessary by means of

either a zoom lens to replace the usual projection lens in the motion picture projector, or by electronic "underscanning" of the image. Means also are provided for moving the image both in the horizontal and vertical directions so as to position certain objects in a more desirable location, or, in some cases, to move certain objects or elements of the image out of the outline of the screen, thus effectively editing them out of the film. Then, the modified video signals are recorded on video tape. Portions of the tape which have had editing work performed on them then are spliced together with other portions of tape to form the finished, edited video tape. The editing can be combined with electronic color correction. As another alternative, two motion picture projectors can be used instead of one, with means for storing the enlargement and other editing information, and then the projectors can be operated alternately to produce a continuous video tape without splicing. As a further alternative, a single projection can be used together with two zoom enlargement systems and appropriate shutters, with the zoom systems being operated alternatively, in order to produce a continuous video tape.

3,824,337

## SENSOR FOR CONVERTING A PHYSICAL PATTERN INTO AN ELECTRICAL SIGNAL AS A FUNCTION OF TIME

Frederik Leonard John Sangster, and Hendrik Heijns, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

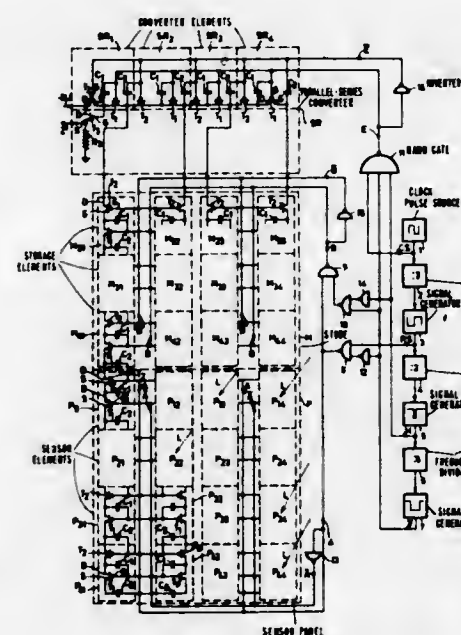
Continuation of Ser. No. 232,561, March 7, 1972, abandoned.

This application July 20, 1973, Ser. No. 381,016

Int. Cl. H04n 3/16

U.S. Cl. 178-7.1

7 Claims



A sensor for television, formed with converter elements integrated in a semiconductor body. The converter elements are divided into sensor elements for picking up the information originating from a physical pattern such as, for example, a scene and converting the information into an electrical charge pattern. The information from the sensor elements is passed to converter elements in the form of storage elements at a low-frequency during the field blanking period. Part of the information is passed to converter elements of a parallel-series converter during the field blanking period. The information from the storage elements is passed on line by line during the line blanking period to the parallel-series converter and is read out at a high frequency during the line scan period.

3,824,338

## TELEVISION RECEIVER POWER SUPPLY

Takuiji Suzuki, and Norihisa Imao, both of c/o The General Corporation, 1116, Suenaga, Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 113,982, Feb. 9, 1971,

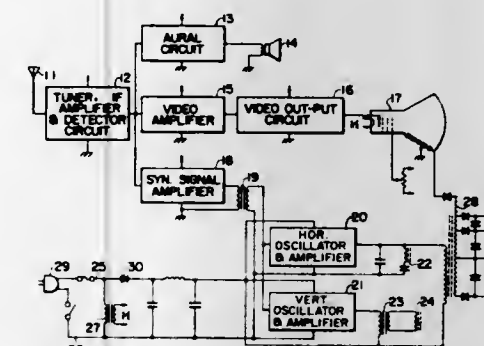
abandoned. This application June 6, 1973, Ser. No. 367,650

Claims priority, application Japan, Feb. 12, 1970, 45-14079

Int. Cl. H04n 5/44

U.S. Cl. 178-7.3 R

3 Claims



A television receiver of transformerless type having primary and secondary voltage supply circuits which respectively supply ungrounded and grounded supply voltages to horizontal and vertical deflection circuits on the one hand and other remaining circuit components on the other hand. D.c. isolation is provided between the grounded and ungrounded components by an isolating transformer connected between sync signal amplifier means and the deflection circuits, the transformer however permitting a.c. signal transmission between the sync signal amplifier means and the deflection circuits.

3,824,339

## PROMPTING DEVICE FOR LECTURERS AND TELEVISION ANNOUNCERS

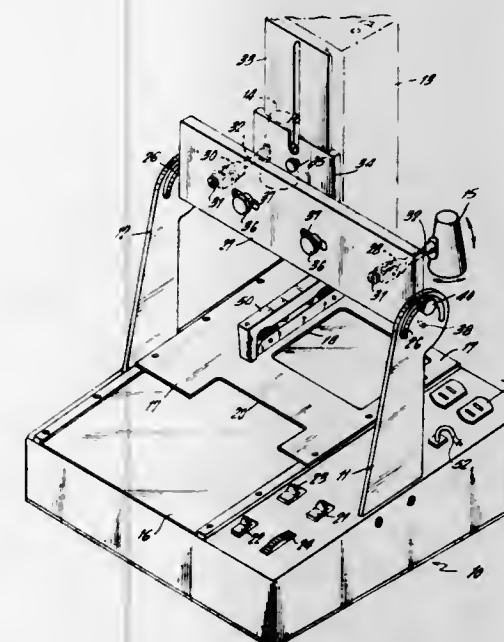
Alvin S. Eisenberg, Little Neck, N.Y., assignor to Q-TV, Inc., New York, N.Y.

Filed Nov. 9, 1972, Ser. No. 305,057

Int. Cl. G03b 31/00; H04n 5/24

U.S. Cl. 178-7.81

2 Claims



A manuscript in card, sheet, or strip form is moved across a table which is the object plane of a television camera. The camera is adjustably positioned above the table and the camera output is connected to a closed circuit system which includes one or more television picture tubes for showing an

image of the manuscript. One picture tube is positioned in front of the speaker. Electrical controls are provided for adjusting the speed of the manuscript as it moved through the object plane. Adjustments are also available for focusing the television camera lens and for swinging the camera from one position to another to pick up information to be conveyed to the speaker.

3,824,340

## VARIABLE TRANSMISSION TIME DELAY COMPENSATION ARRANGEMENT

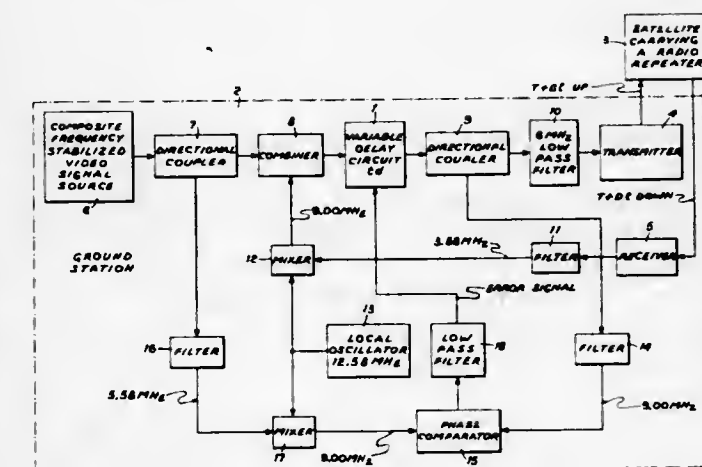
Cleatus R. Sensney, Oakland, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 8, 1972, Ser. No. 304,681

Int. Cl. H04i 7/00

U.S. Cl. 178-69.5 DC

10 Claims



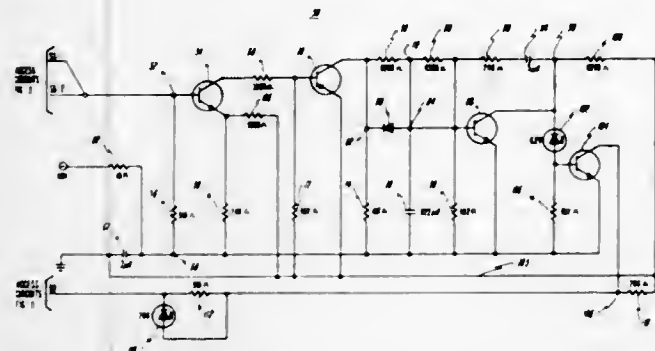
This arrangement includes a variable delay circuit through which a color television signal is propagated prior to transmission to a communication satellite. The television signal is received from the satellite at the transmitting station. The color subcarrier is extracted from the received television signal and also from the original television signal. Both of the extracted color subcarriers are translated to the same frequency disposed above the frequency of the television signal. The translated subcarrier extracted from the received television signal is propagated through the delay circuit with the original television signal. At the output of the delay circuit this latter subcarrier is extracted and applied to a phase comparator for comparison with the translated subcarrier extracted from the original television signal. A control signal is produced proportional to the phase difference between the two compared translated subcarriers. The







connection to the shared equipment. The status indication circuit provides a substantially constant busy voltage indication



which is independent of the impedance of the access circuit connected thereto and prevents simultaneous connections by more than one access circuit to the same shared equipment.

3,824,349

## METHOD OF TRANSFERRING INFORMATION

Robert Bertold Buchner, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

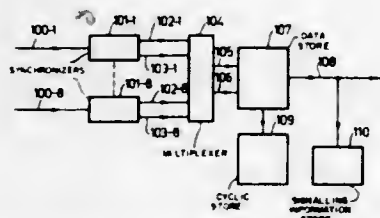
Continuation of Ser. No. 221,234, Jan. 27, 1972, abandoned.

This application July 23, 1973, Ser. No. 381,755

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

2 Claims



A method of transferring information via a time-switched connection which extends via at least one first time channel with which a channel interval of a first cycle is associated, a synchronizer, a data register and a second time channel with which a channel interval of a second cycle is associated. For the loss-free transfer of the information to an information receiver the data register is read out at least three times in a non-destructive manner in each second cycle, the original information being derived from the multiple information thus obtained by elimination of the excess of information.

3,824,350

## ACCESS CIRCUIT FOR SHARED TELEPHONE EQUIPMENT

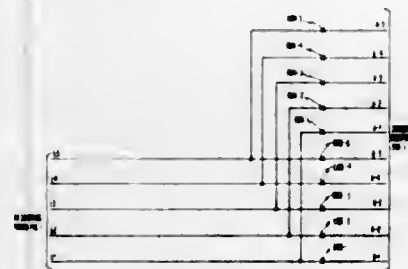
Donald R. Merriam, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed May 4, 1973, Ser. No. 357,297

Int. Cl. H04q 3/00

U.S. Cl. 179-18 AB

10 Claims



An access circuit is provided for completing a connection to an idle piece of shared call processing equipment which has a

status indication circuit which indicates the busy-idle condition of the shared equipment. The access circuit shapes a request-for-service pulse which is applied thereto to permit switching components in the access circuit to definitively select a single idle piece of shared equipment to which to complete the connection and, when the idle piece of shared equipment has been selected, the access circuit immediately transmits a signal to the status indication circuit to indicate a busy condition for the selected piece of shared equipment.

3,824,351

## AUTOMATIC REPERTORY DIALER

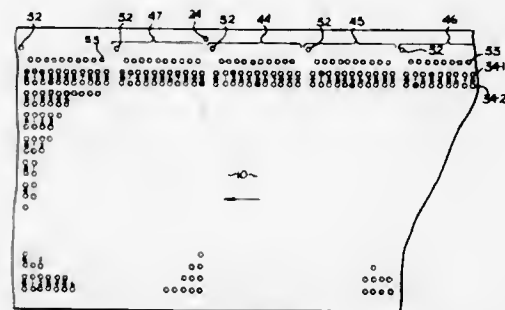
Thomas G. Wixon, 1589 Blackstock Ave., Simi, Calif. 93065

Filed Aug. 21, 1972, Ser. No. 282,608

Int. Cl. H04m 1/45

U.S. Cl. 179-90 B

16 Claims



An automatic repertory dialer for use with a standard impulse telephone dialing system. A series of ten pulses for each digit to be dialed is generated by the motion of a programming belt on which is also stored, in coded form, a plurality of telephone numbers which may be dialed. The number of pulses from each series of 10 pulses which are delivered to the dialing circuit is determined by the position of a mark on the programming belt. For each telephone number to be programmed, there are eleven positions on the programming belt associated with each digit of the telephone Number. These positions correspond to the number of pulses to be transmitted for that digit, from zero to 10. A mark in the appropriate position will cause that number of pulses to be transmitted for that particular digit. The circuit which accomplishes the dialing function is responsive to marks on the programming belt and transmits signals from the time the belt is in a first position to the time it assumes a second position, said positions being established by marks on the belt.

3,824,352

## STACKED PIEZOELECTRIC TRANSDUCER ACTING AS QUARTER-WAVE RESONATOR FOR RECORDING VIDEO INFORMATION

Robert Adler, Northfield, and Roger W. Knitter, Hoffman Estates, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,392

Int. Cl. G11b 3/00; H04r 17/04; H01v 7/00

U.S. Cl. 179-100.41 P

12 Claims



A recording head for applying a video program to a record disc employs a transducer having a plurality of planar piezoelectric elements united in a stack arrangement which collectively exhibits a predetermined acoustic impedance. A base member, bonded to one terminus of the stack, has a specific impedance at least an order of magnitude greater than

the stack impedance so that the stack operates substantially as a quarter-wave resonator. An energizing signal applied to the stack develops longitudinal mode vibratory displacements of the stack proportional to the excursions of the energizing signal. A coupler, bonded to a second terminus of the stack, translates the vibratory displacements to a stylus which generates a pattern on an impressionable surface of the record disc.

3,824,353

## HOOK-SWITCH CRADLE ASSEMBLY FOR ELECTRICAL COMMUNICATION HANDSET

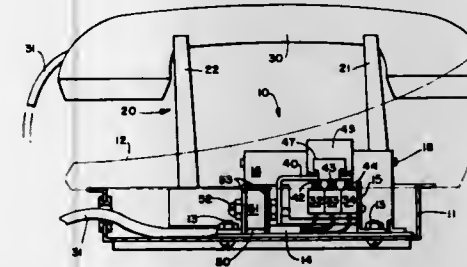
William E. Howe, Orinda, and Bruce A. Buell, Walnut Creek, both of Calif., assignors to Voycall, Oakland, Calif.

Filed Oct. 19, 1972, Ser. No. 298,871

Int. Cl. H04m 1/08

U.S. Cl. 179-164

11 Claims



A hook-switch type cradle assembly for use with an electrical communication handset providing reduced sensitivity to spurious undesired signals caused by accidental or intentional "teasing" and a reduced susceptibility to "bouncing" is disclosed. An embodiment of the invention is described in which microswitches are utilized and in which the mass in motion during operation is reduced as compared to prior art. Various embodiments of the mechanical components for accomplishing the objects of this invention are disclosed.

3,824,354

## OPERATOR MEANS ASSOCIATED WITH MULTIPLE SWITCH ARRAY AND SIGNAL TO FUNCTION CORRELATOR MEANS

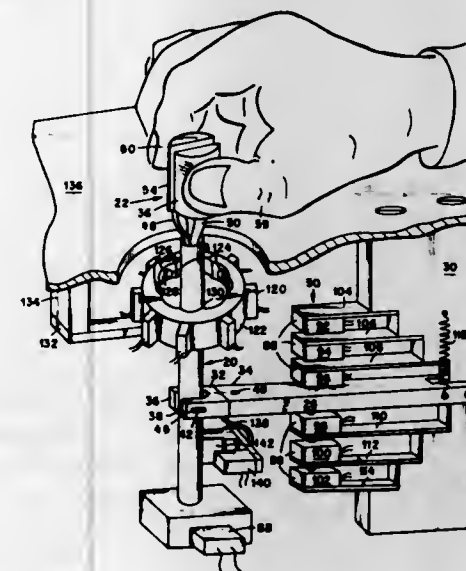
Norman G. Anderson, and Norman L. Anderson, both of 126 Westlook Cir., Oak Ridge, Tenn. 37830

Filed Mar. 17, 1972, Ser. No. 235,614

Int. Cl. H01h 9/00

U.S. Cl. 200-1 R

6 Claims



A man-to-machine interface system including activator or wand means which is movable, using generally the same

musculature as in writing, to and/or through various combinations of vertical and lateral positions to develop at least two signals, one of which is representative of the vertical position of the wand and one of which is representative of the lateral position of the wand. These signals may be developed as by the wand means actuating switch means. These signals are paired by appropriate means and correlated with machine functions assigned to the various combinations of signals to provide input signals to the machine that cause it to perform those functions that correspond to those combinations of positions to or through which the wand is moved.

3,824,355

## DE-ENERGIZED TAP CHANGER FOR TRANSFORMERS WITH POLYPHASE SLIDING CONTACT ASSEMBLY

Sivert Norman, and Jan Syren, Uno Zetterlund, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

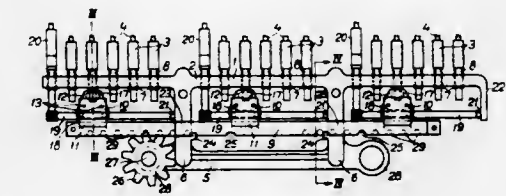
Filed June 5, 1973, Ser. No. 367,098

Claims priority, application Sweden, June 27, 1972, 8402/72

Int. Cl. H01h 15/06

U.S. Cl. 200-16 F

7 Claims



A de-energized tap changer for transformers comprises a frame of insulating material, a slide which carries movable contacts, the slide being displaceable in the frame, and a drive for the slide. The frame of the tap changer is manufactured in one piece and consists of a terminal bar with attachment means for connections from the transformer windings, a carrier member carrying the drive, and cross-bars connecting the terminal bar and the carrier member. The movable slide is displaceable in grooves in the cross-bars and can be inserted in the grooves only when situated outside its ordinary working area.

3,824,356

## ACTUATOR FOR ELECTRO-MOTIVE FORCE AND FLUID PRESSURE FORCE

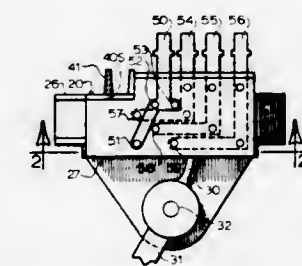
Theodore E. Fiddler, 1268 Suffield Dr., Birmingham, Mich. 48008, and Arnold G. Adams, Troy, Mich., assignors to said Fiddler, by said Adams

Filed Dec. 14, 1972, Ser. No. 315,106

Int. Cl. H01h 9/06

U.S. Cl. 200-61.86

3 Claims



A control device having one moving body for actuating application of both electro-motive-force (EMF) and fluid-pressure-force (FPF) in a system such as vehicular heating, ventilating, and/or air-conditioning having a case with a first wall equipped with selectively positioned FPF ports located



between FPF supply and use in the system and a second wall equipped with EMF selectively positioned contacts located between EMF supply and use in a system; a movable body having a first surface equipped with a grooved maze lying against the ported wall of the case forming a plurality of selective FPF channels relative to the FPF supply and use ports and having a second surface equipped with a slide bridge member for selectively interconnecting the contacts to close EMF circuits; and means for selectively moving the body relative to the case to change the maze channels relative to the FPF ports and change the bridge member relative to the EMF contacts to selectively and simultaneously control the application of EMF and FPF in the system.

3,824,357

## ELECTRICAL TIMER WITH IMPROVED GEAR-CAM STRUCTURE

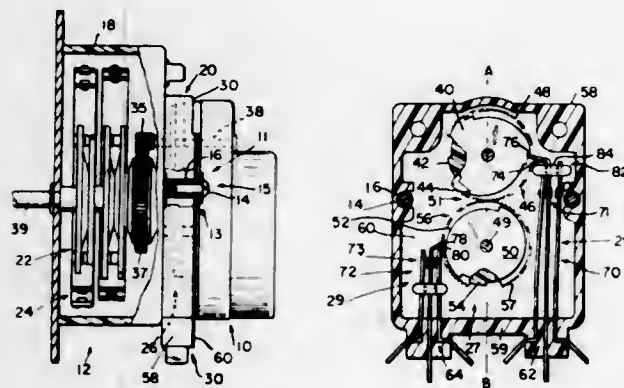
William R. Brown, and Noel C. Mullikin, both of Beech Grove, Ind., assignors to P. R. Malory & Co., Inc., Indianapolis, Ind.

Filed Apr. 16, 1973, Ser. No. 351,347

Int. Cl. H01h 7/08, 43/10

U.S. Cl. 200—38 B

29 Claims



A timing means, a substantially-thin second timing means, and a motor are combined in such a manner that one is sandwiched in between the other two.

3,824,358

## CALIBRATABLE PRESSURE SWITCH WITH ADJUSTMENT MEANS

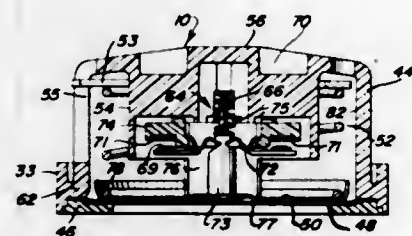
Joseph L. Edwards, West Asheville; William D. Penland, Weaverville, and James B. Warren, Skyland, all of N.C., assignors to Square D Company, Park Ridge, Ill.

Filed May 10, 1973, Ser. No. 359,150

Int. Cl. H01h 35/34

U.S. Cl. 200—83 S

10 Claims



A casing for the switch has an internal cylindrical projection provided with a cavity for receiving a plunger-operated switch mechanism. A helical range spring surrounding the projection abuts an adjustable upper spring seat, and a diaphragm has a lower seat for the range spring and a switch plunger bonded to its inner side. The internal cylindrical projection has a pair of circumferentially spaced arcuate extensions extending from the cylindrical projection which serves as a stop means for the

diaphragm and prevents undue movement of the plunger. The upper spring seat is generally annular but has generally radially protruding, parallel spaced end portions, which, when pressed together, permit the upper spring seat to be disengaged from the casing and raised or lowered relative to the casing. Upon release of the protruding end portions, circumferentially spaced projections on the outer periphery of the annular portion of the upper spring seat engage the inner wall of the casing to maintain the spring seat in a selected position.

3,824,359

## VACUUM LOADBREAK SWITCH

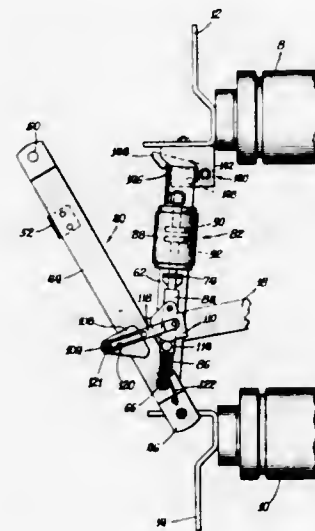
Kazou H. Date, Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Oct. 6, 1972, Ser. No. 295,527

Int. Cl. H01h 33/12, 33/66

U.S. Cl. 200—146 R

7 Claims



A loadbreak switch is provided in which a pair of spaced apart main current carrying blades are pivotally mounted for movement into and out of engagement with a stationary terminal, and a vacuum interrupter assembly has a nested position between the two blades and is also pivotable into and out of engagement with the stationary terminal. The main blade assembly and the vacuum interrupter assembly are both operable in response to a main switch operating mechanism. The vacuum interrupter assembly includes a vacuum switch and an operating device which is responsive to disengaging movement of the main blade assembly from the stationary terminal to first open the contacts of the vacuum switch and then unlatch the vacuum interrupter assembly from the stationary terminal. Subsequent to unlatching of the vacuum interrupter assembly, spring means snaps the vacuum interrupter assembly away from the stationary terminal and into the nested position of the vacuum interrupter assembly between the main blades. The main blades and the vacuum interrupter assembly are also pivotable into engagement with the stationary terminal as a single unit in response to the main switch operating mechanism.

3,824,360

## COMPRESSED GAS ELECTRICAL CIRCUIT BREAKER

Ernst Slamecka; Karl Martschini; Eckhard Pflaum, and Heinz-Helmut Schramm, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 4, 1972, Ser. No. 277,978

Claims priority, application Germany, Aug. 6, 1971, 2140284

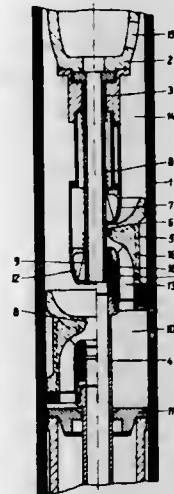
Int. Cl. H01h 33/70

U.S. Cl. 200—148 A

11 Claims

A compressed-gas electrical breaker, is disclosed in the switching chamber of which are arranged a compression

space, a fixed contact, a movable contact and a blasting device connected with the movable contact. A movable nozzle body, designed as a blast piston is connected with the movable contact, and operates in conjunction with a spring-loaded shield. The spring-loaded shield is movably guided on the stationary



contact and is adapted to be displaced by the nozzle body from the open position of the breaker in which the shield covers the stationary contact to the closed position of the breaker in which the shield engages the nozzle member to seal the compression space of the breaker.

3,824,361

## HIGH-VOLTAGE ELECTRIC CIRCUIT BREAKER

Dieter Noack, and Heiner Marin, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

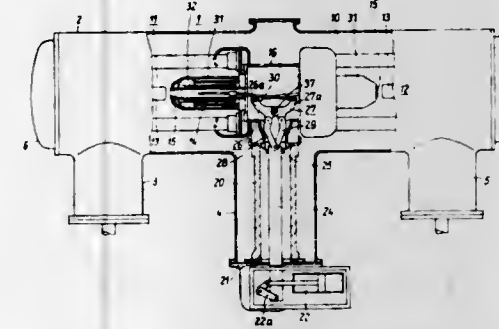
Filed Jan. 15, 1973, Ser. No. 323,720

Claims priority, application Germany, Jan. 28, 1972, 2204556

Int. Cl. H01h 9/40

U.S. Cl. 200—148 F

3 Claims



A high-voltage electric circuit breaker has two mutually oppositely movable contacts which cooperate with two stationary contacts, the movable and stationary contacts being positioned on a common axis, and the two movable contacts being actuated by two bell-cranks which translate transverse motion from an actuator to motion in alignment with the movable contacts to open and close the latter relative to the stationary contacts. The two bell-cranks are pivoted on the same axis but are laterally offset from each other so that they can swing free from each other by overlapping each other. This permits the bell-cranks to have a large lever ratio but by swinging in overlapping axes, to be enclosed in a relatively small casing. Thus it is possible to move the movable contacts through longer strokes and permit them to be of the piston and cylinder arc-blasting type.

3,824,362

## ALTERNATE ACTION SWITCH MECHANISM

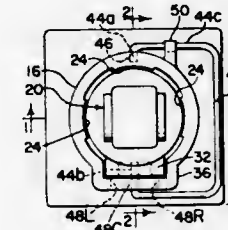
George John Bury, Lake Villa, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 23, 1973, Ser. No. 363,228

Int. Cl. H01h 13/56

U.S. Cl. 200—153 J

7 Claims



An alternate action switch mechanism is achieved by means of a cam including a cam slot into which a cam follower is inserted to engage a plurality of cam surfaces that are formed as a series of ramps and drop-offs. The cam slot is formed as a closed loop so that the cam follower repeatedly falls into one drop-off after another after it rides up the associated ramp surfaces. The cam follower is thereby prevented from returning to the previous ramp by each drop-off and it, therefore, traverses the cam slot in a single direction. At one position of the cam follower, resulting from a first depression of the plunger, the switch is locked into an actuated position. When the plunger is subsequently depressed, the cam follower returns to its original position, thereby deactuating the switch.

3,824,363

## INTERCHANGEABLY STRUCTURED ELECTRICAL CARTRIDGE WITH CROSS-BIASED LATCH MECHANISM FOR THE RELEASABLY TETHERED CAP OF THE SAME

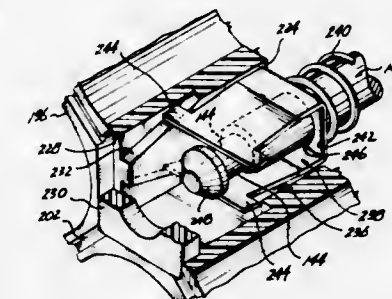
Maurice D. Fuller, Mercer Island, Wash., assignor to Korry Manufacturing Company, Seattle, Wash.

Filed June 26, 1972, Ser. No. 266,305

Int. Cl. H01h 3/20, 9/20

U.S. Cl. 200—328

34 Claims



The cartridge is interchangeably structured to accommodate various servomechanisms for the switch unit or other operating unit therein, as well as to accommodate various electrical arrangements for the pushbutton cap which is slidably guided in the open end of the cartridge to operate the servomechanism. The cap is releasably latched to each servomechanism by a cross-biased latch mechanism which prevents the cap from being shocked out of the cartridge, but which can nevertheless be overridden by a finger pull on the cap when it is desired to remove the cap from the cartridge. When so removed, the cap is tethered to the cartridge, although the tether is releasable from the cap, and vice versa, should this become necessary or desirable.



3,824,364

## APPARATUS FOR HEATING A VISCOUS LIQUID

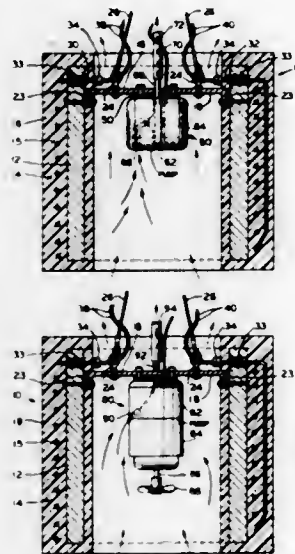
John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed June 7, 1973, Ser. No. 367,867

Int. Cl. H05b 5/08, 3/00; B67d 5/62

U.S. Cl. 219—10.51

9 Claims



An open ended tubular heating unit is provided which is comprised of a stainless steel tube surrounded by an induction heating coil which is disposed in magnetically coupled relationship with the tube. The tube and coil are encapsulated in insulating material, and the unit is submersible in a viscous liquid such as oil which is disposed in a vessel and the temperature of which liquid inhibits pumping thereof from the vessel. The unit is adapted to be supported in suspension and the coil energized to inductively heat the stainless steel tube, whereby the liquid inside and surrounding the unit is heated to elevate the temperature thereof and reduce the viscosity thereof. A driven impeller may be provided within the tubular unit to impel liquid flow therethrough, and a driven pump may be provided within the unit to pump the heated liquid from the vessel.

3,824,365

## MICROWAVE OVEN CONTROL SYSTEM

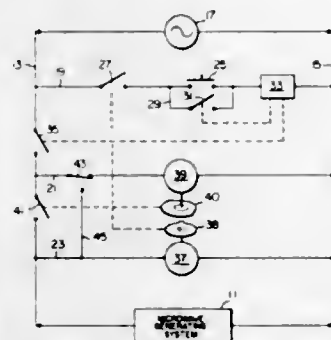
William R. Tapper, New Brighton, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 7, 1972, Ser. No. 313,188

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

21 Claims



A control circuit for a microwave oven is disclosed which functions to automatically control the running time of the microwave generator to enable it to run continuously, during its cooking cycle, or intermittently, during its defrosting cycle. The control circuit includes a timer control switch operatively coupled to a timer motor. The timer control switch functions to control the current flow from the source of electrical power

to the microwave generator. The circuit also includes a defrost control switch which functions to cyclically open and close a series current path to the microwave generator. A bypass circuit is also provided across the defrost control switch to short-circuit the defrost switch and provide a bypass current path to the microwave generator. A "cook-defrost" switch is provided to connect the circuit to the bypass circuit for the cooking mode, or to disconnect the bypass circuit to enable the current path to be governed by the defrost control switch for the defrosting mode. In one embodiment, the defrost control switch is coupled to a second timer motor which, in turn, is adapted to be cut into and out of the circuit by the "cook-defrost" switch. In a second embodiment, the defrost control switch is coupled to the first timer motor and is continuously operated thereby.

3,824,366

## PROCESS AND APPARATUS FOR ANNEALING THE WELD BEAD OF A WELDED METALLIC TUBE

Andre Garnier, Aymeries, France, assignor to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

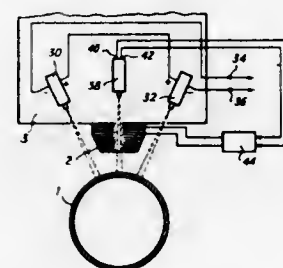
Continuation-in-part of Ser. No. 180,350, Sept. 14, 1971, Pat. No. 3,767,882. This application Oct. 11, 1973, Ser. No. 405,382

Claims priority, application Luxembourg, Sept. 17, 1970, 61704

Int. Cl. H05b 5/08

U.S. Cl. 219—10.77

3 Claims



An apparatus for treating continuously welded metallic tubes comprises a series of longitudinal inductors mounted on movable carriages which are adapted to be pivotal co-axially with respect to the tube in response to the angular position of the weld bead formed on the tube so that each of the inductors remains centered on this weld bead.

3,824,367

## INDUCTOR FOR INDUCTIVELY HEATING A ROTATING WORKPIECE

Norbert R. Balzer, Parma, and Larry G. Enk, Macedonia, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Aug. 13, 1973, Ser. No. 388,072

Int. Cl. H05b 9/02

U.S. Cl. 219—10.79

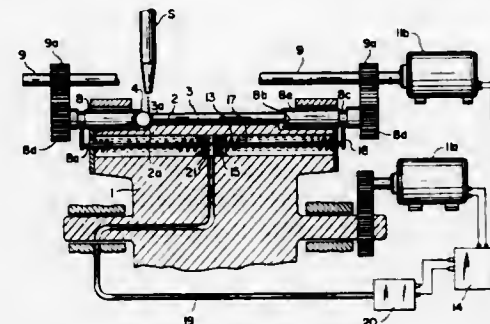
11 Claims



An improvement in a single shot inductor of the type used in heating the total length of an axle shaft as the shaft is rotating about its central axis. The normal single shot inductor includes two generally parallel conductors extending along the length

of the shaft and terminating in cross-over conductors at each end with one of the parallel conductors including a gap for accommodating input leads connected to an alternating current source. This basic inductor is improved by providing a conductor loop including at least one auxiliary conductor extending along the outer surface of the shaft between a first position adjacent one of the cross-over conductors and a second position adjacent the other cross-over conductor, with the auxiliary conductor being magnetically coupled to the surface. The conductor loop is connected in electrical series with one of the input leads of the normal single shot inductor so that the current flow within the auxiliary conductor provides an additional heating area in the rotating shaft.

said grooves, a pair of relatively displaceable receiving shaft means for holding said shafts and balls together on said drum



3,824,368

## LASER WELDING

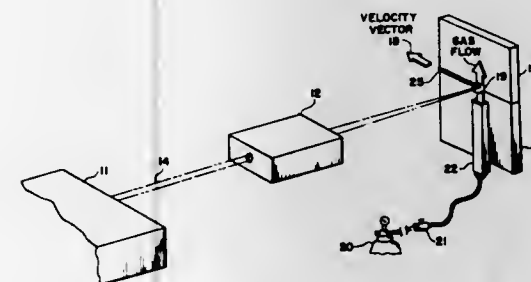
Edward V. Locke, Rockport, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 213,941, Dec. 30, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,737

Int. Cl. B23k 9/00

U.S. Cl. 219—121 LM

5 Claims



A method of laser welding is described wherein a concentrated high power laser beam is moved along a workpiece surface at an interaction point where a flow of gas is introduced. It has thus been found that ordinarily a standing absorption cloud of ionized material is formed by the interaction of the high power laser energy and workpiece which then dissipates a large portion of the laser beam; however, when a gas is flowed across the interaction point, ionization is prevented and consequently substantially all of the laser beam is able to reach the workpiece resulting in an improved weld. The gas flow, therefore, operates to improve the metal working process by allowing the laser energy to pass uninhibited to the workpiece.

3,824,369

## MANUFACTURING DEVICE FOR SHAFTS WITH SPHERICAL SHAFT ENDS

Wolfgang Hepp, Immenstaad; Klaus Pimiskern, Friedrichshafen, and Werner Herbert, Markdorf, all of Germany, assignors to Dornier Systems GmbH

Filed June 25, 1973, Ser. No. 373,256

Claims priority, application Germany, Aug. 11, 1972, 2239619

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EB

10 Claims

This invention relates to an apparatus for manufacturing shafts with spherical shaft ends, particularly shafts for pedestal bearings, comprising a horizontal conveyor drum means adapted to rotate in an indexing manner, a plurality of axially-extending groove means on the circumference of said drum means, means for placing shafts and balls to be connected into

means while being connected, means for synchronously driving said receiving shaft means, and means for connecting said shafts and balls.

3,824,370

## COMBINED RADIATOR CAP AND HEATER ASSEMBLY

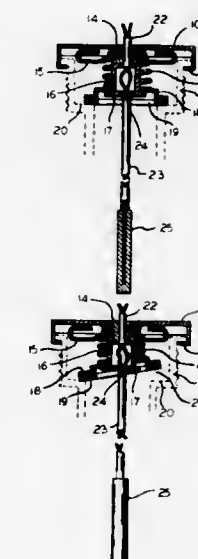
Joseph A. Kucera, 18720 Parkview Dr., Brookfield, Wis. 53005

Filed June 9, 1972, Ser. No. 261,545

Int. Cl. H05b 3/78; F02n 17/06

U.S. Cl. 219—208

5 Claims



A combined radiator cap and heater assembly wherein the radiator cap comprises a top plate and a bottom plate separated by a resilient means, such as a spring which normally keeps the bottom plate biased away from the top plate. Power carrying electrical conductors pass through a ferrule in the top plate into a tubular means connected to the top plate. The tubular means has a flange thereon for movably securing the bottom plate thereto in a manner which enables the bottom plate to move longitudinally along said tubular means. A tube attached to the tubular means holds and extends a heater into the water in the radiator. The conductors pass through the tube to the heater.

3,824,371

## GUN TYPE SOLDERING DEVICE WITH IMPROVED SOLDER WIRE FEEDING MECHANISM

David B. Schurman, Jr., 98 Morningside Path, East Weymouth, Mass. 02189

Filed Nov. 1, 1972, Ser. No. 302,675

Int. Cl. H05b 1/00; B23k 3/06

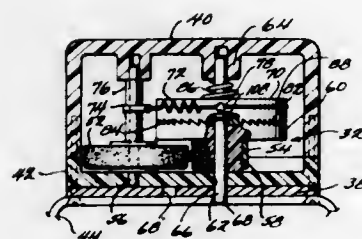
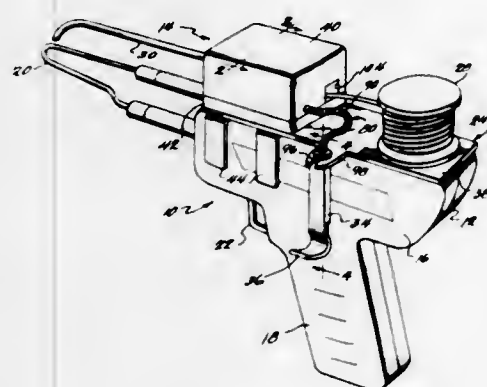
U.S. Cl. 219—230

13 Claims

An electrical gun-type soldering device having a solder wire feeding mechanism preferably in the form of an attachment,



the feeding mechanism including an actuating member having a thumb engaging portion adapted to be selectively disposed in either one of two normally biased inoperative positions in one of which the thumb engaging portion is disposed adjacent the upper left side of the handle portion of the soldering device for convenient engagement by the right thumb of a right-handed operator and in the other of which the thumb engaging portion is disposed adjacent the upper right side of the handle portion for convenient engagement by the left thumb of a left-handed operator. The actuating member is mounted by means of a flexible cable and a surrounding closely wound coil spring for movement from the selected normally biased



inoperative position through successive operative cycles each of which includes a downward working stroke by a downward digital pressure of the thumb by the operator on the thumb engaging portion and an upward return stroke of the thumb engaging portion by release of the thumb pressure. The feeding mechanism also includes a pair of cooperating rollers mounted with their peripheries in cooperating relation to drivingly engage therebetween the intermediate portion of a solder wire extending from a supply spool and a ratchet mechanism for effecting an incremental rotational movement of at least one of the rollers in response to an operating cycle of the actuating member.

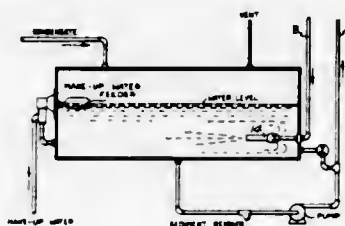
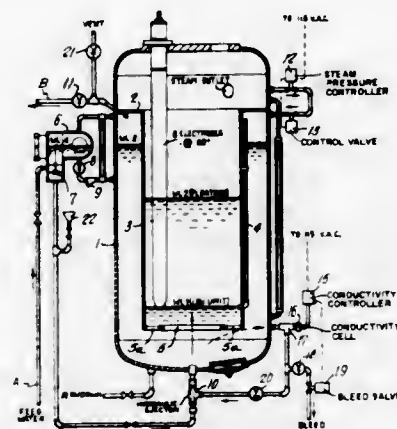
**3,824,372**  
**LOW VOLTAGE ELECTRIC BOILERS**  
Milton Eaton, 363 Ninth St., Shawinigan, Quebec, Canada  
Filed Apr. 30, 1973, Ser. No. 355,707  
Int. Cl. H05b 3/60

U.S. Cl. 219—287

8 Claims

An electrode boiler in which the electrodes are enclosed in a steam generating compartment surrounded by a control compartment, the boiler load being controlled by transfer of boiler water between the steam generating and control compartments and the feedwater supply being regulated by means responsive to the water level in the control compartment referred to as the controlled water level. The improvement of the boiler of the present invention includes the use of a float-operated feedwater regulator made responsive to a reference water level having a delayed response to the controlled water level. The delay is obtained by the use of a throttling device located in the water communication between the reference and the controlled water levels. The boiler water conductivity

control means for boilers operated at low voltage includes an external piped circuit in which the conductivity measuring device is located and through which boiler water is made to

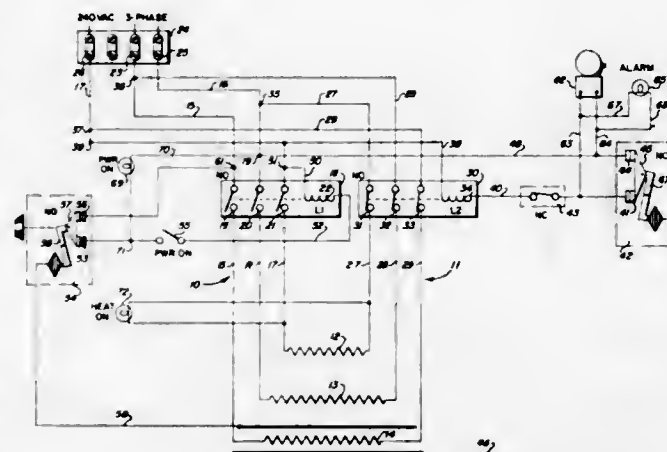


flow by means of a hydraulic ejector located in the feedwater supply pipe. A conductivity control piping arrangement is also provided whereby the boiler water discharged for conductivity control is taken from the external piped circuit.

**3,824,373**  
**SAFETY CIRCUIT FOR DEEP FAT FRYER**  
Clarence H. Napier, 1316 E. Northshore Dr., Tempe, Ariz. 85281  
Filed Oct. 29, 1973, Ser. No. 410,638  
Int. Cl. H05b 1/02

U.S. Cl. 219—494

9 Claims

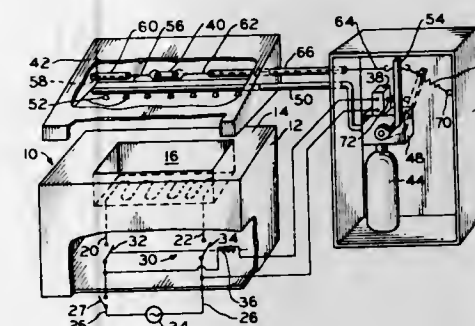


A safety circuit for deep fat fryers including a plurality of electric resistance heating elements, a first set of normally open spring-biased contact switches under the control of an adjustable thermostat, and a second set of normally open spring-biased contact switches, independent of said first set, and under the control of a fixed high-limit thermostat so as to interrupt the circuit to said heating elements in the event the contacts of the first set become stuck or frozen.

**3,824,374**  
**CONDITION RESPONSIVE DISCONNECT**  
**ARRANGEMENT FOR ELECTRICAL COOKING**  
**EQUIPMENT**  
Edward J. Mayher, 13672 Cherokee Trl., Middleburgh Heights, Ohio 44130  
Continuation-in-part of Ser. No. 143,015, May 13, 1971, abandoned. This application May 10, 1973, Ser. No. 359,079  
Int. Cl. H05b 1/02

U.S. Cl. 219—510

12 Claims

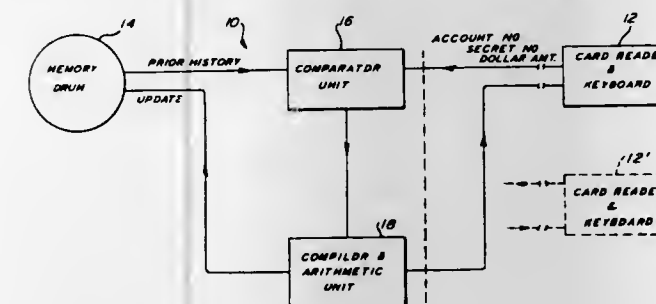


A condition responsive arrangement is provided which includes a normally closed safety control circuit in series with and between a thermostat element in an electric cooking range and a coil-controlled contactor through which the heating element of the range is energized. The thermostat, safety circuit and contactor are connected across a power source and the contactor operates when energized to connect the heating element across the power source. The safety circuit includes a normally closed switch located remotely of the range and actuated in response to a sensed abnormal condition exteriorly of the range to open the safety circuit and thus the electrical circuit to the coil-controlled contactor, thereby removing the heating element of the range from the power source.

**3,824,375**  
**MEMORY SYSTEM**  
Wilmer Gross, Philadelphia; Edwin S. Wydro, Levittown, both of Pa., and Charles W. Wood, Cherry Hill, N.J., assignors to Financial Security Systems, Inc., Philadelphia, Pa.  
Filed Aug. 28, 1970, Ser. No. 67,717  
Int. Cl. G06k 7/00

U.S. Cl. 235—61.7 B

30 Claims

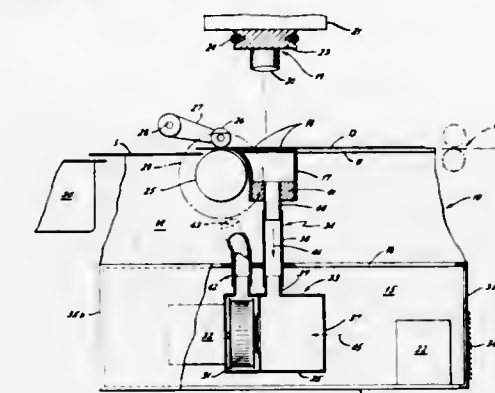


A memory system for simultaneously accessing a memory from a large number of sources includes a cyclic memory from which stored information is continuously read by a plurality of read means and temporarily entered into comparison registers, input registers receive and temporarily store at least one of the coded digits on said memory, and comparators generate a signal upon the existence of a coincidence between a coded digit momentarily in said comparator register and a coded digit temporarily stored in said input register. The existence of such coincidence is used to trigger arithmetic and logic units for further processing of the information.

**3,824,376**  
**DOCUMENT RESTRAINING AND READING APPARATUS**  
Ralph W. Fox, Blue Bell, Pa., assignor to Philco-Ford Corporation, Blue-Bell, Pa.  
Filed May 10, 1973, Ser. No. 358,983  
Int. Cl. G06k 7/02

U.S. Cl. 235—61.11 J

6 Claims

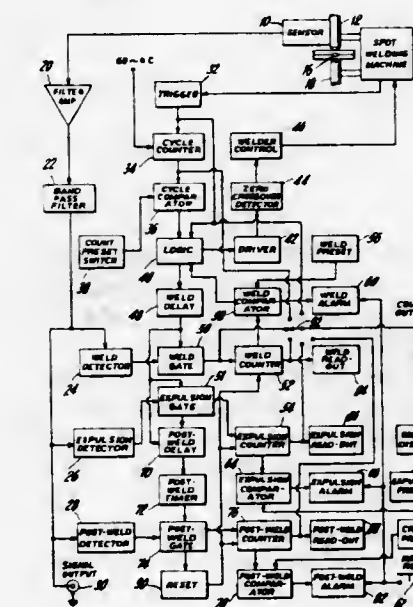


Document handling apparatus in which a document reader is disposed to scan indicia carried by a document occupying a perforated platform at the reading station. A vacuum manifold is cooperable with the perforations in said platform to reduce the pressure at the platform sufficiently to maintain the document in position to be scanned by the reader. A single blower serves several purposes, providing cooling air for electronic equipment included in the reader, and inducing the vacuum at the reading station which serves to keep the documents secured in proper position on the platform. Conduit structure, including first and second branches, is coupled with the blower to provide for drawing of air through said branches. One branch is connected to the vacuum manifold and the second branch presents sufficient restriction to insure that the blower induces, through the first branch, a pressure low enough to hold the document in position, while yet drawing sufficient air through the second branch and across the electronic equipment to cool the same. The output of the blower also is used to provide cooling air for the motor of apparatus which serves to remove documents from the platform.

**3,824,377**  
**ACOUSTIC EMISSION SPOT WELDING CONTROLLER**  
Kenneth R. Notvest, Ramsey, N.J., assignor to Trodyne Corporation, Teterboro, N.J.  
Filed May 10, 1972, Ser. No. 252,111  
Int. Cl. H03k 21/34

U.S. Cl. 235—92 PD

17 Claims



A system for detecting the acoustic emission emanating from a spot weld in which the emission from spot weld nugget







3,824,385

## DIGITAL DIVIDER CIRCUIT

Uwe Klencke, Moglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

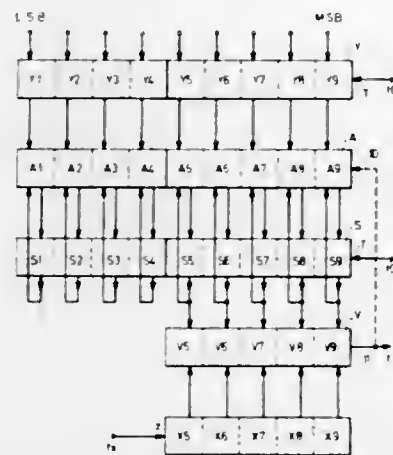
Filed Oct. 10, 1973, Ser. No. 405,143

Claims priority, application Germany, Oct. 28, 1972, 2253006

Int. Cl. G06F 7/52

U.S. Cl. 235—150.3

16 Claims



The frequency of an input pulse train serves as the dividend and operates a first counter in continuously repeated cycles. The divisor is stored as a binary number in a divisor register and, by means of an adder, the divisor and successive integral multiples thereof are successively registered in a summing register at intervals determined by the operation of a comparator which compares the more significant digits of the summing register with all of the lower integral multiple of the divisor. The adder or the summing register is advanced to present the next higher multiple. The succession of output pulses of the comparator provide a pulse train the frequency of which is the quotient. The divisor may be generated by a pulse train and periodically registered, either as a number proportional to the period of the pulse train or a number proportional to the frequency of the pulse train. The divisor register, adder and summing register have additional places for less significant bits in excess of the number of places in the first counter, enabling great reduction in the maximum rounding error.

3,824,386

## APPARATUS FOR DETERMINING THE MOMENTARY TILT OF A VEHICLE OR CRAFT

Rienk Pieter Offereins, Wilmskamp, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

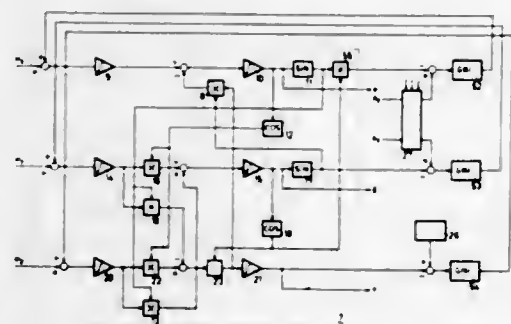
Filed Apr. 26, 1973, Ser. No. 354,672

Claims priority, application Netherlands, May 4, 1972, 725986

Int. Cl. G06g 7/78

U.S. Cl. 235—150.27

5 Claims



An apparatus for determining the momentary tilt of a moving vehicle or craft is provided with two translational ac-

celerometers mounted rigidly on or in the vehicle or craft. The output signals of the accelerometers determine the acceleration components ( $a_x, a_y$ ) in two, mutually perpendicular, axial directions ( $x, y$ ) situated in a plane horizontal with respect to the vehicle or craft. From said output signals the low frequency components of two of the three angles ( $\alpha, \beta$ ) defining the momentary tilt are obtained by employing, amongst others, a low-pass filter available for the two signals. The low-frequency components of the third angle ( $\gamma$ ) defining the momentary tilt are derived, via a low-pass filter, from a signal which is supplied by a compass and indicates the azimuth position of the vehicle or craft. The apparatus is furthermore provided with three angular accelerometers also mounted rigidly on or in the vehicle or craft, of which accelerometers the output signals determine the angular acceleration ( $\omega$ ) which said vehicle or craft is experiencing with respect to its centre of gravity. From said output signals the high frequency components of the three angles ( $\alpha, \beta, \gamma$ ) defining the momentary tilt are obtained by using a high-pass filter, available for each of these signals, and a (first) computing device.

3,824,387

## METHOD AND APPARATUS FOR CONTROL OF CONDITIONS IN A PROCESS

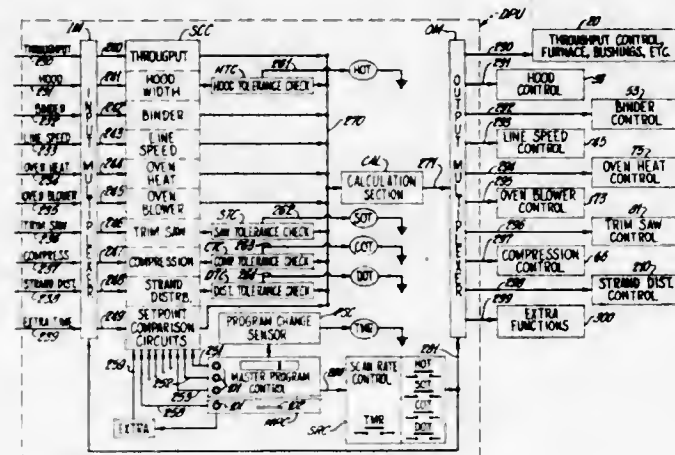
John M. Garst, Blacklick, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jan. 3, 1972, Ser. No. 215,048

Int. Cl. G06F 15/46

U.S. Cl. 235—151.1

28 Claims



An embodiment described herein comprises apparatus for manufacturing a glass fiber mat which includes means for providing glass fibers at a deposition station, movable collecting surface means arranged to receive fibers at the deposition station, means for depositing glass fibers along the collecting surface including means for driving the movable collecting surface past the deposition station, and data processing means for controlling the variables of the glass fiber providing and depositing means to provide a mat-like mass of fibers on a collecting surface with predetermined uniform characteristics. A plurality of control loops provide data on the actual condition of each variable being monitored and controlled. The data supplied by each control loop is scanned by a scanning means having a plurality of selectable different scanning rates. The scanned actual condition data of each control loop is compared with setpoint data representing a desired condition for the variable of that loop. A selection means is responsive to the comparing means and selects a first slower scanning rate for at least one of the control loops in response to substantial agreement between actual and setpoint data in the comparing means. In response to a predetermined difference in the comparing means between actual and setpoint data of the one control loop a second faster scanning rate for the scanning means is selected for the one control loop.

3,824,388

## HYDROCARBON CRACKING SYSTEM

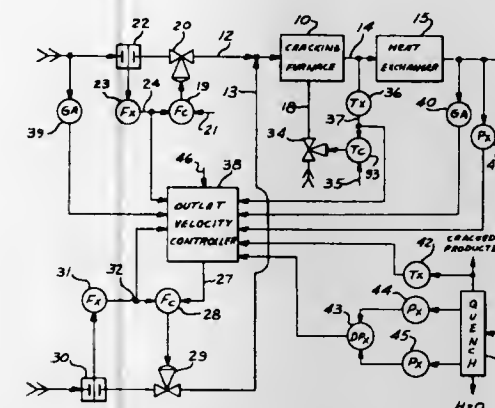
John C. Cugini, 9 Penlaw Rd., Lawrenceville, N.J. 08648

Filed June 26, 1972, Ser. No. 266,208

Int. Cl. G06F 15/46

U.S. Cl. 235—151.12

33 Claims



Operation of a hydrocarbon cracking furnace is controlled automatically by utilizing various types of equipment to control the flow to the furnace of hydrocarbon feed gas, a mixing gas such as steam, and furnace fuel in such manner as to increase the yield of desirable cracked products while simultaneously operating the furnace closer to its limiting conditions and increasing the amount of furnace on-line time. This is accomplished by monitoring numerous furnace operating parameters to provide data which is used to automatically control equipment which results in controlling the furnace outlet gas velocity in a predetermined desired manner. The system provides for automatic control of furnace outlet gas velocity by controlling the flow of any one or more of the hydrocarbon feed gas, the mixing gas such as steam, or the furnace fuel in an automatically controlled sequence of operations. Equipment and operator-set limiting conditions are imposed on the system and the latter can be changed as desired.

3,824,389

## COUNTERS

John Benjamin Leslie Walters, Walsall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

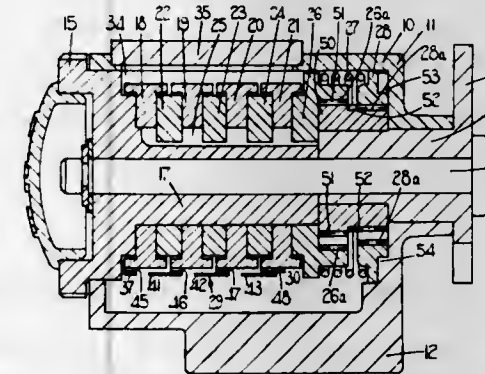
Filed June 20, 1973, Ser. No. 371,694

Claims priority, application Great Britain, June 24, 1972, 29720/72

Int. Cl. G06c 15/26, 15/42

U.S. Cl. 235—117 R

8 Claims



A counter comprises a body housing a set of discs which are freely rotatable on a sleeve and which have numerals on their peripheries. A series of drive plates are keyed to the sleeve and interleaved with the discs. At one end of the set of discs a spring-loaded collar also keyed to the sleeve urges the drive plates and discs into frictional engagement. The sleeve is

rotatable with a reset wheel whilst the collar is driven by a star counting wheel through an orbital drive arrangement. Each disc has a set of first abutments and a second abutment on its periphery. Spring blades engage the peripheries of the discs to engage the first abutments so as to oppose movement of the discs in a counting direction but to permit movement thereof in a reset direction. The spring blades associated with all the discs but one end disc are each provided with a resilient detent which is positioned in the path of movement of the second abutment on a disc adjacent that engaged by the associated first abutment.

3,824,390

## MULTICHANNEL MASS SPECTROMETER

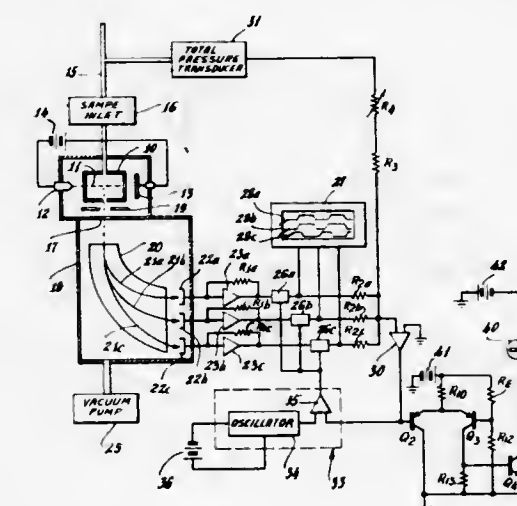
John J. Magyar, Arcadia, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 18, 1971, Ser. No. 190,223

Int. Cl. H01J 39/34

U.S. Cl. 250—294

9 Claims



This is a multichannel mass spectrometer in which gas components of a mixture sample are ionized and the ions directed respectively to different collector cups or plates to generate voltage signals corresponding to the ion currents collected. Means are provided for initially adjusting the voltage of the output signals so that each collector output circuit produces the same signal as the others at unit partial pressure of the gas component it is adapted to measure. A reference signal is supplied and means is provided for comparing it with the sum of the collector circuit output voltages. Sensitivity control means is responsive to changes in the initially adjusted relationship of the sum of the collector output signals to the reference signal and adjusts each of the collector output signals by the same factor to maintain the sum of the collector signals in the initial adjusted relationship. Thus the collector signals will be proportional to the respective gas component partial pressures despite variations in the relative proportions of the component partial pressures, and despite changes in factors which would otherwise alter the sensitivity of the spectrometer system. Detector means is also provided to indicate an excessive change in the sum of the collector signals due to restriction of the sample inlet conduit or other unusual condition.

3,824,391

## METHODS OF AND APPARATUS FOR FLAME MONITORING

Bernard Edward Noltingk, Dorking, and Norman Edgar Robinson, Croydon, both of England, assignors to Central Electricity Generating Board, London, England

Filed May 21, 1973, Ser. No. 362,546

Int. Cl. H01J 39/12

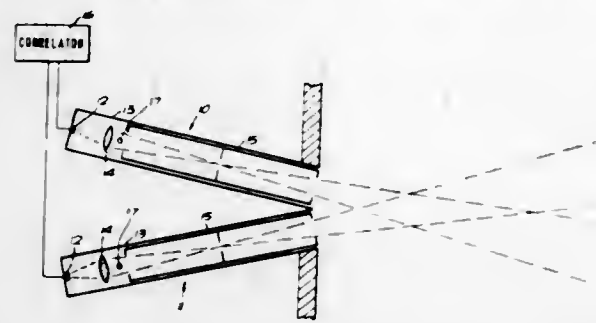
U.S. Cl. 250—208

10 Claims

For monitoring each individual flame in a multi-burner furnace, two optical light receiving systems each have a photo-



sensor on which is focused a narrow beam, the two beams intersecting at a small angle in or near the flame to be monitored. The angular beam widths are less than the angle of intersection. The alternating electrical signals from the photo-



sensors due to flicker components in the flame are correlated in a correlator which determines the degree of correlation whereby the presence or absence of a flame in the intersection region only of the two beams is detected.

### 3,824,392 DETECTOR TO INDICATE BURNING OR GLOWING PARTICLES

Kurt Eskil Tibbling, Solna, Sweden, assignor to Pak Construction AB, Huddinge, Sweden

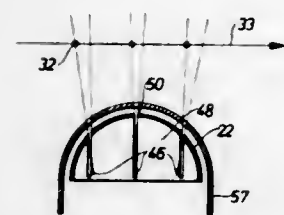
Filed Apr. 23, 1973, Ser. No. 353,313

Claims priority, application Sweden, Apr. 24, 1972, 5380/72

Int. Cl. G08b 17/12

U.S. Cl. 250—221

5 Claims



A detector to be utilized in processes where inflammable material is transported in conduits at a high speed. Then the detector will indicate glowing particles, as sparks and fire flakes, which may appear within a risk zone or are rapidly being transported through such a zone. Said detector includes a transducer suitable disposed within the system, as on the tube wall of a transport conduit. Said transducer gives signals in the form of a pulse train when such a particle passes through the visual field thereof.

### 3,824,393 SYSTEM FOR DIFFERENTIAL PARTICLE COUNTING

Alfred E. Brain, Santa Cruz, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Continuation of Ser. No. 174,936, Aug. 25, 1971, abandoned, which is a division of Ser. No. 44,503, June 6, 1970, abandoned. This application Oct. 1, 1973, Ser. No. 402,656

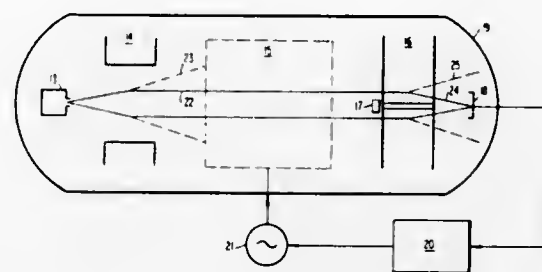
Int. Cl. H01j 39/12

U.S. Cl. 250—222 PC

4 Claims

A system for differentiating and counting particles and in particular nucleated particles such as white blood cells. The presence in the field of view of a particle of the type to be differentiated and counted is detected and an image of the field scanned by a television camera. An analog to digital converter samples the television camera output to provide a digital data representation of the intensity of a sampled field of picture elements of predetermined resolution. The digital data is processed by a digital computer including a memory for stor-

ing the sampled field of picture elements. Picture elements corresponding to a particle to be analyzed are circumscribed by box-finding algorithms and digital data corresponding to picture elements enclosed by the box are analyzed for parameters used in identifying the particle. Particles are identified by



a distance measure or criterion of closeness to selected prototype particle points in an  $n$  dimensional space according to a preselected set of  $n$  parameters. Focus is automatically preserved during microscope imaging of a specimen passed beneath the microscope objective to insure reliable data for processing.

### 3,824,394 ATOMIC BEAM RESONATOR HAVING A CONFOCAL CONICS FIELD GEOMETRY IN THE SECOND STATE SELECTOR

Peter Kartaschoff, Poudrieres 43, Neuchatel, Switzerland

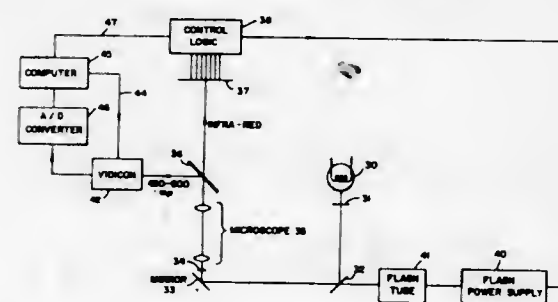
Filed Jan. 30, 1973, Ser. No. 328,087

Claims priority, application Switzerland, Feb. 15, 1972, 2110/72

Int. Cl. G01n 27/78; H01s 1/00

U.S. Cl. 250—251

4 Claims



An atomic beam resonator having a source for producing the beam, a first and second state selector separated by an interaction zone, means for generating an oscillating field in the interaction zone, and a detector. The second state selector is a dipole magnet having pole pieces of trapezoidal shaped in such a way that, in a plane perpendicular to the beam axis, the field is described by a set of confocal conics, the equipotentials being hyperbolae and the field lines ellipses.

### 3,824,395 RADIOMETRIC ASSAY OF PARTICULATE MATTER IN FLUIDS

Bernard A. Fries, Orinda, and Charles K. Parker, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 28, 1972, Ser. No. 221,664

Int. Cl. G01t 1/18

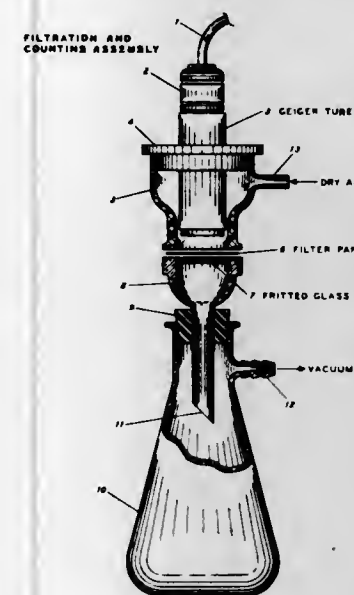
U.S. Cl. 250—308

6 Claims

A porous filtering medium is rendered radioactive by incorporation of a radioactive isotope within it, or by coating it with an insoluble radioactive isotope, having weakly penetrating radiation. This source of radioactivity is first counted. The

fluid to be assayed is then filtered through the filtering medium and the attenuation of radiation due to collected solid

different beams with the inspection unit and the locations of the theoretical zones of tolerance which are traced on the film by means of beta-ray sources through a perforated mask which is positioned with high precision with respect to the block.



material is proportional to the amount of particulate matter in the filtered fluid. The method may be automated and assays made continuously.

### 3,824,396 METHOD AND APPARATUS FOR CHECKING POSITIONS OF BOTTOM END WALLS OF BLIND HOLES FORMED IN A PART AND IN PARTICULAR IN A GRAPHITE BLOCK

Jean-Louis Boutaine, Le Chesnay; Roko Bujas, and Jean Tortel, both of Gif-sur-Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

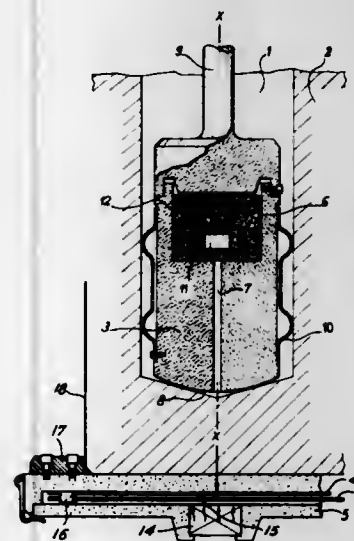
Filed May 18, 1973, Ser. No. 361,426

Claims priority, application France, May 31, 1972, 72.19564

Int. Cl. G01b 15/00

U.S. Cl. 250—312

6 Claims



The positions of the axes of cylindrical blind holes bored in parallel relation in a block of solid material such as graphite are checked by directing a parallel and narrow beam of X-ray or gamma-ray photons along the axis of each blind hole towards the bottom of the hole. An inspection unit consisting of radiation-sensitive photographic film and placed outside the block opposite to the blind holes is employed in order to make a comparison between the points of intersection of the

### 3,824,397 DEVICE FOR X-RAY PHOTOGRAPHY, IN PARTICULAR FOR MAMMOGRAPHY

Manfred Bauer; Gerhard Hellberg, and Friedrich Reiniger, all of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

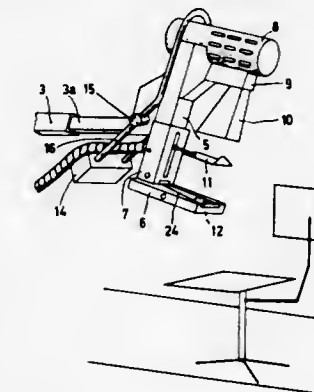
Filed May 3, 1972, Ser. No. 250,071

Claims priority, application Germany, May 11, 1971, 2123151

Int. Cl. G03b 41/16

U.S. Cl. 250—320

5 Claims



An X-ray photography device for mammography, including a support which is connected to a telescopic horizontal arm, is rotatable about the axis of the arm, and also is tiltable about an axis which is perpendicular to the arm.

### 3,824,398 METHOD FOR PLASMA TREATMENT OF SUBSTRATES

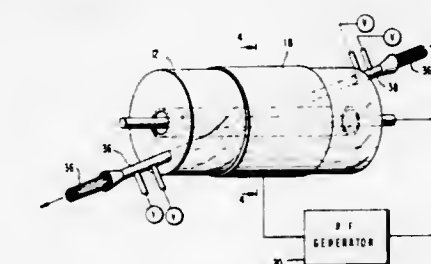
Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 171,282, Aug. 12, 1971, Pat. No. 3,723,289. This application Sept. 26, 1972, Ser. No. 292,348

Int. Cl. G01n 23/00; H01j 37/00

U.S. Cl. 250—325

3 Claims



A method and apparatus for efficiently generating a gaseous plasma particularly for the treatment of substrates. A radio frequency electrical signal is applied to two electrodes disposed exteriorly of an electrically insulative, gas impervious envelope. A central passage extends into the envelope and one electrode is disposed in the central passage. The electrodes are separated at least in part by the envelope and the radio frequency signal applied to the electrodes excites the gas within the envelope to thereby generate a gaseous plasma therein. The gas conditions within the envelope differ from the gas conditions exteriorly thereof and the amplitude of the radio frequency signal is insufficient to generate a plasma out-



side the chamber defined by the envelope. Since the plasma does not contact the electrodes, efficiency is maximized and the plasma is not contaminated by the electrodes. In addition, the surface areas of the electrodes differ substantially thereby creating a plasma within the envelope which varies in concentration in a predetermined manner, with the concentration being greatest near the center of the envelope. A substrate may therefore be contacted by varying plasma concentration as it passes through the envelope and the outer wall of the envelope is not contaminated by the plasma. A vacuum lock for preventing gas leakage into the envelope is also disclosed.

3,824,399

# METHOD OF IN VIVO EXAMINATION OF ORGAN FUNCTIONS

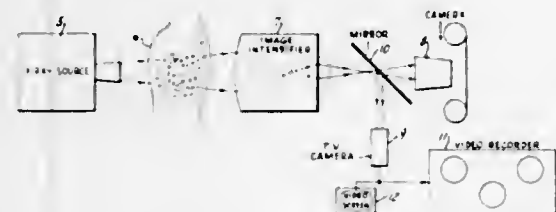
Lars Bjork, and Uno Erikson, both of Saab Scania Aktiebolag, Linköping, Sweden

Continuation-in-part of Ser. No. 110,184, Jan. 27, 1971, abandoned. This application July 5, 1973, Ser. No. 376,796

Int. Cl. G01t 1/16

U.S. Cl. 250—336

2 Claims



A known quantity of X-ray-opaque tracer is injected into blood entering an organ to be examined. X-rays are passed through the organ to an imaging plane. Image records are made periodically through a cycle of the organ. Selectively delineated image areas of each record of interest are scanned to produce a signal corresponding to blackness variations across the image. The signal is so amplified as to produce an output that varies with tracer concentration across the projected area of the organ. Integrating that output for each record provides a final output representative of tracer concentration in the delineated organ portion.

3,824,400

# INDUCED CHARGE TRANSFER DEVICES

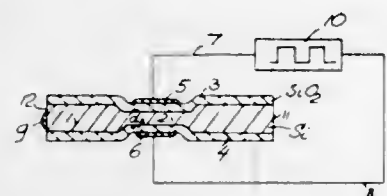
Kurt Lebovec, 11 Woodlawn Dr., Williamstown, Mass. 01267

Continuation-in-part of Ser. No. 861,021, Sept. 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 703,958, Feb. 8, 1968, Pat. No. 3,473,032. This application Sept. 27, 1972, Ser. No. 292,694

Int. Cl. G02f 1/28

U.S. Cl. 250—552

4 Claims



Electric devices which comprise an induced mobile charge in a semiconducting layer facing a mobile charge of opposite polarity across a semi-insulating layer. The positions of these charges are shifted simultaneously. In one embodiment of the invention said charges are induced on opposite surfaces of a thin semiconducting layer through insulators by means of applied potentials and said semi-insulating layer is a depletion space charge layer in the semiconductor between said opposite surfaces, the induced charges exchanging positions by

reversal of the applied potentials. In another embodiment one of said mobile charges is a Gunn domain which induces the mobile charge of opposite polarity through a semi-insulating film of the Gunn device material, said charges shifting parallel to each other along said semi-insulating film.

3,824,401

# PHOTOELECTRIC TYPE WEFT SENSING PROCESS AND WEFT SENSOR

Toshiyuki Suzuki, Nara-ken, Japan, assignor to Enshu Limited, Skizuoka-ken, Japan

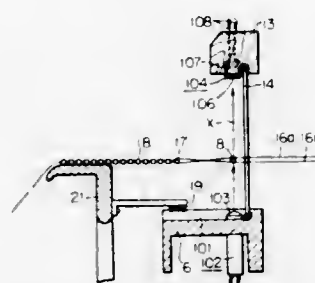
Filed Nov. 14, 1972, Ser. No. 306,206

Claims priority, application Japan, Nov. 16, 1971, 46-92050; Nov. 16, 1971, 46-92051

Int. Cl. G01n 21/30

U.S. Cl. 250—561

30 Claims



Interception of light, which is emitted by a light emitter positioned on one vertical side of the warp sheet, by the weft at the moment of picking motion is sensed by a light receiver positioned on the other vertical side of the warp sheet while cutting off luminous noises by the warp sheet and, after the photoelectric conversion, corresponding electric signals are given to a discrimination circuit so that the absence of weft at the time of the picking motion will cause instant interruption of the loom running.

3,824,402

# DUAL PARAMETER FLOW PHOTOMETRIC APPARATUS AND METHOD

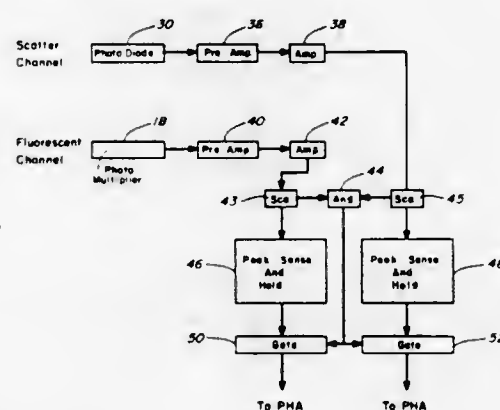
Paul F. Mullaney, and William T. West, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Commission, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,892

Int. Cl. G01n 21/26; G03b 27/32, 27/60

U.S. Cl. 250—565

1 Claim



A photometric apparatus and method for measuring light responsive characteristics of appropriately stained biological cells. At least two light responsive characteristics are measured and compared to eliminate spurious light induced noise. More particularly, light scattering produced by the cells and fluorescent light emitted by the cells in response to an incident

light beam are detected. Electrical signals are produced in accordance with such fluorescence and scattered light. The fluorescence and scattering signals are then compared to one another to eliminate from an output signal fluorescence signals produced from spurious fluorescence in the solution carrying the cells or debris and scattering signals from scattering produced by cellular debris.

3,824,403

# POWER CONTROL CIRCUIT FOR AUTOMATIC VEHICLES AND THE LIKE

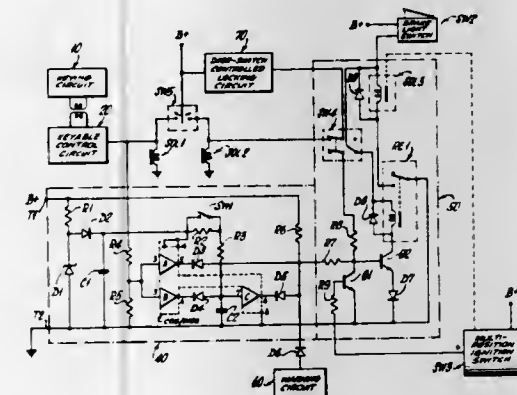
Francis A. McGuirk, Jr., Chatham, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Sept. 15, 1972, Ser. No. 289,283

Int. Cl. B60r 25/04

U.S. Cl. 307—10 AT

10 Claims



A power control circuit operative to enable start-up of a vehicle engine in response to a predetermined sequence of events. Upon opening one or more doors by means of a keying circuit actuating a keyable control circuit, a control signal is provided to a timing circuit which in turn provides an enabling signal to an enabling circuit for a predetermined period of time during which engine start-up may be effected by depressing the brake pedal and subsequently actuating the ignition switch. The timer output and the actuation of the brake pedal switch cause energization of a solenoid which normally prevents actuation of the ignition switch. Energization of this solenoid enables actuation of the ignition switch, which in turn mechanically prevents the solenoid from preventing further actuation of the ignition switch after the solenoid is again de-actuated upon either expiration of the enabling signal or de-actuation of the brake light switch.

3,824,404

# VEHICLE POWER OUTPUT MEANS

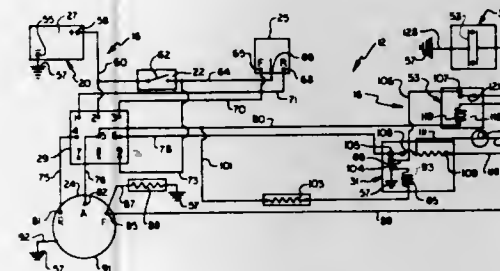
Leonard R. Ghere, 256 S. Florence, Wichita, Kans. 67209

Filed Apr. 3, 1973, Ser. No. 347,434

Int. Cl. H02j 1/00

U.S. Cl. 307—10 R

10 Claims



This invention relates to a power output means for conversion of the regulator alternator electrical system of a vehicle to supply electrical power for the operation of lighting fixtures,

hand tools, etc. The power output means is connected to the normal vehicle ignition means being a battery power supply, ignition switch, an alternator, an a regulator with the invention herein being a power converter means including a master switch means connected to a voltage control assembly and a current control assembly to achieve a power output at an output receptacle whereby the invention is operable to control the voltage and amperage output regardless of the vehicle engine speed.

3,824,405

# AUTOMATIC WIPER AND LIGHT CONTROL

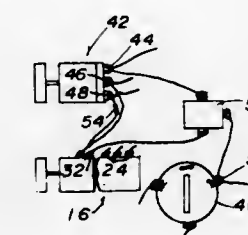
Thurman A. Glaze, 9704 Tokomah Trl., Tampa, Fla. 33617

Filed June 1, 1973, Ser. No. 365,858

Int. Cl. H02g 3/00

U.S. Cl. 307—10 LS

3 Claims



A system is provided for automatically turning on head and tail lights of a motor vehicle when the vehicle windshield wipers are turned on. However, when the ignition switch is in other than the normal "On" position, the windshield wipers may be operated without the lights on, as when watching a drive-in movie in the rain.

3,824,406

# PHASE RESPONSIVE CONTROL CIRCUIT

Charles W. Ellis, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

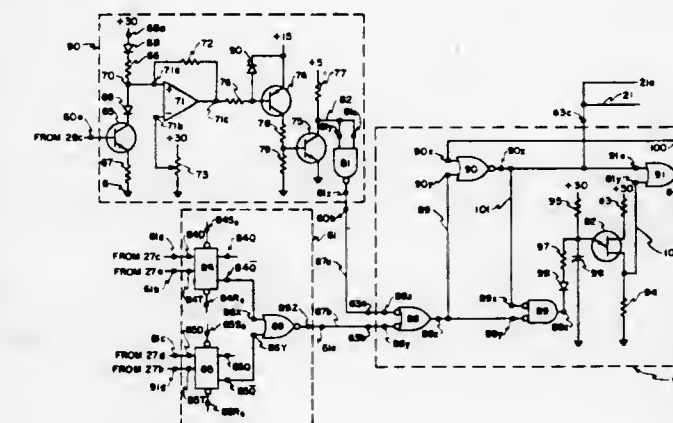
Division of Ser. No. 152,770, June 14, 1971, Pat. No.

3,723,888. This application Jan. 29, 1973, Ser. No. 327,292

Int. Cl. H03k 5/20

U.S. Cl. 307—87

3 Claims



A circuit for establishing and controlling a synchronous relationship between the voltages of two independently energized a-c sources. Two a-c voltages are applied in switching control relationship to respective inputs of a phase comparator circuit. The comparator circuit generates a pulse train having a duty cycle which is a substantially linear function of the phase angle between the voltages of the two a-c sources. A reference pulse train having a fixed duty cycle is subtracted from the variable duty cycle pulse train to establish a signal voltage that varies in accordance with the magnitude and sign of the phase angle between the voltages of the two a-c sources. When the frequency of one a-c source is within acceptable



frequency limits, the above signal voltage is allowed to vary the frequency of the other a-c source, as required, to maintain a synchronous relationship between the voltages of the two a-c sources. When, however, the frequency of one a-c source varies outside of acceptable limits, the above signal voltage is prevented from varying the frequency of the other a-c source which then operates at a fixed, predetermined frequency.

3,824,407

# DIRECT CURRENT SIGNAL ISOLATOR PROVIDING A CLOSE REPLICA OF WAVE SHAPE

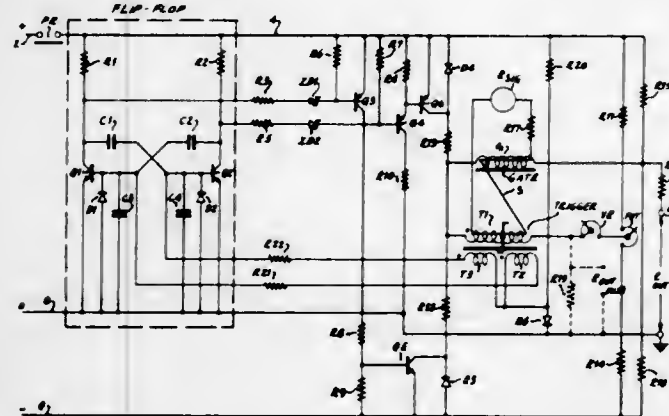
Robert L. Risberg, Brookfield, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 15, 1973, Ser. No. 341,564

Int. Cl. H02m 5/10

U.S. Cl. 307—88 MP

11 Claims



A circuit providing information regarding the magnitude and polarity of signals in an electrical system. The signals may be A.C., D.C., asymmetrical, or of a pulse nature. A flip-flop drives a saturable reactor "trigger" winding alternately with opposite voltage polarities, and pulses generated by the saturation phenomenon of the trigger reactor control the flip-flop to reverse the voltage upon saturation. A second non-saturating reactor "gate" winding, not magnetically coupled to the saturating core, is also driven by the flip-flop on a minor hysteresis loop. A D.C. input signal winding is wound simultaneously on both cores. The output signal is obtained from the "gate" winding and is a close replica of the input signal wave form.

3,824,408

# DRIVER CIRCUIT

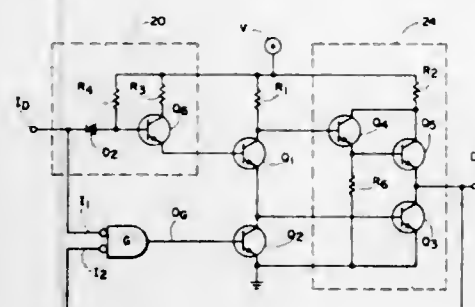
L. E. Andre Brunel, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed July 20, 1973, Ser. No. 381,257

Int. Cl. H03k 19/40

U.S. Cl. 307—214

25 Claims



A high speed inverting driver circuit, having a pair of serially arranged bipolar transistors in its output stage, for provid-

ing an interface between low level logic signals and a load. During operation of said driver circuit a logic gate, which is coupled to the base electrode of a bipolar transistor switch bridging the base and emitter electrodes of one transistor in the output stage, compares the voltage signals appearing at the input and output terminals of the driver circuit. If, due to slow turn OFF of said one transistor in the output stage, said voltage signals are simultaneously at their logical "0" level (ground potential), the bipolar transistor switch is turned ON by a signal from the logic gate, and the base and emitter electrodes of said one transistor of the output stage are effectively joined. By joining the base and emitter electrodes via the transistor switch, as aforesaid, charge stored in the base region of said one transistor in the output stage is rapidly depleted and the turn OFF time of said one transistor thereby greatly reduced.

3,824,409

# ARBITER CIRCUITS

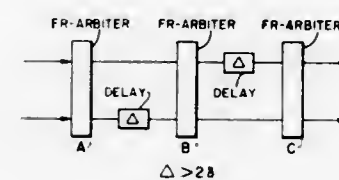
Suhas S. Patil, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 12, 1972, Ser. No. 261,849

Int. Cl. H03k 17/28, 17/30, 19/20

U.S. Cl. 307—232

10 Claims



An infinite resolution electronic arbiter circuit is described which provides a signal at one of its outputs within a known time with a very small possibility that a signal also appears on its other output. Finite resolution arbiter circuits are cascaded with a delay element interposed between one arbiter output and the input of the other to provide an arbiter circuit having infinite resolution. Finite resolution arbiter circuits are shown constructed from both C and C' circuits.

3,824,410

# FREQUENCY TO VOLTAGE CONVERTER WITH MEANS FOR PRESCRIBING PULSE WIDTH AGAINST FLUCTUATIONS

Hidefumi Funaki; Toshiaki Tanaka; Katsuyoshi Nakajima, and Yuichi Kanda, all of Tokyo, Japan, assignors to Nippon Electric Varian, Ltd., Tokyo, Japan

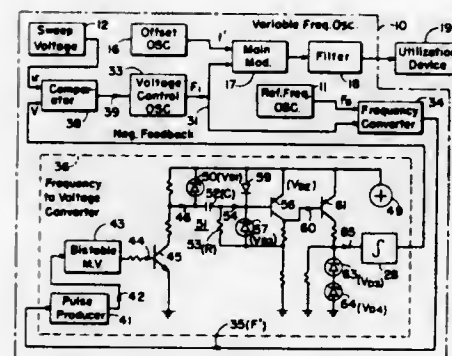
Filed June 20, 1972, Ser. No. 264,449

Claims priority, application Japan, June 21, 1971, 46-44587; Apr. 18, 1972, 47-38312

Int. Cl. H03k 5/00

U.S. Cl. 307—233

3 Claims



In a frequency to voltage converter, the height of pulses produced in response to the respective cycles of the input

signal is stabilized by prescribing the pulse levels with reference to ground and by compensating for the temperature dependency of the characteristics of the circuit elements. Furthermore, the pulse width is prescribed by a predetermined number of cycles of a crystal controlled oscillation. A high gain feedback loop including the converter and a voltage controlled crystal oscillator serves to sweep the frequency of the voltage controlled oscillation in linear proportion to the sweep voltage applied to the loop and to phase synchronize the oscillation with respect to a reference oscillation supplied to the loop. The frequency swept oscillation is applicable to a nuclear magnetic resonance analyser without the offset oscillation.

3,824,411

# PULSE DELAY CIRCUIT

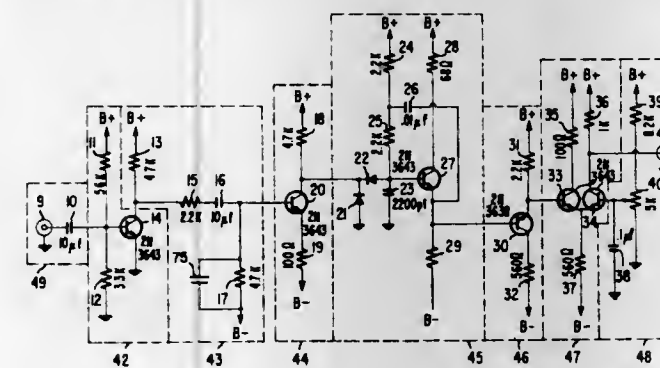
James Hugh Wharton, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 264,363, June 19, 1972, abandoned. This application July 2, 1973, Ser. No. 375,379

Int. Cl. H03k 1/12, 5/159

U.S. Cl. 307—262

6 Claims



A delay circuit for delaying a pulse or a series of pulses of different widths. The circuit delays the leading and trailing edges of an input pulse for respective first and second time delays. The delay of the trailing edge of the input pulse is not dependent upon the width of the input pulse, thus allowing pulses of different widths to pass through the delay circuit and have their respective leading and trailing edges delayed.

3,824,412

# CIRCUIT ARRANGEMENT FOR THE PHASE ADJUSTMENT OF A PAL SWITCH

Klaus Kroner, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 91,658, Nov. 23, 1970, abandoned.

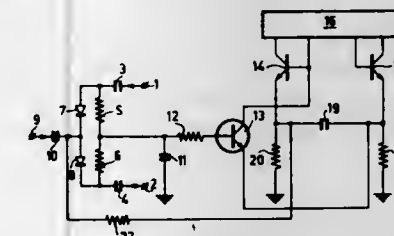
This application Aug. 30, 1972, Ser. No. 285,025

Claims priority, application Germany, Dec. 19, 1969, 1963820

Int. Cl. H03k 3/282, 5/153

U.S. Cl. 307—269

3 Claims



A PAL TV receiver has a multivibrator switching at one half of the line frequency and a circuit for stopping the switching operation if a PAL switch is out of phase with the chroma burst. A capacitor circuit is provided for releasing the stopping circuit so that the switch does not stop switching for too long a period.

3,824,413

# ANALOG FEEDBACK FREQUENCY RESPONSIVE CIRCUIT

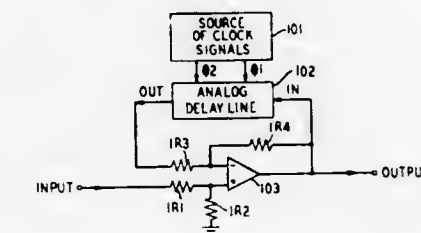
Mebein Awipi, Ocean; Sotirios Constantine Kitsopoulos, Summit, and Donald Steven Levinstone, Bayonne, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 16, 1973, Ser. No. 333,327

Int. Cl. H03k 1/16

U.S. Cl. 307—295

29 Claims



An active analog delay line is utilized as a feedback element to develop output signals as a function of frequency. The analog feedback delay element is arranged to accept the output signals, sample those signals at a periodic clock rate, and to serially pass the sampled signal from stage to stage in order to achieve the amount of delay desired. The output of the delay device is then summed with an input signal to provide a new output signal. The circuit is useful as a sample delay recursive comb type filter and as a selectively controllable oscillator.

3,824,414

# SECONDARY MEMBER FOR SINGLE-SIDED LINEAR INDUCTION MOTOR

Eric Roberts Laithwaite, Long Ditton, and Thomas George Fellows, Barnet, both of England, assignors to Tracked Hovercraft Limited, London, England

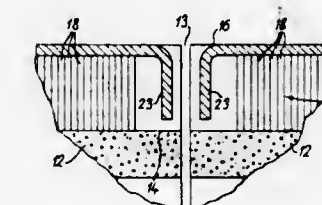
Filed Mar. 13, 1973, Ser. No. 340,721

Claims priority, application Great Britain, Mar. 15, 1972, 12073/72

Int. Cl. H02k 41/02

U.S. Cl. 310—13

7 Claims



The secondary of a single-sided, short-stator linear induction motor is formed in sections, for example, with expansion joints between sections. At the discontinuities, the ends of the reaction plate are turned down to provide return paths for circulating induced currents in the vicinity of the discontinuities.

3,824,415

# APPARATUS EQUIPPED WITH A SINGLE-PHASE SYNCHRONOUS MOTOR AND A STARTING COUPLING

Bernard Joseph Beusink, Clementinalaan, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,979

Claims priority, application Netherlands, Nov. 28, 1972, 7216084

Int. Cl. H02k 7/118

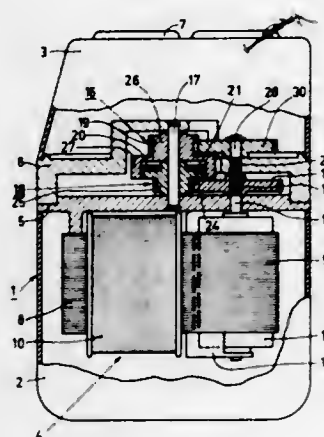
U.S. Cl. 310—41

2 Claims

Electrical appliance, equipped with a singlephase synchronous motor and a starting coupling with fly weights.



Measured from the axis of rotation of the starting coupling, the angle between the axis of rotation of a fly weight and the points where the fly weight frictionally cooperates with the

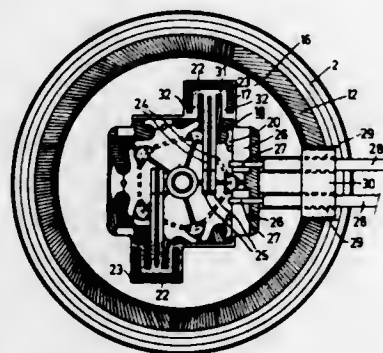


driven coupling section, is between 150° and 180° and the angle between the said axis of rotation and the centre of gravity of the fly weight is substantially 90°.

**3,824,416**  
**VIBRATION-DAMPED BRUSH ASSEMBLY FOR USE IN A SMALL DYNAMO-ELECTRIC MACHINE**  
Jan Maarten van de Griend, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed Sept. 20, 1972, Ser. No. 290,473  
Claims priority, application Netherlands, Sept. 30, 1971, 7113387

U.S. Cl. 310-51 Int. Cl. H02k 5/24

4 Claims

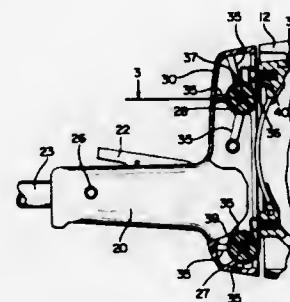


A small electric machine, such as a motor or a tachogenerator, which employs a commutator and a brush assembly, in which the undesirable vibrations of the brushes with respect to the commutator are damped by damping means. The preferred damping means comprises amounts of a plastic deformable putty-like damping material, for example on the basis of polyvinylacetate. This material is provided at the locations of the brushes. The damping material adheres both to the brush and to the fixed parts of the machine. To reduce contact noise, plate-shaped brushes having leaf-spring-like brush elements preferably are formed with long parts which are in contact with the damping material. This may be effected with little loss of space by connecting the leaf springs to a brush support via parts which extend on both sides of the leaf springs parallel therewith.

**3,824,417**  
**HANDLE MOUNTING CONSTRUCTION FOR ELECTRIC PAVING BREAKER**  
Robert Gordon Moores, Jr., Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.  
Filed Mar. 19, 1973, Ser. No. 342,868  
Int. Cl. H02k 5/24

U.S. Cl. 310-51

2 Claims

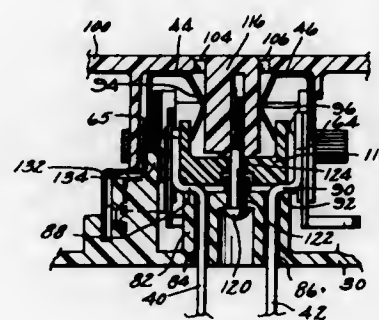


An electric paving breaker is described which includes an electric motor, a crank and piston driven by the motor and a ram which delivers energy to a bit to produce a hammering output. A pair of handles are mounted on an axis perpendicular to the axial direction of the hammering force. A shock-absorbing mounting for the handles is described.

**3,824,418**  
**WALL PLUG-IN TIME SWITCH**  
Charles A. Balchunas, Hopkinton, Mass., assignor to General Electric Company, Bridgeport, Conn.  
Division of Ser. No. 260,759, June 8, 1972, Pat. No. 3,754,107.  
This application Feb. 13, 1973, Ser. No. 331,763  
Int. Cl. H02k 11/00

U.S. Cl. 310-71

1 Claim



A wall plug-in time switch wherein a pair of shouldered wall prongs are uniquely mounted in a housing of the time switch for connecting the time switch to a conventional wall mounted outlet box. The construction includes shoulders on the wall prongs which are sandwiched between bosses which are formed on a rear casing and a front cover of the time switch housing. Terminals for an electrical motor are also located in the vicinity of the wall prongs so that the wall prongs, and electric motor are reliably connected to each other and positioned within the housing with the use of relatively few parts.

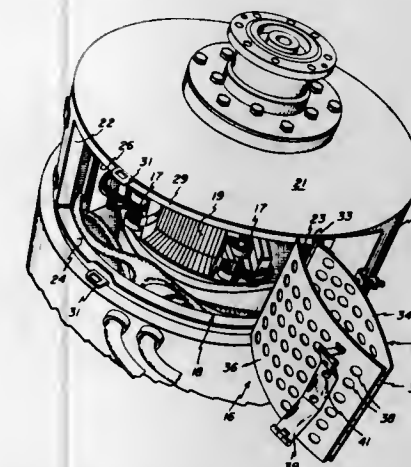
**3,824,419**  
**TRACTION MOTOR INSPECTION COVER**  
William G. Skrzypczyk, Erie, Pa., assignor to General Electric Company, Erie, Pa.  
Filed Apr. 4, 1973, Ser. No. 347,857  
Int. Cl. H02k 5/10

U.S. Cl. 310-89

11 Claims

An arcuate cover for a motor housing opening wherein an adaptor plate is attached to the housing and an articulated

cover is hingedly secured thereto to open downwardly and close upwardly with provision for securing the cover in a closed position. The cover is articulated proximate its mid-point and a torsion spring is provided to bias the two concave

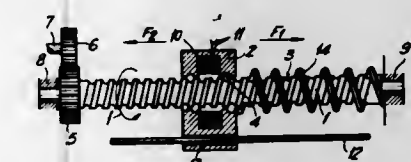


portions together when in the open position so as to limit its depending length. A second oppositely disposed articulated section may be provided which opens upwardly and is securable to the lower section when in the closed position.

**3,824,420**  
**DEVICE FOR TRANSFORMING A ROTATIONAL MOTION INTO A TRANSLATIONAL MOTION**  
Bernardus Hendrikus Marinus Johannes Stegeman, Amsterdam, and Hilrich Jan Matthijs Venker, Heemstede, both of Netherlands, assignors to Honeywell Bull (Nederland) N.V. (Societe anonyme), Amsterdam, Netherlands  
Continuation of Ser. No. 119,976, March 1, 1971, abandoned.  
This application Apr. 6, 1973, Ser. No. 348,600  
Int. Cl. H02k 7/06

U.S. Cl. 310-89

27 Claims

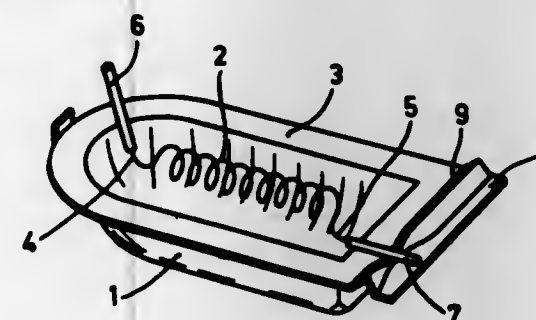


A motion transforming device wherein selectively energizable magnetic coupling is provided between the threads of a screw and a nut engaged therewith.

**3,824,421**  
**ELECTRIC FILAMENT LAMP**  
Leffert Schuringa, and Herman Albert Joannes Roefs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed Sept. 7, 1972, Ser. No. 286,933  
Claims priority, application Germany, Sept. 9, 1971, 12394  
Int. Cl. H01j 1/88

U.S. Cl. 313-110

3 Claims



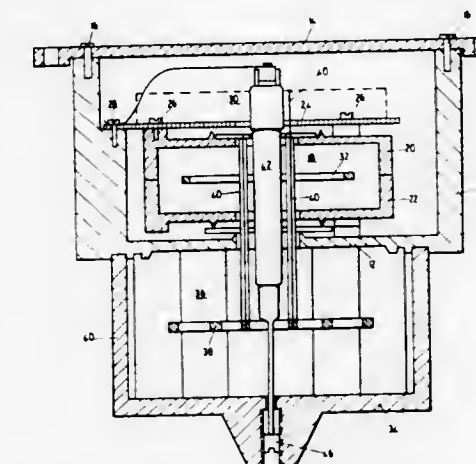
The invention relates to an electric filament lamp, in particular a halogen twin lamp for motor-cars, in which an anti-

dazzle cap is incorporated which partly screens one of the filaments and to which one or more current conductors are spot-welded. In the welding place, the screening cap comprises one or several ridges which are at least partly squeezed by the spot-welding operation.

**3,824,422**  
**SMOKE DETECTORS**  
Nicolaas T. Van der Walt; Bernardus J. Bout, and Timothy J. Newington, all of Johannesburg, South Africa, assignors to Anglo American Corporation of South Africa Limited, Johannesburg, South Africa  
Filed June 25, 1973, Ser. No. 373,317  
Claims priority, application South Africa, June 27, 1972, 72/4440; Nov. 15, 1972, 72/8084  
Int. Cl. H01j 7/40

U.S. Cl. 313-218

4 Claims

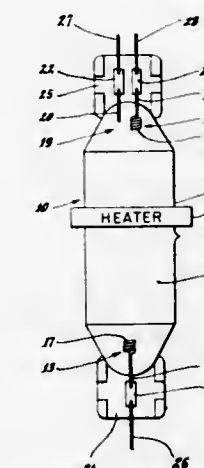


A smoke detector for use in detecting the early outbreak of a fire and including a housing defining a smoke chamber, a housing defining a reference chamber, a grid in each of the chambers and an electrostatic shield surrounding each of the grids. The shields are made of an electrically-conductive plastic material thereby eliminating the possibility of corrosion.

**3,824,423**  
**ELECTRIC DISCHARGE LAMP**  
Romano G. Pappalardo, Sudbury, Mass., and Samir A. Ahmed, Manhattan, N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.  
Filed May 2, 1973, Ser. No. 356,521  
Int. Cl. H01j 61/12

U.S. Cl. 313-225

17 Claims



A low pressure electric discharge lamp comprising a sealed light-transmissive envelope and a fill within the envelope; the



fill including, as the primary light-emitting material, a highly fluorescent aromatic organic compound, such as perylene, coronene, p-terphenyl, 1,6-diphenyl-hexa-1,3,5-triene, 9,10-diphenylanthracene, and 1,4-bis-2-(4-methyl-5-phenylox-azoyl) benzene. At operating temperatures, the pressure or partial pressure of the vaporized organic compound is less than 1 torr.

3,824,424

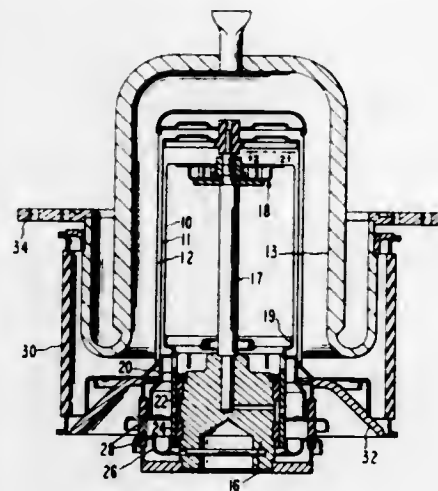
# MESH TYPE FILAMENTARY THERMIONIC CATHODE EMITTER AND TUBE USING SAME

Sterling G. McNees, Los Altos Hills, and James P. Polese, Menlo Park, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 26, 1973, Ser. No. 345,052  
Int. Cl. H01j 1/15, 19/08; H01k 1/02

U.S. Cl. 313-341

6 Claims



First and second sets of thermionic cathode emitter filaments are wound into a composite cross-wound helical cathode emitter structure. The helical cathode emitting structure is supported at opposite ends by means of electrical terminals for passing electrical current through the cross-wound filaments. At one end of the composite mesh, the filaments have inwardly directed terminal portions terminating on the terminal support structure, whereby the inwardly directed terminal portions of the filaments permit a certain degree of flexibility to accommodate unequal thermal expansion of the support and mesh and whereby the cooling effect of the terminal structure is generally limited to the inwardly directed terminal portions of the filaments. The terminal structure also includes flexible support fingers to further accommodate unequal thermal expansion.

3,824,425

# SUPPRESSOR ELECTRODE FOR DEPRESSED ELECTRON BEAM COLLECTOR

John L. Rawls, Jr., Archer, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

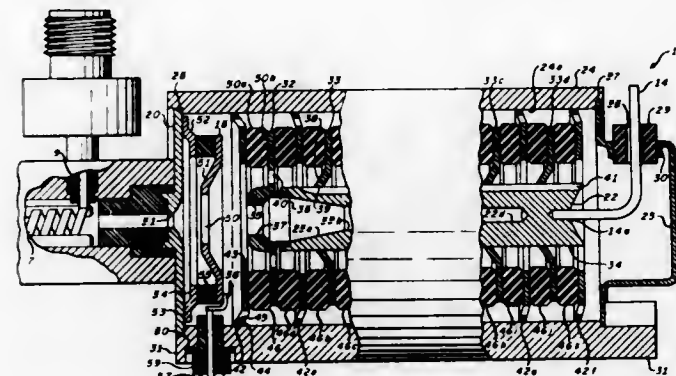
Filed May 21, 1973, Ser. No. 362,135  
Int. Cl. H01j 25/34

U.S. Cl. 315-3.5

5 Claims

A rugged unitary electron beam collector structure for a velocity modulation or other high power electron beam vacuum tube is characterized by the use of a ruggedly

mounted suppressor electrode at the entry of the collector permitting reliable, high efficiency operation. The improved



3,824,426

# COLOUR TELEVISION DISPLAY APPARATUS PROVIDED WITH A CATHODE-RAY TUBE

Edgard Emile Charles Rossaert, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

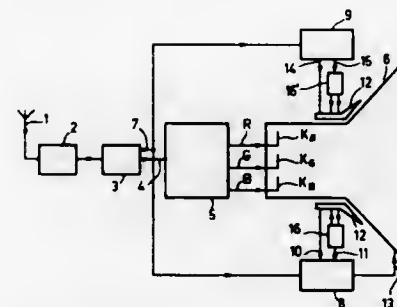
Filed Oct. 11, 1972, Ser. No. 296,657

Claims priority, application Netherlands, Oct. 23, 1971, 7114607

Int. Cl. H01j 29/70

U.S. Cl. 315-27 GD

10 Claims



Colour television display apparatus in which for correction of isotropic astigmatism a correction current flows through the coil halves of at least one deflection coil unit, which current is substantially a square function of at least one deflection current. As a result a correction quadrupolar field is produced. The correction current generator includes passive elements, namely impedances, diodes and transistors operating as switches. The deflection coil halves are toroidally wound on the core.

3,824,427

# HIGH VOLTAGE REGULATOR

Fenwick R. McLeod, Jr., Prospect Heights, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,313

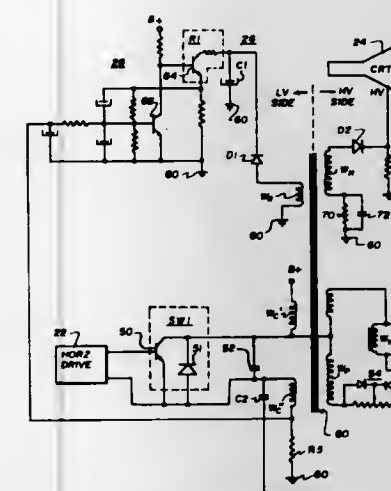
Int. Cl. H01j 29/70

U.S. Cl. 315-29

21 Claims

A horizontal flyback transformer in a television receiver includes a driving choke winding coupled to a horizontal drive stage. A regulating winding is wound on the same core leg as the driving choke winding. A high voltage winding and a primary winding for driving a horizontal deflection yoke coil are wound on an opposite core leg. To regulate the high voltage developed by the high voltage winding, the regulating winding is coupled to a variable loading circuit controlled by current

through a resistor in series with the driving choke winding. Each core leg includes an air gap selected to cause the leakage secondary winding and connected in series with a diode in opposition to said primary winding and in parallel to said primary



3,824,428

# HIGH FREQUENCY FLUORESCENT TUBE LIGHTING CIRCUIT AND A-C DRIVING CIRCUIT THEREFOR

Joel S. Spira, Allentown, and Joseph Licata, Schnecksville, both of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

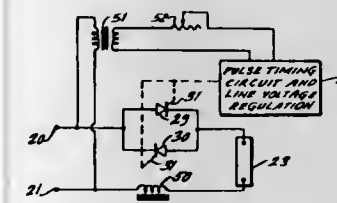
Division of Ser. No. 843,927, July 23, 1969, Pat. No.

3,619,716. This application Sept. 7, 1971, Ser. No. 178,056

Int. Cl. H05b 39/00

U.S. Cl. 315-105

10 Claims



A sinusoidal voltage source in series with a fluorescent, mercury vapor, sodium vapor device, etc. is pulsed at a given pulse repetition rate with the pulse having a given conduction time. Two or more tubes can sequentially conduct pulses with the current input being a continuous sinusoid. A particular pulsing circuit contains a modified pulse-forming network consisting of one or more stages of a closed series connection of a choke and two capacitors. The chokes of each stage are connected in series. The modified pulse-forming network is used as a frequency converter per se, as a d-c to a-c converter, or specifically is in parallel with a fluorescent tube load.

3,824,429

# CAPACITIVE DISCHARGE IGNITION SYSTEM

Jose Luis Almendro Davallillo, Madrid, Spain, assignor to Fabrica Espanola Magnetos, S. A., Madrid, Spain

Filed June 20, 1972, Ser. No. 264,458

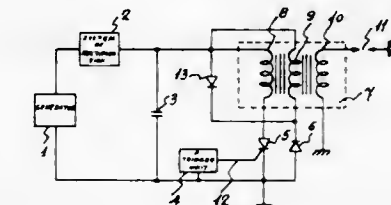
Claims priority, application Spain, July 9, 1971, 393129

Int. Cl. H05b 37/02

U.S. Cl. 315-209 R

1 Claim

A capacitive discharge ignition system in which a source of D.C. power charges a capacitor which is in series with the primary winding of a coil (the secondary winding being connected in series with a sparking device). The coil also includes an auxiliary primary winding magnetically connected to the



winding and said triggering device. In one embodiment another diode is also connected in parallel to said auxiliary winding to dampen current delivered thereto.

3,824,430

# CIRCUIT ARRANGEMENT FOR RECOGNITION OF A DEFECT CAUSED BY PHASE BREAKDOWN OR GROUND SHORT IN THE CURRENT SUPPLY OF A THREE-PHASE MOTOR

Michael Hentschel, Hannover, Germany, assignor to Sprecher & Schuh AG, Aarau, Switzerland

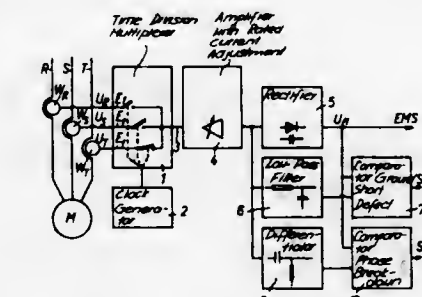
Filed May 16, 1973, Ser. No. 360,946

Claims priority, application Switzerland, Aug. 23, 1972, 12483/72

Int. Cl. H02h 7/09

U.S. Cl. 317-13 R

9 Claims



A circuit arrangement for recognition of a defect from detection alternating voltages proportional to current values at the outer conductors of a three-phase motor and which defects are brought about by phase breakout or ground short in the current supply of the three-phase motor, wherein there are provided a time division-multiplex device and thereafter a rectifier circuit arrangement for generating a time division-multiplex signal from the detection alternating voltages by means of cyclically successive samples of uniform duration and forming from the positive or negative parts of the time division-multiplex signal through smoothing a measurement voltage, the amplitude of which is approximately equal to the arithmetic mean value of the rectified multiplex signal. There is further provided a differentiator for differentiating the time division-multiplex signal for the recognition of a phase breakdown, a first comparator for comparing the voltage pulse of the differentiator possessing the maximum amplitude value with a percentual part of the measurement voltage, and wherein the percentual part of the measurement voltage is selected such that the phase breakdown comparator with undisturbed current supply of the motor does not respond and upon the occurrence of a phase breakdown delivers a phase breakdown-indicating signal. For the recognition of a ground short from the time division-multiplex signal there is provided a low pass filter arrangement for deriving peak values of signal components occurring with the frequency of the detection alternating voltages, and a second comparator for comparing the peak values with another percentual part of the measurement voltage, wherein this another percentual part is chosen such that the ground short-comparator during undisturbed current supply of the motor does not respond and upon occurrence of a ground short delivers a ground short-indicating signal.



# 3,824,431 HIGH VOLTAGE SUPPRESSOR FOR TRANSMISSION LINES

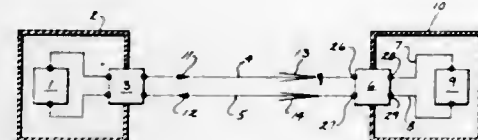
Heinz M. Schlicke, Fox Point, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed May 10, 1973, Ser. No. 358,885

Int. Cl. H02h 1/04

U.S. Cl. 317-61

13 Claims



A compensated high voltage suppressor for insertion in a transmission line is shown for shunting large interference voltages from the line to ground. The suppressor has a varistor material through which the large interference voltages are shunted, and this material also functions as a capacitor dielectric. Additional circuit components are connected with this capacitance to form a low pass filter in the transmission line which has a characteristic impedance substantially matching the line characteristic impedance. This impedance matching maintains effective transmission for power, or signals conducted along the line in the normal mode of operation.

# 3,824,432 BATTERY IGNITER

Eberhard Gersing, Göttingen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt Main, Germany

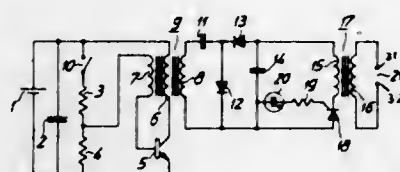
Filed Aug. 15, 1973, Ser. No. 388,655

Claims priority, application Germany, Sept. 6, 1973, 2243694

Int. Cl. F23q 3/00

U.S. Cl. 317-79

9 Claims



A battery igniter particularly suitable for lighters. The igniter uses a battery as the energy source which in turn feeds a voltage converter including an oscillating transformer with a feedback branch. A rectifier follows the voltage converter to which is connected a storage capacitor. The storage capacitor in turn is connected by means of a high voltage switch to a high voltage igniter transformer. The secondary winding of the high voltage transformer is connected to a spark gap which performs the ignition.

# 3,824,433 UNIVERSAL CIRCUIT BOARD

William H. Newton, Jr., Houston, Tex., assignor to Thunderco, Inc., Houston, Tex.

Filed Mar. 5, 1973, Ser. No. 338,134

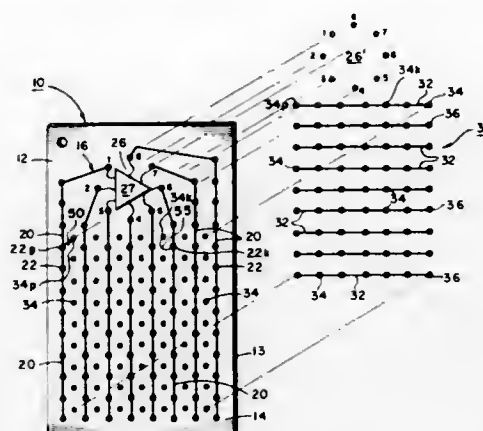
Int. Cl. H05k 1/14, 1/18

U.S. Cl. 317-101 CE

7 Claims

The invention generally concerns two and three-dimensional matrixes programmable for any desired electric net-

work, and the method for making the same. Each matrix includes groups of parallel-spaced, mutually-perpendicular con-



ductors electrically insulated from each other by a dielectric member which is imperforate at the crossover points of the conductors.

# 3,824,434 RELAY WITH TIME DELAY COIL

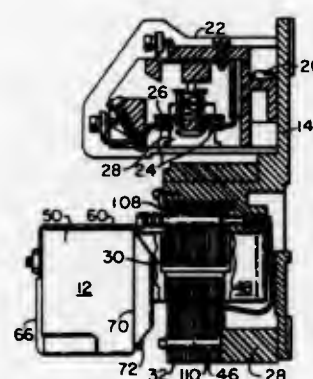
Robert D. Boley, Lexington, Ky., and William E. Grass, Whitefish Bay, Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 26, 1972, Ser. No. 318,053

Int. Cl. H01h 47/18

U.S. Cl. 317-141 S

10 Claims



An electromagnetically operated A.C. relay which is actuated an adjustable timed interval after the relay is energized. The relay incorporates the timing accuracy provided by a solid state timing circuit and the power switching advantages provided by mechanically operated switching contacts. The relay includes a unitary coil and timing unit which may be substituted for a coil in an instantaneous operated relay to convert the instantaneous operated relay to a relay which is actuated a predetermined time interval after the relay is energized.

# 3,824,435 MODULE FOR USE WITH SYSTEMS HANDLING MULTIPLE AUTOMATIC FUNCTIONS

Christian A. Sebillé, Saint Jean De Folleville, and Claude J. P. Prugnaud, all of Maisons-Laffitte, France, assignors to S. A. dite Ethylene Plastique, Courbevoie, Hauts de Seine and S. A. dite Comsip Automation, Rueil Malmaison, Hauts de Seine, both of, France

Filed Jan. 24, 1973, Ser. No. 326,250

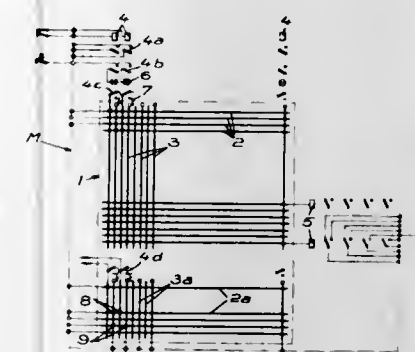
Int. Cl. H01h 47/22

U.S. Cl. 317-157

7 Claims

A module for use with systems handling multiple automatic functions incorporates a matrix of rows and columns of signal

lines which can be interconnected by means of short circuit tags and by the operation of relays responsive to input instruc-



tions to produce a required overall circuit configuration for processing the input instructions into appropriate outputs.

# 3,824,436 ACTIVE THIN FILM DEVICE BASED ON CROSSED DISCONTINUOUS THIN FILMS AND METHOD

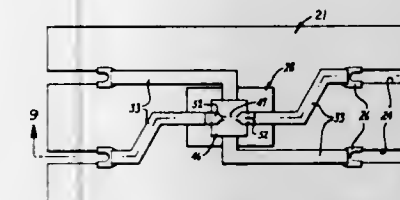
Francis P. Fehlner, 83 E. 4th St., Corning, N.Y. 14830

Continuation-in-part of Ser. No. 163,887, July 19, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,931

Int. Cl. H01l 3/00

U.S. Cl. 317-234 R

22 Claims



An active thin film device of solid state electron structure having a relatively thin layer of electronically pervious insulating material with at least one discrete portion of electronically pervious conductive material disposed on the insulating material, with at least one additional portion of electronically pervious conductive material disposed on the insulating material, the first named and additional portions in combination with the layer of insulating material forming first and second conductive regions, the first and second conductive regions being substantially free of normal electric fields. Means is used for applying a voltage to one of said conductive regions to cause electron injection therefrom into the insulating layer to thereby affect the conductivity of the other conductive region.

# 3,824,437 METHOD FOR CONTROLLING ASYNCHRONOUS MACHINES

Felix Blaschke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 63,073, Aug. 12, 1970, abandoned.

This application Mar. 23, 1972, Ser. No. 237,572

Claims priority, application Germany, Aug. 14, 1969, 1941312; Apr. 22, 1970, 2019263

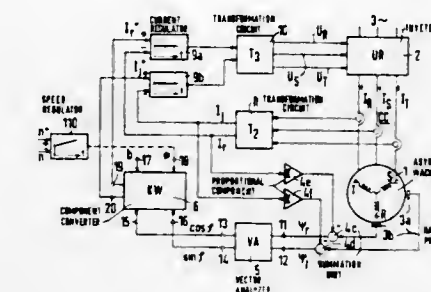
Int. Cl. H02p 5/40

U.S. Cl. 318-227

25 Claims

A component converter has two adding amplifiers each having two inputs and four multipliers each having two inputs and an output. Each output of the multipliers is connected to a corresponding input of the amplifiers. A first input terminal is

connected to an input of each of two of the multipliers and applies a stator related field component voltage  $\cos \phi$  thereto. A second input terminal is connected to an input of each of the other two of the multipliers and applies a stator related field component voltage  $\sin \phi$  thereto. A third input terminal is



connected to the other input of each of two of the multipliers and applies a field axis related voltage  $b$  or a stator related component voltage  $I_r$  thereto. A fourth input terminal is connected to the other input of each of the other two of the multipliers and applies a field axis related voltage  $w$  or a stator related component voltage  $I_r$  thereto.

# 3,824,438 DITHER CIRCUIT

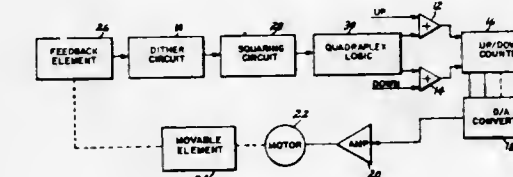
Harold Dean Wiebe, Sharonville, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed June 13, 1973, Ser. No. 369,486

Int. Cl. G05b 23/02

U.S. Cl. 318-631

4 Claims



An apparatus for use with a servomechanism having a transducer coupled to a movable element and producing a quantized feedback signal. The apparatus provides a dither signal on an output of the feedback element at a frequency which keeps the servomechanism from changing the position of the element from a desired position.

# 3,824,439 ELECTRONIC STROKE ADJUST FOR MOTOR CONTROL

B. Hubert Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 14, 1973, Ser. No. 332,463

Int. Cl. G05b 1/06

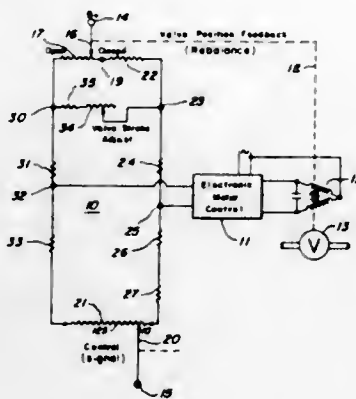
U.S. Cl. 318-667

3 Claims

An improved condition control system including an electrical bridge circuit for controlling a motor which in turn positions a valve or damper. The motor also drives a wiper on a valve position feedback potentiometer. The valve feedback potentiometer is specifically placed in the bridge network in series with a further resistor so that an electrical voltage center occurs in the bridge at one end of the potentiometer. A stroke adjust variable resistance is connected in parallel with



the series connected feedback potentiometer and further resistor to provide an electronic valve stroke length adjust. In



adjusting stroke length only the open position of the valve is controlled while the closed position of the valve, i.e., at the electrical voltage center, is not affected.

3,824,440

## STEPPING MOTOR CONTROL SYSTEM

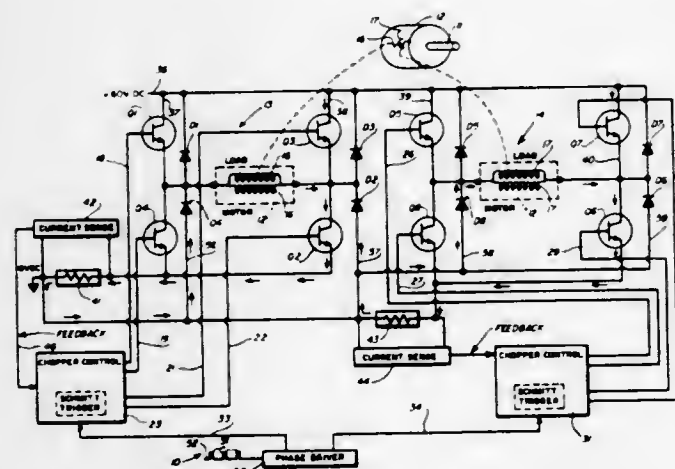
Michael D. McIntosh, Greencastle, Pa., assignor to Landis Tool Company, Waynesboro, Pa.

Filed Aug. 2, 1972, Ser. No. 277,143

Int. Cl. H02k 37/00

U.S. Cl. 318-696

4 Claims



An improved method of driving a stepping motor utilizes a high voltage power supply and a control system which causes high rates of change of motor winding current to obtain high response speed and torque. Feedback is utilized to sense current level and a corrective action is taken when the current being monitored deviates from predetermined maximum or minimum limits. Such limits are necessary to prevent damage to the motor caused by excess current or stalling of the motor caused by too little current. The rate of change of current is a function of circuit parameters, motor parameters, and motor torque. Corrections may occur typically 4,000 times per second. Each of the motor windings is controlled by a bridge-amplifier circuit having two pairs of transistors connected in series with the motor winding coupled between two center points. The line current from each circuit is connected to a single driver to control the rotational speed and direction of the motor shaft.

### 3,824,441 MULTIVOLTAGE, REGULATED POWER SUPPLY WITH FAULT PROTECTION

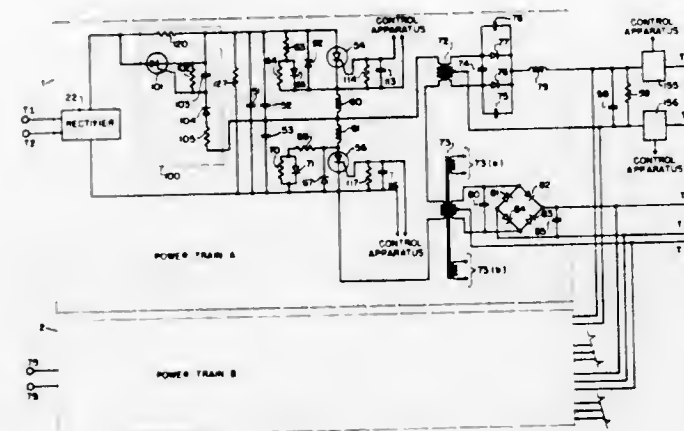
Albert M. Heyman, Bedford, and Edward H. Friedman, Needham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,047

Int. Cl. H02m 3/32

U.S. Cl. 321-2

12 Claims



A power supply for providing a plurality of regulated voltage levels while protecting the power supply from damage due to fault conditions. The power supply provides apparatus for rectifying AC input power and, by means of a DC to DC converter, supplies a DC voltage to the output terminals.

A selected DC output voltage is monitored by feedback circuits. The feedback circuits control the operation of switching elements of the DC to DC converter, and therefore determine the monitored output voltage level, by increasing or decreasing the rate of operation of the switching elements.

Various fault conditions, such as over and under-voltage conditions, etc., are monitored by the fault detection apparatus at the selected output voltage terminals. The detection of a fault condition causes the power supply to suspend operation. Operation of over-current condition detection apparatus is continually verified.

The apparatus supplying the selected output voltage terminals simultaneously supplies the terminals providing the remainder of the plurality of output voltages. Because of the coupling of the source apparatus for the output voltage terminals, regulation of one voltage level provides regulation for each voltage level. Similarly, fault conditions at any of the voltage terminals are detected by the fault detection apparatus.

3,824,442

## INVERTER CIRCUITS

Kenneth Gordon King, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Continuation of Ser. No. 268,460, July 3, 1972. This

application Aug. 23, 1972, Ser. No. 282,938

Claims priority, application Great Britain, July 23, 1971, 34783/71

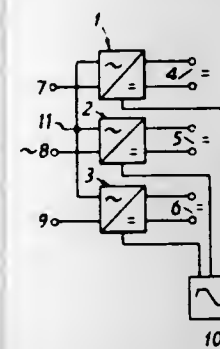
Int. Cl. H02m 7/00

U.S. Cl. 321-5

4 Claims

A polyphase, floating neutral, inverter in which harmonics of the operating frequency are added to the fundamental to increase the line-to-line output voltage for a given input voltage. In the three-phase three-wire case the Triplen harmonics are

used. The inverter uses single phase amplifiers and a polyphase drive signal generator. One generator is described



in detail. The inverter also includes a rapid acting semiconductor device protection circuit which employs an electrical network analog of the thermal characteristics of the device.

3,824,443

REGULATOR CIRCUIT HAVING A CLAMPED  
REGULATING WAVE

Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

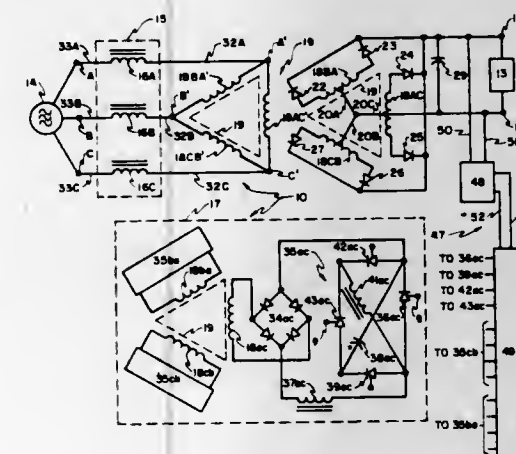
Continuation of Ser. No. 257,857, May 30, 1972. This

application Jan. 5, 1973, Ser. No. 321,287

Int. Cl. H02m 7/00

U.S. Cl. 321-5

11 Claims



A circuit for providing a regulated a-c or d-c output voltage from an unregulated a-c input voltage. A series regulating network is disposed between the regulator input and the regulator output to support the difference between the unregulated input voltage and the regulated output voltage. A shunt regulating network is connected in shunt with the series regulating network to generate a plurality of regulating waves which, together with the input voltage, control the current through and voltage across the series regulating network. Output voltage sensing circuitry controls the phase angle between the input voltage and the regulating waves, as required, to establish and maintain the regulated output voltage.

3,824,444

CONTROLLED RECTIFIER SYSTEMS AND FLEXIBLE  
GATE PULSE CONTROL CIRCUITS THEREFOR

Robert W. Spink, Wauwatosa, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 5, 1973, Ser. No. 376,913

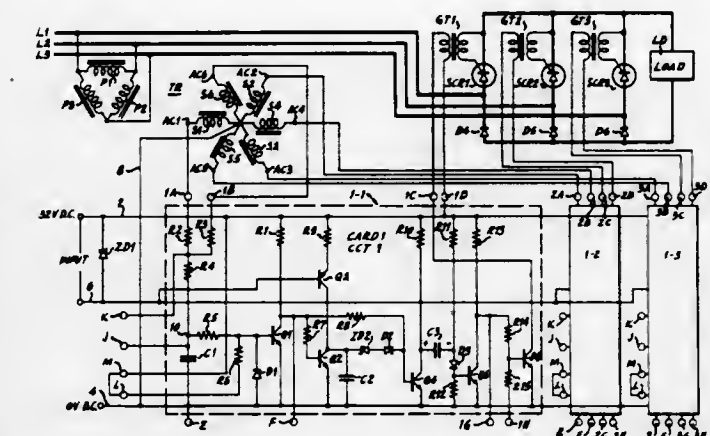
Int. Cl. H02m 7/20

U.S. Cl. 321-5

11 Claims

A plurality of different controlled rectifier systems for D.C. motor control using flexible gate control circuits. Three like gate control circuits are adapted to be mounted on each printed circuit card. Each gate control circuit is universal in

character and is provided with external terminals whereby it can be connected for different applications such as semi-converter, half-wave reversing, full-wave system, and the like. This gate control circuit includes control signal integration where the control signal shapes the ramp and a pulse is generated after a fixed energy accumulation. This flexible gate control circuit is provided with a novel ramp stretch cir-



cuit that can be rendered effective by jumpering external terminals. Provision is also made for connecting to external terminals an external ramp stretch circuit of a different time constant. The invention affords a single design of gate control circuit adapted for use in a plurality of different silicon controlled rectifier systems so that all are insensitive to line phase rotation.

3,824,445

CHOKE ARRANGEMENT FOR LIMITING SWITCH-IN  
CURRENT FLOW THROUGH THYRISTOR VALVES OF  
HIGH-VOLTAGE CONVERTER CIRCUIT

Peter Etter, Baden, Switzerland, and Jurgen Hengsberger, Berlin, Germany, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland and Allgemeine Elektricitäts-Gesellschaft AEG-Telefunken, Berlin and Frankfurt/Main, Germany

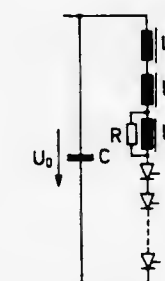
Filed Oct. 18, 1972, Ser. No. 299,334

Claims priority, application Switzerland, Oct. 29, 1971, 15791/71

Int. Cl. H02m 1/18

U.S. Cl. 321-11

7 Claims



A high-voltage converter system utilizing a string of series-connected thyristor type valves in which capacity created currents flowing through the thyristors during the switch-in phase of their operating cycle are limited by inclusion of an arrangement of sequentially saturable core type chokes located in the main load current flow path through the thyristors.



### 3,824,446 CONTROLLED RECTIFIER

Johannes Forster; Karl-Heinz Bezold, and Gerhard Vitt, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

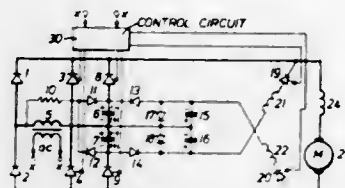
Filed Feb. 22, 1973, Ser. No. 334,756

Claims priority, application Germany, Feb. 22, 1972, 2209293

Int. Cl. H02m 1/18; H02p

U.S. Cl. 321-12

13 Claims



A rectifier circuit, for alternating current, has a plurality of controlled rectifiers and a separate quenching device for each of the controlled rectifiers. Each quenching device is connected in parallel with its associated controlled rectifier and includes a quenching thyristor and a quenching capacitor connected in series. A supplemental capacitor is connected in parallel with each of the quenching capacitors. A coupling diode is in the path connecting the supplemental capacitor with the quenching capacitor. This coupling diode and the supplemental capacitor are arranged so that the supplemental capacitor can only be charged during the period when the polarity of the quenching capacitor is changed, which occurs when the quenching capacitor is being recharged in the reverse direction after quenching of the associated controlled rectifier. The supplemental capacitor is coupled to a load which is attached to the D.C. output terminals of the rectifier. A discharge device enables the supplemental capacitor to be discharged through the load.

### 3,824,447 BOOSTER CIRCUIT

Tsuneo Kuwabara, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

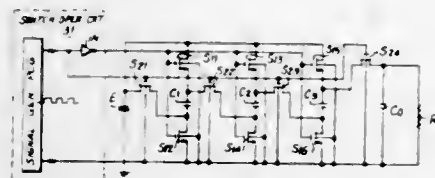
Filed Nov. 30, 1972, Ser. No. 310,911

Claims priority, application Japan, Feb. 24, 1972, 47-19237; Dec. 3, 1971, 46-97235

Int. Cl. H02m 7/00

U.S. Cl. 321-15

2 Claims



A booster circuit is provided which comprises a booster output capacitor and a plurality of capacitors, which are connected in parallel to a booster power supply for being charged when a voltage of a first level is applied to an input terminal of the booster circuit and, on the other hand, connected in series with each other when a voltage of a second level is applied thereto. The alternate application of the voltages having the first and second levels in repetitive manner allows the generation of a boosted voltage across the booster output capacitor.

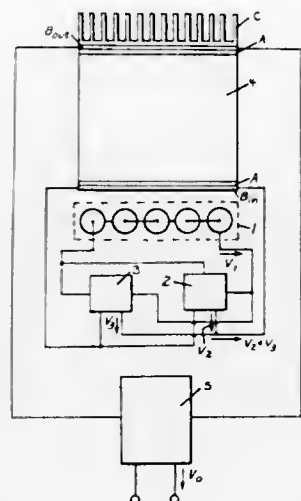
### 3,824,448 CONTACT POTENTIAL GENERATOR SYSTEM

Eduardo Villaseñor De Rivas, Los Angeles, Calif., assignor to Rene Villaseñor De Rivas, Los Angeles, Calif.

Filed Dec. 21, 1972, Ser. No. 317,275

Int. Cl. H02n

6 Claims



A contact potential generator comprising a ferro-electric generator excited into operation and maintained at that state to produce a useful output signal by the power input of an ignition section consisting of a battery of infrared radiation and beta radiation converter cells. The radiation converter cells utilize the contact potential difference of their electrodes to convert infrared radiation and beta radiation into electric power.

### 3,824,449 FERRORESONANT VOLTAGE REGULATING CIRCUIT

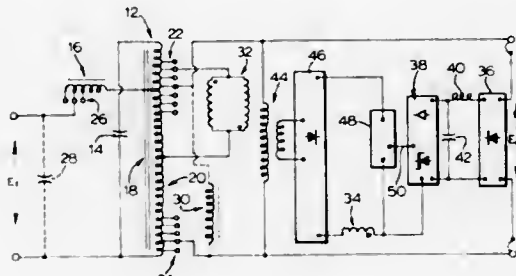
Alfred Max Hase, 6 Manorwood Rd., Scarborough, Ontario, Canada

Filed May 29, 1973, Ser. No. 364,903

Int. Cl. G05f 1/32

U.S. Cl. 323-6

8 Claims



A ferroresonant voltage regulator circuit includes a saturable transformer, an unsaturable transformer in series with the input, and a capacitor across the saturable transformer. Voltage sensing and referencing circuitry is inserted in the output. A synchronous switch having a control wire — usually a saturable reactor, magnetic amplifier or triac — is connected across at least a portion of the saturable transformer, and is controlled by the control coil so that the saturable transformer has a load from the synchronous switch at no-load conditions of the regulator. The amount of loading on the saturable transformer from the synchronous switch varies substantially inversely as the amount of loading because of the regulator load.

### 3,824,450 POWER SUPPLY KEEP ALIVE SYSTEM

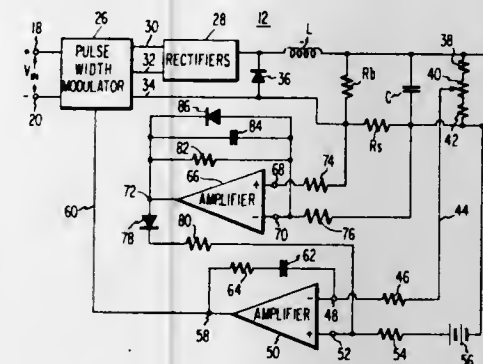
Miles Carrington Johnson, Mount Holly, and Donald Page Clock, Granada Hills, both of Calif., assignors to RCA Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,902

Int. Cl. G05f 1/46, 1/64; H02m 3/24

U.S. Cl. 323-23

9 Claims



A power supply system comprising a plurality of parallel connected voltage regulators, each regulator having a voltage control loop. Each voltage regulator is provided with a circuit which increases the reference voltage supplied to the voltage control loop so that the control loop of each regulator is prevented from being cut off during standby operation.

### 3,824,451 PULSE MODULATED FOURIER TRANSFORM MAGNETIC RESONANCE SPECTROMETER UTILIZING QUADRATURE PHASE DETECTION AND HIGH PASS FILTER TO ELIMINATE UNDESIRABLE STRONG RESONANCE LINES

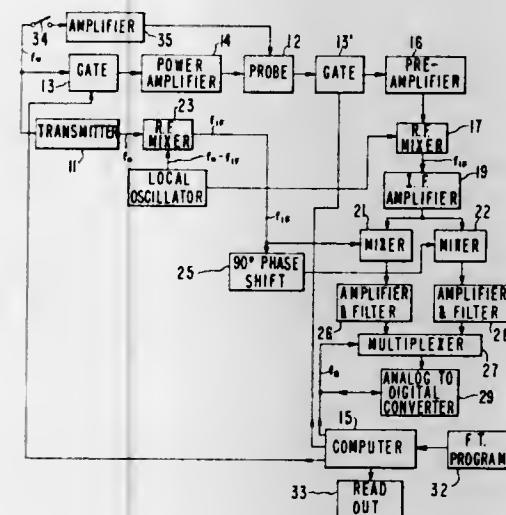
Raymond Freeman, Menlo Park, and Howard D. W. Hill, Cupertino, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 15, 1972, Ser. No. 306,947

Int. Cl. G01n 27/78

U.S. Cl. 324-0.5 R

17 Claims



A magnetic resonance spectrometer, for example a pulse modulated Fourier transform spectrometer system, wherein the carrier frequency is positioned on an undesired output resonance line, the receiver circuitry of the system including a quadrature phase detection stage in which the resonance lines falling on the positive and negative frequency side of the zero frequency position in the output spectrum corresponding to the carrier frequency component may be distinguished, the receiver circuitry including a high pass filter positioned

between the quadrature phase detector stage and the analog to digital converter for removing all frequency components near the zero component from the signal transmitted to the analog to digital converter, whereby the strong undesired resonance line is eliminated from the output spectrum.

### 3,824,452 FOURIER TRANSFORM NUCLEAR MAGNETIC RESONANCE SPECTROMETER EMPLOYING MEANS FOR GENERATING RANDOM PULSE INTERVALS TO AVOID ANOMALIES DUE TO NET TRANSVERSE MAGNETIZATION

Raymond Freeman, Menlo Park, and Howard D. W. Hill, Cupertino, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

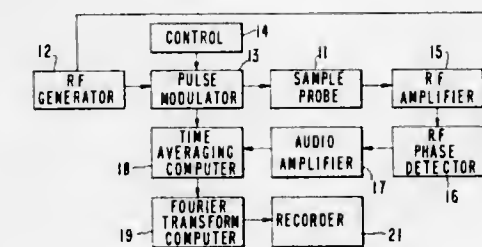
Continuation of Ser. No. 132,527, April 8, 1971, abandoned.

This application June 6, 1973, Ser. No. 367,598

Int. Cl. G01n 27/00

U.S. Cl. 324-.5 R

11 Claims



Means for eliminating phase and intensity anomalies in high resolution nuclear magnetic resonance spectra particularly useful in impulse Fourier spectrometers wherein free induction decay signals are obtained from a sample under analysis, the demodulated free precession signals being averaged in a time-averaging computer and then Fourier-transformed and displayed as a resonance frequency spectrum. Phase and intensity anomalies are avoidable by not permitting establishment of a finite net transverse component of magnetization in the steady state regime by introducing a delay into each recycle time. Alternatively, net transverse magnetization may be permitted to occur for a set of pulses but the phase and intensity anomalies may be avoided by changing the pulse rate for each set and by time-averaging the responses of the sets of pulses, each set of pulses being a predetermined number of pulses at a fixed pulse interval for each set, the pulse intervals for each set being different from the pulse interval of said first set by a random period.

### 3,824,453 METHOD OF DETERMINING CONCENTRATIONS

Charles Taft Baker, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

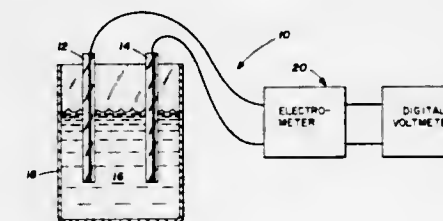
Continuation of Ser. No. 874,287, Nov. 5, 1969, abandoned.

This application Feb. 4, 1972, Ser. No. 223,523

Int. Cl. G01n 27/42

U.S. Cl. 324-29

8 Claims



A reference electrode and test electrode comprising a body of semi-conductor material having an element incorporated in it are positioned in a solution containing the element and the potential between the electrodes is measured. If the concen-



tration of the element in the solution is known, the potential indicates the concentration of the element in the test electrode. Conversely, if the concentration in the test electrode is known, the potential indicates the concentration in the solution. In the latter case, the test electrode is prepared by plating a compound containing the element onto a body of semiconductor material and diffusing the element into the body.

3,824,454

# **CALIBRATED ELECTROSTATIC CHARGE DETECTOR AND METHOD FOR MEASURING THE STRENGTH OF ELECTROSTATIC FIELDS**

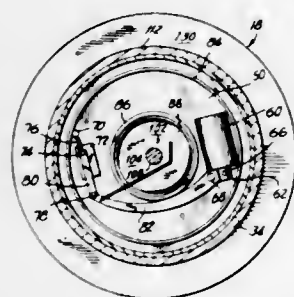
Sidney Charles Stern, Framingham; Ralph Gray Eldridge, Lexington; John Clark Johnson, Westboro, and David Karl Beaver, Tewksbury, all of Mass., assignors to Enviro/Tech Sciences, Inc., Newton Upper Falls, Mass.

Filed Oct. 18, 1971, Ser. No. 190,073

Int. Cl. G01r 5/28, 29/11

U.S. Cl. 324—32

17 Claims



Disclosed is an electrometer having a sensing element located within a conductive housing. A shutter encloses the sensing element and its conductive plate within the housing. An iris diaphragm is provided to restrict the electric field entering the housing. Upon the periodic closing of the shutter, there is formed a Faraday cage with the sensing element brought into contact with the shutter and housing. The controlling circuitry is separated and shielded from the sensing means.

An inert gas is used to surround the sensing element to substantially prevent fires and explosions when the instrument is used in an explosive atmosphere.

The control circuitry provides for asymmetrical control signals such that the shutter has a shorter closed cycle as opposed to an open cycle.

A calibration plate is disclosed jointly used in combination with the sensing element to establish predetermined voltage levels in the operational environment in which the instrument is used.

3,824,455

# **APPARATUS FOR GENERATING MUTUALLY ORTHOGONAL SINUSOIDAL SIGNALS UTILIZING ORTHOGONAL HALL PLATES WHICH ARE RELATIVELY ADJUSTABLE**

Barry N. Levitt, Framingham, and Francis L. Shorey, Concord, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 6, 1971, Ser. No. 204,842

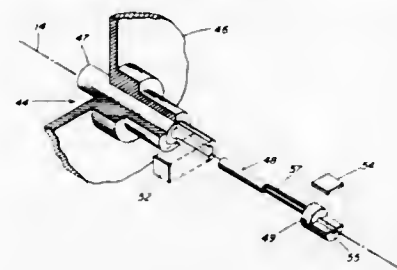
Int. Cl. G01r 33/00

U.S. Cl. 324—34 R

1 Claim

Angular displacement measuring apparatus wherein a pair of Hall effect cells orthogonally disposed and affixed to a stator element are disposed within a magnetic field generated by a pair of permanent magnets affixed to a rotor element is disclosed. In response to a control current passing through such pair of Hall effect cells a Hall effect voltage is generated within each one of such cells, the magnitude of such voltage being related to the sine and cosine of the angular displacement

between the rotor element and stator element. The Hall effect cells are orthogonal to within a tolerance of two minutes



of arc. Such tolerance is achieved by affixing each one of the Hall effect cells to one of two separate portions of the stator element.

3,824,456

# **MAGNETOMETER FLOWMETER USING PERMANENT MAGNETS AND MAGNETOMETER ELEMENTS ALIGNED WITH THE FLOW**

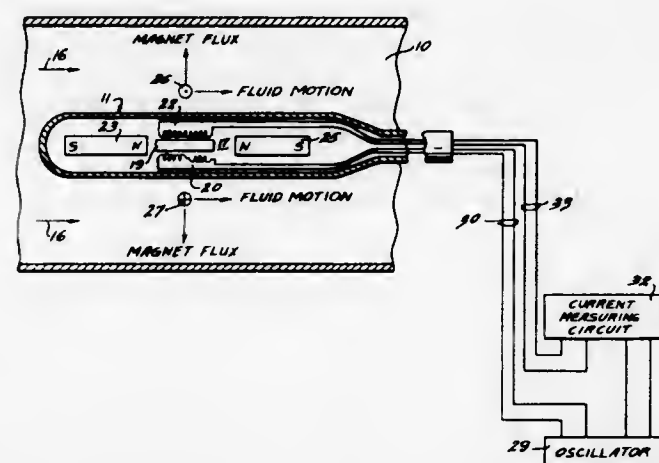
David E. Wiegand, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 23, 1973, Ser. No. 335,280

Int. Cl. G01r 33/12

U.S. Cl. 324—34 FL

6 Claims



A flowmeter for measuring the flow of conducting fluids, in particular liquid sodium, is described. The flowmeter includes a permanent magnet or electromagnet for setting up a steady-state magnetic field in the fluid. A fluxgate element is positioned so as to detect the magnetic field developed by the movement of the fluid through the steady-state magnetic field. The magnitude of the magnetic field developed by the fluid motion is a measure of the fluid velocity.

3,824,457

# **METHOD OF MAKING A SOLID-STATE SUPERCONDUCTING ELECTROMAGNETIC RADIATION DETECTOR**

Myron Strongin, Center Moriches; Anand M. Saxena, Upton, and Jack E. Crow, Bellport, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 4, 1973, Ser. No. 347,756

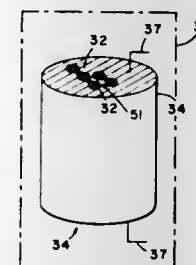
Int. Cl. G01r 33/02

U.S. Cl. 324—43 R

8 Claims

Method for making a solid-state superconducting electromagnetic radiation detector by the steps of dividing aluminum into tangled, irregular, clusters of small randomly arranged oxide coated aluminum particles that are compressed

and shaped into a self-sustaining solid mass. Connecting leads to the mass and cooling the mass to superconducting temperatures provides a transducer-detector that produces an output



3,824,458

# **DEVICE FOR MEASURING PARAMETERS OF ELEMENTS OF PARALLEL LC-CIRCUIT**

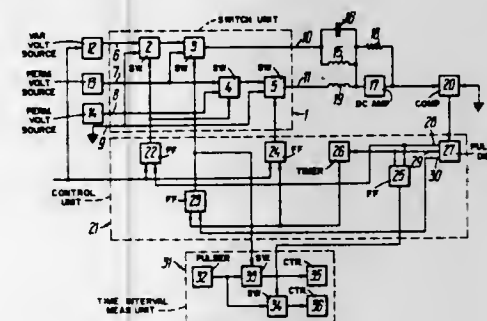
Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, Uritskogo 44/10; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv. 5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 17, all of Penza, U.S.S.R.

Filed Jan. 22, 1973, Ser. No. 325,927

Int. Cl. G01r 27/00

U.S. Cl. 324—57 P

1 Claim



For measuring the parameters of the elements of a parallel LC-circuit, an apparatus which comprises a switching unit the first input whereof is connected to a source of linearly varying voltage, started by an external signal. A second input of the switching unit is connected to a source of permanent voltage. A third input is connected to a source of permanent voltage of the opposite polarity, and the fourth input is grounded. A DC amplifier with a parallel resistive negative feedback has an input is connected through the parallel LC-circuit to the first input of the switching unit and is also connected through a reference inductance coil to the second input of the switching unit. The device further comprises a comparison unit connected to the output of the DC amplifier, a control unit connected to the output of the comparison unit and a time interval measuring unit connected to the output of the control unit. At the moment of the arrival of an external signal, the first output of the switching unit is connected to the first input thereof, and the second output of the switching unit is connected to the second input thereof. At the moment when the output voltage of the DC amplifier equals zero for the first time, the first output of the switching unit is connected to the fourth input thereof, and the second output of the switching unit is connected to the third input thereof. Following a metered time interval after the moment when the output voltage of the DC amplifier equals zero for the second time, the first output of the switching unit is connected to the second input thereof, and the second output of the switching unit is connected to the fourth input thereof. At the moment when the output voltage of the DC amplifier equals zero for the third time, the first output of the switching unit is connected to the fourth input thereof.

3,824,459

# **METHOD OF MEASURING THE ELECTROSTATIC CAPACITY OF A CAPACITOR**

Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

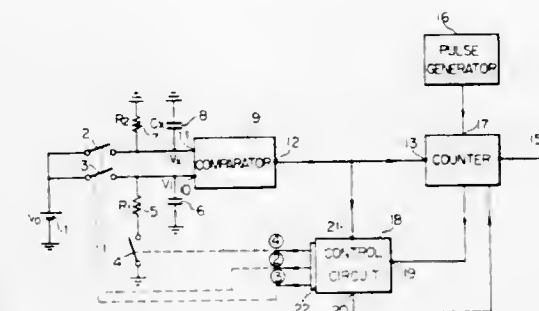
Filed Sept. 17, 1973, Ser. No. 397,745

Claims priority, application Japan, Sept. 21, 1972, 47-94926

Int. Cl. G01r 11/52, 27/26

U.S. Cl. 324—60 CD

5 Claims



This invention pertains to an invention for measuring the electrostatic capacity of a capacitor and comprises three processes. The first process is the application of a fixed voltage to both a capacitor to be measured and a standard capacitor; the second process is the discharging of the electric charges of the standard capacitor during the time a counter counts from 0 to n and then obtaining the terminal voltage  $V_s$  of the standard capacitor; the third process is the discharging of the electric charges of the capacitor to be measured during the time a terminal voltage of the capacitor to be measured changes from said fixed voltage to the voltage  $V$ , and then obtaining a count m counted during this time. At the conclusion of the third process the electrostatic capacity of the capacitor to be measured is obtained according to a ratio between said counts m and n and an electrostatic capacity of said standard capacitor.

3,824,460

# **LEAKAGE SENSOR**

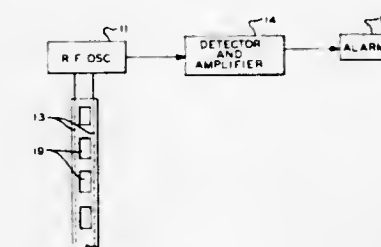
Reuben V. Gustafson, 228 W. 17th St., New York, N.Y. 10011

Filed Apr. 2, 1973, Ser. No. 346,977

Int. Cl. G01r 27/26

U.S. Cl. 324—61 R

12 Claims



An improved capacitive sensing system adapted for use in detecting the presence of a liquid on a floor or the like in which the sensing probe comprises a pair of encased wires held essentially parallel to each other by a plurality of spaced webs which are an extension of casing of the wires, the probe being held flat on the floor over a considerable length so that leakage anywhere along the probe will result in a capacitance change which may be sensed and an appropriate alarm activated in response thereto.

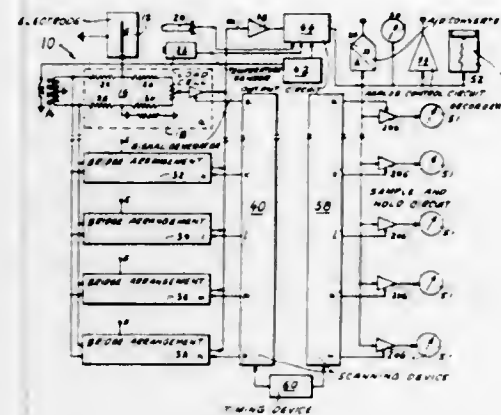


3,824,461

**ELECTRICAL IMPEDANCE MEASURING APPARATUS**  
Fritz K. Preikschat, 16020 Lake Hills Blvd., Bellevue, Wash. 98008Filed Sept. 10, 1973, Ser. No. 395,736  
Int. Cl. G01r 27/26

U.S. Cl. 324—61 R

16 Claims



Apparatus for measuring the electrical impedance of a variety of materials including an electrode arrangement providing sample data to an impedance bridge, a frequency generator providing a test signal to the impedance bridge, the impedance bridge including a transformer having three separate windings, two of which are highly symmetrical to each other and all three of which have an impedance below 10,000 ohms, and four resistors having resistance values differing from the impedance of the transformer windings but comparable to the unknown impedance, two of the four resistors connected to each of the two symmetrical windings of the transformer. Output devices for displaying the electrical impedance are also disclosed. In one embodiment, a sample box useful in the measurement of the electrical impedance of bulk materials including novel means for mounting an electrode therein is disclosed. Also disclosed in another embodiment is apparatus useful for measuring the electrical impedance of thin sheet material including novel mechanical thermal compensation means.

3,824,462

**DEVICE FOR TESTING PRINTED CIRCUIT BOARDS**  
Mario Vinsani, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

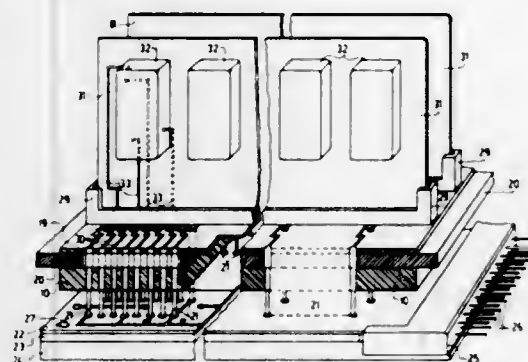
Filed Feb. 23, 1973, Ser. No. 335,276

Claims priority, application Italy, Mar. 3, 1973, 21344/72

Int. Cl. G01r 31/02

U.S. Cl. 324—73 PC

7 Claims



A device is provided for testing printed circuit boards on which electronic components such as integrated circuit units are to be mounted. While in the device, the board is submitted to a test program suitable for testing the bonds with the electronic components mounted thereon, however, if a failure is detected, it is known to reside in the printed circuit of the board, rather than the components, and the test results aid in locating it.

3,824,463

**INDUCTANCE TYPE VELOCITY MEASURING APPARATUS**

Kenneth L. Oehler, Pflugerville, Tex., assignor to Oehler Research Incorporated, Austin, Tex.

Filed June 23, 1972, Ser. No. 265,530

Int. Cl. G01p 3/66

U.S. Cl. 324—179

2 Claims



A shot cluster velocity measuring apparatus in which the coils through which the shot is to sequentially pass are mounted in axially spaced relation and are electrically connected as frequency determining elements in a high frequency oscillator, the output of which is frequency modulated as the shot cluster passes the coils. An FM discriminator generates an amplitude varying signal representative of the frequency modulation. A differentiating and filtering circuit shapes the discriminator output which is then amplified. The gain of a variable gain amplifier is automatically adjusted to equalize signal amplitude, and a Schmitt trigger produces rectangular pulses. If the pulses out of the trigger are of sufficient duration they are used to produce 'start' and 'stop' signals, indicating the passage of the center of mass of the projectile or projectile cluster through the first and second coils, respectively. These signals are then used to control an interval timer which displays the count as a measure of velocity.

3,824,464

**PULSE DETECTION SYSTEMS**

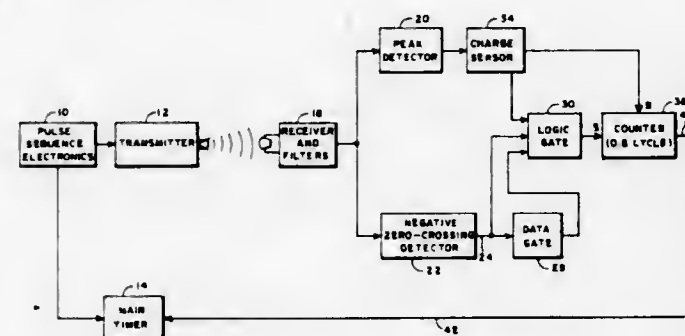
Donald J. Rotier, Saint Paul, and Robert T. Sawamura, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 16, 1973, Ser. No. 379,378

Int. Cl. G04f 11/06; H03k 5/20; G01s 9/06

U.S. Cl. 324—186

9 Claims



Pulse detection circuitry for accurately measuring the time for transmission of a train of acoustical energy pulses between a transmitter and receiver. One of the pulses has significantly greater amplitude than the other pulses in the train and has a negative-going zero crossing which occurs at a predetermined time in the pulse train. A peak detector and charge sensor is connected to the receiver. The signal from the receiver is also provided to a negative zero crossing detector which generates pulses to start a timer in response to each negative-going zero

crossing. A peak detector and charge sensor also connected to the receiver detect when the pulse preceding a negative-going zero crossing is greater in amplitude than preceding pulses and reset the counter upon such detection. A data gate which increases system noise rejection is also disclosed.

3,824,465

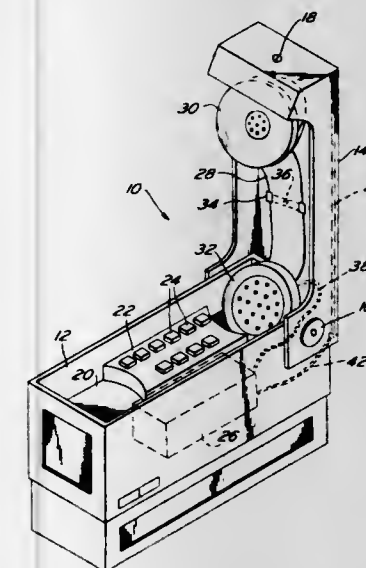
**PORTABLE TONE DECODER-ENCODER SYSTEM**

Roger D. Blough, Willow Grove, Pa., assignor to International Mobile Machines Corporation, Philadelphia, Pa.

Filed Jan. 4, 1973, Ser. No. 320,892

Int. Cl. H04b 1/38

U.S. Cl. 325—16



A portable tone decoder-encoder receiver and transmitter device wherein a radio network is contained in a housing and is operatively connected to a touch-tone pad also within the housing. A pivoted hollow handle is connected to the housing and this handle contains a releasably positioned transmitter and receiver handset and an antenna, both being operatively connected to the network. The handle may be moved from a carrying position to an operative position, and, when in carrying position is releasably locked to the housing.

3,824,466

**SYSTEM FOR THE TRANSMISSION OF DATA SIGNALS BY LINEAR FREQUENCY MODULATION EMPLOYING CIRCUIT IN A RECEIVER TUNED TO A CENTRAL FREQUENCY**

Claude Olier, and Guy Albert Jules David, both of Thiais, France, assignors to U.S. Philips Corporation, New York, N.Y.

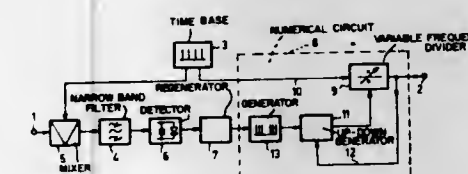
Filed Dec. 29, 1972, Ser. No. 319,543

Claims priority, application France, Jan. 7, 1972, 72.00453

Int. Cl. H04b 1/00

U.S. Cl. 325—30

4 Claims



A system for the transmission of data signals by linear frequency modulation employing a transmitter and a receiver which are synchronized by a circuit present in the receiver which is tuned to a central frequency of the frequency modulated signal applied to a filter the output of which is connected to a detector. Output pulses from the detector, after regenera-

tion in a regenerator, control a digital circuit for controlling the clock phase.

The transmitter includes a voltage controlled oscillator (VCO) in a control loop between the oscillator output and control input of the oscillator for maintaining the central frequency of the oscillator constant.

The transmitter also includes a saw-tooth generator provided with a control loop for maintaining the slope of the saw-tooth voltage constant.

3,824,467

**PRIVACY TRANSMISSION SYSTEM**

Richard Charles French, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

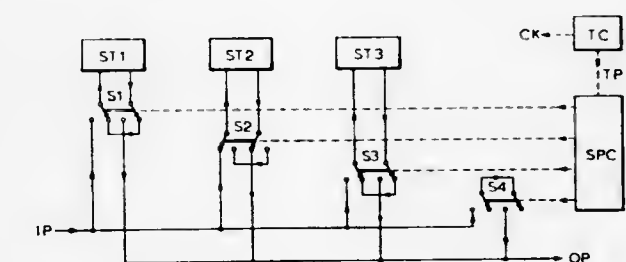
Filed Dec. 1, 1972, Ser. No. 311,443

Claims priority, application Great Britain, Dec. 2, 1971, 56081/71

Int. Cl. H04k 1/06

U.S. Cl. 325—32

26 Claims



A selector switching system and a number of memory devices, each capable of storing one time element of a voice transmission signal and simultaneously releasing a stored time element, which form an encoder and decoder for a transmission system, where a voice transmission signal is divided into consecutive time elements that are rearranged to form an unintelligible transmitted signal.

3,824,468

**SYSTEM FOR TRANSMITTING INFORMATION IN THE PRESCRIBED FREQUENCY-BAND**

Leo Eduard Zegers, and Wilfred Andre Maria Snijders, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

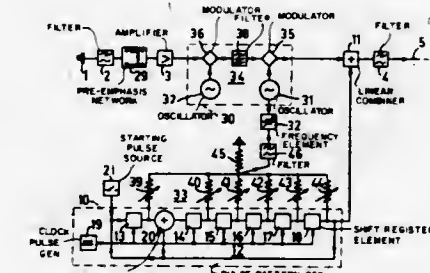
Filed Sept. 13, 1967, Ser. No. 667,534

Claims priority, application Netherlands, Sept. 14, 1966, 6612935

Int. Cl. H04k 1/04

U.S. Cl. 325—32

8 Claims



A transmission system in which auxiliary information in the form of a pulse pattern is transmitted with main information without frequency or time separation. Secrecy in the system is increased by also varying the frequency of the main information in accordance with the pulse pattern.



### 3,824,469 COMPREHENSIVE AUTOMATIC VEHICLE COMMUNICATION, PAGING, AND POSITION LOCATION SYSTEM

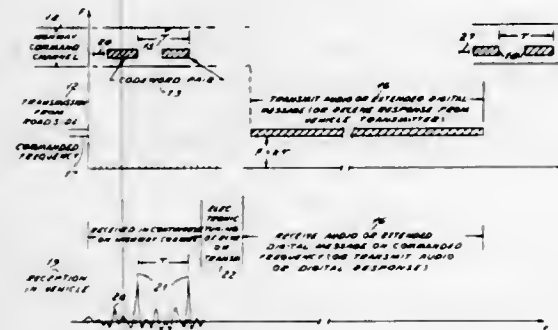
Marlin Philip Ristenbatt, 3606 Terhune Rd., Ann Arbor, Mich. 48104

Filed June 16, 1972, Ser. No. 263,704

Int. Cl. H04b 3/60

U.S. Cl. 325—39

18 Claims



A comprehensive electronic communication system for vehicles to permit transmission and reception of signals with respect to traffic warnings, crash warnings, emergency location signals, assistance signals, danger signals, and traffic advisories and the like, including a transmitter for repetitive transmitting on a single carrier frequency of a digital code-word and a receiver which provides controllable decoding and automatic receiver tuning means for automatically tuning a receiver to a predetermined local channel.

### 3,824,470 COMMUNICATIONS SYSTEM AND METHOD FOR TRANSMITTING OVER A LIMITED BANDWIDTH TRANSMISSION LINK

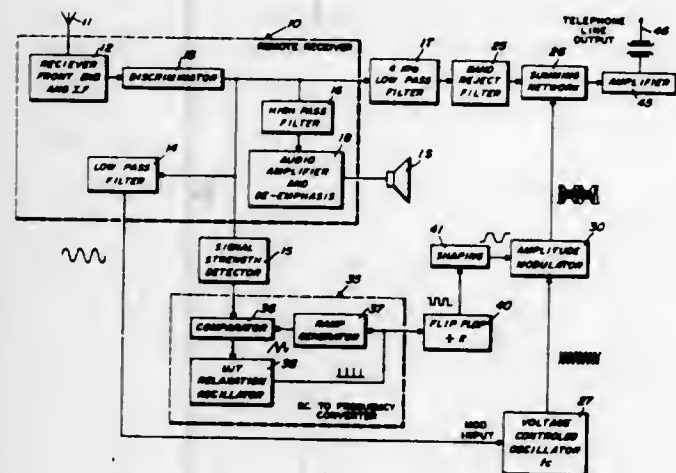
Bruce C. Eastmond, Darien, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Feb. 20, 1973, Ser. No. 333,601

Int. Cl. H04b 3/06

U.S. Cl. 325—45

17 Claims



A communications system, including portable transmitters and several remote receivers connected to a base station by means of a limited bandwidth transmission link (such as a telephone line), wherein the receivers include an encoder for transmitting the information over the transmission link and removing a small band of the information and inserting a carrier frequency, amplitude and frequency modulated by the coded squelch signals and the information signal strength signals, and the base station includes a decoder.

### 3,824,471 PCM TONE RECEIVER USING FLOATING-POINT DIGITAL SPECTRUM ANALYSIS

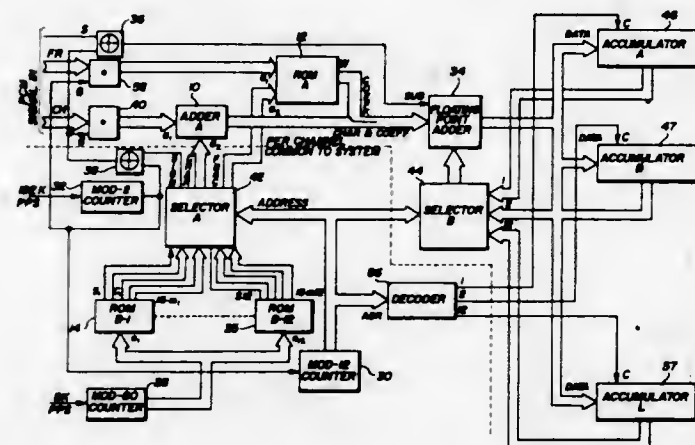
Jeffrey P. Mills, Forest Park, Ill., assignor to GTE Automatic Laboratories Incorporated, Northlake, Ill.

Filed Dec. 1, 1972, Ser. No. 311,064

Int. Cl. H04b 1/16

U.S. Cl. 325—321

14 Claims



Method and apparatus for detecting one or more tone signals in a PCM signal corresponding to an original analog voltage, without converting the PCM signal to analog, including sequentially monitoring samples of the PCM signal using an expression,  $V_r$ , in Fourier spectrum analysis selectively for the respective tone signals to be detected, and storing and accumulating, in floating-point form, the magnitude of  $V_r$ , wherein the determined magnitude of the tone signal in the original analog signal. The accumulated magnitude is compared with another accumulated quantity,  $V_r$ , derived from the incoming PCM signal, to determine if the amplitude of the respective tone exceeds a certain percentage of that of the entire signal. This allows the detector to operate correctly under varying levels of the analog signal.

### 3,824,472 PORTABLE RADIO/TAPE RECORDER CHARGING AND LOCKING SYSTEM

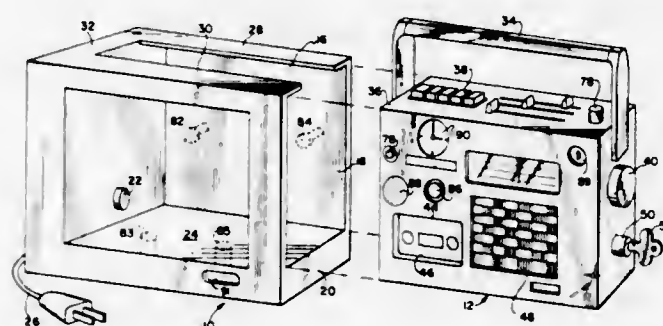
F. William Engel, 1418 Third Ave., San Mateo, Calif. 94402; Robert S. Engel, 2365 N. Edgewood St., Arlington, Va. 22207; Gerald J. Derbes, c/o General Delivery, Kings Hill, Saint Croix, and M. Walter Dusseau, 38 Strand St., Christiansted, Saint Croix, both of V.I. 00820

Filed Jan. 24, 1973, Ser. No. 326,210

Int. Cl. A47b 81/06

U.S. Cl. 325—355

3 Claims



Radio/tape recorders, particularly a charging base and a locking system for locking the portable radio/tape recorder when not in use. The system is particularly adaptable to hotel use, enabling the rental and removal of the radio/tape recorder by the individual guest and use of the unit as a business or recreational aid apart from the hotel room.

### 3,824,473 TRF RADIO RECEIVER WITH ENHANCED Q AERIAL TUNED CIRCUIT AND FREQUENCY RESPONSE COMPENSATION IN THE LOW FREQUENCY AMPLIFIER

Michael Richard Pye, Carlton, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

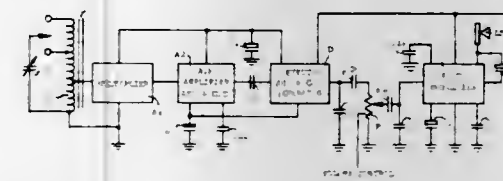
Filed Nov. 16, 1972, Ser. No. 307,303

Claims priority, application Great Britain, Dec. 9, 1971, 57309/71

Int. Cl. H04b 1/16

U.S. Cl. 325—375

9 Claims



This application covers a receiver for amplitude modulated radio signals in which all the active elements are embodied in a single integrated circuit. A single tuned circuit is connected to an RF transistor amplifier and includes positive feedback so as to enhance the magnification factor (Q) of the tuned circuit. A detector is responsive to the signal derived from the tune circuit to produce an audio signal and a low frequency transistor amplifier for amplifying the audio signal. The integrated circuit includes all resistors and transistors of the radio within the integrated circuit.

### 3,824,474 AUTOMATIC FREQUENCY CONTROL DEVICE

Yoichi Sakamoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

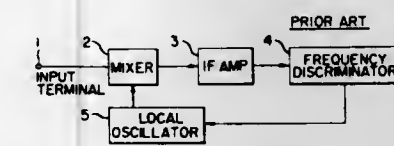
Filed Sept. 21, 1972, Ser. No. 290,841

Claims priority, application Japan, Sept. 25, 1971, 46-74878; Sept. 25, 1971, 46-74879

Int. Cl. H04b 1/16

U.S. Cl. 325—420

5 Claims



An automatic frequency control device for a television receiver is provided in which a DC tuning voltage superposed upon AFC voltage is applied to one end of a varactor in an UHF tuner whereas said DC tuning voltage is applied to one end of a varactor in a VHF tuner and AFC voltage with a polarity opposite to that of the first mentioned AFC voltage is applied to the other end of the varactor.

### 3,824,475 SCANNING RADIO RECEIVER

Peter W. Pfisterer, Oak Ridge, Tenn., assignor to Tenelec, Inc., Oak Ridge, Tenn.

Filed Feb. 1, 1973, Ser. No. 328,663

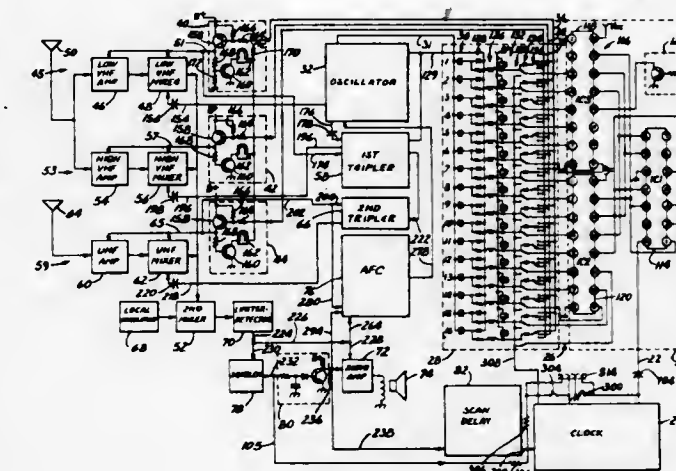
Int. Cl. H04b 1/34

U.S. Cl. 325—470

7 Claims

A signal-seeking receiver automatically scans a plurality of channels of respective predetermined radio frequencies lying in a multiplicity of frequency bands. The channels are tuned in successively by successively coupling respective tuning crystals into the tuning circuit of a signal generator which produces the beating signals for heterodyning. Scanning is stopped upon receiving a signal. For higher bands the frequency of a basic oscillator is multiplied by cascaded frequency-

multiplying circuits. Automatic frequency control is provided, for channels in the highest band, with gating means for disabling the frequency control in the absence of a received



signal. For bypassing selected channels during scanning, the clock driving the scanner is speeded up when the channels to be bypassed would otherwise be tuned in.

### 3,824,476 GROUNDED CONTROL CIRCUIT

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

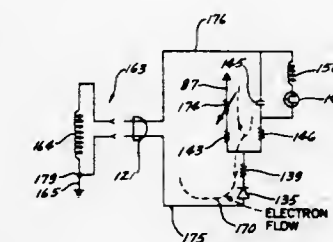
Continuation of Ser. No. 123,046, March 10, 1971, which is a continuation of Ser. No. 803,637, March 3, 1969, abandoned.

This application Oct. 10, 1973, Ser. No. 405,203

U.S. Cl. 328—4

Int. Cl. G06n 27/00

18 Claims



A material moisture sensing control includes a circuit connectable to a two-wire alternating current supply in either of two polarity postures. The circuit includes an earth grounding of one electrode and is operable for providing the desired consistent sensing and safe operation with either polarity posture while eliminating the need for either an isolation transformer or an auxiliary isolation resistor at the earth ground electrode.

### 3,824,477 GROUND SENSITIVE CONTROL FOR ELECTRICAL APPARATUS

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Continuation-in-part of Ser. No. 405,203, Oct. 10, 1973, which is a continuation of Ser. No. 123,046, March 10, 1971, and a continuation of Ser. No. 803,637, March 3, 1969. This

application Nov. 2, 1973, Ser. No. 412,456

Int. Cl. G06n 27/00

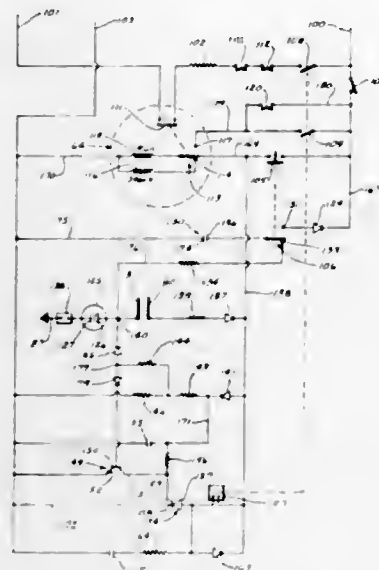
U.S. Cl. 328—4

14 Claims

In a material moisture sensitive control, and integrating switch, in circuit with a pair of moisture sensing electrodes in a fabric drying apparatus, is operable between conductive and nonconductive postures as a function of the dryness condition of the fabrics being dried. A transistor is operable for initiating



termination of operation of the apparatus responsive to a high voltage developed across the integrating switch in the nonconductive condition. In a preferred embodiment, the integrating



switch is in the form of an electrolytic cell in a series circuit and connected at one terminal to earth ground through which a circuit must be completed for operability of the apparatus.

### 3,824,478 SHIFT REGISTER

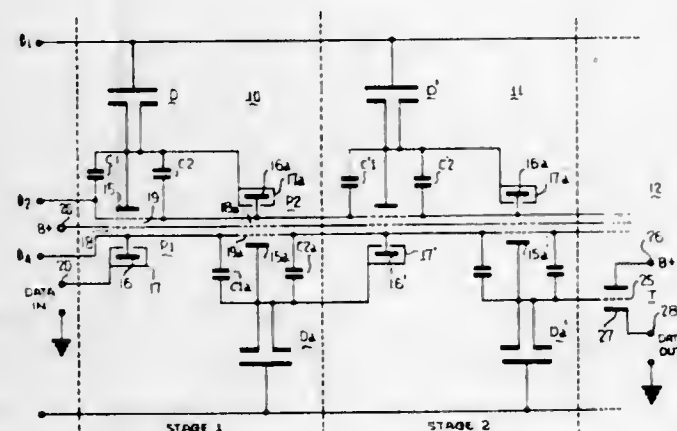
Robert A. Mueller, Tucson, Ariz., assignor to Electron Emission Systems, Inc., Chicago, Ill.

Filed Aug. 7, 1972, Ser. No. 278,366

Int. Cl. G11r 19/00

U.S. Cl. 328—37

21 Claims



Integrated circuitry configuration employing coplanar integrated circuit vacuum devices which are fabricated by photo-etching techniques in terms of lines on a flat substrate to form a shift register in which only active thermionic diodes, pentodes and capacitors are employed, and in which cross-overs of leads of the integrated circuitry are totally avoided.

### 3,824,479 CONTROLLER WITH DIGITAL INTEGRATION

Trygve O. Alger, Norwalk, Conn., assignor to Harrel, Incorporated, East Norwalk, Conn.

Filed Aug. 16, 1972, Ser. No. 280,988

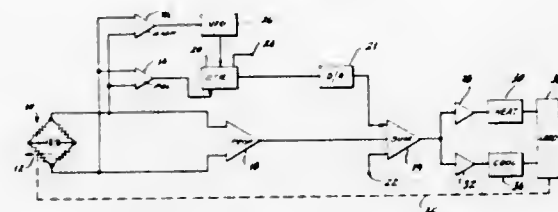
Int. Cl. H03k 17/00

U.S. Cl. 328—69

14 Claims

A controller for use in automatic control applications such as temperature controllers, where a proportional plus automatic reset (integral compensation) or a combination of pro-

portional plus automatic reset and rate (derivative compensation) are applicable. A control characteristic similar to conventional proportional plus automatic reset plus rate control is obtained by use of an up/down digital counter controlled by an oscillator whose frequency is controlled by the error signal. Such a control exhibits the general control characteristics of a proportional plus automatic reset controller in elimination of temperature "droop" but requires little or no adjustment to match the requirements of varying loads. Further elimination



of the need for manual adjustment of rate, reset, and proportional band to match differing loads can be had by shaping the frequency characteristic of the oscillator to a non-linear function of the error signal.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention. In order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

### 3,824,480 SEQUENTIAL SWITCHING DEVICE

Kamran Eshraghian, Hillcrest, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

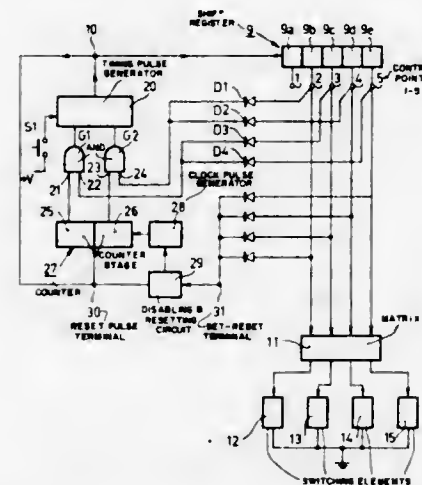
Filed Nov. 29, 1972, Ser. No. 310,233

Claims priority, application Australia, Nov. 29, 1971, 7204/71

Int. Cl. H03k 17/28

U.S. Cl. 328—75

7 Claims



A switching device is disclosed in which switch control means (a multi-stage shift register) controls the switching of switching elements which, in turn, control a predetermined sequence of operations of a controlled device (for example, a washing machine) in a predetermined sequence of times. Stepping pulse generating means steps the switch control means stage by stage. The timing of the stepping pulses is controlled by a periodic pulse generating means via a gated control means in turn controlled by a counter and the outputs of the switch control means.

### 3,824,481 CIRCUIT ARRANGEMENT FOR AUTOMATIC ZERO LEVEL COMPENSATION

Richard Sponholz, Muhlhofen, and Hans Kiefer, Dubdorf, both of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen Bodensee, Germany

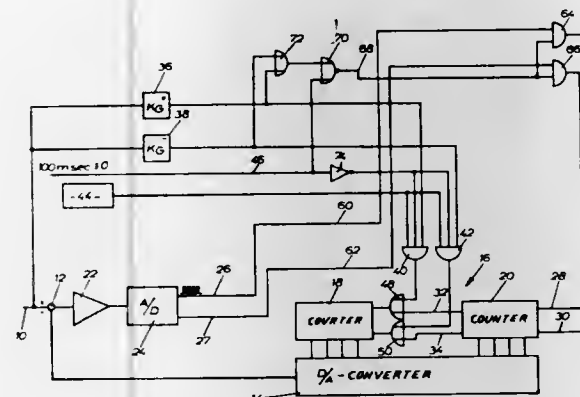
Filed Feb. 7, 1973, Ser. No. 330,222

Claims priority, application Germany, Feb. 8, 1972, 2205792

Int. Cl. H04b 1/12

U.S. Cl. 328—162

2 Claims



A known type of circuit for compensating (i.e. balancing or zeroing) an input signal relative to a changing base line includes a voltage-to-frequency converter receiving the input signal being compensated or balanced, a counter receiving the output pulses of this voltage-to-frequency converter, and a digital-to-analog converter controlled by the counter, where the output of the digital-to-analog converter generates a correction signal which can be added algebraically to the input signal for zero level (base line) compensating or balancing. To shorten the time of balancing without causing overshooting, the present circuit causes coarse adjustment by feeding the output of a (relatively high) fixed frequency generator to the more significant counting stages of the counter until an approximation of balance is reached, followed by feeding the output of the conventional voltage-to-frequency converter to the lesser significant stages after this coarse balancing has been completed. The means for changing over from the coarse balancing to the fine adjustment may include a positive and a negative threshold-value switch.

### 3,824,482 PUMP GENERATED BIAS FOR PARAMETRIC AMPLIFIERS

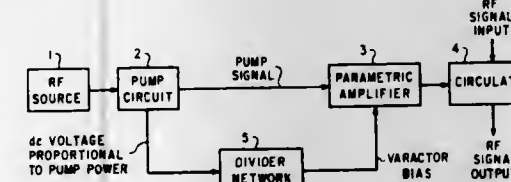
James J. Whelehan, Jr., Smithtown, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 30, 1973, Ser. No. 383,573

Int. Cl. H03f 7/00

U.S. Cl. 330—4.9

3 Claims



Parametric amplifier varactor bias, generated by the rectification of pump power, varies with pump power level to prevent detuning of the varactor circuit caused by changes in pump power level.

### 3,824,483 DIGITAL DEVICE FOR FAST FREQUENCY CONTROL OF A FREQUENCY SYNTHESIZER

Jean Pierre Margala, and Jean Louis Roger Cassany, both of Paris, France, assignors to International Electric Corporation, New York, N.Y.

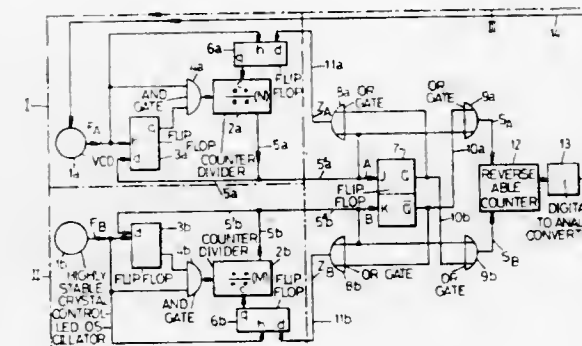
Filed July 20, 1973, Ser. No. 381,291

Claims priority, application France, July 27, 1972, 72.27049

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A

7 Claims



This relates to a phase locked loop voltage controlled digital synthesizer in which digital pulses produced from a voltage controlled oscillator (VCO) and a first frequency divider and a reference oscillator and a second frequency divider are applied to a comparator which produces an output signal when the compared pulses have repetition frequencies which are not equal. The comparator output signal results in a voltage which is applied to the VCO to change the frequency thereof in steps until repetition frequency equality is achieved. The purpose of the present invention is to shorten the time needed to cause the repetition frequency of the pulses at the output of the first frequency divider to equal the repetition frequency of the pulses at the output of the second frequency divider. This is accomplished by including a reversible counter connected to the comparator output. The output signal of the reversible counter is connected to a digital-to-analog converter to produce the VCO control voltage. In addition, two other control circuits are provided for each of the first frequency divider and the second frequency divider which cooperate with the reversible counter in reducing the time of achieving repetition frequency equality.

### 3,824,484 TOUCH-TONE SIGNAL GENERATION SYSTEM

Timothy C. Gillette, Cambridge, Mass., assignor to Compound Computing Corporation, Bedford, Wis.

Filed Oct. 12, 1972, Ser. No. 296,791

Int. Cl. H03b 3/02, 3/04, 5/24

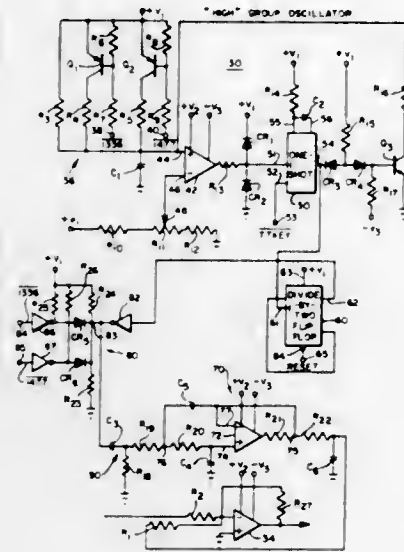
U.S. Cl. 331—48

11 Claims

A touch-tone signal generation system includes a pair of oscillators for generating tones substantially the same as those employed in the system of American Telephone & Telegraph Co., under the trademark designation Touch-Tone each of which provides a selected tone pair for use in data communication systems. The oscillators include a capacitor; a charging circuit for the capacitor including a resistive network; and a threshold detector for triggering a one-shot whenever the charge on the capacitor reaches a predetermined threshold level. A resistor may be added in shunt in the resistance network to change the frequency of the oscillator in response to a switching signal. A divide-by-two flip-flop, which is triggered by the one-shot, provides a train of pulses which are filtered by a low pass filter to remove third harmonics. An amplitude weighting network compensates for the attenuation of the fun-



damental of the selected tone. Each oscillator includes a high pass network to block direct current components. The tones



generated by the oscillators are of opposite phase so that the attack transients introduced by the high pass networks will be substantially canceled.

3,824,485

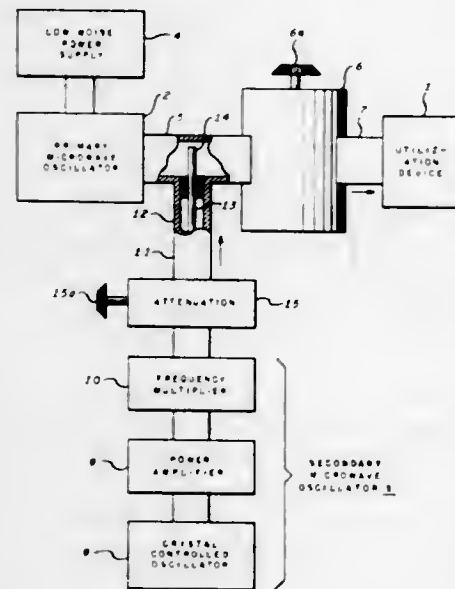
### STABILIZED OSCILLATOR WITH OUTPUT HAVING HIGH SPECTRAL PURITY

James R. Ashley, Colorado Spring, Colo., and Frank M. Palka, Gainesville, Fla., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,368  
Int. Cl. H03b 3/06

U.S. Cl. 331--55

5 Claims



A stable low-noise high frequency signal source comprises a primary high frequency generator stabilized by a high-quality-factor transmission resonator, the primary generator output also being injection phase locked by a stable secondary high frequency quartz crystal controlled generator.

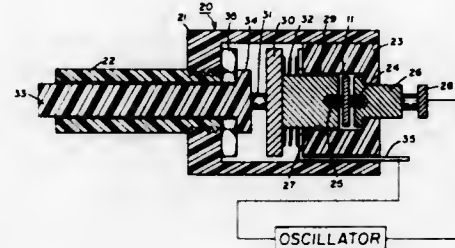
### 3,824,486 SOLID STATE SWITCHING CIRCUIT EMPLOYING A SELECTIVELY DAMPED PIEZOELECTRIC RESONATOR TO CONTROL A THYRISTOR CIRCUIT

Edmund T. Maciag, Middleburg Heights, Ohio, assignor to Vernitron Corporation, Bedford, Ohio

Filed Oct. 27, 1972, Ser. No. 301,480  
Int. Cl. H03b 5/36

U.S. Cl. 331-65

5 Claims



A compact and relatively economical high speed solid state switching circuit wherein a thyristor is controlled by an oscillator employing a selectively damped piezoelectric resonator, the piezoelectric resonator being housed within a mount that yields manual control over its damping.

3,824,487

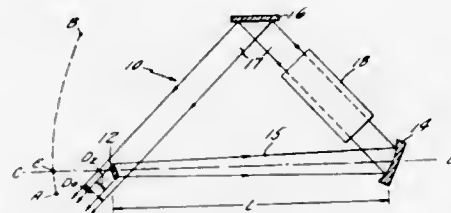
### UNSTABLE RING LASER RESONATORS

Carl J. Buczek, Manchester; Peter P. Chenausky, Farmington, and Robert J. Freiberg, South Windsor, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 8, 1972, Ser. No. 251,040  
Int. Cl. H01s 3/08

U.S. Cl. 331-94.5 C

8 Claims



Unstable resonator designs having totally reflecting optics which allow isolation of the parameters that control transverse mode discrimination from the parameters that control mode volume and output coupling are disclosed. Various asymmetric ring resonator geometries which include a pair of confocal curved reflecting surfaces and suitable techniques for promoting unidirectional oscillation in these geometries are discussed.

3,824,488

### MODE SELECTIVE LASER LINE-SCANNER

Carl C. Aleksoff, Ann Arbor, Mich., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

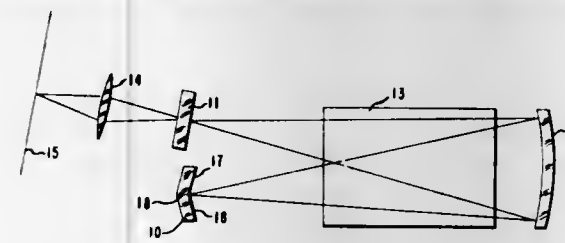
Filed Apr. 18, 1973, Ser. No. 352,473  
Int. Cl. H01s 3/00

U.S. Cl. 331-94.5 K

4 Claims

A crystal of a material having ferroelastic properties and having a face "bent" to a concave rooftop shape by intersec-

tion of a domain wall is provided with a reflecting coating on the "bent" face. The rooftop mirror is employed off-axis in an



optical resonant cavity containing a superradiant medium to form a laser. An image of coherent light can be extracted from the cavity which moves as the domain wall is moved.

3,824,489

### MICROWAVE OSCILLATOR

Robert Spitalnik, Cachan, France, assignor to U.S. Philips Corporation, New York, N.Y.

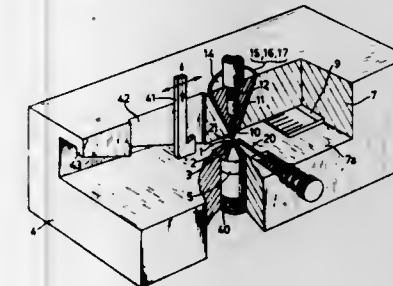
Filed Apr. 25, 1973, Ser. No. 354,660

Claims priority, application France, Apr. 25, 1972, 72.14550

Int. Cl. H03b 7/08

U.S. Cl. 331-107 R

8 Claims



A microwave oscillator which is intended for a semiconductor element and which is accommodated in a ridge-type waveguide. The waveguide is formed on the one side by a portion of small height which is closed by a short-circuit element, and on the other side by a portion having a progressively increasing height which is provided with a resonant structure. The resonant structure is formed by a thin vertical pin and by two further pins which are arranged perpendicular to the side walls of the wave guide and which can be axially adjusted. The assembly formed by these three components constitutes a transmission line which enables transmission of a microwave according to the T.E.M.-mode.

3,824,490

### NEGATIVE RESISTANCE DEVICES

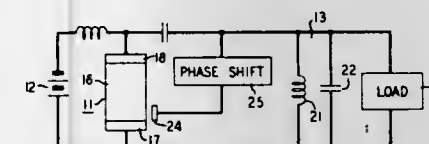
Terence James Riley, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 29, 1973, Ser. No. 374,958

Int. Cl. H03b 7/00

U.S. Cl. 331-107 R

10 Claims



The efficiency of negative resistance devices of the type now known as BARITT devices is increased by reducing the effect of the positive resistance portion of each current transit

cycle. In one embodiment, a control electrode near the injecting contact is connected through a phase delay to the r-f resonator to delay the injection of minority carriers so that a larger portion of carrier transit occurs during the negative resistance cycle portion. In another embodiment, a control electrode near the injecting contact capacitively couples RF energy from the injected carriers to the injecting contact during the positive resistance portion of the cycle.

3,824,491

### TRANSISTOR CRYSTAL OSCILLATOR WITH AUTOMATIC GAIN CONTROL

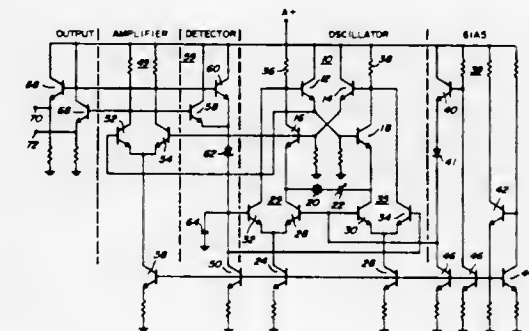
Ronald L. Treadway, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1973, Ser. No. 342,569

Int. Cl. H03b 3/02, 5/36

U.S. Cl. 331-109

7 Claims



A crystal controlled oscillator operable over a wide frequency range includes an emitter coupled oscillator and automatic gain control to maintain the amplitude of the oscillations within a predetermined range to limit crystal drive and to provide a substantially sinusoidal output signal without additional tuned circuits.

3,824,492

### SOLID STATE SINGLE FREQUENCY LASER

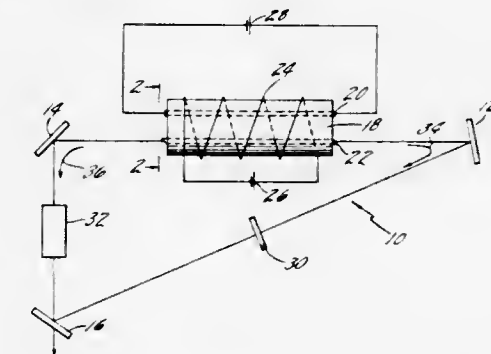
Michael J. Brienza, Manchester, and Arnold R. Clobes, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 22, 1972, Ser. No. 265,363

Int. Cl. H01s 3/06, 3/08

U.S. Cl. 331-94.5

9 Claims



Single frequency, stable laser systems in which a ring resonator having a Brewster ended, solid state rod containing the gain medium are discussed. The lasers which are pumped optically can be operated either continuous wave or pulsed and the phenomenon of spatial hole burning is eliminated by providing a differential loss mechanism in the resonator to avoid the presence of standing waves. The differential loss is



disclosed in various specific inventive embodiments wherein the optical rotation and Faraday rotation of a linearly polarized wave of laser energy either cancel or reinforce one another thereby causing the ring resonator to oscillate in only a single preselected direction.

3,824,493

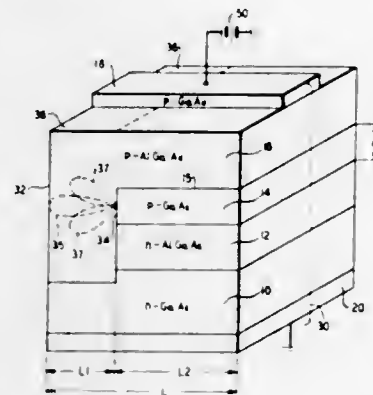
# FUNDAMENTAL MODE, HIGH POWER OPERATION IN DOUBLE HETEROSTRUCTURE JUNCTION LASERS UTILIZING A REMOTE MONOLITHIC MIRROR

Basil Wahid Hakki, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 5, 1972, Ser. No. 286,283  
Int. Cl. H01s 3/00

U.S. Cl. 331—94.5 H

1 Claim



The waveguide region of a double heterostructure junction laser is terminated at a point distant from a remote monolithic mirror. A passive region, which extends axially between the end of the waveguide region and the remote mirror, comprises a material having low absorption loss and is substantially impedance matched to the waveguide region.

3,824,494

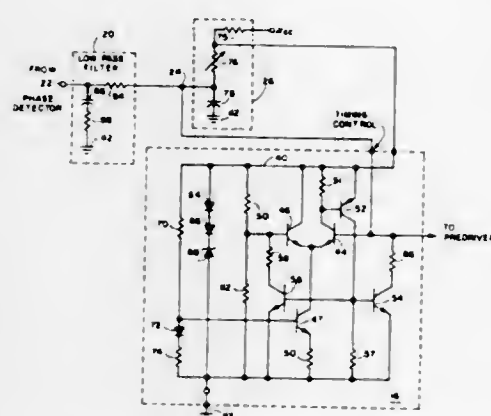
# TEMPERATURE STABLE RELAXATION OSCILLATOR HAVING CONTROLLABLE OUTPUT FREQUENCY

Milton E. Wilcox, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed June 8, 1973, Ser. No. 368,381  
Int. Cl. H03b 5/24

U.S. Cl. 331—111

16 Claims



The disclosed oscillator configuration is suitable for being provided in monolithic integrated circuit form and provides a sawtooth output signal having a repetition rate which is controllable and which is substantially independent of temperature variation. The oscillator circuit includes a comparator which senses the voltage across a discrete timing capacitor and switches states to control the charge and discharge of the

capacitor. The oscillator configuration insures that no conductive semiconductor devices are connected to the timing capacitor during the relatively long charge time of the capacitor and that all transistors connected to the capacitor during the short discharge time are saturated to minimize the effects of the thermal changes of the active devices on the capacitor charge and discharge times. Moreover, the oscillator circuit requires only two power supply levels and one timing control terminal to facilitate its use in minimum lead integrated circuit packages including other circuits.

3,824,495

# CRYSTAL OSCILLATOR, ESPECIALLY FOR CLOCKS AND WATCHES

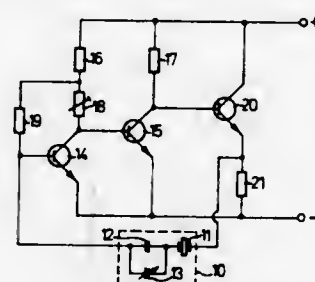
Erich Gerum, Nurnberg, Germany, assignor to Diehl, Nurnberg, Germany

Filed Sept. 13, 1972, Ser. No. 288,680  
Claims priority, application Germany, Sept. 17, 1971, 2146490

Int. Cl. H03b 5/36

U.S. Cl. 331—116 R

14 Claims



A crystal oscillator arrangement, especially for clocks and watches, in which an oscillator circuit has an input terminal connected to one side of a crystal while between the output side of the oscillator circuit and the other side of the crystal there is connected a decoupling stage that includes a nonlinear resistor. A pulse width varying component is connected in one of the oscillator circuit and decoupling stage. The arrangement provides for a phase shift from the input terminal of the oscillator circuit to the output side of the decoupling stage amounting to 360° or a whole multiple thereof. The arrangement provides for stabilization of the oscillator frequency over a wide range of variation of potential of the supply voltage source, usually, a battery.

3,824,496

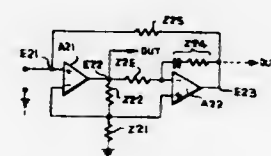
# GYRATOR CIRCUITS COMPRISING OPERATIONAL AMPLIFIERS AND OSCILLATING UTILIZING SAME

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed Sept. 28, 1973, Ser. No. 401,591  
Int. Cl. H03h 11/00; H03b 7/02

U.S. Cl. 331—132

18 Claims



A Riordan-type gyrator circuit, consisting of two stages of differential operational amplifiers and five inductance-determining impedances, is improved to avoid circuit latch-up at turn-on and to double the operative frequency range. The improvement involves deriving the input signal for the non-inverting input terminal of the second stage from a voltage divider at the output of the first stage rather than from the same

input signal applied to the non-inverting input terminal of the first stage. In addition to its gyrator function, the circuit can be modified to serve as an oscillator by employing positive feedback around the first stage. By rendering the voltage divider adjustable at the output of the first stage, the input conductance of the circuit is rendered variable between positive and negative conductances. The circuit also permits simulation of floating and mutually coupled inductors.

3,824,497

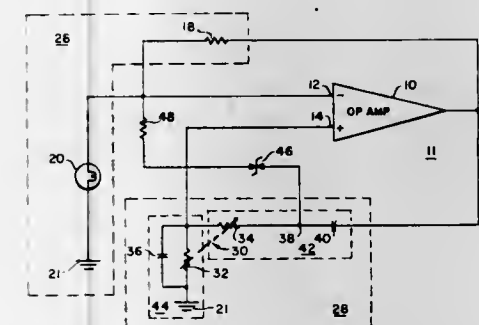
# HIGH-PURITY, FREQUENCY-STABLE, ADJUSTABLE, WIEN-BRIDGE, OSCILLATOR

Christopher B. Schwerdt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,109  
Int. Cl. H03b 5/26

U.S. Cl. 331—141

13 Claims



A high-purity, amplitude-stable, adjustable, Wien bridge oscillator utilizing a single amplifier component and a pair of nonlinear devices. A single operational amplifier is utilized in place of two amplifier components. A lamp in the degenerative-feedback path provides amplitude stabilization of the output oscillations. A back-to-back zener diode in series with a resistor is connected between the inverting input of the operational amplifier and a junction between the series resistor-capacitor arm of the bridge circuit thereby extending the linear operating-frequency range of the oscillator, improving amplitude stability of the output oscillations, and preventing output D.C. drift from feeding back to the inverting input of the operational amplifier through the back-to-back zener diode.

3,824,498

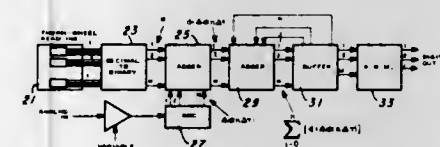
# DIGITAL PROCESSOR FOR SELECTIVELY SYNTHESIZING SINUSOIDAL WAVEFORMS AND FREQUENCY MODULATIONS

Alan L. McBride, Richardson, Tex., assignor to Dallas Instruments Incorporated, Dallas, Tex.

Filed Dec. 22, 1972, Ser. No. 317,848  
Int. Cl. H03k 7/06

U.S. Cl. 332—9 R

5 Claims



A digital oscillator produces discrete quantized samples of a sinusoidal waveform at a fixed sample time. A predetermined frequency is established. A read only memory has predetermined values of the amplitude of a sinusoidal waveform. A read only memory is addressed with the predetermined frequency number to provide a sample value of said sinusoidal waveform.

3,824,499

# DIODE PHASE MODULATOR

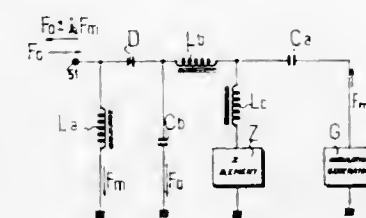
Claude Beaugrand, and Roger Ermoglio, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 31, 1972, Ser. No. 276,383  
Claims priority, application France, Aug. 17, 1971, 71.29963

Int. Cl. H03c 3/22

U.S. Cl. 332—16 R

8 Claims



A modulator comprising a diode to which both the modulating signal and the signal to be modulated are applied. The diode circuit comprises an element whose resistance varies inversely in relation to the amplitude of the direct current detected in the diode. This element is preferably a diode.

3,824,500

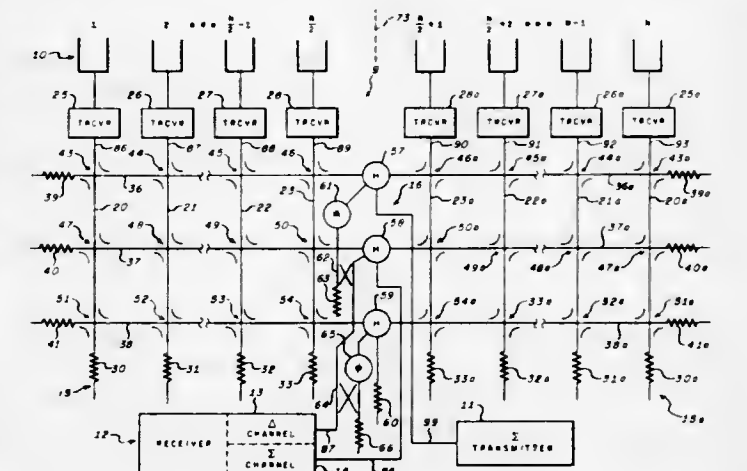
# TRANSMISSION LINE COUPLING AND COMBINING NETWORK FOR HIGH FREQUENCY ANTENNA ARRAY

Carl Rothenberg, North Bellmore, N.Y., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,790  
Int. Cl. G01s 9/02; H01p 5/00

U.S. Cl. 333—6

6 Claims



An improved transmission line network includes signal coupling and combining sub-networks for interchange of high frequency energy between elements of a planar lineal antenna array and a monopulse radar transmitter and receiver having sum and difference channels.

3,824,501

# AUTOMATIC CABLE EQUALIZER

Cliff Andrew Harris, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.Y.

Filed July 12, 1973, Ser. No. 378,578  
Int. Cl. H04b 3/04

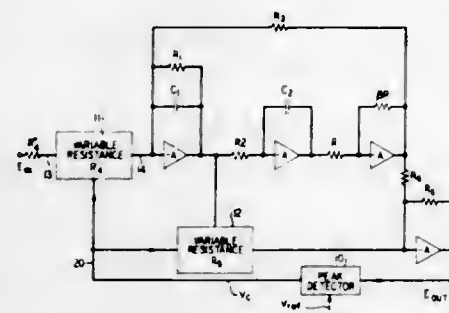
U.S. Cl. 333—18

10 Claims

Disclosed is an active data transmission cable equalizer which minimizes regeneration errors by maximizing the "eye opening" of signals emanating out of digital signal transmission cables. Equalization is achieved by monitoring the equal-



izer's peak output signal, by adjusting the gain  $k$ , of the equalizer, to maintain a constant output signal level, and by altering



the frequency of a simple real zero,  $g$ , in the equalizer's transfer response in accordance with the relation  $1/k = K_1 g + K_2$ , where  $K_1$  and  $K_2$  are equalizer constants.

3,824,502

### TEMPERATURE COMPENSATED LATCHING FERRITE PHASE SHIFTER

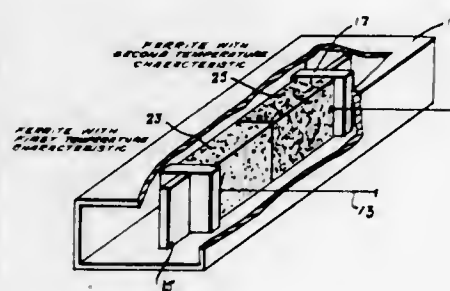
Irwin Bardash, Stony Brook, and Christian Schlotterhausen, Commack, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 11, 1973, Ser. No. 350,257

Int. Cl. H01p 1/32

U.S. Cl. 333—24.1

4 Claims



A nonreciprocal latching phase shifter that is compensated for changes in temperature. A pair of ferrite rectangular toroids in series connection are inserted into a rectangular waveguide and a dielectric material is inserted within the toroids with a magnetizing wire centrally disposed within the dielectric material and connected to a source of magnetizing current outside the waveguide. The ferrite material of one of the pairs of toroids has a remanent magnetization that increases with increasing temperature while the other of the pair has a remanent magnetization that decreases with increasing temperature.

3,824,503

### COUPLING DEVICE AND METHOD FOR SIMULTANEOUS IMPEDANCE BALANCING

Robert H. McCracken, Montgomery County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,894

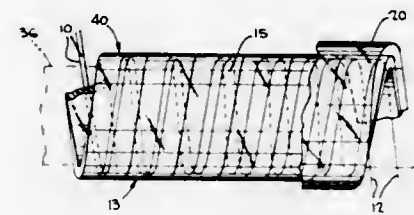
Int. Cl. H03h 7/42; H01p 5/10

U.S. Cl. 333—26

4 Claims

A wide range coupling device for simultaneously balancing and matching two arbitrary impedances is provided which comprises a tapered line extending over several wavelengths and coiled into a helix of gradually increasing pitch. The tapered line comprises two equal lengths of conductive wire insulated with respect to each other. Taper dimensions are determined by first specifying and interconnecting said impedances and in a single plane adjusting the taper for

minimum reflection utilizing time-domain reflectometry. An adhesive material is utilized to fix taper spacing. The tapered line is then rolled into a helix. Time-domain reflectometry is



3,824,504

### MICROWAVE FILTER

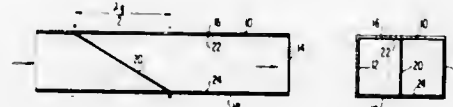
William J. Parris, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,312

Int. Cl. H01p 1/20, 3/06

U.S. Cl. 333—73 W

11 Claims



A microwave filter adaptable to suppress the even harmonics of a predetermined fundamental frequency of energy processed in a waveguide. The filter consists of a slanted conductor, for example a wire, connected between the top and bottom walls of a rectangular waveguide such that its ends contact the waveguide at points one half of a guide wavelength apart of the fundamental frequency along the length of the waveguide.

3,824,505

### ELECTROMECHANICAL DELAY LINE WHEREIN CORE EXHIBITS HIGHER MEAN REFRACTIVE INDEX THAN ENVELOPE

Manfred Borner, Ulm/Donau, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

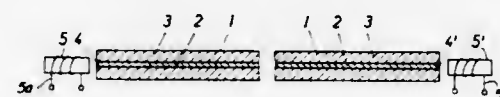
Filed Apr. 28, 1972, Ser. No. 248,391

Claims priority, application Germany, Apr. 29, 1971, 2121213; Apr. 19, 1971, 7116724

Int. Cl. H03h 9/30

U.S. Cl. 333—30 R

14 Claims



A delay line composed of a filamentary core capable of supporting the propagation of mechanical energy and a surrounding envelope. The material of the core and the envelope are such that the core exhibits a mean refractive index for the mechanical energy which is higher than that of the envelope.

3,824,506

### MICROWAVE ATTENUATORS

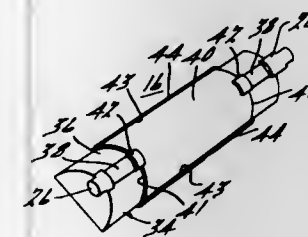
Helmut Bacher, Ann Arbor, Mich., assignor to Midwest Microwave Inc., Ann Arbor, Mich.

Continuation of Ser. No. 208,093, Dec. 15, 1971. This application May 22, 1973, Ser. No. 363,178

Int. Cl. H01p 1/22

U.S. Cl. 333—81 A

45 Claims



A microwave coaxial attenuator having a centrally disposed arcuate resistive layer with opposite axial ends thereof in electrical contact with a pair of center conductors and a pair of side ends in electrical contact with an outer ground conductor.

3,824,507

### PARITY OF TUNING APPARATUS

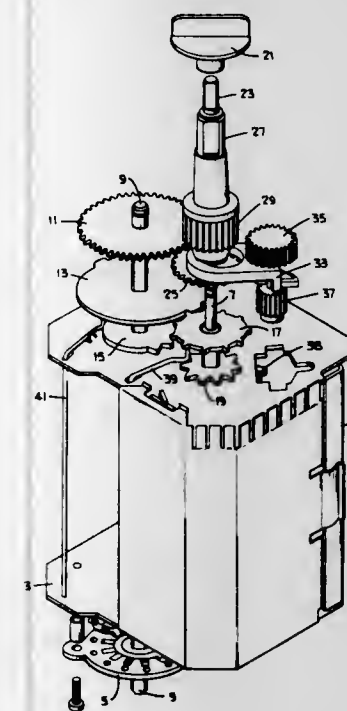
Walter Franklin Speer, Speedway City, and Lloyd Edward Reed, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,297

Int. Cl. H03j 5/00

U.S. Cl. 334—47

10 Claims



A television tuning apparatus which provides a single selector shaft for selecting channels in both the VHF and UHF bands wherein the single selector shaft is coupled to a conventional VHF rotary mechanical detent switch tuner and to a switch connected to a series of preset potentiometers which provide tuning voltages for a varactor UHF tuner. The apparatus sequentially selected VHF channels and UHF channels maintaining a uniformity of tuning ease throughout both bands of tuning.

3,824,508

### ELECTROMAGNETIC REPULSION DEVICE ACTUATING THE MOVABLE CONTACT MEMBER OF A CIRCUIT INTERRUPTER

Claude Terracol, Grenoble, France, assignor to MERLIN GERIN Societe Anonyme, Grenoble, France

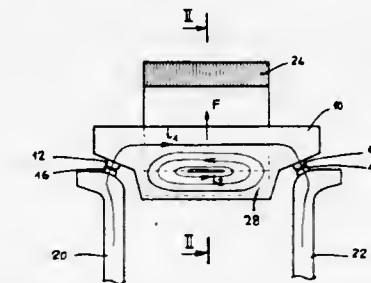
Filed May 21, 1973, Ser. No. 362,267

Claims priority, application France, May 26, 1972, 72.19239

Int. Cl. H01h 77/02

U.S. Cl. 335—16

12 Claims



Electromagnetic repulsion device comprising a magnetic circuit energized by the current flowing through a circuit interrupter and an induction-plate which is movable with the movable contact member of the circuit interrupter. The abrupt rising of a fault current induces secondary currents in the induction-plate to vigorously expel the induction-plate from the air gap of the magnetic circuit in which it is normally located when the circuit interrupter is in the closed-circuit position so that the contacts are rapidly opened.

3,824,509

### MAGNETICALLY OPERATED ELECTRIC SWITCH DEVICE

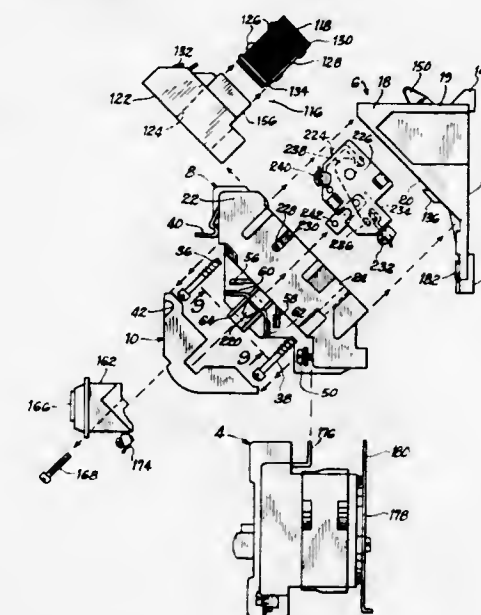
Robert L. McGary, Batavia, Ill., assignor to Furnas Electric Company, Batavia, Ill.

Filed May 17, 1972, Ser. No. 254,044

Int. Cl. H01h 50/04

U.S. Cl. 335—132

21 Claims



An electromagnetically operated switching device in which movable contacts move along lines extending downwardly at an acute angle to the horizontal to engage and disengage fixed contacts. An electromagnet is mounted in the housing oriented so as to have the main axis of the magnetomotive force thereof act along a line extending downwardly at an angle from a housing wall intended to be mounted vertically and an armature is connected to the movable contact guided so as to move along the same line.

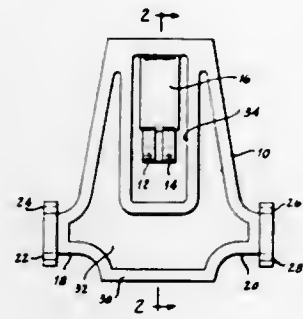


3,824,510

**MECHANICAL INTERLOCK FOR ELECTRIC SWITCHES**  
 Arthur F. Kolb, Mequon, and John J. Gilmore, Grafton, both  
 of Wis., assignors to Cutter-Hammer, Inc., Milwaukee, Wis.  
 Filed July 19, 1973, Ser. No. 380,564  
 Int. Cl. H01h 9/26

U.S. Cl. 335-160

2 Claims



An inexpensive thermoplastic interlock member which spatially aligns, anchors and mechanically interlocks the operation of a pair of electrical relays.

The interlock is a compact one piece member comprising a frame, anchorage means for anchoring the frame between two relay assemblies, each relay assembly having a respective armature, and an interlock element suspended within the frame by an integral flexible link for movement laterally of the frame, to prevent simultaneous actuation of the relay armatures.

The interlock element has inclined surfaces extending laterally of the frame and into the paths of movement of the two armatures so that the interlock element is laterally displaced to obstruct the path of movement of one armature whenever the other engages the inclined surface thereof.

3,824,511

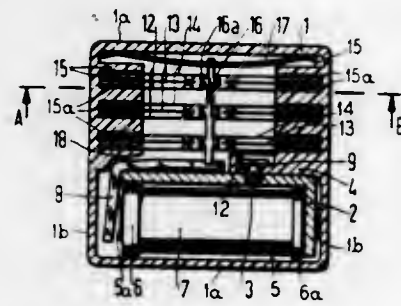
**ELECTROMAGNETIC RELAY**

Martin Aidn, and Alois Ruhland, both of Muenchen, Germany, assignors to Siemens AG., Berlin & Munich, Germany  
 Filed Apr. 12, 1973, Ser. No. 351,103  
 Claims priority, application Germany, Apr. 17, 1972, 2218494

Int. Cl. H01h 13/04

U.S. Cl. 335-202

10 Claims



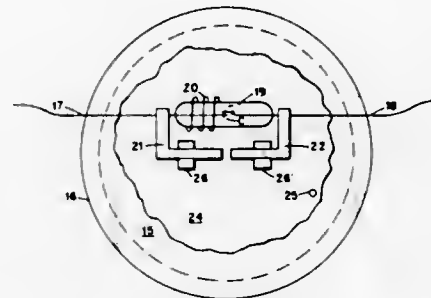
Electromagnetic relay having a relatively thin insulating member as the base for the relay which forms a mounting for the electromagnet, armature and relay contacts. The contacts for the relay comprise a series of sets of contact springs. Each set of contact springs is spaced along the base and arranged on opposite sides of an actuator member for the contacts and made from insulating material. The contact springs are assembled in the insulating member by merely sliding the springs into position in the base with all of the contacts arranged in a common plane, to provide a relay which may be readily assembled and is of minimum height and has all of the parts of the relay mounted on the base and readily accessible.

3,824,512

**MAGNETIC SELF-LATCHING PRESSURE SWITCH**  
 Floyd M. Glass, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.  
 Filed Nov. 14, 1973, Ser. No. 415,912  
 Int. Cl. H01h 35/32

U.S. Cl. 335-205

3 Claims



A pressure-operated switch is provided that will maintain closure indefinitely until it is reset electrically. A permanent magnet is positioned close to a reed relay switch in response to a shock wave and the magnet acting in conjunction with two pole pieces effects the closing of the switch which then remains closed even when the shock wave no longer exists. The switch may then be reset to an open position by means of an electrical coil encompassing the reed switch.

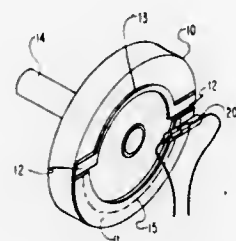
3,824,513

**POSITION INDICATION APPARATUS**

George Toney Webb, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Apr. 16, 1973, Ser. No. 351,666  
 Int. Cl. H01h 36/00

U.S. Cl. 335-207

9 Claims



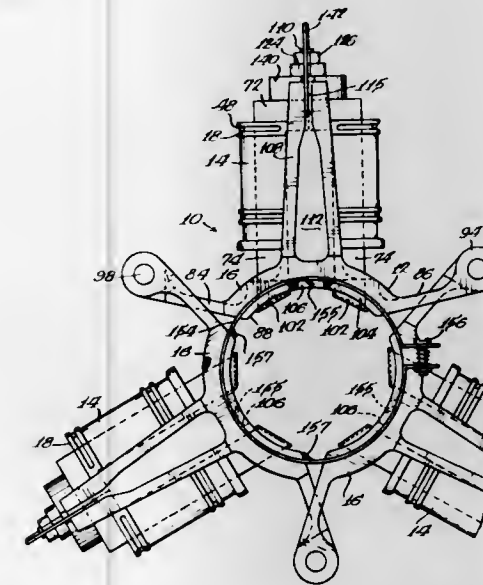
A position indication apparatus including a permanent magnet, a shunt for steepening the field gradient of the permanent magnet, and a device, such as a reed switch, responsive to the presence of the magnetic field. A substantially thin, substantially high coercivity permanently magnetized material occupies a portion of the surface of a circular base, such as a disc. At one edge of the magnetic material is mounted a substantially thin shunt comprised of a relatively soft magnetic material. The shunt substantially steepens the magnetic field gradient near this edge of the permanent magnet, thereby causing a substantially steeper drop-off in field intensity beyond the edge of the permanent magnet. A reed switch is positioned in parallel, spaced relation to the permanent magnet to be activated by movement of the magnet through a predetermined zone with respect to the reed switch. The zone can be substantially decreased dimensionally by the addition of the shunt, thereby greatly increasing the accuracy of the combination for use as a position indication apparatus.

3,824,514

**CONVERGENCE MAGNET AND HOUSING ASSEMBLY**  
 Donald G. Hojnacki, McHenry, Ill., assignor to Coilcraft, Inc., Cary, Ill.  
 Continuation-in-part of Ser. No. 103,710, Jan. 4, 1971. This application Mar. 29, 1973, Ser. No. 346,138  
 Int. Cl. H01f 7/00

U.S. Cl. 335-210

21 Claims



A low cost convergence magnet and housing assembly having the advantages of small size, simplicity, superior cooling, superior adjustment to varying kinescope neck sizes, stability against jarring or shock, cheapness, and security of terminal wires and their connections to winding leads.

3,824,515

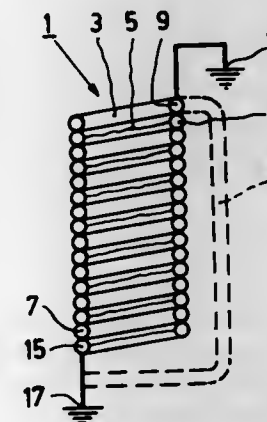
**SCREENING CAGE**

Benedictus Timotheus Johannes Holman, Emmasingel, Eindhoven, Netherlands  
 Continuation of Ser. No. 110,457, Jan. 28, 1971, abandoned.  
 This application May 12, 1972, Ser. No. 252,938  
 Claims priority, application Netherlands, Feb. 18, 1970, 7002232

Int. Cl. H01f 5/00

U.S. Cl. 335-213

4 Claims



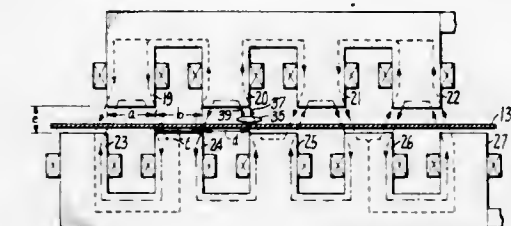
Electric screening cage comprising multifilarly helically wound wires connected to earth so that the earth-connected ends of each pair of adjacent wires are located at opposite ends of the cage.

3,824,516

**ELECTROMAGNETIC MATERIAL HANDLING SYSTEM UTILIZING OFFSET POLE SPACING**  
 Sander Benowitz, 1537 Bedford Ave., Sunnyvale, Calif. 94087  
 Filed Feb. 5, 1973, Ser. No. 329,587  
 Int. Cl. H01f 13/00

U.S. Cl. 335-284

13 Claims



A technique of moving electrically conductive non-magnetic particles wherein a plurality of electromagnets are positioned on either side of an air gap with each electromagnet facing a non-magnetic space between electromagnets on the opposite side of the air gap. The electromagnets are energized with polyphase current in a manner to generate a sweeping magnetic flux down the air gap for moving particles therealong. Eddy currents generated by one magnetic field relative phase reacts with flux of another magnetic field relative phase to provide motion of the article. Two specific utilizations of this technique are described; the separation of conductive non-magnetic particles from waste material and the movement of aluminum can lids.

3,824,517

**INDUCTOR HAVING A MAGNETIC CASING FORMED BY STACKED STAMPINGS**

Jean-Marc Hess, Chamalieres, and Adolph Knop, Orcines, both of France, assignors to Constructions Electrotechniques du Centre, Blahzat, France

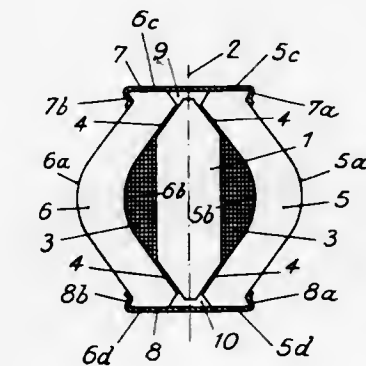
Filed Feb. 26, 1973, Ser. No. 335,849

Claims priority, application France, Feb. 28, 1972, 72.06669; Jan. 17, 1973, 73.01545

Int. Cl. H01f 27/26

U.S. Cl. 336-83

16 Claims



An inductor comprises a central core 1 having bevelled upper and lower edges. The core is surrounded by a coil or winding 3, and the magnetic circuit is completed by complementary half shells 5 and 6 that surround the coil and mate with the bevelled core edges but which are separated therefrom by compressible films 4. Flanged assembly brackets



7 and 8 complete the structure and may be inwardly pinched to compress the films and thereby adjust the inductance value to a desired level. The void spaces 9 and 10 at the top and bottom of the core help to channel the flux through the shells 5 and 6.

3,824,518

## MINIATURIZED INDUCTIVE COMPONENT

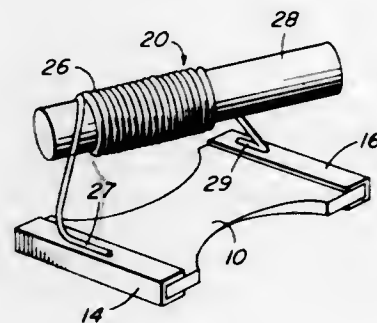
Stephen A. Slenker, Tyngsboro, Mass., assignor to Piconics, Inc., Tyngsboro, Mass.

Filed Mar. 5, 1973, Ser. No. 338,265

Int. Cl. H01f 15/02

U.S. Cl. 336-96

7 Claims



There is disclosed an inductive component including a ceramic substrate having metalized strips affixed thereto, an inductive element preferably in the form of a coil wound upon a ferrite core attached to the strips, and an epoxy encapsulant enclosing the inductive element and forming with the ceramic substrate a unitary inductive component. The substrate is constructed with oppositely sloping walls arranged to provide an interlocking dovetail arrangement with the encapsulant thereby providing an improved bonding therebetween to prevent separation between the substrate and encapsulant when the component is soldered in a circuit.

3,824,519

## COIL FORMS AND TERMINAL

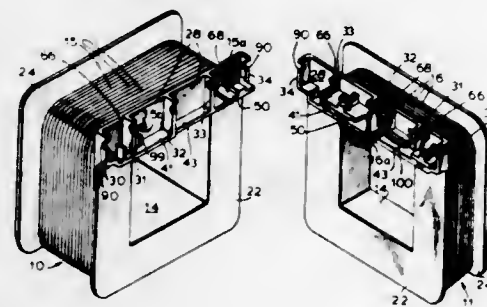
Imrich M. Miller, Paterson, N.J., assignor to Universal Manufacturing Corporation, Paterson, N.J.

Filed Feb. 16, 1973, Ser. No. 333,222

Int. Cl. H01f 15/10, 27/28

U.S. Cl. 336-192

12 Claims

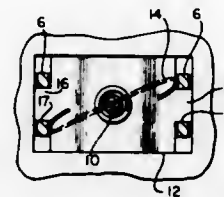


A coil form with an integrally formed terminal boards which is adapted to mate with another form having a similar terminal board to form enclosed, electrically insulated compartments. A crimp-solder terminal formed by a coil of wire is also provided.

3,824,520  
ELECTRIC FUSE HAVING BLOWN FUSE INDICATOR  
Edward J. Knapp, Jr., Newburyport, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.  
Filed Dec. 12, 1973, Ser. No. 424,042  
Int. Cl. H01h 85/12

U.S. Cl. 337-161

5 Claims



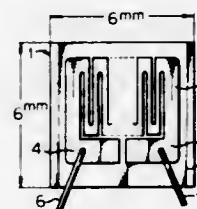
The spring-biased indicator pin of a blown fuse indicator is normally restrained by a fusible element arranged with the preponderant portion of its length in a plane at right angles to the axis of said pin, projecting through a bore in said pin and subjected to a shear-action by the spring-bias of said pin.

3,824,521  
RESISTOR

Kazuo Horii, Funabashi; Kazuo Ohya, Yachiyo; Matuo Zama, Tokyo, and Hiroyuki Takashina, Kawasaki, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan  
Filed Sept. 24, 1973, Ser. No. 400,345  
Int. Cl. H01c 1/02

U.S. Cl. 338-275

6 Claims



An improved thin-film resistor low in the resistance temperature coefficient is provided. A metal film or foil is bonded with a thermosetting resin onto an insulating base plate having a lower linear expansion coefficient than the metal and is etching-processed so as to be of a desired resistance pattern. The difference in the linear expansion coefficient between the metal and the insulating base is selected to be  $26 \text{ to } 66 \times 10^{-7}/^\circ\text{C}$ . The metal and base are covered with a resin so as to be a molded assembly, together with lead wires connected to both ends of the metal.

3,824,522  
CURRENT ADAPTOR

Johannes Kurt Bertrams, deceased, late of Hilden, Germany, and Casper Antonius Henricus Mulkens, administrator, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1973, Ser. No. 340,768

Claims priority, application Netherlands, Mar. 18, 1972, 7203661

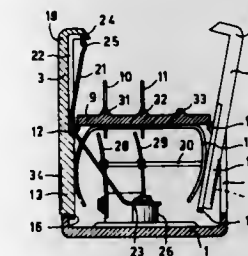
Int. Cl. H01r 9/00

U.S. Cl. 339-21 R

4 Claims

The invention relates to a current adaptor which can be connected to a current supply rail. The current adaptor comprises a housing with grips on either side whose free ends are

bent in the form of a hook so as to grip around the current supply rail. The grips are hinged to the housing and those sides



of each of the grips which extend beyond the pivot viewed from the free end, are pressed apart with the aid of a spring incorporated in the housing.

3,824,523

## CONTACT RETENTION ASSEMBLY

Michael J. McGhee, Basingstoke, England, assignor to ITT Industries, Inc., New York, N.Y.

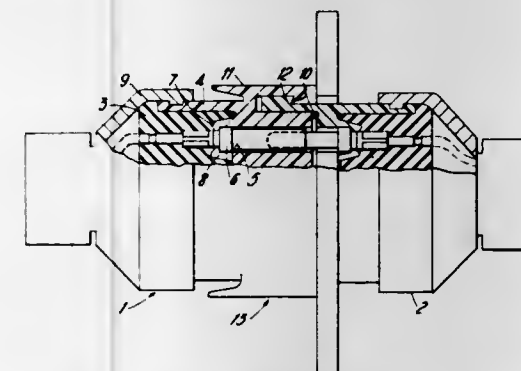
Continuation of Ser. No. 233,622, March 10, 1972,

abandoned. This application June 21, 1973, Ser. No. 371,958  
Claims priority, application Great Britain, Mar. 12, 1971, 6650/71

Int. Cl. H01n 13/40

U.S. Cl. 339-59 R

8 Claims



A two-part connector assembly wherein the elements are latched together by a latch on one element which latches to a notch on the other element. The latch, in cross-section, is T-shaped. To release, pressure is applied to one arm of the T to rock it about the shank of the T, which is integral with the casing. The contacts are rear-clip insertion and extraction types, with the tines for contact retention integral with the inside of the bore in which the contact is located.

3,824,524

## ELECTRICAL CONNECTOR ASSEMBLY

Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

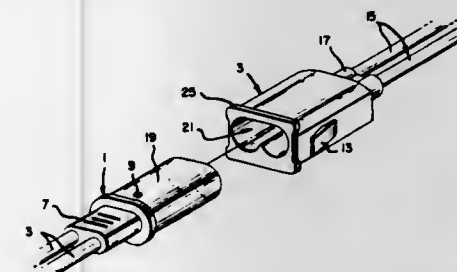
Filed Jan. 31, 1973, Ser. No. 328,186

Claims priority, application Great Britain, Mar. 12, 1971, 6650/71

Int. Cl. H01r 13/52

U.S. Cl. 339-60 R

3 Claims



The disclosure relates to a high voltage connector for installation in a panel cutout in the field, wire connection to the

connector being made by crimping individual wires to individual contact members and locking each of the contact members into the connector housing by means of locking tines on the contact member and shoulders in the housing. The housing further includes a pair of ears for locking the housing into the panel and a flange on each housing portion to hold the housing portions together when mated. The connector is formed from polarized male and female members which connect together.

3,824,525

## CONNECTOR LATCH ASSEMBLY

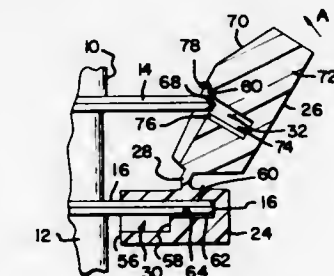
Alfred John Keller, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 11, 1972, Ser. No. 288,170

Int. Cl. H01r 13/54

U.S. Cl. 339-91 R

13 Claims



This invention relates to a connector latch assembly comprising a pair of identical latches adapted to simultaneously secure a pair of mated connectors one to the other. Each latch includes a base member slidably engaged with an end of the mounting flange of one of the connectors and an integral hinged member selectively engageable with the corresponding end of the mounting flange of the other connector.

3,824,526

## POSITIVE STOP HIGH VOLTAGE CONNECTOR

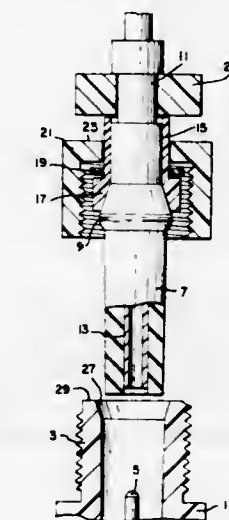
Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 31, 1973, Ser. No. 328,187

Int. Cl. H01r 13/52

U.S. Cl. 339-94 R

10 Claims



The disclosure relates to a high voltage connector which includes a cylindrical insulator provided with a radial flange having an outer portion in the form of an O-ring molded thereon, the insulator and a mating receptacle providing positive stop means in the movement of the mating elements to prevent undue strain against and breaking of the flange. The disclosure also describes a threaded cap rotatable about the



insulator and cooperating with threads on the receptacle for fastening them together, the insulator having a stop member for preventing removal of the cap. There is also provided a washer of low friction material between the cap and a ferrule on the insulator to avoid rotation of the ferrule while threading the cap onto the receptacle.

3,824,527

## WIRE-IN-SLOT ELECTRICAL CONNECTIONS

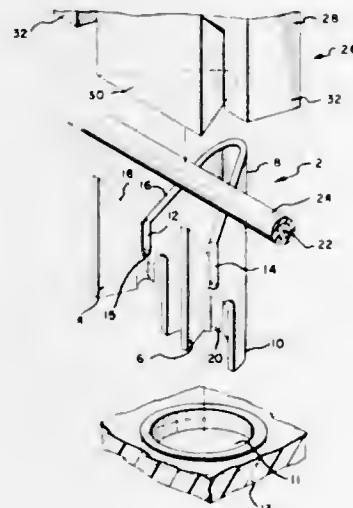
William Robert Evans, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 3, 1972, Ser. No. 277,839

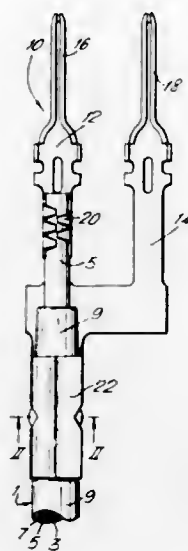
Int. Cl. H01r 13/38

U.S. Cl. 339—97 R

15 Claims



base, the lances being positioned opposite each other and, when the ferrule is crimped about the coaxial cable, each



lance piercing and passing between the strands of the outer stranded conductor so that some of the strands are positioned between a lance and an inner surface of a sidewall.

3,824,529

## FLAT CABLE CONNECTOR

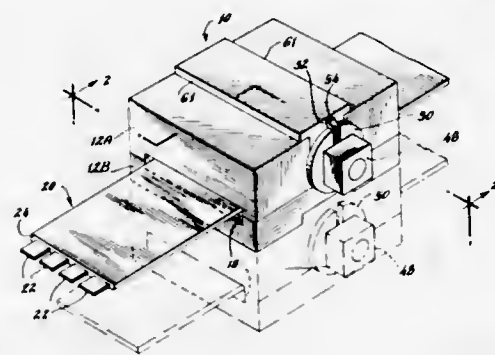
Robert Francis Dorrell, Des Plaines, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 28, 1972, Ser. No. 310,059

Int. Cl. H01r 9/06

U.S. Cl. 339—99

10 Claims



Electrical connecting device comprises a generally V-shaped member having wire receiving slots extending into corresponding side edges which are adjacent to the bight of the V. The plate sections of the V are preferably kinked in alignment with the slots. Upon insertion of a wire, the plate sections are resiliently stressed by the wire in a manner to cause them to move towards each other. Additionally, the individual plate sections may be flexed by stressing of the kinked sections in the manner of a cylindrical spring.

3,824,528

## CONNECTOR FOR COAXIAL CABLE

Wilhelm Cornelis Johannes Esser, Tilburg, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 4, 1973, Ser. No. 357,302

Claims priority, application Netherlands, May 16, 1972, 7206575

Int. Cl. H01r 11/20

U.S. Cl. 339—97 C

4 Claims

An electrical connector including a contact member for connection to an outer stranded conductor of a coaxial cable having an inner conductor and a dielectric separating the inner conductor from the outer stranded conductor, the contact member including a pair of spaced sidewalls interconnected by a base to define a generally U-shaped ferrule, a lance formed from each sidewall and extending inwardly of the sidewall at an acute angle in a direction away from the

This invention provides a connector for flat multiconductor cable. Cables to be connected are inserted in slots on opposite sides of a housing, there being an upper and a lower contact adjacent the slot for each cable conductor to be mated. There is an eccentrically mounted cam for each upper contact which cams are commonly actuated to force the upper contacts into engagement with cable positioned in the slot. Each upper and lower contact has a pointed projection for each cable to be joined which projections pierce the insulation of the cable when the cams are actuated, pinching the conductor of the cable therebetween to assure good physical and electrical contact of the cable connector with the connector contacts. If there is a metallic ground shield on the cable, an extra pair of contacts are provided adjacent the slot which contacts have teeth for engaging the shielding. A cam is provided for the upper of the shield engaging contacts which cam is operated by the same means as the other cams of the connector.

3,824,530

## INSTALLATION OF ELECTRICAL CONNECTORS ON WIRES INTERMEDIATE THE ENDS THEREOF

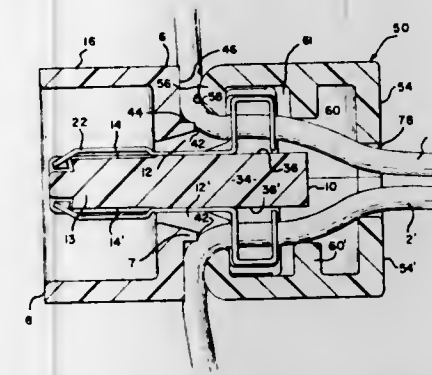
Lincoln Edwin Roberts, Winston-Salem, and John Robert Shoemaker, Walkertown, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1972, Ser. No. 312,395

Int. Cl. H01r 9/00

U.S. Cl. 339—99 R

6 Claims



Electrical connector having wire-in-slot electrical connecting means therein is applied to conductors intermediate the ends of the conductors. A cover or clamp is removably secured to the rearward side of the connector and functions to hold the conductors in the wire-receiving slots of the contact terminals which are contained in the connector. The cover also functions to gather the wires which extend towards the connector and confine them in the vicinity of the rearward end or side of the connector.

## ERRATA

For Classes 339—128, 339—198, 339—221, 339—246, 339—268 and 339—258 see: Patents Nos. 3,824,552 thru 3,824,557

3,824,531

## PLURAL BEAM STEERING SYSTEM

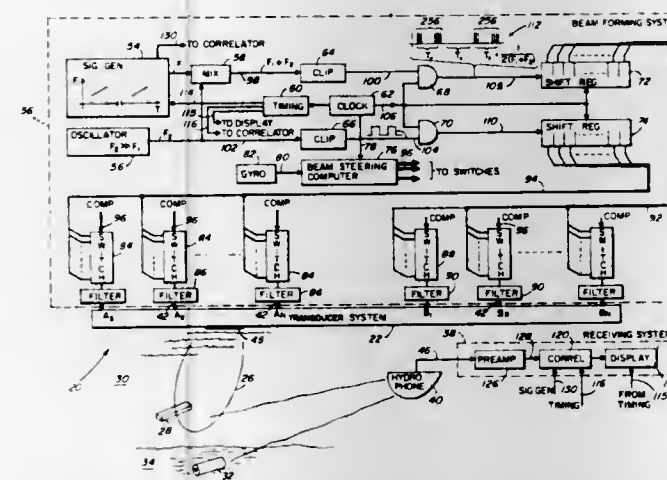
George M. Walsh, Middletown, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 15, 1973, Ser. No. 323,602

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R

13 Claims



A system for forming and steering beams of radiation at a plurality of frequencies radiated into a medium capable of producing a nonlinear reaction between these beams resulting in a radiant energy signal having a resultant frequency equal to an arithmetic combination of the radiated frequencies. The beam forming is accomplished by an array of radiating ele-

ments arranged preferably in a random fashion to produce a directivity pattern having a main lobe while minimizing the magnitudes of side lobes. The steering is accomplished by variable delay lines coupled between a source of signals at the radiated frequencies and the array of radiating elements providing for individual delays to each of these radiating elements so that each of the beams can be steered with individually controllable steering angles. The delays are varied in accordance with command signals from a beam steering computer to direct the main lobes of the radiation patterns through a common region of the medium as the beams are scanned, this resulting in a scanned beam at the resultant frequency. The signal resulting from the nonlinear reaction may be correlated with a replica thereof, the replica being generated in conjunction with the two radiated frequencies.

3,824,532

## SEISMIC SIGNAL INTRUSION DETECTION CLASSIFICATION SYSTEM

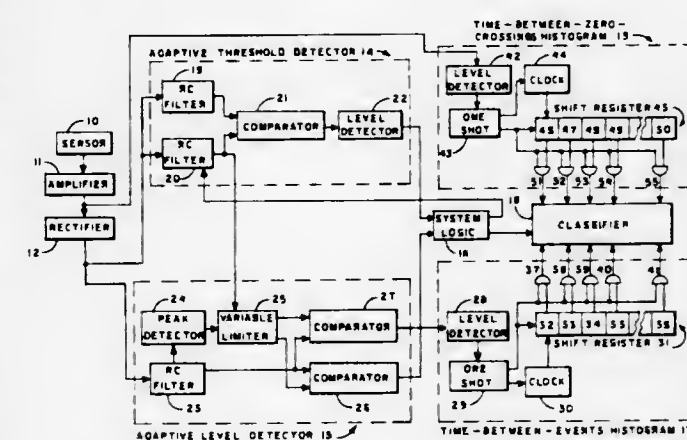
Albert J. Vandierendonck, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 27, 1971, Ser. No. 184,239

Int. Cl. G08b 13/00

U.S. Cl. 340—15

5 Claims



An intrusion detection system for detecting and classifying intrusions into a protected area by recognizing their characteristic patterns of seismic disturbances. A sensor produces an electrical signal representative of seismic disturbances created by an intrusion. Signals that surpass a predetermined level constitute an event. These signals are introduced to a histogram circuit that operates to determine the time between these events and to transmit a pulse to a classifier indicating each such time. The classifier generates a plurality of analogue signals each of which individually represents by its amplitude the sum of the pulses falling within a particular time between events pattern. Each pattern is characteristic of a particular type of intrusion such as aircraft, ground vehicle, human, nuisance, etc.

3,824,533

## DIGITAL COUNT RATE METER AND DEPTH DELAY SYSTEM FOR WELL LOGGING

Gerald P. Adamson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 18, 1972, Ser. No. 289,903

Int. Cl. G01v 1/40

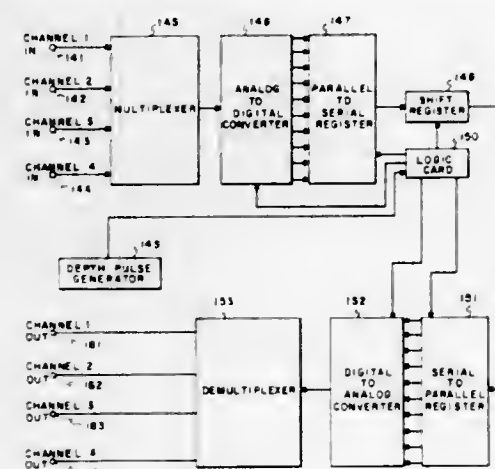
U.S. Cl. 340—18 DC

2 Claims

Electrical signals from a well logging instrument are coupled to the earth's surface where circuitry is provided for a series of common depth point correlations. In one embodiment, the digitized signals drive an eight-bit counter which is gated through eight respective buffer circuits to eight serial shift registers. The signals in the eight-bit counter section are clocked



out to the buffer section once each second regardless of movement of the well logging instrument in the borehole. The signals are shifted from the shift register at the rate of four bits per foot of well logged into a digital-to-analog converter. The amount of delay within the circuit is a function of the number of bits in the shift register divided by the number of depth pulses per foot of well logged. In an alternative embodiment, the analog signal to be delayed is converted to a parallel ten-bit digital signal which is then converted to a series signal which is coupled into a serial shift register. The conversion process is a function of depth pulses relating to the number of feet logged



in the well. The output of the serial shift register is connected to a series-to-parallel register which is coupled into a digital-to-analog converter. In still another embodiment, the serial shift register is used with means for selecting the length of the register to vary the amount of delay. In yet another embodiment, a plurality of signal channels is coupled through a multiplexer and an analog-to-digital converter to the shift register. As with the other embodiments, a depth pulse generator clocks the pulses through the system and a demultiplexer provides a plurality of analog channels at the output of the system.

3,824,534

## GUIDANCE AND INFORMATION SYSTEM FOR MOBILE OBJECTS

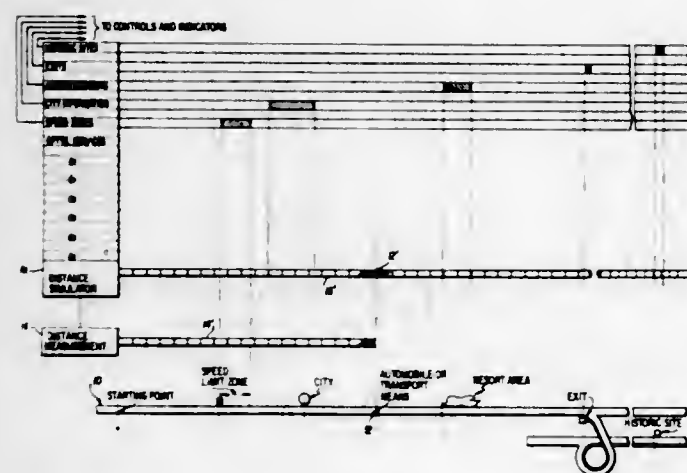
O. Robert Straumsnes, 18 Walworth Ter., White Plains, N.Y. 10606

Filed Aug. 12, 1971, Ser. No. 171,293

Int. Cl. B60r 27/00

U.S. Cl. 340-24

21 Claims



A guidance and information system for mobile objects includes an elapsed distance simulator responsive to the actual distance of travel of a mobile object for generating desired

control functions at predetermined positions along a known path of travel. The distance simulator comprises a fixed cylindrical drum having a helical track thereon with a scale having gradations corresponding distances, e.g., mileage, along the path of travel. Control elements are selectively positioned along the track at desired, predetermined locations corresponding to predetermined distances along the path of travel of the mobile object, and which elements respectively relate to desired control functions to be generated when the mobile object reaches that predetermined position in its travel. A rotatable cylindrical drum, received concentrically within the first drum, includes a reverse helical path on its surface and is driven in rotation as a function of the distance travelled by the mobile object. A follower is received within the track of the outer drum and engages the reverse helical track of the inner drum so as to traverse the distance track of the outer drum as a function of the distance travelled. Switching means associated with the follower are actuated upon engaging each of the said control elements, thereby to generate electrical control signals which in turn produce the associated, corresponding control functions. The desired control functions are thus produced at the desired, predetermined positions along the path of travel. Exemplary such functions include guidance and traffic control functions, such as related to permissible speed limits, direction of travel and the like, information regarding points of interest along the path of travel, such as resort areas and historical sites, or general information regarding a city being approached along the path of travel, commercial advertisements which may be interspersed among the other message and control functions, or any other desired matters.

3,824,535

## HEAD-UP DISPLAY APPARATUS INCLUDING MEANS FOR DISPLAYING THREE DIMENSIONAL AIRCRAFT VERTICAL PATH LINE

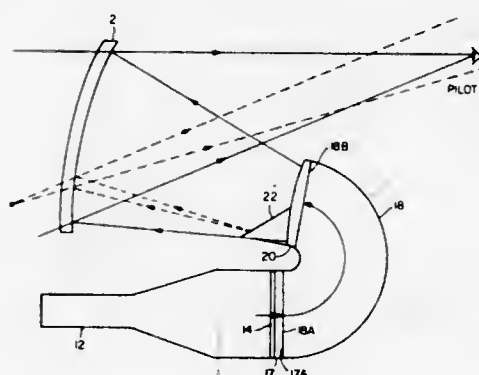
Ralph R. Rover, Jr., Cresskill, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 28, 1972, Ser. No. 293,221

Int. Cl. G08g 5/00

U.S. Cl. 340-27 NA

8 Claims



In combination with head-up display apparatus for displaying aircraft navigational symbology to the pilot of the craft as a real world infinity overlay, means for displaying a three dimensional aircraft vertical path line appearing to the pilot to extend from a point just forward of the craft on out to infinity.

3,824,536

## WHEEL BLOCKING ALARM AND INDICATING SYSTEM

John R. Cherico, 508 Breckenridge St., Buffalo, N.Y. 14213

Filed May 1, 1972, Ser. No. 249,387

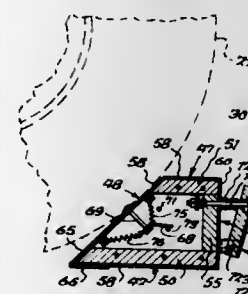
Int. Cl. B60q 7/00

U.S. Cl. 340-52 R

11 Claims

A wheel blocking alarm and indicating system comprising a blocking member adapted to be placed in blocking engage-

ment with a vehicle wheel, first sensing means in the form of switching means on the blocking member adapted to be contacted and operated by the wheel, and electrically operated indicating means connected to the switching means for providing an alarm indication when the blocking member is not placed in blocking engagement against the wheel and for providing an indication of safety when the switching means is operated when the blocking member is placed in blocking engagement against the wheel. The indicating means can be



located remote from the blocking member such as inside a loading dock for wheeled freight carriers. A second sensing means in the form of switching means is provided on the blocking member and is connected to the indicating means to provide an alarm indication when the blocking member is not received in a storage means provided separate from the blocking member and when the blocking member is not placed in blocking engagement against the wheel.

3,824,537

## ANTI-EVASION SYSTEM FOR VEHICLE UNSUPERVISED BREATH TESTERS

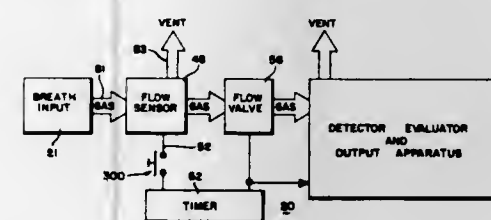
Clarence E. Albertson, Villa Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 25, 1972, Ser. No. 257,030

Int. Cl. G08b 21/00

U.S. Cl. 340-53

4 Claims



A system for discouraging attempts at evasion of an unsupervised vehicle operator breath tester employing a free hand station (e.g. pushbutton on dash) which must be activated during a test period. In one embodiment this station directly allows the test to be completed and in another embodiment it does so indirectly using the transmittal of a signal from the station to the breath input unit through the user to allow passing of the test. Absence of such a signal indicates that the user is not contacting both the station and breath input and may be attempting to avoid the test.

3,824,538

## MOTOR VEHICLE OPERATOR MONITORING SYSTEM

Cecil Slomp, Jarrettsville, Md., assignor to Shelly Mullins, Wise, Va., a part interest

Filed June 8, 1973, Ser. No. 368,229

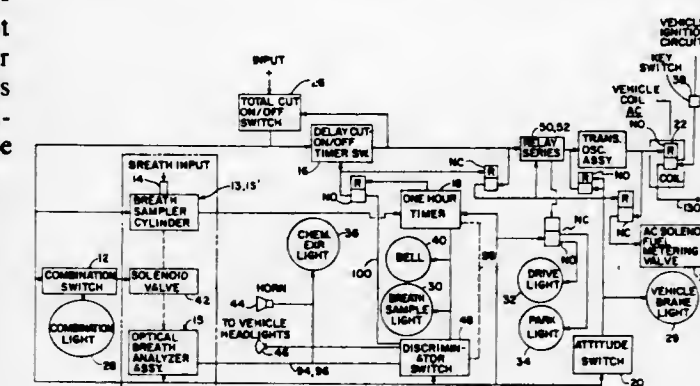
Int. Cl. G08b 21/00

U.S. Cl. 340-53

26 Claims

A motor vehicle operator monitoring system having control interlocks to disable an operated vehicle in graduated stages when the vehicle operator is found to have impaired faculties,

including a system insuring that the operator periodically submits to testing on penalty of vehicle disablement, a system as-



sessing test results, a system responsive to unsatisfactory test results to warn the vehicle operator, the public, and to bring the vehicle to a safe gradual stop taking terrain into account.

3,824,539

## VEHICLE TAMPER ALARM SYSTEM

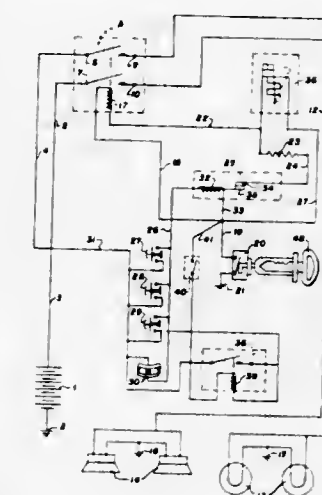
Paul J. Horvath, 6956 Quebec St., Vancouver, British Columbia, Canada

Filed Jan. 10, 1973, Ser. No. 322,512

Int. Cl. B60r 25/10

U.S. Cl. 340-65

3 Claims



An alarm network for incorporation in a vehicle having a battery, horn and headlights, in which a relay switch is provided controlling the power supply from the battery to the horn and headlights. The relay has a control circuit with which a flasher switch is associated so as to cause repeated opening and closure of the relay switch, a thermally responsive cutout switch, and various tamper responsive switches which close upon interference with the vehicle in an anticipated manner. A master switch is also provided in association with the vehicle door lock, the master switch being operable by rotation of a key in the lock.

3,824,540

## BICYCLE LOCK AND ALARM APPARATUS

Robert Reyniersen Smith, II, Ryco, One First St., Los Altos, Calif. 94022

Filed July 27, 1972, Ser. No. 275,802

Int. Cl. B60r 25/10; G80b 21/00

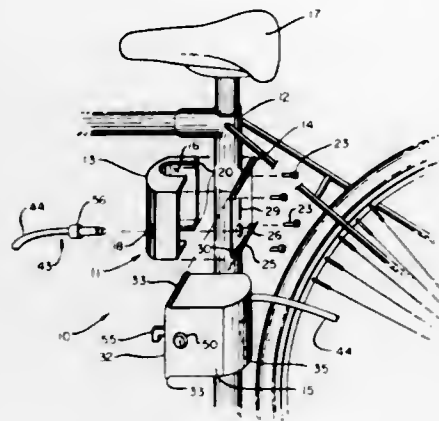
U.S. Cl. 340-63

2 Claims

A bicycle lock and alarm apparatus for use as a preventive or deterrent device in controlling bicycle thievery. A continu-



ous cable adapted to extend through the bicycle wheels and also about the bicycle frame to immobilize the wheels and locking means to join the ends of the cable to form a loop. An



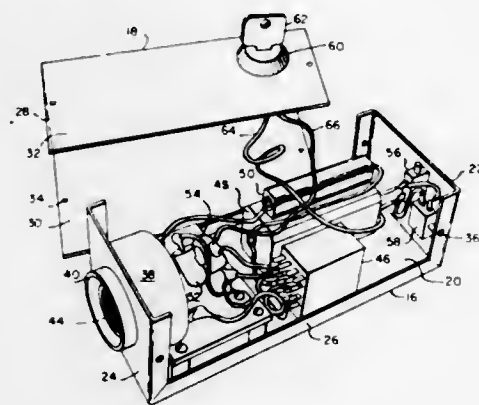
electrical circuit including an electrical conductor running through the length of the cable and responsive to interruption of the conductor for activating an alarm.

3,824,541

**ANTI-THEFT DEVICE FOR BICYCLES AND THE LIKE**  
Robert W. Nolan, 97 Madison Ave., Newtonville, Mass. 02160  
Filed Nov. 15, 1972, Ser. No. 306,894  
Int. Cl. G08b 13/00

U.S. Cl. 340-65

1 Claim



An alarm device mountable to the frame of a bicycle or the like is adapted to emit a highly audible sound if the bicycle is removed from a parked position. The device includes a sound generating unit powered by batteries with a pair of angularly positioned mercury switches adapted to actuate the alarm through a latching relay circuit upon unauthorized movement of the bicycle. The components are contained in a housing attached to the bicycle frame and a key-operated lock switch is employed to arm the device when left in a parked position by the bicycle owner.

3,824,542

**ELECTRONICALLY CONTROLLED TWO-TERMINAL FLASHER UNIT**

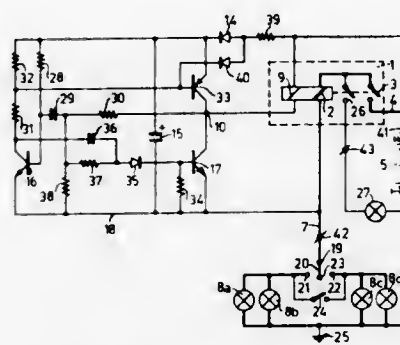
Bruno Schorter, Savigny-sur-Orge, France, assignor to U.S. Phillips Corporation, New York, N.Y.  
Filed Mar. 31, 1972, Ser. No. 240,190  
Claims priority, application France, Apr. 9, 1971, 71.12790  
Int. Cl. B60q 1/38

U.S. Cl. 340-81 R

11 Claims

An electronically controlled two-terminal automatic flasher unit for the directional signal lamps of a motor vehicle. The flasher unit includes an astable multivibrator with supply leads connected to a capacitor. The multivibrator alternately con-

nects a relay energizing winding to each of the supply leads. A diode is serially connected with the capacitor across the two terminals of the flasher, as is a hold winding on the relay and a



relay contact. The flasher unit can be installed without a change in the wiring system and can perform the vehicle alarm function.

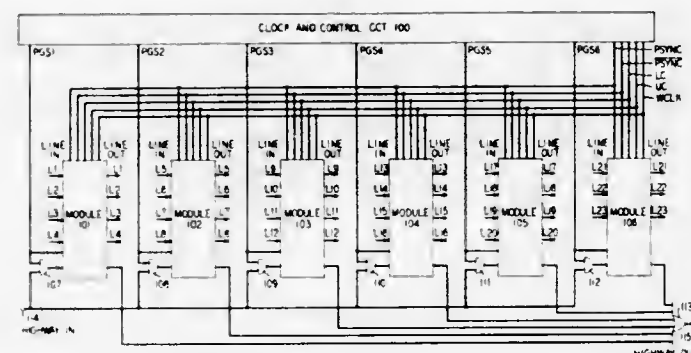
3,824,543

**DIGITAL DATA INTERCHANGE CIRCUIT FOR A MULTIPLEXER/DEMULTIPLEXER**

Michael Peter Cichetti, Jr., Staten Island, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed June 26, 1973, Ser. No. 373,633  
Int. Cl. H04q 1/00

U.S. Cl. 340-147 CN

19 Claims



During a time-division highway frame, data signals from the incoming side of a plurality of lines are clocked into line registers while data signals from the incoming side of a two-way time-division highway previously stored in the line registers are clocked out to the outgoing side of the lines. At the same time, data signals from the incoming side of the time-division highway are distributed to the several portions of a highway register while data signals from the incoming lines previously stored in the highway register portions are transmitted to the outgoing side of the time division highway. After being distributed to a group of highway register portions, the data signals are recirculated through successive portions of the group while subsequent data signals are being distributed to the remaining groups of highway register portions. The data signals in the line registers and in the highway register portions are serially interchanged at the highway data rate while synchronizing signals are transmitted to the highway.

3,824,544

**MERCHANDISING ARRANGEMENT UTILIZING A CODED CHECK**

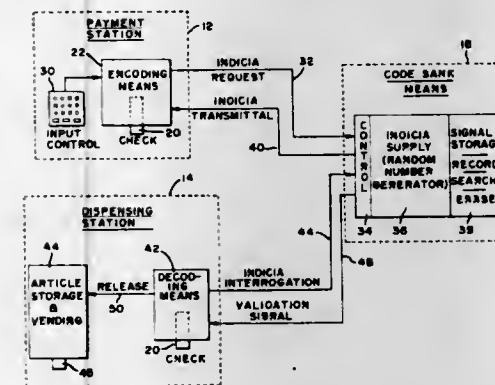
Luther G. Simjian, 7 Laurel Ln., Greenwich, Conn. 06830  
Filed Apr. 13, 1973, Ser. No. 350,902  
Int. Cl. G06k 5/02

U.S. Cl. 340-147 A

4 Claims

The invention concerns a merchandising arrangement in which a coded check is used. Upon the issuance of the check

the code of the check is stored in a storage means. For obtaining purchased articles of merchandise the check is presented to a decoding means which sends a signal corresponding to the code to the storage means. If the storage means contains the



code, the check is validated and the code is erased from the storage means. Random number generators and other features are disclosed to make the code unpredictable or not available to unauthorized personnel.

3,824,545

**ARRANGEMENT FOR COLLECTING AND/OR DISTRIBUTING INFORMATION VIA TRANSMISSION LINES**

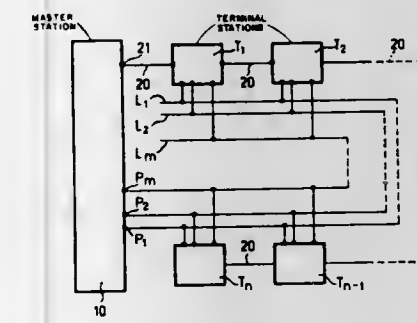
Jean Yves Rene Lucien Brenner, Savigny/Orge; Didier Jean Mougel, Arcueil, and Alain Jacques Himmelbauer, Hay-Les-Roses, all of France, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,979

Claims priority, application France, Nov. 5, 1971, 71.39787  
Int. Cl. H04q 9/14

U.S. Cl. 340-151

3 Claims



An arrangement for collecting and/or distributing information, comprising a master station and a number of terminal stations, each terminal station being connected to the preceding terminal station via a transmission line, the first terminal station being connected to the master station. All terminal stations are connected to the master station via a number of collecting lines. By transmission of a pulse on the transmission line, the information which is transmitted by the terminal stations to the master station or vice versa is successively received on the collecting lines.

3,824,546

**PATTERN RECOGNIZING SYSTEMS**

Harumi Kawasaki, and Tohru Nakajima, both of Tokyo, Japan, assignors to Apahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 14, 1973, Ser. No. 324,362

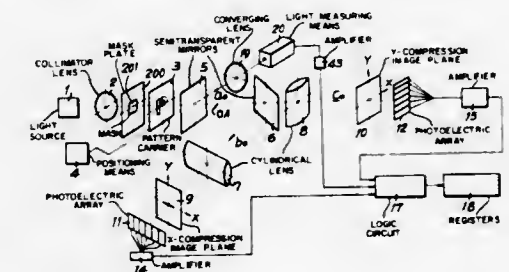
Claims priority, application Japan, Jan. 22, 1972, 47-8467  
Int. Cl. G06k 9/12

U.S. Cl. 340-146.3 F

12 Claims

A system for recognizing and identifying patterns in the form of letters, numerals, and the like. An image-forming

structure is provided for forming an image of a pattern, which is to be recognized, in each of a pair of image planes. This image-forming means has an optical axis, and a positioning structure is operatively connected with a pattern carrier for moving the latter across the latter optical axis in order to locate patterns, which are carried by the pattern carrier and which are to be recognized, sequentially at a read position extending across the optical axis. A pair of photosensitive units are respectively situated in the regions of the above image



planes for responding to an image at the latter planes and for respectively detecting characteristics of the image in a pair of mutually perpendicular directions and then converting these characteristics into a pair of corresponding electrical signals which are respectively indicative of characteristics of a pattern along a pair of mutually perpendicular coordinates. A quantizing assembly is electrically connected with the pair of photosensitive units for quantizing the latter electrical signals into binary codes capable of identifying the pattern.

3,824,547

**COMMUNICATIONS SYSTEM WITH ERROR DETECTION AND RETRANSMISSION**

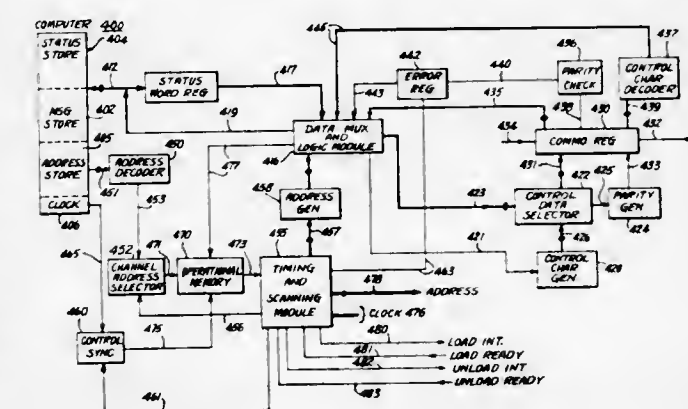
Wendel C. Green, Annandale, Va.; Charles W. Bebster; Patrick J. Sharkitt, both of Silver Spring, Md., and Richard R. Hayden, Washington, D.C., assignors to Sigma Systems, Inc., Arlington, Va.

Filed Nov. 29, 1972, Ser. No. 298,878

Int. Cl. G06f 11/10; G08c 25/00

U.S. Cl. 340-146.1 BA

11 Claims



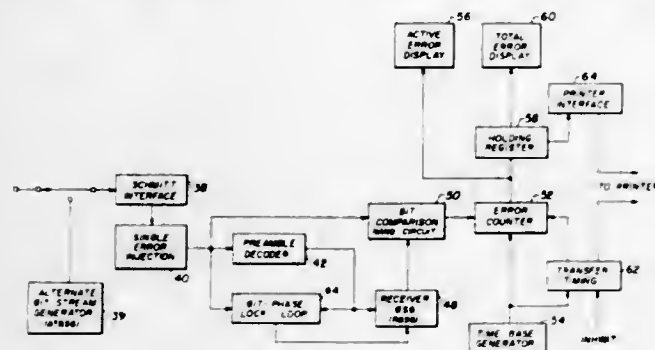
A bi-directional data communication system in which positive and negative acquisition signals are utilized to inform the transmitting station as to any errors in the reception of a message. The system employs both character parity and message parity error detection and each station contains buffer storage message areas for both transmitted and received messages. Messages are retained in the buffer storage areas until a positive acquisition pulse is received by the transmitting station. Upon receipt of a negative acquisition pulse, indicating an error in reception, the transmitting station retransmits the entire message stored in the buffer area. Timeout circuits are also provided to cause the transmitting messages to be repeated in the event of line distortion of the positive or negative acquisition pulses.



3,824,548

**SATELLITE COMMUNICATIONS LINK MONITOR**  
Dean R. Sullivan, Lakeside, and James E. Pohl, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Jan. 15, 1973, Ser. No. 323,497  
Int. Cl. H04b 1/00, 7/00; G08c 25/00  
U.S. Cl. 340—146.1 E

4 Claims



In satellite relay communication systems, apparatus for automatically measuring and indicating in real time, the absolute bit error rate introduced in a transmitted bit stream by the data link. In an exclusive test mode, a selectively predetermined random or fixed code sequence is transmitted over the link. At a receiver site, the identical, reference code sequence is generated for comparison, on a bit-by-bit basis, with the transmitted sequence after bit and code synchronization are completed.

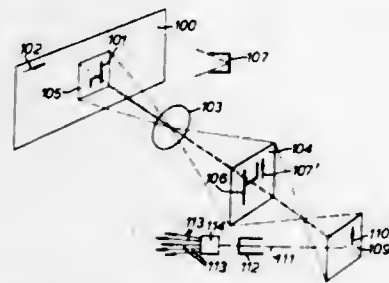
3,824,549

**OPTICAL CHARACTER RECOGNITION APPARATUS**  
Peter Ormonde Styan, and Stuart John Mason, both of Broadstone, England, assignors to Plessey Handel Und Investments A. G., Zug, Switzerland  
Filed Nov. 29, 1971, Ser. No. 206,225  
Claims priority, application Great Britain, Nov. 30, 1970, 56871/70

Int. Cl. G06k 9/12

U.S. Cl. 340—146.3 AC

18 Claims

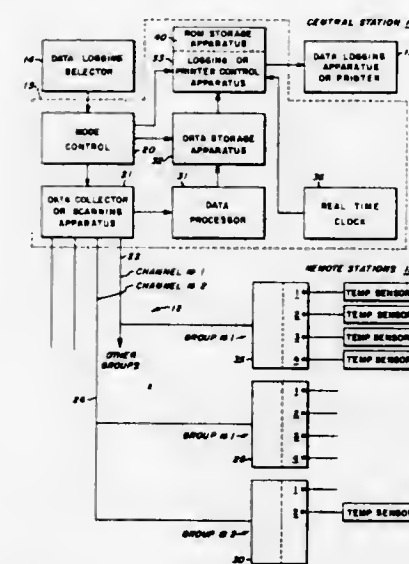


In an arrangement for the detection of horizontal edge and vertical stroke features of characters the character is scanned in the vertical direction using at least three scan lines and three instantaneous voltages corresponding to respective horizontally aligned scan points on the scan lines are derived having a magnitude in dependence upon the relative lightness or darkness of the points. The arrangement is such that a vertical stroke will be detected when the instantaneous voltage appertaining to points on the centre scanned line exceeds or otherwise differs significantly from each of the voltages appertaining to horizontally aligned points on the other two scanned lines whereas a horizontal edge will be detected when one or more of the voltages appertaining to horizontally aligned points on the scanned lines at one instant in the scanning cycle differs significantly from corresponding voltages derived at an adjacent time instant thereby indicating a change from a relatively light to a relatively dark region or vice versa in the direction of scanning.

**READ-ONLY-MEMORY STORAGE APPARATUS FOR CONTROLLING DATA LOGGING APPARATUS**  
Frank H. W. Schoenwitz, Schaumburg, Ill., assignor to Honeywell Inc., Minneapolis, Minn.  
Continuation of Ser. No. 83,569, Oct. 23, 1970, abandoned.  
This application June 7, 1973, Ser. No. 367,936  
Int. Cl. H04q 9/00

U.S. Cl. 340—151

3 Claims



A supervision system has a central station connected to a plurality of remote stations wherein information obtained from the remote stations is logged or printed out on a data logging apparatus or printer in accordance with a format previously established. The printer has a control apparatus which is connected to be controlled by a program stored in a read-only-memory storage apparatus for establishing a format for the collected data to be printed.

**3,824,551**  
**RELEASABLE BUFFER MEMORY FOR DATA PROCESSOR**

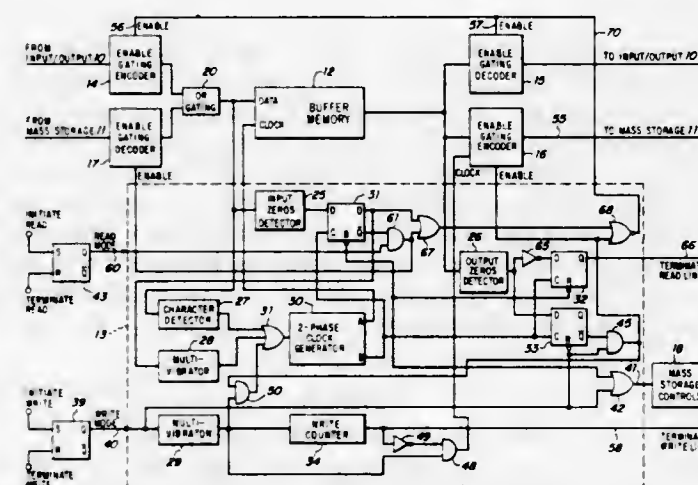
Genio R. Arciprete, Lexington, and Peter G. Martin, Arlington, both of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.

Filed May 18, 1972, Ser. No. 254,711

Int. Cl. G06f 11/00

U.S. Cl. 340—172.5

23 Claims



The invention is a buffer memory release system for an automatic data processor which incorporates a buffer memory interposed between an input/output device, e.g., a typewriter, and a mass data storage means, with the buffer memory and the mass storage means each adapted to store data blocks made up of a plurality of characters of which usually less than

all are meaningful, i.e., data-bearing, characters. The meaningful characters are those characters (including spaces) that correspond to a typewritten line. The remaining characters of the data block correspond to blank or unused cells in the buffer memory and are considered to be blank or unused characters. The preferred embodiment of the invention is designed so that in the writing (i.e., recording) mode, the meaningful characters of a data block are emptied from the buffer memory into the mass storage means, followed by the writing of zeros representative of the blank cells (unused characters) in the buffer, and means are provided for making the buffer memory available for input of new data from the typewriter as soon as the writing of zeros commences. In the reading (i.e., playing-out) mode, means are provided for printing out characters from a block of data immediately after all of the meaningful characters in that data block have been transferred into the buffer memory from the mass storage means and without waiting until the recorded zeros that follow the meaningful characters are read out. This releasing of the buffer avoids delays in mechanical operations.

3,824,552

**ELECTRICAL CONNECTOR ASSEMBLY**

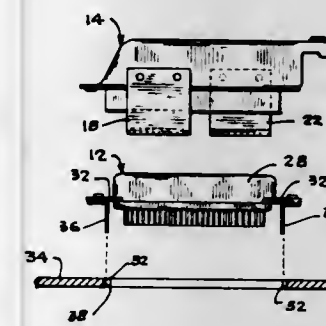
Edward Kirby, Des Plaines, Ill., assignor to TRW, Inc., Cleveland, Ohio

Filed May 25, 1972, Ser. No. 256,685

Int. Cl. H01r 13/54; H02b 1/02

U.S. Cl. 339—128

5 Claims



An electrical connector assembly adapted to be mounted to a support chassis by snap-in action, the assembly being provided with deflectable clip elements insertable into mating openings in the support chassis to engage the chassis and secure the assembly thereto, said clip element being deflectable to permit removal of the assembly from the chassis by displacement of the clip elements to a position where they will pass through the chassis openings upon said removal.

3,824,553

**LOW VOLTAGE TERMINAL STRIP CAPABLE OF WITHSTANDING HIGH VOLTAGE TRANSIENTS**

Douglas Wade Glover, Harrisburg; Mervin Amos Gardner, Highspire, and Erlon Fitch Johnson, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 22, 1973, Ser. No. 372,548

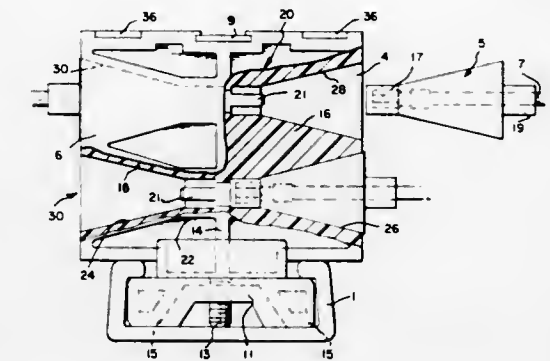
Int. Cl. H01r 9/00

U.S. Cl. 339—198 GA

2 Claims

A terminal strip to provide for varying numbers and combinations of connections between input conductors and output conductors is disclosed. The strip is built up of any desired number of insulating block elements, each of identical structure, all mounted on a channel shaped track between end stops. The block elements have interlocking means and they define plural cavities with sets of contact terminals inside the cavities to which the conductors are terminated in desired patterns. Barrier wall sections subdivide the cavities and separate sets of terminals. The cavities are of pyramid shape, the elec-

trical plug therefore being of the same pyramid shape to provide intimate contact between the walls of the cavities and the plug to increase the distance via air between contacts. High voltage surge conditions can be successfully withstood due to



cavity spacings, post spacings, presence of barrier walls, and use of insulating material for all elements except the contact terminals. Access cover means and cavity identifying marker means are also provided.

3,824,554

**SPRING-TYPE PRESS-FIT**

Gordon D. Shoholm, Box 433, Grantsburg, Wis. 54840

Filed Aug. 28, 1972, Ser. No. 284,331

Int. Cl. H01r 9/08

U.S. Cl. 339—221 R

3 Claims



A spring-type press-fit section for anchoring and electrically connecting wire-wrap and other terminal pins which is capable of providing greater retention of terminal pins with a lower ratio of damage to the mating hole material than existing designs for use in military and commercial electronic and electrical equipment assemblies.

3,824,555

**ELECTRICAL CONDUCTOR TERMINAL ASSEMBLY**

Keith William Klein, Simsbury, and Joseph Michael Palmieri, Southington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,127

Int. Cl. H01r 7/24

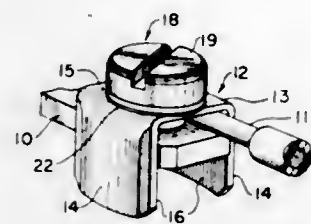
U.S. Cl. 339—246

2 Claims

An assembly for making an electrical connection between a flat terminal strap and an aluminum conductor, comprising a



U-shaped saddle member including a pair of leg sections adapted to straddle the strap, a bolt captured in a free-turning relation in the bridging section between the leg sections and threadably engaging the strap, a resilient washer positioned



between the bottom of the head of the bolt and the bridging section of the saddle member, and wherein the saddle member is aluminum and the leg sections of the saddle member are straight, parallel and of arcuate cross section.

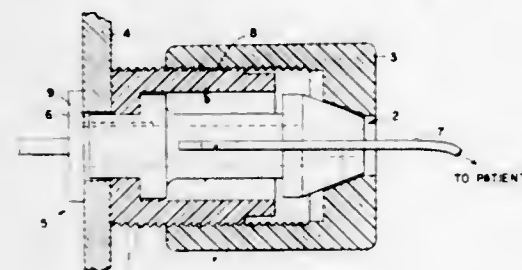
3,824,556

### EXTRA-CORPOREAL MEDICAL INSTRUMENT ELECTRICAL CONNECTOR

Barouh V. Berkovits, Newton Highlands; Pieter J. Denouter, Marlboro, and Edward L. Lewis, Sharon, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 13, 1972, Ser. No. 243,717  
Int. Cl. H01r 7/16

U.S. Cl. 339-268 S



An electrical connector for attaching wires extending from a patient to an extra-corporeal medical instrument — resilient electrically conductive jaws grip an axially inserted wire leading from the patient. A collet peripherally mounted on the jaws adjustably deforms them exerting a compressive clamping force on the wire. The collet and jaw assembly is appropriately keyed to a complementary aperture in the instrument panel and affixed thereto by a threaded locking member. The locking member is electrically conductive thereby forming a feed through of the instrument panel. As the locking member engages a complementary threaded portion on the distal end of the jaws a bearing force is applied thereby affixing the entire assembly to the panel.

3,824,557

### ELECTRICAL CONTACT

Marvin C. Mallon, Canoga Park, Calif., assignor to Interdyne Company, Van Nuys, Calif.

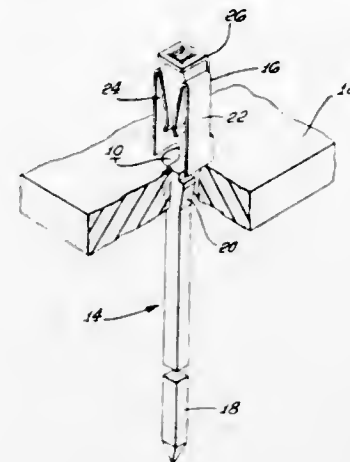
Continuation of Ser. No. 174,401, Aug. 24, 1971. This application July 13, 1973, Ser. No. 379,105  
Int. Cl. H01r 7/28

U.S. Cl. 339-258 R

3 Claims

A free-standing, guided entry metallic one-piece female spring contact is provided which has particular utility in conjunction with integrated circuits. The contact is intended to be mounted, together with a multiplicity of similar contacts, in plated holes in a printed circuit board. The contact is formed

to define two opposing spring leaves which receive the pins or tab-like male contacts, for example, of an integrated circuit



device. The contact also defines an integral apertured crown over the spring leaves which serves as a guide for the male contact.

3,824,558

### AUTOMATIC APPARATUS FOR SEQUENCING REPAIR WORK IN OPTIMUM ORDER ON MALFUNCTIONS OF GROUPED OPERATING MACHINES

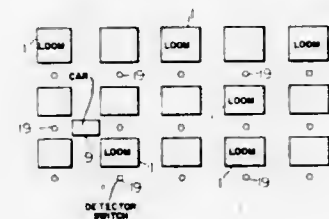
Heiji Koshiba, 14-17, Izuminomachi 6-chome, Kanazawa, Japan

Continuation-in-part of Ser. No. 73,694, Sept. 21, 1970, abandoned. This application June 28, 1972, Ser. No. 267,013  
Claims priority, application Japan, Sept. 19, 1969, 44-74840

Int. Cl. G06f 11/00

U.S. Cl. 340-172.5

7 Claims



Apparatus for use in a mill having a plurality of operating machines, wherein the apparatus includes sensing means for detecting machine malfunctions, memory means for determining the order in which repairs should be made to malfunctioning machines, and a repair operator's carriage having means for moving it from one malfunctioning machine to another in the predetermined order and along the shortest route.

3,824,559

### DATA PROCESSING APPARATUS FOR WEIGHTING INPUT INFORMATION SIGNALS

David Latham Grundy, Saddleworth, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England  
Filed Aug. 17, 1972, Ser. No. 281,510

Claims priority, application Great Britain, Aug. 18, 1971, 38859/71

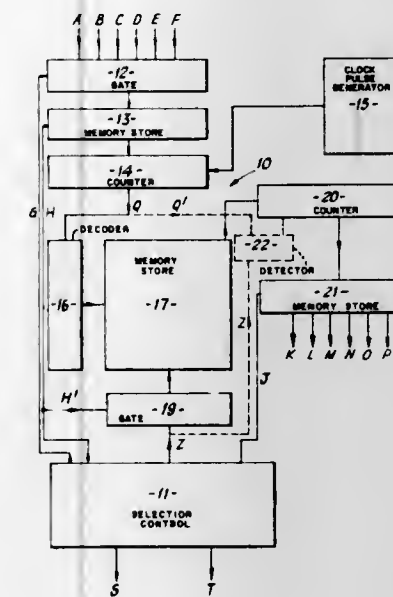
Int. Cl. G06f 15/34

U.S. Cl. 340-172.5

21 Claims

A data processing apparatus is provided for weighting input information signals of varying magnitude each in accordance with a generated function representable by a stepped waveform and stored in a ROM. Each weighted instantaneous magnitude comprises an output of the apparatus.

The magnitude of the information is represented by a train of uniformly spaced pulses and the stepped waveform has unit changes in value at, at least, some of the unit time intervals



corresponding to the uniformly spaced pulses. A memory is addressed by the train of uniform pulses and output pulses are obtained for each such train corresponding a unit change in value of the stepped waveform of the generated.

3,824,560

### NURSE RESPONSE VERIFICATION SYSTEM

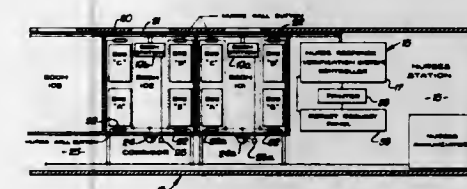
Richard D. Vitolo, 130 N. Brighton St., Burbank, Calif. 91506, and Philip Ingalls, Canoga Park, Calif., assignors to said Vitolo, by said Ingalls

Filed Oct. 2, 1972, Ser. No. 294,364

Int. Cl. G06f 3/00

U.S. Cl. 340-172.5

5 Claims



A nurse response verification system particularly useful in hospitals or other health care facilities automatically records (a) the time that each patient calls for assistance, (b) how long the nurse takes to respond to the call, and (c) the length of time the nurse spends in service to the patient. The system comprises a plurality of remote stations each situated in a hospital room and connected to a controller which repetitively and sequentially interrogates all stations. Each time a nurse call is initiated, the station in the room where service was requested transmits an interrogation response word which causes the controller to establish in memory a record (a "call word") associated with that call. The "wait time" taken to respond to the call is tallied in the call word. When the nurse reaches the room, she presses a switch at the station, indicating that the call has been answered and identifying the bed of the patient requesting service. The station transmits this information to the controller for entry into the call word. The duration of service also is tallied in the call word. Upon completion of service, the nurse again presses a switch at the room station. This causes the controller to complete the call word, which is stored along with other records for subsequent printout in report form, at operator request.

924 O.G.—27

3,824,561

### APPARATUS FOR ALLOCATING STORAGE ADDRESSES TO DATA ELEMENTS

Peter Wolf, Boeblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

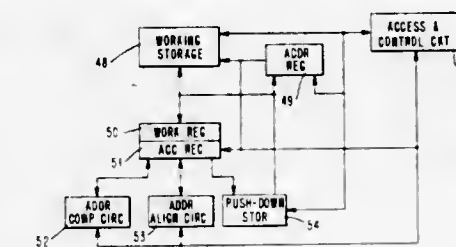
Filed Dec. 29, 1972, Ser. No. 319,566

Claims priority, application Germany, Apr. 17, 1972, 2218839

Int. Cl. G11c 7/00; G06f 13/00

U.S. Cl. 340-172.5

5 Claims



A group of variable length data elements are allocated storage addresses by means of apparatus and an associated method, the allocation taking place before the data elements are stored. Characteristic data sets are provided in a main storage which define the characteristics of each data element in the group. The data sets are scanned in two directions. On the first pass, information as to the lengths and boundary requirements of each element are accumulated. On the second pass, addresses are allocated to each element to eliminate gaps in the group while maintaining proper boundary alignment.

3,824,562

### HIGH SPEED RANDOM ACCESS MEMORY SHIFT REGISTER

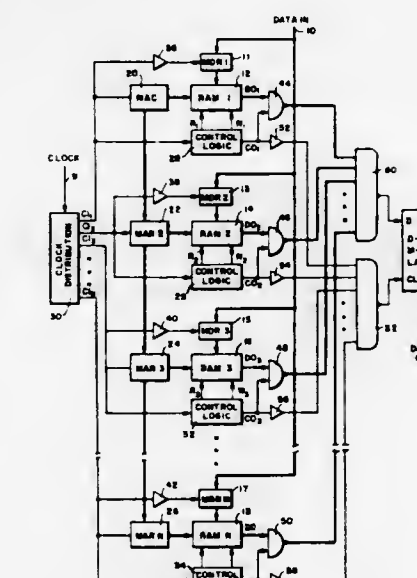
Lawrence M. Leibowitz, Fairfax, Va., and Charles F. Bates, Seat Pleasant, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,539

Int. Cl. G11c 19/00

U.S. Cl. 340-172.5

4 Claims



A number of Random Access Memory (RAM) units are controlled by read-write logic, memory address counters, and a clock distribution function to provide a high speed shift register. The high speed capability is obtained through the use of







second X-selection current, so that both sense wires pick up the same noise. As a result of a correct orientation of the second core which is selected by coincident currents, the latter core does not switch. The noise caused by the Y-selection current is balanced by a similar, opposed noise on the other half of the same sense wire. During a write operation the core is again selected by coincident currents, an inhibit current on the half of a sense wire then causing a "zero" to be written. The cores are threaded according to a double fish-bone pattern.

3,824,570

# MAGNETO-OPTICAL TRANSDUCER USING BUBBLE DOMAINS

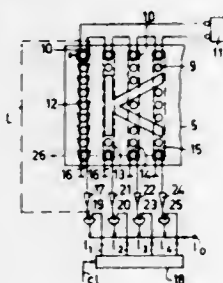
Laurentius Antonius Peter Maria De Bot, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,229

Claims priority, application Netherlands, Mar. 17, 1972, 7203555

Int. Cl. G11c 11/14, 11/42

U.S. Cl. 340—174 YC



A device for converting image information into magnetic information including a light source for projecting an image of the image information onto a plate of magnetic material capable of accommodating domains. A domain pattern is produced by the projection of the image information, as a result of the thermal action of the incident light, which is an image of the image information. Domain displacement means are provided by means of which the domain pattern thus obtained can be displaced, at least in parts, for reading purposes.

3,824,571

# MAGNETIC BUBBLE GENERATION

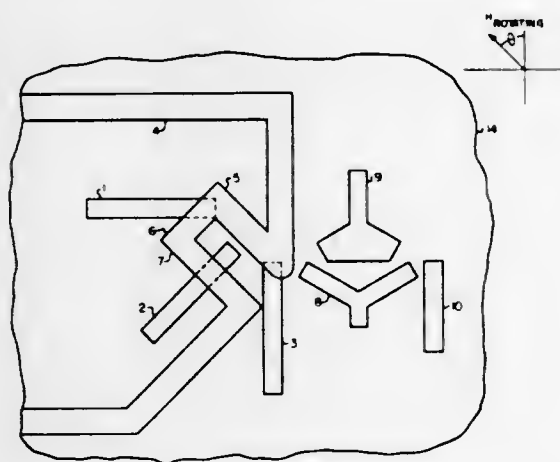
Richmond B. Clover, Jr., Sunnyvale, and Robert F. Waites, Palo Alto, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Apr. 9, 1973, Ser. No. 349,163

Int. Cl. G11c 11/14

U.S. Cl. 340—174 TF

7 Claims



A magnetic bubble generator device is provided for nucleating magnetic bubbles in a wafer of magnetic material. The

device includes an arrangement of permalloy elements which generate fringing magnetic fields near their ends when the elements are magnetized by an applied rotating magnetic field. These fringing fields penetrate the magnetic wafer, but are not large enough to induce reversal of the direction of the magnetization in the wafer. However, the device also includes a current line which generates a magnetic field when it is pulsed, this latter field adding to the fringing fields in a localized region of the magnetic wafer to produce a combined field in that region. The combined field is sufficiently strong to induce a localized reversal of the direction of magnetization in the magnetic wafer; i.e. to nucleate a magnetic bubble. The device may be used, for example, to write bits of information into a bubble memory.

3,824,572

# ALIGNABLE DISK PACK

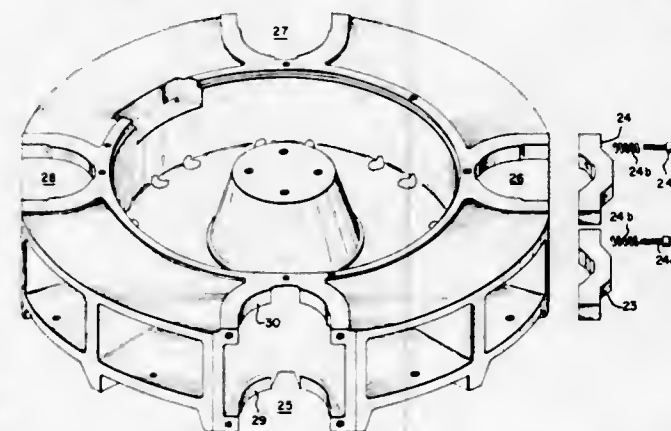
James Morehouse, San Jose, Calif., assignor to Disk Systems Corporation, Santa Clara, Calif.

Filed Oct. 19, 1973, Ser. No. 407,885

Int. Cl. G11b 5/56

5 Claims U.S. Cl. 340—174.1 C

4 Claims



A magnetic disk subsystem includes four disk packs alignably mounted in recesses in the periphery of a base plate. A rotary access mechanism is mounted on the base plate in the center of the four disk packs and carries magnetic heads into read/write relationship with the disks of the packs. Mating surfaces in the recesses and on the pack housings provide the capability for accurate alignment between the disks of a pack and the rotary access mechanism. The center of rotation of the disk spindle is offset from the center of rotation of the disk pack housing in each recess. Rotation of the disk pack housing with respect to the base plate changes the alignment between the access mechanism and the tracks of the disk.

3,824,573

# MAGNETIC BUBBLE RESONANCE SENSOR

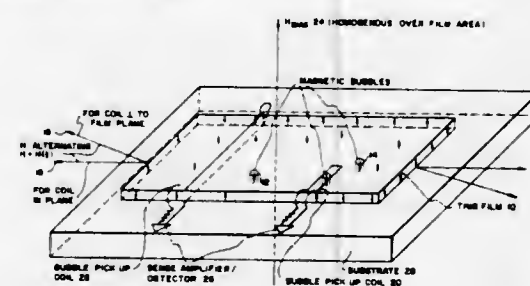
John F. Scarzello, 6917 Allview Dr., Ellicott City, Md. 21046, and Robert S. Sery, 1105 Oakview Dr., Silver Spring, Md. 20903

Filed July 19, 1973, Ser. No. 380,642

Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 RF

7 Claims



A magnetic sensor to sense the presence or absence of a bubble domain at selected locations in a magnetic bubble memory or logic element, employing magnetic resonance phenomena to sense the bubble domain.

3,824,574

# PROCESS CONTROL APPARATUS

John Michael Ironside, Birmingham; Duncan Barry Hodgson, Leamington; Michael Herbert Cops, and Malcolm Williams, both of Solihull, all of England, assignors to Joseph Lucas (Electrical) Limited, Birmingham, England

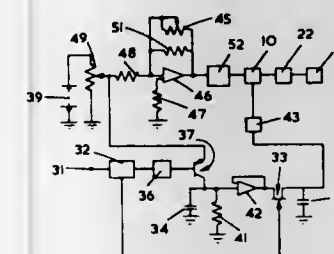
Filed Dec. 21, 1972, Ser. No. 317,433

Claims priority, application Great Britain, Dec. 21, 1971, 59507/71

Int. Cl. H04q 9/06

U.S. Cl. 340—213 Q

2 Claims



This invention relates to process control apparatus in which two parameters of a process are measured, and fed to a memory unit which produces an output pulse of length dependent on the values of the two parameters, the output pulse being used to control the process. One of the inputs to the memory unit is varied in a non-linear manner so that the accuracy with which the memory unit defines the pulse length is increased.

3,824,575

# WARNING DEVICE FOR USE WITH BOATS

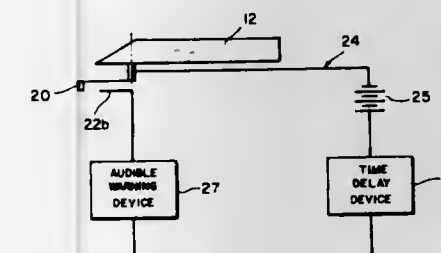
William Rich, III, 454 Fort Washington Ave., New York, N.Y. 10033

Filed Mar. 5, 1973, Ser. No. 338,173

Int. Cl. G08b 21/00

U.S. Cl. 340—241

6 Claims



A portable warning device is mounted on the deck of a boat at anchorage in a harbor and provides an audible warning signal in response to changes in the wind direction relative to the boat. The warning device comprises a pivotable wind vane for sensing the wind direction and a movable electric contact is connected to the wind vane to undergo pivotal movement therewith. A pair of annular electric contact segments are disposed stationary relative to the boat and positioned in spaced-apart relationship along the path of travel of the movable contact to alternatively engage with the movable contact whenever the sensed wind direction relative to the boat exceeds a certain value. A normally open electric circuit is electrically connected to the movable contact and the contact segments such that movement of the movable contact into engagement with either one of the electric contact segments closes the electric circuit. The electric circuit includes a warning device operative when actuated to emit the audible warning signal, and a time delay device for delaying the actuation of the warning device for a predetermined time period after the electric circuit is closed.

3,824,576

# ALARM SYSTEM ACTIVATED BY TOUCH SENSITIVE DOOR KNOB INTRUSOR

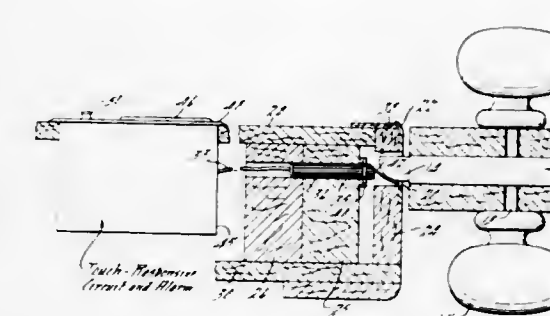
Robert J. Pioch, 3982 Utopia Dr., Clark Lake, Mich. 49234

Filed Aug. 16, 1972, Ser. No. 281,132

Int. Cl. G08b 13/00; H01h 35/00

U.S. Cl. 340—258 C

1 Claim



An alarm system consists of a touch-sensitive electronic circuit connected to the handle of a door by an electrical connection which is completed through the striker plate area and latch bolt.

3,824,577

# ACCELERATION AND DECELERATION SENSING AND INDICATING SYSTEM FOR BOATS AND THE LIKE VESSELS

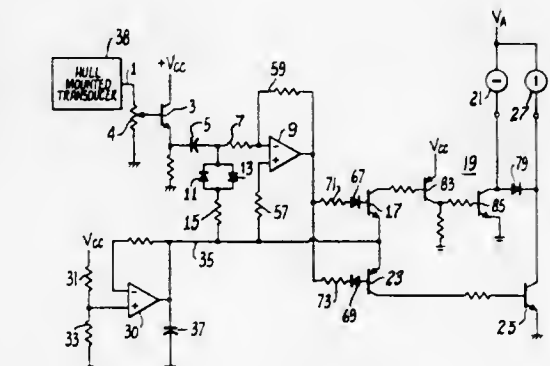
Arthur C. Stickney, Scarborough, Maine, assignor to The Eastern Company, Naugatuck, Conn.

Filed Oct. 10, 1972, Ser. No. 296,071

Int. Cl. G01p 15/00; G08b 21/00

U.S. Cl. 340—262

7 Claims



An acceleration and deceleration sensing and indicating system is provided to indicate changes in speed of a boat and the like vessel. Acceleration and deceleration of the boat are sensed and monitored by a hull-mounted electrical transducer and associated electronic processing circuitry. Electronic circuitry processes the signal generated by the transducer and operates the respective indicator light and/or lights to display a position (+) indication for acceleration and a negative (−) indication for deceleration. Means are also provided in the electronic circuitry to insure that sudden large changes in speed will not cause the indicator light and/or lights to be energized for undesirably long periods of time and therefore mask subsequent small changes in speed. Thus, in one particular application of this system, a sailboat helmsman is able to evaluate the effect of small changes in the trim of the ship's gear.

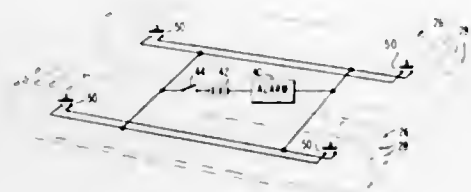


3,824,578

ATTITUDE INDICATOR FOR LOAD LIFTING  
APPARATUS AND METHODHolton G. Harders, 5521 E. Highway 98, Panama City, Fla.  
32401Filed May 22, 1972, Ser. No. 255,707  
Int. Cl. G08b 21/00

U.S. Cl. 340—267 C

24 Claims



In a load lifting apparatus such as a crane mounted on a support frame, a method and system for actuating an alarm when the support frame is vertically displaced a predetermined amount through inclination of the support frame to indicate an unsafe inclined attitude of the apparatus support frame. In one embodiment wherein the crane is supported on a tractor, four switches are respectively mounted at spaced locations on the tractor frame to be actuated by associated control arms mounted for vertical movement relative to the tractor frame when the latter has undergone a predetermined unsafe amount of inclination. Any one of the switches upon closing will close a battery operated electrical circuit containing the alarm to sound the alarm. In another embodiment, the arm and switch assemblies are applied to an "outrigger" jack system used to support the crane above the ground surface.

3,824,579

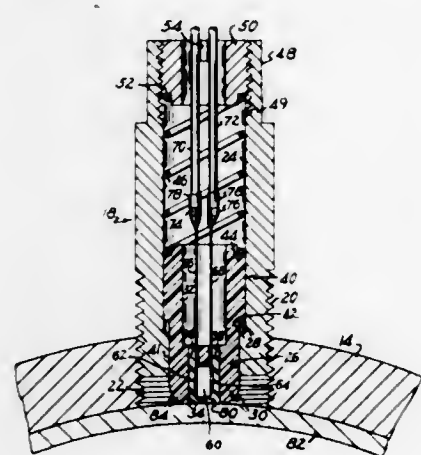
APPARATUS FOR MONITORING BEARING  
TEMPERATURE AND FOR PROTECTING BEARING  
FROM OVERTEMPERATURE

Joseph W. Waseleski, Jr., Mansfield, Mass., and Ralph E. Charnley, Esmond, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1972, Ser. No. 318,044  
Int. Cl. G08b 21/00

U.S. Cl. 340—269

15 Claims



A system for monitoring and protecting a bearing employs a temperature responsive thermistor spring biased against the outer shell of the bearing. The thermistor preferably has a positive temperature coefficient of resistivity with a threshold or anomaly temperature for example of approximately 300°F above which the thermistor changes from a low resistance to a high resistance mode. The change in resistance is sensed by a protection circuit and a switch is actuated upon overheating of

the bearing. The thermistor is disposed in a probe which is slidably mounted in a sensor head. A spring located in the head biases the probe outwardly, the outward motion being limited by stop surfaces. The sensor head is mounted in a housing containing the bearing such that in the absence of the bearing the probe would extend into the bearing cavity. Insertion of the bearing cams the probe toward the sensor head leaving the probe in close thermal contact with the bearing structure.

3,824,580

## GAS PANEL MATRIX DRIVER

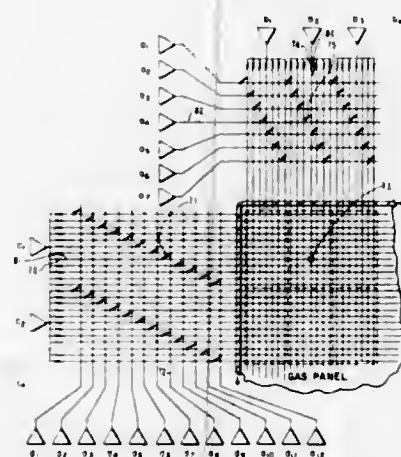
Charles Ronald Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,355

Int. Cl. H01j 11/00

U.S. Cl. 340—324 M

9 Claims



A method and system for driving a gas panel, which employs a resistor matrix, between the panel drivers and the panel. The resistor matrix is operated in approximately a half-select mode in a manner such that two horizontal control lines must be driven and two vertical drive lines must be driven to write a cell. The algebraic summation of the potential on the drive lines from the matrix causes selected cells to fire or emit light pulses, or in the event that they have already been fired, continue to fire. Through use of the matrix, the number of drivers required is greatly reduced in that no longer is there a requirement of one driver for each horizontal and vertical line, and thus the logic for selection of the drivers is greatly simplified. In addition, since the matrix is operated in a half-select mode, single horizontal and vertical drivers can be utilized to erase an entire character position without need, as is in the conventional case, of a cell-by-cell erasure under control of the logical character generator.

3,824,581

SIGNAL MAGNITUDE DISPLAY DEVICE FOR  
CONVERTING AN INPUT ELECTRIC SIGNAL INTO A  
VISUAL DISPLAY

Isamu Ohno, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed June 12, 1972, Ser. No. 261,592

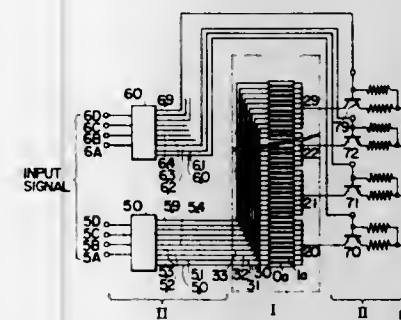
Claims priority, application Japan, June 26, 1971, 46-55780  
Int. Cl. G08b 5/36

U.S. Cl. 340—324 R

5 Claims

An electrically operated, signal magnitude display device of a non-mechanical, compact type suitable to substitute for a panel meter, with the capability of converting an input digital electrical signal into a visual analog display wherein the magnitude of the input signal is to be represented by an appropriate indication of position within the field of the display. The device comprises a display section having a plurality of

electrically activatable luminous elements, such as luminous diodes, arranged in a one-dimensional array so that the elements may be independently activated to luminesce and thereby serve to visually define an incrementally variable position within the array. An electrical circuit, interconnecting with the luminescent element terminals through respective intersecting common groups of terminals in a matrix circuit,



responds to the input signal and selects the specific luminous element positioned in the array to correspond to the magnitude of the input signal. In a practical example, the electrical circuit receives, e.g., two digits of a binary coded decimal input signal and converts them to two decimal signals gating two intersecting groups of ten terminals in the matrix circuit to form an activation circuit through the one luminescent element whose terminals appear in the two groups.

3,824,582

## GAS PANEL DISPLAY APPARATUS

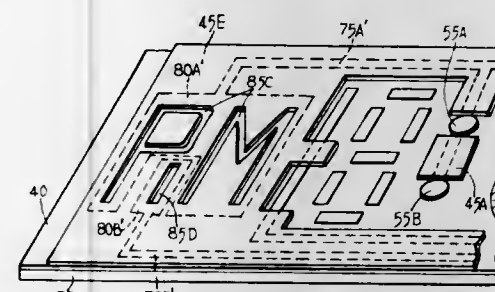
David Glaser, Green Brook, and Joel M. Levine, Flemington, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 24, 1971, Ser. No. 201,679

Int. Cl. G09f 9/32

U.S. Cl. 340—336

3 Claims



A special format readout indicator of the gas discharge type includes several different character and symbol display positions in a flat sandwich structure. The device includes an insulating base plate on which a plurality of separate groups of cathode electrode segments and terminals for them are formed. Some of the cathode groups are interconnected arrays of electrode segments provided for displaying different characters or symbols, while others are preformed for displaying only predetermined symbols, and are interconnected if operation permits. Some of the anodes are associated both with a character display cathode group and with one or more of the symbol indicating cathode elements. The cathodes are formed of strips or bars of conductive material connected to conductors supported on the insulating base plate. The anode electrodes are suitably shaped to cooperate with appropriate ones of the character and symbol cathodes and are supported near them, preferably being carried by an insulating face plate.

3,824,583

APPARATUS FOR DIGITIZING NOISY TIME DURATION  
SIGNALS

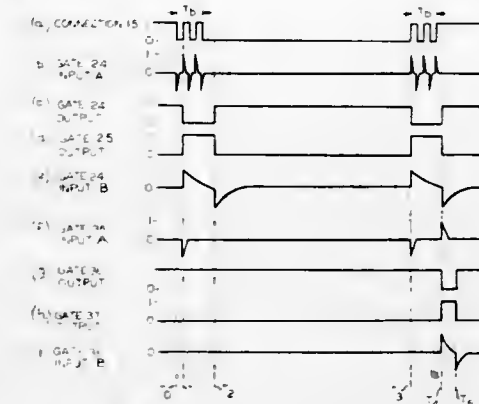
Quentin C. Turtle, Cranston, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,033

Int. Cl. H03k 13/00

U.S. Cl. 340—347 R

3 Claims



The disclosure relates to apparatus for transducing time duration signals into digital form and concerns a scheme for preventing contact bounce noise in said signals from triggering the production of the control pulses needed for the transducing process. The scheme includes a one-shot multivibrator which produces an output pulse of longer duration than the bounce period whenever the signal reverts to its reference level, and apparatus which senses both said output pulse and the time duration signal and produces a control pulse only when the trailing edge of said output pulse occurs at a time when the signal is at its reference level.

3,824,584

## ANALOG-DIGITAL CONVERTER CIRCUIT

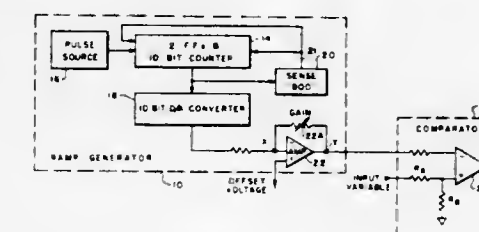
Pasco A. Coia, Providence, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 15, 1972, Ser. No. 253,549

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

9 Claims



An analog-digital converter circuit that converts electrical input signals, representative of such variables as voltage, current or resistance, into time-impulse signals. The converter circuit as disclosed is designed to accept various input signals for example, signals representing values between 0-5 volts, 4-20 milliamps, 10-50 milliamps, 0-25 kilohms. Signals of this character are converted into time-impulse signals whose pulse width is adjusted to be directly proportional with the magnitude of the input signals. When the aforementioned analog input electrical signals are so converted they are then adapted to be transmitted great distances via telephone lines, or radio-microwave communication links, without distortion. Such form of output signals are adapted for transmission in connection with certain time-impulse telemetering systems, for example, a system known as the Chronoflo system. When used with such Chronoflo system, a 0-5 volt signal would be



adjusted to give a 0-13.333 second pulse, whose repetition cycle would be 15 seconds. The converter of the instant invention includes provision for accepting various input signal levels and for modifying the output time-impulse signal to conform to a variety of time-impulse formats. Another provision which is included is a masking of the input signals which occur below a prescribed level. This masking of input signals below a threshold prevents spurious signal generation due to low level noise at the input.

3,824,585

### PYROMETER WITH DIGITALIZED LINEARIZING CORRECTION HAVING PROGRAMMABLE READ ONLY MEMORY

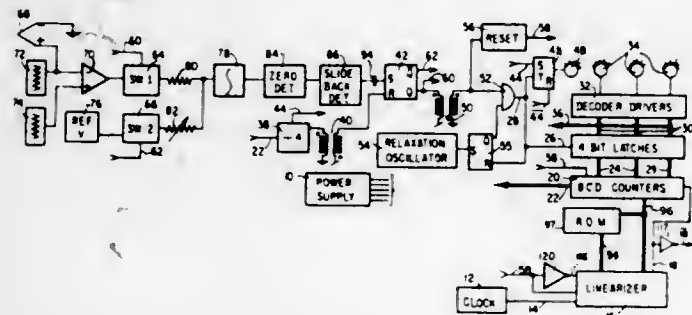
Robert S. Meijer, Chicago, Ill., assignor to Alnor Instrument Company, Division of Illinois Testing Laboratories, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 152,702, June 14, 1971. This application June 20, 1972, Ser. No. 264,616

Int. Cl. H03k 21/34

U.S. Cl. 340-347 NT

16 Claims



By feeding BCD temperature representing count pulses into a read only memory (R.O.M.) which feeds into simple gating logic, progressively selected count pulses are discarded to cause a nonlinear thermocouple response to become linearized. The thermocouple response is fed into an improved dual slope integrator; whereby, pulse width modulation becomes a related measurement of sensed temperature. The R.O.M. enables the linearized output to be subdivided into many linear sections for greatly improved tracking of the linearized curve.

3,824,586

### METHOD OF AND APPARATUS FOR ANALOG TO DIGITAL CONVERSION UTILIZING ACOUSTIC WAVES

Calvin F. Quate, Los Altos Hills, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

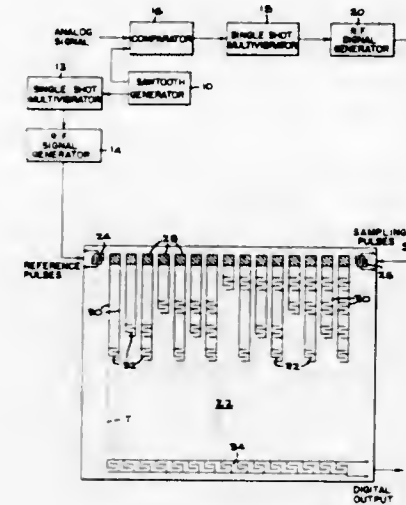
Filed Sept. 7, 1972, Ser. No. 286,928  
Int. Cl. H03d 13/00; H03k 13/02

U.S. Cl. 340-347 AD

3 Claims

An analog to digital conversion system wherein a sequence of correlated electromagnetic reference pulses and sampling pulses are generated, the individual sampling pulses each being time-delayed an amount determined by the instantaneous value of an analog signal. The reference and time-delayed sampling pulses are then applied to a piezoelectric medium to generate acoustic waves in a fashion such that translation of the two waves occurs and interaction exists at a position deter-

mined by the time delay of each sampling pulse. One of a group of acoustic digital pulse trains is then generated unique-



3,824,587

### DUAL MODE ANGLE ENCODER

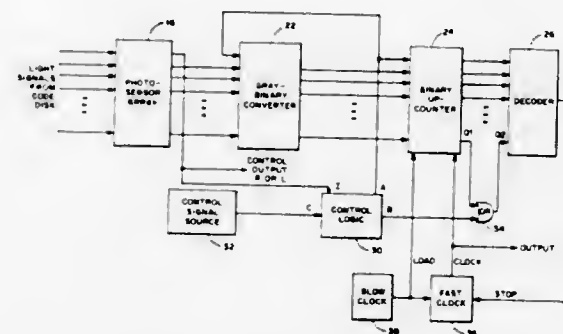
John T. Fowler, Winthrop, Mass., assignor to The Laitram Corporation, New Orleans, La.

Filed Oct. 25, 1972, Ser. No. 300,771

Int. Cl. G08c 9/08

U.S. Cl. 340-347 P

4 Claims



An angle encoder for selectively providing from a single rotatable code element an output indication of the angular position of the rotatable element and of angular deviation and sense with respect to a reference position. A Gray coded code element is employed and from which a Gray code is sensed to provide digital signals which are processed by associated logic circuitry operative in two modes. In one mode an output indication is provided of the angular position of the code element, while in a second mode an output indication is provided of the extent and sense of angular deviation of the code element.

3,824,588

### ANALOG TO DIGITAL CONVERTER HAVING DIGITAL OFFSET CORRECTION

Ronald G. Vermillion, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1973, Ser. No. 330,924

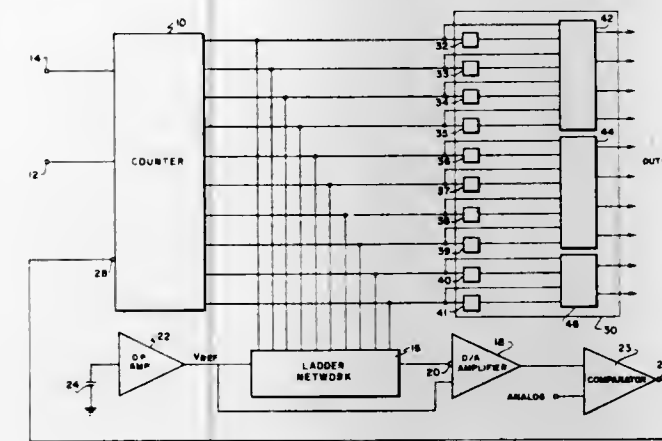
Int. Cl. H03k 13/02, 13/32

U.S. Cl. 340-347 CC

2 Claims

An analog to digital converter digitizes incoming analog signals and also corrects the digitized value for zero baseline

offset. The converter is a ripple counter using an inverted resistor ladder network. The output of the ladder network is compared with the incoming analog signal for equality. When equality is sensed the counter is stopped. Offset correction is



performed by digitizing a zero level analog signal, determining the error, and storing the error in a register. The stored value of the error is added or subtracted arithmetically to subsequent conversions.

3,824,589

### COMPLEMENTARY OFFSET BINARY CONVERTER

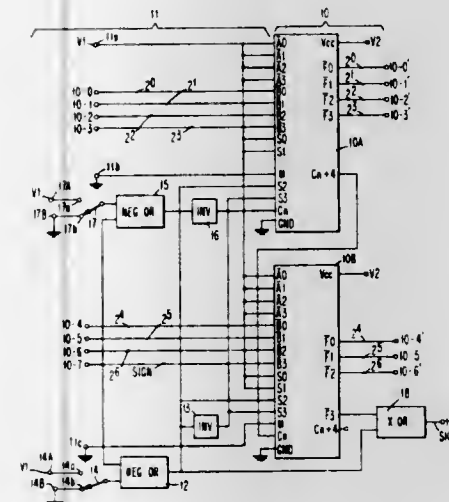
James G. King, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,990

Int. Cl. G06f 3/00

U.S. Cl. 340-347 DD

3 Claims



A converter and control means therefor for converting sign magnitude, one's complement and two's complement binary input signals to complementary offset binary output signals.

3,824,590

### ADAPTIVE INTERPOLATING VIDEO ENCODER

John Ormond Limb, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1973, Ser. No. 345,001

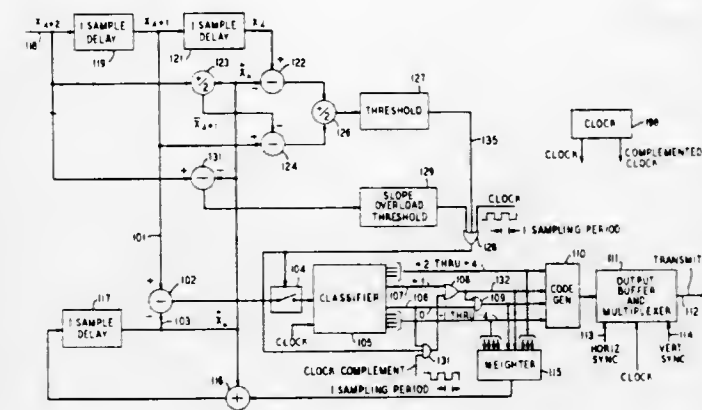
Int. Cl. H04b 1/00; H03k 13/22

U.S. Cl. 340-347 AD

8 Claims

Input samples are subjected to two separate single sample delays such that three consecutive samples are simultaneously

available. A first sample is encoded differentially to full precision, and the encoded version is interpolated with the actual value of the third sample to yield an estimate of the second sample. The error between a reconstruction of the first sample and its original value is averaged with the error between the interpolated estimate for the second sample and its original



value. This averaged error, which simulates visual integration, is compared with a threshold. If the threshold is exceeded, the second sample is encoded to full precision; otherwise, a predetermined code word is transmitted such that the receiver decodes by means of interpolation. Thereupon, the third sample is encoded to full precision and the process continues. Slope overload correction is also provided.

3,824,591

### ILLUMINATED MAP

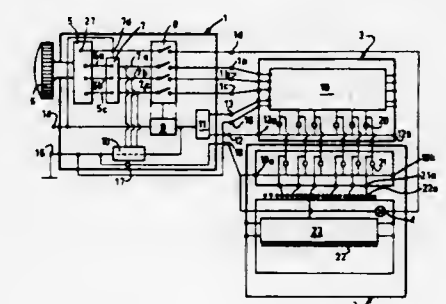
Philippe Simon, 9 avenue Gaston Boissier, 78-Viroflay, France

Filed Mar. 2, 1973, Ser. No. 337,372

Int. Cl. G08b 5/00

U.S. Cl. 340-381 R

33 Claims



Information display device comprising in combination an illuminated diagram, an indicating table carrying a list of locations on said diagram, and electronic selector means. The selector means comprises a generator assembly adapted to deliver a succession of pulses over at least three output lines and to supply said lines successively, but with overlapping periods in which two lines are simultaneously supplied. The indicating table is provided with a plurality of illuminable indicators each associated with a location listed thereon and connected to said generator assembly to be successively illuminated by the pulses therefrom. The diagram carries a plurality of illuminable indicators, each associated with a position on said diagram listed on said indicating table and connected to be lit whenever the corresponding indicator on said indicating board is lit and said pulse generator stopped.



3,824,592

# METHOD AND APPARATUS FOR MEASURING AND INDICATING THE DISTANCE, DISTANCE VARIATION, OR BOTH BETWEEN AN AUTOMOTIVE VEHICLE AND AN OBSTACLE

Ludwig Mehlretter, Munich, Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft Mit Beschränkter Haftung, München, Germany

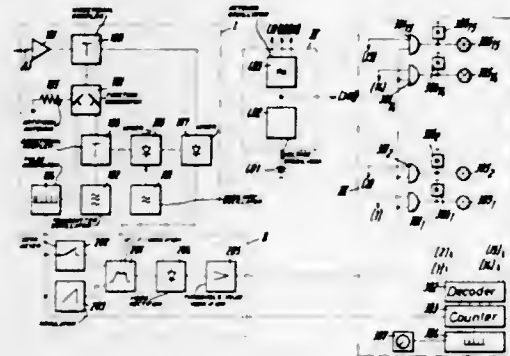
Filed Oct. 10, 1972, Ser. No. 296,043

Claims priority, application Germany, Nov. 26, 1971, 2158793

Int. Cl. G01s 9/06, 9/24

U.S. Cl. 343—13 R

12 Claims



A modulated interrogation signal is transmitted from the vehicle, received at the vehicle after reflection from an obstacle, and compared with a reference signal for determination of the distance, distance variation or both. The transmission of the interrogation signal is stochastically controlled, and the received signals are utilized, to indicate the desired distance information, only after repeated comparison correlation thereof with the reference signal. The apparatus includes a transmitter controlled by a function generator to emit a modulated interrogation signal, a receiver for the reflected interrogation signal, an evaluating circuit for comparing the reflected signal with the reference signal, and an indicating instrument influenced by the evaluation circuit. The generator stochastically controls either the frequency or the amplitude of the function generator within certain limits, and a plurality of distance gates in the evaluation circuit, corresponding to respective successive distance ranges, have the reference signal applied to a first input and the received signals applied to a second input. Each gate has a correlator connected to its output and which is operable, only after repeated gating through of the associated distance gate, to deliver a signal to the indicating instrument connected with the respective distance gate.

3,824,593

# MILLIMETER WAVE IMAGING SYSTEM USING DIRECT CARRIER INJECTION

Joseph M. Baird, Newberry Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 4, 1972, Ser. No. 312,005

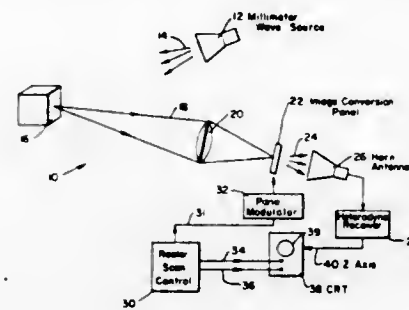
Int. Cl. G01s 7/04

U.S. Cl. 343—17

18 Claims

Disclosed is a millimeter wave imaging system which includes means for illuminating a remote target with RF energy and means for receiving and processing the RF energy which is reflected from the target. The processing means includes a diode array upon which the received energy is focussed and which is directly driven by an X-Y addressing system. The diodes in the array are digitally scanned directly to thereby directly inject carriers sequentially into the diodes in the

panel. These diodes alternately pass and absorb the incoming RF energy at high image conversion rates, thereby imparting



maximum resolution to the imaging system and enabling real time operation. Simultaneously, heat and power dissipation is minimized.

3,824,594

# APPARATUS FOR RECEIVING SEPARATE STANDARD FREQUENCIES WITH SEPARATE SUB-BANDS

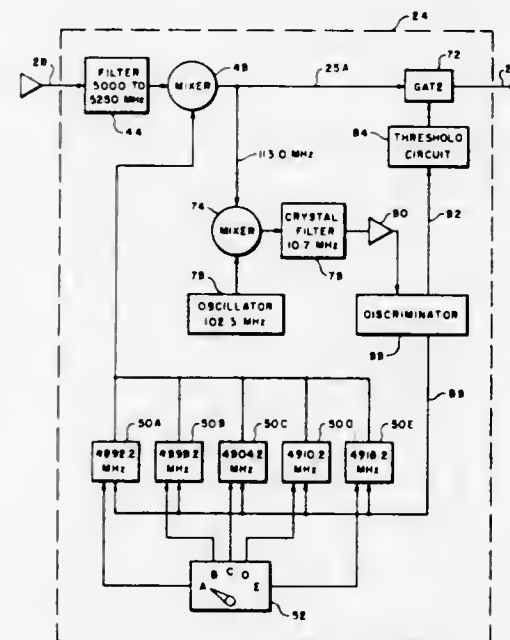
Warren Hundley, Upper Saddle River, N.J., assignor to Tull Aviation Corporation, Armonk, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,468

Int. Cl. G01s 1/18

U.S. Cl. 343—108 R

10 Claims



Radio guidance signals are received in any one of a plurality of frequency sub-bands with a separate standard frequency signal being provided for each separate frequency sub-band, and each standard frequency signal being spaced apart from the associated guidance signal sub-band by the same fixed frequency difference.

3,824,595

# HIGH ACCURACY DIRECTION FINDING SYSTEM

Stanley Rylon Hall, Ellicott City, Md., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed June 4, 1971, Ser. No. 149,949

Int. Cl. G01s 3/48

U.S. Cl. 343—113 R

33 Claims

A method and apparatus for performing high accuracy direction finding. The amplitude difference and phase dif-

3,824,597

# DATA TRANSMISSION NETWORK

Edward A. Berg, Vienna, Va., assignor to Data Transmission Company, Vienna, Va.

Filed Nov. 9, 1970, Ser. No. 88,068

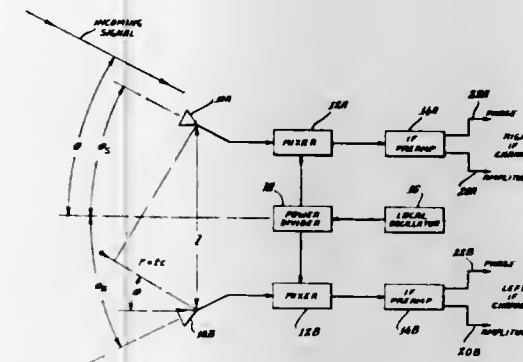
Int. Cl. H04j 3/00

U.S. Cl. 343—204

22 Claims



ference of a signal as received at a single pair of squinted antennas are determined. A fine but ambiguous indication of the direction is generated from the determined phase difference



and a rough but unambiguous indication of direction is generated from the determined amplitude difference. The rough unambiguous indication is then utilized to resolve the ambiguity of the fine indication.

3,824,596

# AUTOMATIC SECTOR INDICATING DIRECTION FINDER SYSTEM

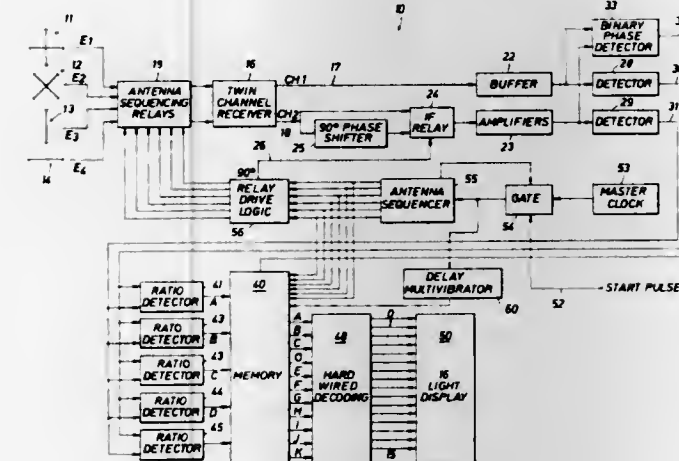
William G. Guion, and Terence C. Green, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Sept. 27, 1972, Ser. No. 292,533

Int. Cl. G01s 5/02

U.S. Cl. 343—113 R

20 Claims



An automatic sector indicating direction finder system which incorporates a receiving antenna arrangement incorporating four separate antenna patterns, each having a field pattern which is a function of the azimuth angle, the apparatus forming antenna signals which are then transferred through a plurality of antenna sequencing relays to a dual channel receiver. The dual channel receiver is connected to the four antennae in a timed sequence. The two outputs of the dual channel receiver are applied to phase detectors and amplitude detectors which determine the relative amplitude ratios. These ratios and the phase measurements are stored in memory momentarily and are then strobed from memory through a hard wired decoding logic circuit to an external display. The display breaks the 360° of azimuth into sixteen sectors, all equal in size, and indicates the sector location of a target.

Disclosed is a transcontinental communications network particularly designed for the very rapid transmission of digital data between subscribers throughout major areas of the United States. The network comprises a microwave trunkline extending from San Francisco downwardly through the center of the country and upwardly to Boston along which data may be transmitted at rates of 4800, 9600, and 14,400 bits per second and higher. Transmission along the trunkline is by phase modulation of a carrier in the 6 MHz and 11 MHz band. Time division multiplexing provides a minimum of 4,000 channels utilizing a relatively small bandwidth of the frequency spectrum. The trunklines are under the control of switching centers comprising regional and district offices which allocate channels and handle communications traffic through the network. A microwave cable or optical local distribution system connected to the basic trunkline provides a full duplex operation throughout the network and insures the rapid transmission of data completely throughout the network from one subscriber to another.

3,824,598

# APPARATUS FOR MAINTAINING ELECTRONIC EQUIPMENT IN AN AIRPLANE BELOW A CERTAIN TEMPERATURE

Guy Beaussay, La Celle; Jean Francois Morand, Paris, and Pierre Rossignol, Colombes, all of France, assignors to Electronique Marcel Dessault, Paris, France

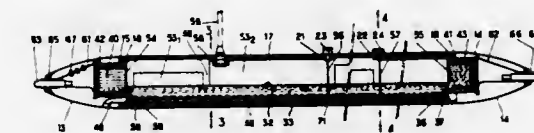
Filed Sept. 22, 1972, Ser. No. 291,369

Claims priority, application France, Sept. 28, 1971, 71.34837

Int. Cl. H01q 1/28

U.S. Cl. 343—705

1 Claim



An apparatus for maintaining electronic equipment in an airplane below a certain temperature. The apparatus comprises an elongate cylindrical container with pointed end sections removably mounted on the container. A tank is located along the length of the container and contains a liquid with a high heat capacity. A beam having a U-section houses the electronic equipment. In the course of the flight, the heat generated by the electronic components and by the friction of the outside wall of the container against the air is absorbed by the liquid. The tank is provided with heat exchange tubes



which can be connected to a cold fluid source when the plane is on the ground in order to bring the temperature of the liquid to ambient temperature or below. Expansion chambers are provided at the ends of the tank enabling the expansion of the liquid during flight.

3,824,599

## TV/FM/AM ANTENNA COUPLER

Charles K. Haswell, Scotts, Mich., assignor to Barker Manufacturing Company, Inc., Battle Creek, Mich.  
Filed Dec. 13, 1972, Ser. No. 314,709  
Int. Cl. H01q 9/16

U.S. Cl. 343—822

4 Claims



An antenna system using a standard dipole antenna capable of receiving television, AM and FM signals employing signal isolation means wherein the antenna may be automatically used to receive AM, FM and television signals without adjustment or control. A coaxial cable is employed from the antenna coupler to the AM/FM radio receiver, and a coaxial cable stub is disposed adjacent the radio antenna lead-in and is of a length equal to substantially 1/4 of a wavelength in the FM band, the shields of the antenna lead-in and the coaxial stub being electrically connected, and the inner conductors being connected to the dipole antenna such that the stub coaxial cable functions as a "short circuit" providing correct coupling to the dipole antenna when receiving FM signals, but does not interfere with AM signal reception.

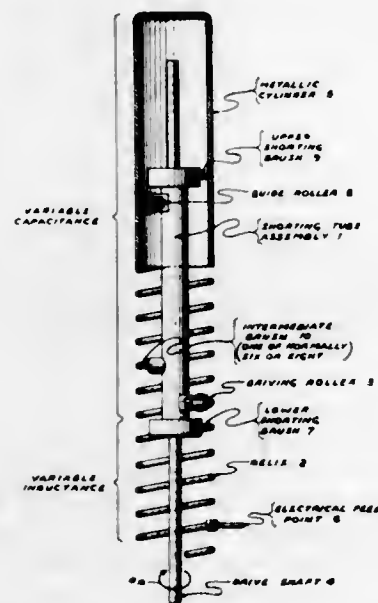
3,824,600

## TUNING MECHANISM FOR A HELIX/CYLINDER ANTENNA

Charles P. Majkrzak, Nutley, and Michael S. Polgar, Oceanport, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.  
Filed Feb. 5, 1973, Ser. No. 329,792  
Int. Cl. H01q 1/36

U.S. Cl. 343—895

21 Claims



There is disclosed a tuning element configuration for a helix/cylinder (inductance/capacitance) type antenna, the

tuning element comprising a shorting tube assembly which includes a lower tube drive assembly, an upper guide roller assembly and an intermediate shorting brush assembly arranged therebetween. The tube drive assembly consists of a lower shorting brush arrangement and a drive roller arrangement, the latter of which is made up particularly of a simple stamped and screw-machine parts to provide a configuration which is superior to the prior art both structurally and electrically while being significantly less costly. Similarly, the upper guide roller assembly consists of an upper shorting brush arrangement and a guide roller arrangement which is made up of simple stamped and screw-machine parts in a less costly but electrically and structurally superior configuration. Provision is made for a novel construction of shorting brushes which go to make up the intermediate shorting brush assembly and which also constitute the major parts of the upper and lower shorting brush arrangements.

3,824,601

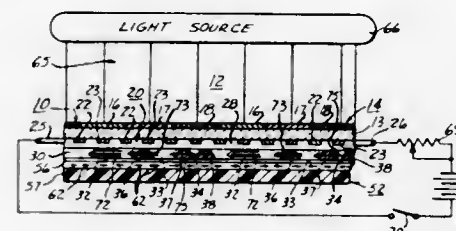
## MULTI-COLOR MAGNETIC IMAGE RECORDING AND MEDIA

Thomas H. Garland, El Monte; Sherman W. Duck, Altadena; Frederick J. Jeffers, Altadena, and Richard J. McClure, Altadena, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Mar. 28, 1972, Ser. No. 238,899  
Int. Cl. G01d 15/12, 15/34

U.S. Cl. 346—74.1

31 Claims



A color print of an image is provided by producing of each color component to be printed a magnetic record that has its specific magnetic moment. Each of these magnetic records is printed out with a toner that corresponds in color to the particular color component and that is magnetically attractable by the particular magnetic moment.

3,824,602

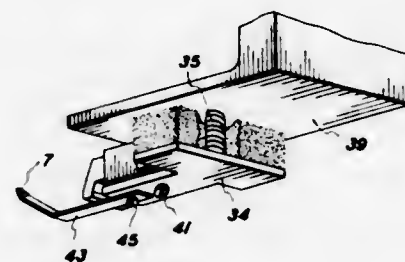
## CLOSED CELL POLYURETHANE FOAM PEN GUIDE DAMPER

Ved Kumar Gulati, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1973, Ser. No. 346,497  
Int. Cl. G01d 15/00

U.S. Cl. 346—139 C

1 Claim



A writing stylus assembly for recording incoming facsimile signals on a writing medium such as an electroresistive paper held around a drum of a facsimile transceiver, comprises a spring means for pressing the stylus tip so that the tip rides on

the surface of the writing medium with a predetermined amount of pressure, a lever which moves, upon actuation, the tip of the writing stylus away from the drum and the writing medium, and means responsive to the deactuation of the lever for retarding the relaxation time of the spring to prevent the stylus tip from hitting against the drum.

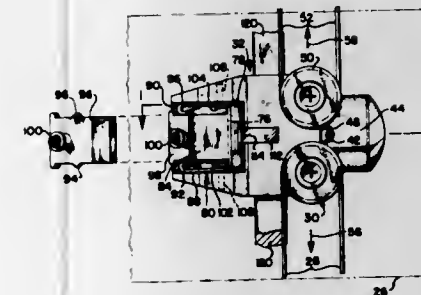
3,824,603

## SOLENOID ACTUATED RECORDING APPARATUS

Roy G. Bates, and William R. Dahl, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.  
Filed Dec. 18, 1972, Ser. No. 316,341  
Int. Cl. G01d 15/24

U.S. Cl. 346—141

2 Claims



An X-Y recorder carrier supports a stylus and solenoid which are uniquely linked to provide movement of a stylus on to a chart thereby to avoid inertial effects of the solenoid on the stylus in the selective actuation by the solenoid of the stylus into and out of chart engagement. Electrical power for the solenoid is transmitted to the solenoid by the carrier drive cables and associated pulleys.

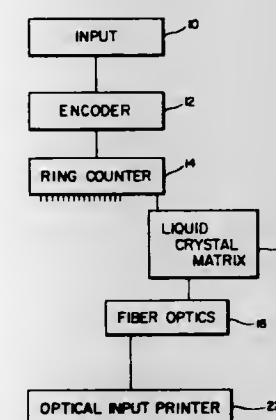
3,824,604

## ALPHANUMERIC PRINTING SYSTEM EMPLOYING LIQUID CRYSTAL MATRIX

Edward I. Stein, 8521 N. Lotus Ave., Skokie, Ill. 60076  
Filed Oct. 12, 1972, Ser. No. 297,011  
Int. Cl. B41b 13/00, 15/00, 17/00

U.S. Cl. 354—5

15 Claims



A completely solid state printing system having a keyboard or computer input, a bit encoder or data translator, a matrix switching system, a liquid crystal matrix to optically form the characters to be printed, a fiber optics translator, and a xerographic printing machine to reproduce the character impressions received from the fiber optics translator.

3,824,605

## ILLUMINATION CONTROL ARRANGEMENT FOR PHOTOGRAPHIC CAMERA

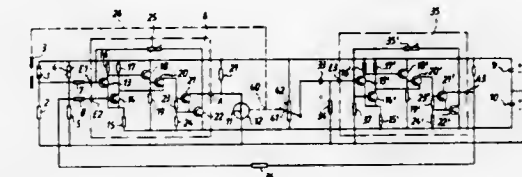
Engelbert Fliesser; Karel Pustka, and Eduard Wagensohn, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Division of Ser. No. 176,757, Oct. 6, 1971. This application Nov. 13, 1973, Ser. No. 415,387

Claims priority, application Germany, Oct. 6, 1970, 2049110

Int. Cl. G03b 7/10

U.S. Cl. 354—42

9 Claims



An arrangement in photographic cameras in which the diaphragm is positioned through an electromagnetically operated setting device with damped motion. A first voltage divider has a light-sensitive element and is connected to one terminal of a difference amplifier. A second voltage divider is connected to the second terminal of the difference amplifier and serves as a source of reference voltage against which the voltage signals from the first voltage divider containing the light-sensitive element is compared. The output of the difference amplifier is connected to the diaphragm-setting device which, in turn, positions a voltage generator that provides a voltage signal dependent upon the velocity of the diaphragm-setting device. This velocity-dependent voltage signal is applied to the second voltage divider so as to result in damped motion of the setting device.

3,824,606

## PHOTOGRAPHIC EXPOSURE CONDITION INDICATING DEVICE

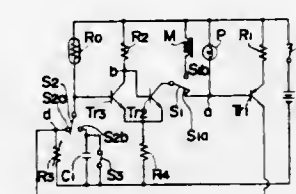
Ichiro Yoshiyama, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-ku, Japan  
Filed Mar. 2, 1973, Ser. No. 337,480

Claims priority, application Japan, Mar. 17, 1972, 47-27911; Mar. 24, 1972, 47-30128

Int. Cl. G03b 7/08, 17/18

U.S. Cl. 95—10 CE

6 Claims



In a photographic camera having a shutter the speed of which is automatically controlled, the photographic exposure condition indicating device comprising a light sensitive element, a switching circuit responsive to an output signal from the light sensitive element and an indicating circuit including an electric lamp responsive to the switching circuit, both being disposed in parallel to the light sensitive element and with respect to each other, for operating the lamp when the output signal attains a predetermined value, and a variable resistor for varying the predetermined value of the output signal, whereby the critical shutter speed at which the photographer can steadily hold the camera without wobbling the latter can be varied as desired or required.



3,824,607

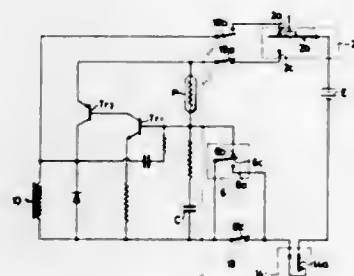
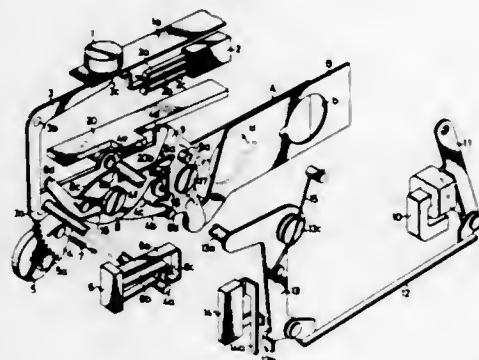
**SHUTTER OPERATING APPARATUS FOR CAMERA**  
Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera  
Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1973, Ser. No. 358,792

Claims priority, application Japan, May 30, 1972, 47-54085  
Int. Cl. G03b 9/40, 9/62

U.S. Cl. 354—50

14 Claims



An apparatus comprising a sector opening and closing member for opening and closing sectors by reciprocal pivotal movement, a sector driving member movable forward by a shutter release action and backward by a shutter cocking action and engageable with the sector opening and closing member during the forward movement to move the opening and closing member pivotally, and a movable member supporting the driving member to shift the driving member upon the shutter release action to a position where the driving member is engageable with the opening and closing member, before the driving member is initiated into operation. Prior to the return of the sector driving member to its cocked position during the shutter cocking operation, the returning movement of the movable member brings the sector driving member to a position where it is free of engagement with the sector opening and closing member.

3,824,608

**ELECTRIC SHUTTER CIRCUIT**

Kenji Toyoda, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Sept. 13, 1973, Ser. No. 396,705

Claims priority, application Japan, Sept. 20, 1972, 47-93679

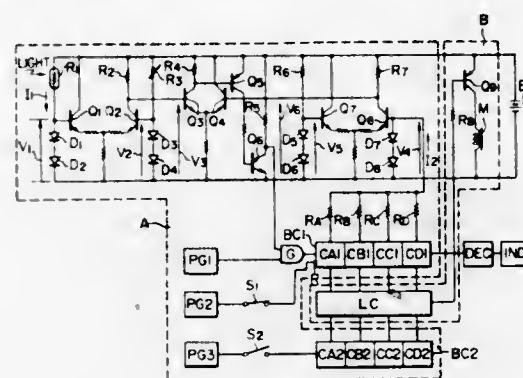
Int. Cl. G03b 7/08; G01j 1/44; H03k 19/14

U.S. Cl. 354—50

14 Claims

An electric shutter control includes a first circuit which counts and memorizes the number of first pulses, which is inversely proportional to the intensity of light reflected from an object to be photographed, and generates and counts the

number of second pulses proportional to the time elapsed from the time the shutter is opened, and a second circuit,



which directly compares the numbers of the first and second pulses and deenergizes an electromagnet when both numbers coincide with each other to close the shutter.

3,824,609

**COLOR MICRO OPTIC APPARATUS**

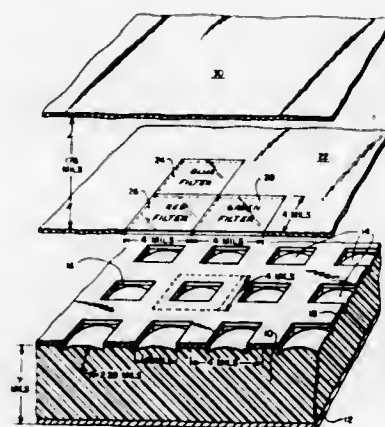
George J. Tevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.

Filed Feb. 14, 1973, Ser. No. 332,284

Int. Cl. G03b 33/14

U.S. Cl. 354—102

17 Claims



A color micro optic apparatus which employs black and white photographic film in taking and yet produces color images upon readout. Distributed sets of contiguous color filters, each set having (for example) red, green, and blue filters, are sequentially aligned with corresponding sets of lensettes of microfiche. In use as a camera, red light activates only those emulsion portions of the microfiche which are beneath the red filters, similar discrimination occurring with the blue and green filters. After the emulsion is developed only those emulsion areas beneath filters which have passed light are transparent. For readout, the developed emulsion and filters receive white light (in the opposite direction) to reconstruct a color image.

3,824,610

**CAMERA ADAPTED FOR PERCUSSIVELY IGNITABLE FLASHLAMPS**

Wolfgang Ort, Stuttgart-Bad Canstatt, and Michael Reibl, Sindelfingen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,053

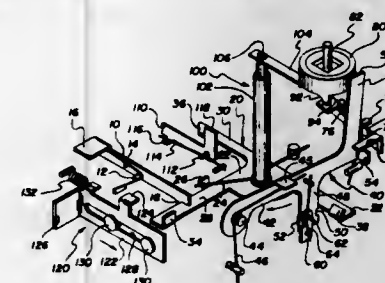
Int. Cl. G03b 15/04

U.S. Cl. 354—139

7 Claims

Camera includes a control member which is movable to actuate the flash firing and flash indexing mechanisms whenever

a flash unit is coupled to the camera. In a preferred embodiment, the flash firing member blocks movement of the control member and is moved to an unblocking position when a flash



unit is inserted in the camera socket. In an alternate embodiment, a separate latching lever impedes movement of the control member and is moved to an unlatched position when a flash unit is inserted in the camera socket.

3,824,611

**TEMPERATURE RESPONSIVE IMITATING APPARATUS FOR A PHOTOGRAPHIC CAMERA**

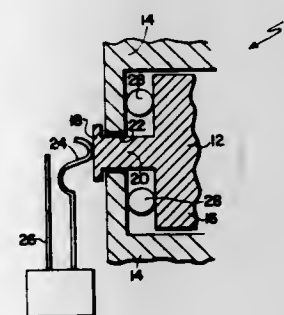
Edwin H. Land, Cambridge, and David V. Cronin, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,228

Int. Cl. G03b 17/00

U.S. Cl. 354—202

12 Claims



An exposure actuation system, preferably including an electric start switch for a photographic camera including a movable actuator button which is operative to initiate a photographic exposure only at predetermined temperatures. Depression of the movable actuator button is operative to move one electrical spring contact into electrical engagement with another spring contact for closing appropriate camera shutter circuitry. In a preferred embodiment, a liquid-filled elastic member is interposed in the path of movement of the subject actuator button. Should the photographic camera be subjected to temperatures below the freezing point of the liquid, the liquid freezes and prevents depression of the actuator button.

3,824,612

**MECHANISM FOR INDICATING CONDITION OF OPERABILITY OF AN ELECTRICALLY CONTROLLED CAMERA SHUTTER**

Naoyuki Uno, 7-6, Kumano-cho and Katsuhiko Nomura, 38-6 Tsukujoshi-cho both of Kawagoe, Japan

Filed Sept. 12, 1973, Ser. No. 396,946

Claims priority, application Japan, Sept. 19, 1972, 47-93236

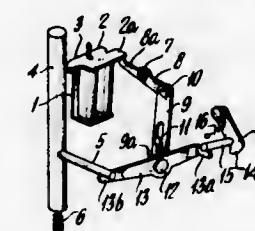
Int. Cl. G03b 9/08, 17/18

U.S. Cl. 354—266

9 Claims

A mechanism for preventing the opening of a shutter in a camera having an electronic shutter control network in the

event of insufficient battery voltage or a defect in the control, includes a solenoid which is energized upon the initiation of, but before the shutter opening release operation, to releasably lock the shutter closing operation by the attraction and advance of the solenoid armature. A shutter release member is operatively coupled by a lever to the latch member of the



3,824,613

**MAGAZINE HAVING LATCH MEANS**

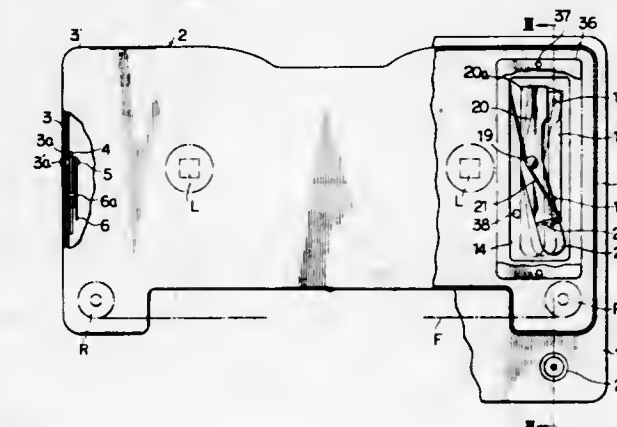
Takao Matsui, No. 11-6, Nozawa 1-chome, Setagaya-ku, Tokyo, Japan

Filed Sept. 21, 1972, Ser. No. 290,848

Int. Cl. G03b 19/04

U.S. Cl. 95—31 CA

2 Claims



Magazine having a casing body and a cover plate and provided with latch means for preventing the cover plate from being inadvertently removed from the casing body. The latch means comprises a swingable lever pivoted to either one of the casing body and the cover plate at the inside thereof so as to be swung between the latching position and the unlatching position. The swingable lever is normally urged toward the latching position by a spring and is provided with a hook at its free end having an inclined outer edge with respect to the length of the swingable lever. A latch pin is secured to the other of the casing body and the cover plate at a position interior thereof. When the cover plate is fitted with the casing body, the outer edge of the hook slidably abuts against the latch pin so that the swingable lever is swung toward the unlatching position against the action of the spring and, after the latch pin slides over around the outer edge of the hook, the swingable lever is swung toward the latching position by the action of the spring so as to latch the latch pin by the hook thereby preventing the cover plate from being removed from the casing body. The swingable lever is provided with a magnetically operable portion so that the swingable lever can be



swung toward the unlatching position to permit the cover plate to be removed from the casing body by moving a magnet located on the outer surface of the magazine so as to attract and move the magnetically operable portion toward the unlatching position of the swingable lever.

3,824,614

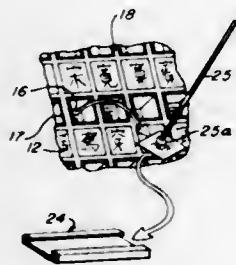
## EQUIPMENT FOR MANUFACTURING PRINTED MATTER

David Sun Shew, 19 Olive Ave., Larkspur, Calif. 94939  
Filed Apr. 24, 1972, Ser. No. 246,708

Int. Cl. G03b 15/00

U.S. Cl. 354—292

2 Claims



Individual, relatively small sheets bearing different characters are removably disposed in superposed relation in multiple replenishable piles thereof in at least one character-selector board provided with an index to the characters to facilitate locating and readily removing each small sheet bearing a selected character from a specific pile thereof in said board. A plurality of composition strips receive the small sheets of selected characters removed from said board to form on such strips words, sentences and paragraphs made up from said small sheets of selected characters. Enlarging or reducing platemaking cameras photograph said made up composition strips and prepare paper plates therefrom for introduction into an offset printing press to afford the end product of printed matter which may serve as copy for newspapers, magazines, catalogues and the like.

3,824,615

## AUTOMATIC FILM PROCESSOR WASH TANKS HAVING WASHED SQUEEGEE ROLLERS

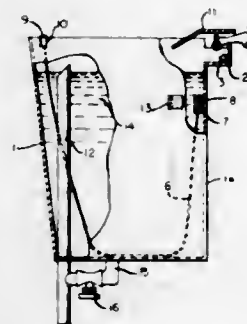
Tadashi Shintani, and Shingo Yasuda, both of Kyoto, Japan, assignors to LogElectronics Inc., Springfield, Va.

Filed Apr. 9, 1973, Ser. No. 349,493

Int. Cl. G03d 1/04

U.S. Cl. 354—331

10 Claims



A photographic film processor comprises at least one treatment tank containing a processing chemical, e.g. a fixer, and a water-containing wash tank disposed adjacent the treatment tank. A pair of squeegee rollers located between the two tanks is operative to transport a sheet of film being processed from the treatment tank into the wash tank. One or more jets of

water are projected onto the squeegee rollers to prevent the accumulation of residues thereon, and water flowing off the rollers is directed into the wash tank. The wash tank may be provided with a removable net for catching and facilitating removal of a sheet of film being processed.

3,824,616

## AIR-JET CROSSOVER FOR AUTOMATIC FILM PROCESSORS

Kazuhiko Uchida, Kyoto, Japan, assignor to LogElectronics Inc., Springfield, Va.

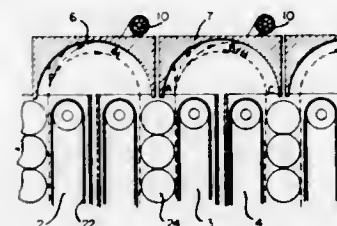
Filed May 7, 1973, Ser. No. 357,738

Claims priority, application Japan, Sept. 28, 1972, 47-113079

Int. Cl. G03d 3/12

U.S. Cl. 354—339

6 Claims



An automatic film processor, of the type comprising a plurality of treatment tanks associated with a transport system for transporting a sheet of film to be processed through said tanks in succession, is provided with an improved crossover guide structure positioned between an adjacent pair of the tanks for guiding a sheet of film as it is transported from one to the next of said pair of tanks. An air blower and associated duct are provided to produce positive air pressure adjacent the interior of the crossover guide structure to pneumatically urge a sheet of film away from the guide structure as the sheet is transported past the guide structure, to minimize faulty processing or scratching of the film sheet.

3,824,617

## MAGNETIC TAPE COPYING APPARATUS

Fukashi Kobayashi, Hirakata; Mitsuki Ono, Katano; Masahiko Yatsugake, Hirakata, and Yukihiko Fukushima, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

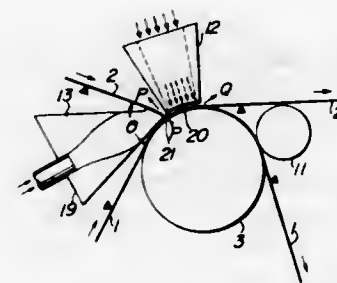
Filed Apr. 12, 1972, Ser. No. 243,152

Claims priority, application Japan, Apr. 16, 1971, 46-2460; July 16, 1971, 46-63174[U]; Apr. 19, 1971, 46-25478; July 16, 1971, 46-63175[U]; Apr. 22, 1971, 46-26592; Aug. 7, 1971, 46-70494[U]; Apr. 16, 1971, 46-29652[U]; Aug. 23, 1971, 46-76049[U]; June 7, 1971, 46-48094[U]; June 8, 1971, 46-48497[U]; July 12, 1971, 46-61431[U]; July 12, 1971, 46-61432[U]

Int. Cl. G11b 5/86

U.S. Cl. 360—16

18 Claims



A magnetic tape copying apparatus employing the so-called thermal transfer process wherein a slave tape heated to a tem-

perature near the Curie point thereof and a master tape having a signal recorded thereon are put together with the magnetic surfaces thereof in contact with each other and cooled, whereby the signal on the master tape is transferred onto the slave tape, said apparatus comprising novel tape heating and compressing means which makes possible the use of a tape having a high coercive force and a high Curie point, such as CrO<sub>2</sub> tape, as the slave tape which could not be used in conventional transfer processes, and which enables quality copied tapes to be obtained at a high efficiency without causing physical damage to the slave tape.

3,824,618

## MAGNETIC HEAD AND SIMULATED FOUR-CHANNEL STEREO SYSTEM

Masayuki Mural, Tokyo, Japan, assignor to Pioneer Electronics Corporation, Tokyo, Japan

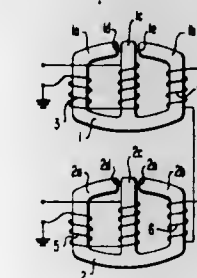
Filed Oct. 10, 1972, Ser. No. 296,491

Claims priority, application Japan, Oct. 7, 1971, 46-92328[U]; Oct. 13, 1971, 46-94482[U]

Int. Cl. G11b 5/20, 5/28

U.S. Cl. 360—22

4 Claims



A magnetic reproducing head for reproducing a two-channel stereo signal as a simulated four-channel signal. The head reproduces the first channel signal, the second channel signal, a signal equal to the difference between the first and second channel signals and the difference between the second and first channel signals.

3,824,619

## TRANSDUCER SYSTEM

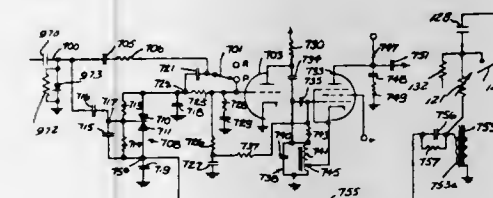
Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 848,992, Aug. 11, 1969, abandoned, and a continuation-in-part of Ser. No. 34,504, May 4, 1970, Pat. No. 3,705,954, and a continuation-in-part of Ser. No. 62,601, Aug. 10, 1970, Pat. No. 3,683,107, said Ser. No. 848,992, Division of Ser. No. 401,832, said Ser. No. 62,601, Continuation of Ser. No. 528,934. This application Nov. 18, 1971, Ser. No. 199,977

Int. Cl. H04n 5/76

U.S. Cl. 360—36

2 Claims



A longitudinal scan transducing apparatus for use with a television receiver comprising a magnetic transducer head having transverse conductors for supplying high frequency bias, tape transport features including a damping pad acting on the tape adjacent the head for damping high frequency vibration at the head, head shifting and tape reversal features, and television set adapter circuitry for supplying a wide-band video signal and for stabilizing reproduced sync signals.

3,824,620

## CIRCUIT ARRANGEMENT FOR COMPENSATING DROP-OUT IN THE REPRODUCTION OF SIGNALS RECORDED ON A RECORD CARRIER

Erich Langer, Sudstadt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

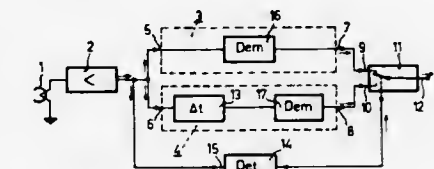
Filed July 13, 1972, Ser. No. 271,348

Claims priority, application Austria, July 15, 1971, 6162/71

Int. Cl. H04n 5/78

U.S. Cl. 360—38

10 Claims



A playback system for a video signal recorded on a carrier signal has a drop-out compensation circuit. This circuit has two channels, one of which delays the reproduced signal. If a drop-out occurs a switch selects the delayed channel. Demodulators are coupled to the switch in each channel and compensate for the switching time of the switch.

3,824,621

## MULTI-CHANNEL TAPE PLAYING DEVICE

Kozi Suzuki, Yoshida Oizumi Gumma, Japan, assignor to Tokyo Sanyo Electric Co., Ltd., Gunma and Sanyo Electric Co., Ltd., Osaka, both of Japan

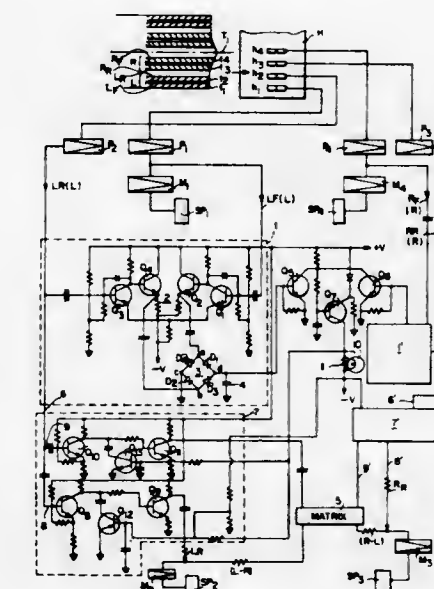
Filed June 8, 1972, Ser. No. 261,098

Claims priority, application Japan, June 8, 1971, 46-11778; June 10, 1971, 46-11779

Int. Cl. H04h 5/00; G11b 21/08, 23/18

U.S. Cl. 360—78

6 Claims



A device for playing the voices recorded in the tapes in such a form as to assure a perfect compatibility between the two channel stereo program tape and the four channel stereo program tape, wherein upon automatically discerning, at the time of playing, whether the tape program belongs to the two channel or four channel, the result is indicated to the operator, and in the case of four channel program tape, the signals of each channel are individually reproduced, while in the case of two channel program tape, they are automatically reproduced in simulation to the four channel program.



3,824,622

## MULTICHANNEL MAGNETIC HEAD

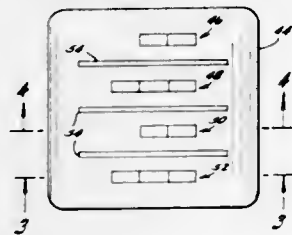
Mitsugi Kashimoto, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 164,661. This application Apr. 20, 1973, Ser. No. 352,886

Int. Cl. G11b 5/28

U.S. Cl. 360—121

1 Claim



A multichannel magnetic head of the type combining the functions of erasing, recording and playback comprises a plurality of magnetic core units of two types separated by magnetic shielding means. The first type of core unit is of the conventional three-leg construction utilizing a common central core and is effective to generate recording and/or erasing signals. The second type of core is used for playback only and comprises a single generally U-shaped core having a balanced playback winding. The two types of core units are arranged alternately along the head in a direction perpendicular to tape travel whereby inductive coupling within each unit is virtually eliminated, thereby to maintain a good signal to noise ratio and an improved tone quality.

3,824,623

## SYSTEM FOR REDUCING CROSS TALK OF UNSELECTED MAGNETIC HEADS INTO A SELECTED HEAD

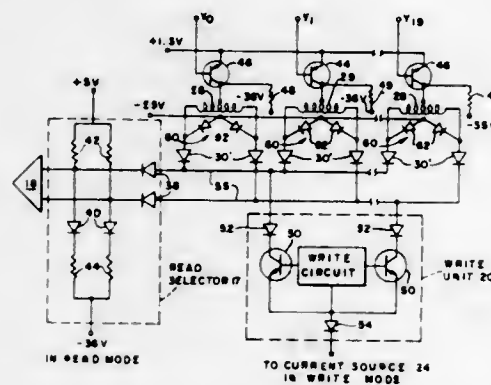
George C. Gucker, Old Bethpage, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Dec. 14, 1972, Ser. No. 314,929

Int. Cl. G11b 5/44

U.S. Cl. 360—124

11 Claims



A plurality of individually selectable magnetic read/write heads are coupled in parallel to signal transmitting circuitry, such as a read amplifier. The magnetically responsive coil in

each head is equipped with a low impedance shunt circuit including a pair of opposed, series-connected diodes having their common junction tied to a reference voltage. Additional head-isolating diodes connect the ends of each head coil to the signal transmitting circuitry. A head is selected by applying a predetermined voltage to a given head coil to forward-bias the associated head-isolating diodes. The head-isolating diodes for the unselected heads, however, remain reverse-biased by virtue of a reference voltage applied to each of the unselected head coils. By virtue of the relationship between the reference voltage applied to the coil and the reference voltage applied to the shunt diode junction, the diodes in each shunt circuit for an unselected head are forward-biased. Accordingly, input signals picked up by an unselected head are effectively shunted out and not permitted to superimpose additive noise on the read or write signal associated with the selected head, whose shunt circuit is rendered inoperative.

3,824,624

## SYSTEM AND METHOD FOR CONVERGING ITERATIONS FOR LOADFLOW SOLUTIONS IN A HYBRID LOADFLOW COMPUTER ARRANGEMENT HAVING TRANSIENT STABILITY ANALYSIS CAPABILITY

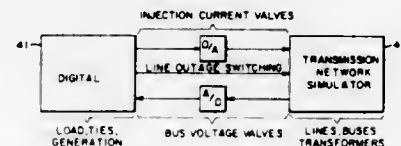
Norman R. Carlson, Export; Paul H. Haley, Pittsburgh, both of Pa., and Mark K. Enns, Ann Arbor, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 255,050

Int. Cl. G06j 1/00; G06f 15/06, 15/56

U.S. Cl. 444—1

4 Claims



A hybrid loadflow computer arrangement includes an analog network simulator and a digital computer which interchange signals through analog input and output circuitry. The analog simulator includes modular bus, generator, load, tie line and line DC circuits representative of electric power system buses, generators, loads, tie lines and lines. The analog simulator provides tie line currents and external voltages and load currents and voltages to the digital computer for the determination of tie powers and load powers as a function of corresponding currents and voltages and the determination of whether these powers are within predetermined tolerances. The digital computer and the analog simulator iteratively operate to provide new tie powers and load powers as a function of tie powers and load powers determined in the next preceding iteration so as to produce convergence to a load-flow solution.

## DESIGNS

JULY 16, 1974

232,058

## BOTTLE-HOLDING INFANT JACKET

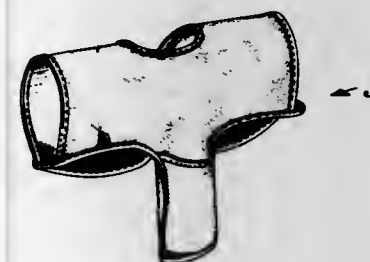
Connie A. Palomares, 15240 Kittridge, No. 312, Van Nuys, Calif. 91405

Filed June 29, 1972, Ser. No. 267,368

Term of patent 14 years

Int. Cl. D2—05

U.S. Cl. D2—229

232,060  
GLOVE

Alfred Mayer, Forest Hills, N.Y., assignor to Kayser-Roth Corporation, New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,187

Term of patent 14 years

Int. Cl. D2—06

U.S. Cl. D2—376



232,059

## NECK ORNAMENT

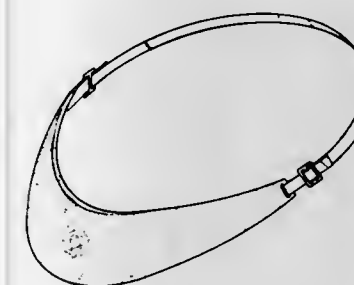
Peter E. Kurtz, 733 NE. 13th Court, Apt. 18, Fort Lauderdale, Fla. 33304

Filed Sept. 15, 1972, Ser. No. 289,332

Term of patent 14 years

Int. Cl. D2—07

U.S. Cl. D2—243



232,061

## BUTTON OR THE LIKE

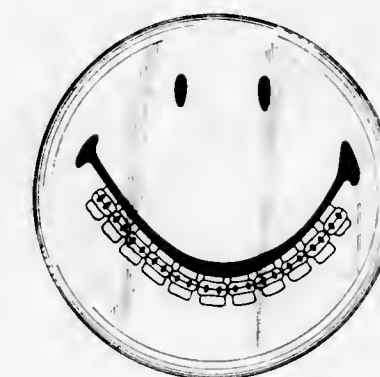
John J. Christiansen, Sheboygan, Wis., assignor to American Orthodontics Corporation, Sheboygan, Wis.

Filed Feb. 21, 1973, Ser. No. 334,323

Term of patent 14 years

Int. Cl. D2—07

U.S. Cl. D2—436





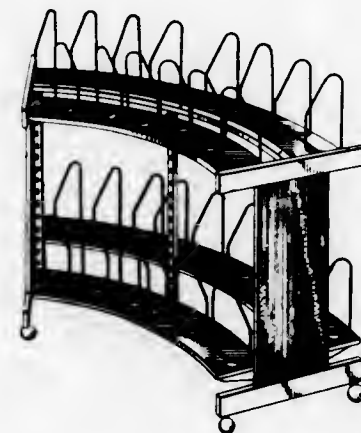
**232,062**  
**MODULAR DISPLAY CASE FOR FABRICS**  
**OR THE LIKE**

Ann M. Turdo, New York, N.Y., assignor to Mod  
 Displays, Inc., New York, N.Y.  
 Filed Jan. 8, 1973, Ser. No. 321,567  
 Term of patent 14 years  
 Int. Cl. D20-02; D6-04  
 U.S. Cl. D6-186



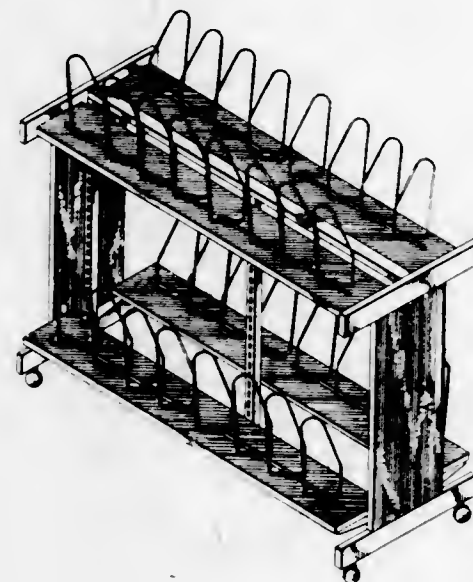
**232,064**  
**MODULAR DISPLAY CASE FOR FABRICS**  
**OR THE LIKE**

Ann M. Turdo, New York, N.Y., assignor to Mod  
 Displays, Inc., New York, N.Y.  
 Filed Jan. 8, 1973, Ser. No. 321,569  
 Term of patent 14 years  
 Int. Cl. D20-02; D6-04  
 U.S. Cl. D6-186



**232,063**  
**MODULAR DISPLAY CASE FOR FABRICS**  
**OR THE LIKE**

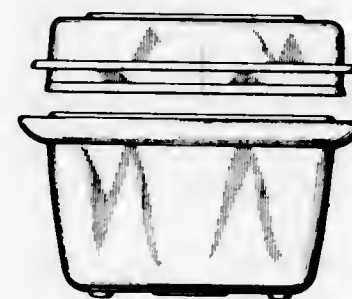
Ann M. Turdo, New York, N.Y., assignor to Mod  
 Displays, Inc., New York, N.Y.  
 Filed Jan. 8, 1973, Ser. No. 321,568  
 Term of patent 14 years  
 Int. Cl. D20-02; D6-04  
 U.S. Cl. D6-186



**232,065**  
**FOOD STORAGE DISH**

Robert Daenen, Erembodegem, Belgium, assignor to Dart  
 Industries Inc., Los Angeles, Calif.  
 Filed Apr. 19, 1972, Ser. No. 245,689  
 Term of patent 14 years  
 Int. Cl. D7-01

U.S. Cl. D7-16



**232,066**  
**SPOON OR SIMILAR ARTICLE OF FLATWARE**

Ford J. Lanzoni, Yalesville, Conn., assignor to Interna-  
 tional Silver Company, Meriden, Conn.  
 Filed Nov. 15, 1972, Ser. No. 306,571  
 Term of patent 14 years  
 Int. Cl. D7-03

U.S. Cl. D7-137



**232,067**  
**SPOON OR SIMILAR ARTICLE OF FLATWARE**

Siro R. Toffolon, Meriden, Conn., assignor to Interna-  
 tional Silver Company, Meriden, Conn.  
 Filed Nov. 3, 1972, Ser. No. 303,612  
 Term of patent 14 years  
 Int. Cl. D7-03

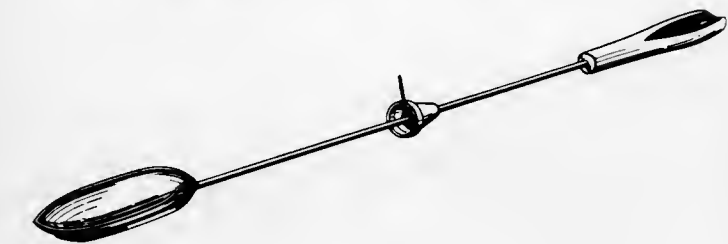
U.S. Cl. D7-137



**232,068**  
**BOTTLE SCRAPER SPOON**

Edith H. Hager, 9620 Watts Branch Drive,  
 Rockville, Md. 20850  
 Filed Nov. 24, 1972, Ser. No. 309,188  
 Term of patent 14 years  
 Int. Cl. D7-06

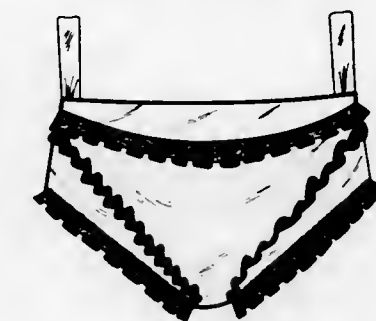
U.S. Cl. D7-181



**232,069**  
**LITTER BAG**

David W. Walker, 2113 State St.,  
 New Albany, Ind. 47150  
 Filed Jan. 10, 1973, Ser. No. 322,451  
 Term of patent 14 years  
 Int. Cl. D7-07

U.S. Cl. D7-193



**232,070**  
**KEY**

Max Wiczer, 9122 Kedvale, Skokie, Ill. 60076  
 Filed July 18, 1973, Ser. No. 380,488  
 Term of patent 14 years  
 Int. Cl. D8-07

U.S. Cl. D8-136



**232,071**  
**KEY**

Max Wiczer, 9122 Kedvale, Skokie, Ill. 60076  
 Filed July 18, 1973, Ser. No. 380,956  
 Term of patent 14 years  
 Int. Cl. D8-07

U.S. Cl. D8-136





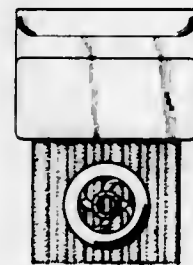
**232,072**  
**MOLDED PLASTIC LUGGAGE HANDLE**  
 Bela G. Szabo, Carnegie, Pa., assignor to Bruce  
 Plastics, Inc., Pittsburgh, Pa.  
 Filed May 18, 1972, Ser. No. 254,845  
 Term of patent 14 years  
 Int. Cl. D8—06

U.S. Cl. D8—154



**232,073**  
**DRAPERY SLIDE FOR A CURTAIN ROD**  
 Samuel Galletti, 1360 NE. 204th Terrace,  
 North Miami Beach, Fla. 33162  
 Filed June 29, 1973, Ser. No. 375,089  
 Term of patent 14 years  
 Int. Cl. D8—08

U.S. Cl. D8—239



**232,074**  
**BOTTLE**  
 Howard Cooper, Suite 7707, 175 E. Delaware,  
 Chicago, Ill. 60611  
 Filed Mar. 12, 1973, Ser. No. 340,076  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—28



**232,075**  
**BOTTLE**  
 Howard Cooper, Suite 7707, 175 E. Delaware,  
 Chicago, Ill. 60611  
 Filed Mar. 12, 1973, Ser. No. 340,077  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—28



**232,076**  
**BOTTLE OR SIMILAR ARTICLE**  
 Albert Jacob, Paris, France, assignor to Colgate-  
 Palmolive Company, New York, N.Y.  
 Filed Sept. 27, 1972, Ser. No. 292,766  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—42



**232,077**  
**BOTTLE**  
 Gordon A. Strand, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Dec. 15, 1972, Ser. No. 315,674  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—47



**232,078**  
**BOTTLE**  
 Gordon A. Strand, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Nov. 6, 1972, Ser. No. 304,237  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—100



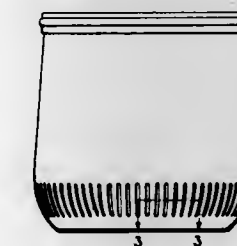
**232,079**  
**BOTTLE**  
 Warren J. Luedtke, Racine, Wis., assignor to  
 S. C. Johnson & Son Inc., Racine, Wis.  
 Filed Aug. 14, 1972, Ser. No. 280,639  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—144



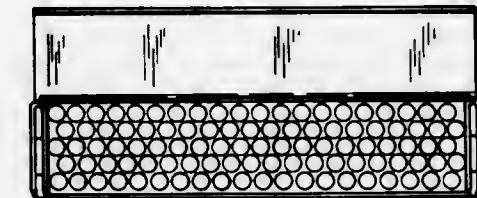
**232,080**  
**JAR**  
 Gordon A. Strand, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Nov. 6, 1972, Ser. No. 304,250  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—150



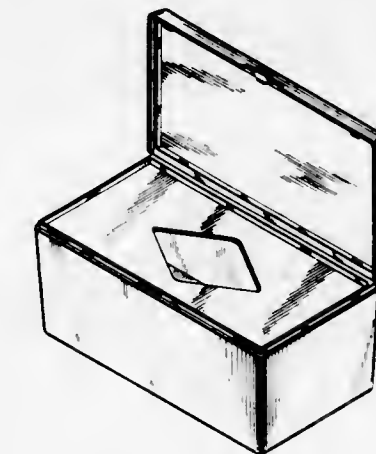
**232,081**  
**COMBINED SHIPPING AND PARTITIONING CON-  
 TAINER FOR CYLINDRICAL OBJECTS OR THE  
 LIKE**  
 Anthony R. Zine, Jr., Corning, N.Y., assignor to  
 Corning Glass Works, Corning, N.Y.  
 Filed Mar. 13, 1972, Ser. No. 234,470  
 Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—184



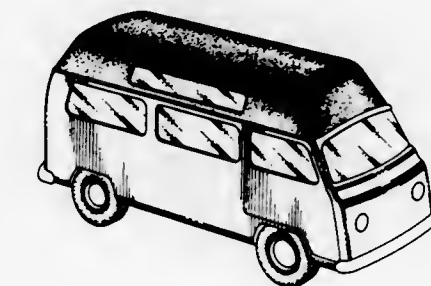
**232,082**  
**DISPENSING CONTAINER**  
 William E. Fitzpatrick, Oakland, N.J., and Timothy F.  
 Gary, Dover, Del., assignors to Rapid-American Cor-  
 poration, New York, N.Y.  
 Filed Apr. 24, 1972, Ser. No. 247,258  
 Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—224



**232,083**  
**CAMPER VEHICLE**  
 Leo V. Lano, 9620 Avenida Monterey,  
 Cypress, Calif. 90630  
 Continuation-in-part of abandoned design application Ser.  
 No. 25,605, Oct. 22, 1970. This application Oct. 20,  
 1972, Ser. No. 299,290  
 Term of patent 14 years  
 Int. Cl. D12—08

U.S. Cl. D12—100





232,084

**MIRROR FRAME FOR TRUCKS OR THE LIKE**  
Kenneth J. Fischer, Jacksonville, Fla. (% Road King Industries, Inc., P.O. Box 548, Ashburn, Ga. 31714)  
Filed Dec. 1, 1972, Ser. No. 311,133

Term of patent 14 years

The portion of the term of the patent subsequent to Jan. 16, 1987, has been disclaimed  
Int. Cl. D12—16

U.S. Cl. D12—187



232,087

**FRONT FOR AIR CONDITIONER**  
John J. Pink, Cedar Rapids, Iowa, and Melvin H. Boldt, Glenview, Ill., assignors to Amana Refrigeration, Inc.  
Filed Jan. 2, 1973, Ser. No. 320,597

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—141



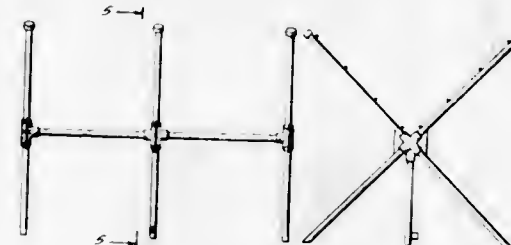
232,088

**PLAYGROUND SPRINKLER**  
Anita Margrill, 151 W. 13th St., New York, N.Y. 10010  
Filed Dec. 6, 1972, Ser. No. 312,676

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—6



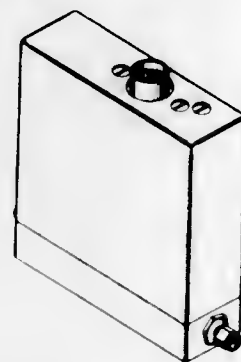
232,085

**AUTOMATIC FLUID FLOW CONTROL UNIT**  
Walter C. Benzing, Saratoga, Calif., assignor to Applied Materials Technology, Inc., Santa Clara, Calif.  
Filed Nov. 8, 1971, Ser. No. 196,875

Term of patent 14 years

Int. Cl. D24—01

U.S. Cl. D16—2 C



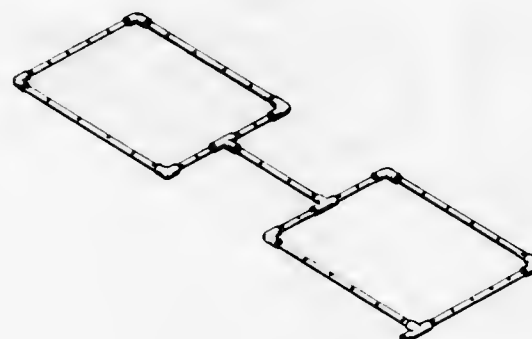
232,089

**PLAYGROUND SPRINKLER**  
Anita Margrill, 151 W. 13th St., New York, N.Y. 10010  
Filed Dec. 6, 1972, Ser. No. 312,677

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—6



232,086

**FLUID METERING VALVE**  
Charles H. Graham, Los Altos, Calif., assignor to Applied Materials Technology, Inc., Santa Clara, Calif.  
Filed Nov. 8, 1971, Ser. No. 196,876

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D16—1 R



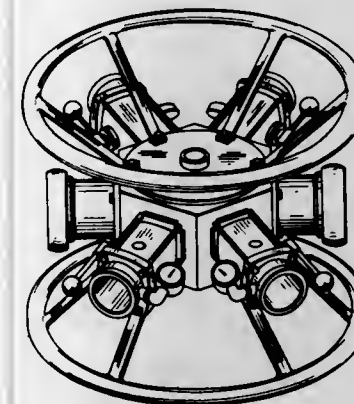
232,090

**PORTABLE HYDRANT**  
George G. Allenbaugh, Jr., Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio  
Filed Oct. 20, 1972, Ser. No. 299,365

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—12



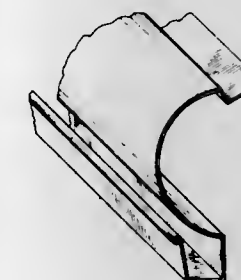
232,091

**NON-CLOG GUTTER OR SIMILAR ARTICLE**  
John Clark, 808 Southgate, McHenry, Ill. 60050  
Filed Aug. 31, 1972, Ser. No. 285,226

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—45



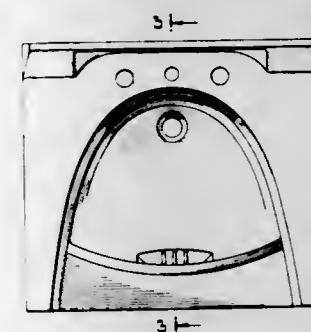
232,092

**LAVATORY**  
Donald C. Schrock, Nevada, Mo., assignor to Crane Co., New York, N.Y.  
Filed Apr. 16, 1973, Ser. No. 351,707

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—58



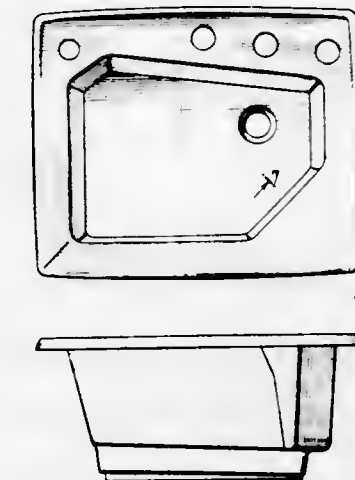
232,093

**LAVATORY**  
Donald C. Schrock, 1013 N. West St., Nevada, Mo. 64772  
Filed June 20, 1973, Ser. No. 371,793

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—58



232,094

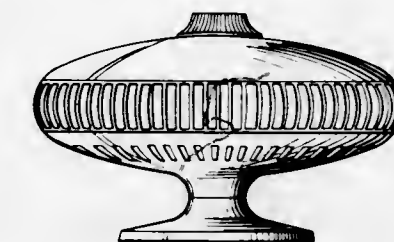
**VENTILATOR**  
Otto Bjarsch, Neugablonzer Weg 5, Traunreut, Germany  
Filed May 18, 1972, Ser. No. 254,824

Claims priority, application Germany Dec. 7, 1971

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—151



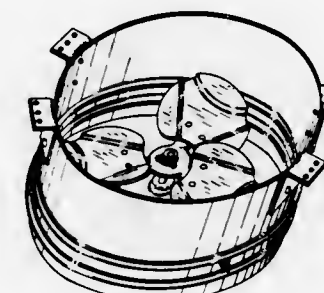
232,095

**POWER FAN**  
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio  
Filed Feb. 15, 1973, Ser. No. 332,574

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—155





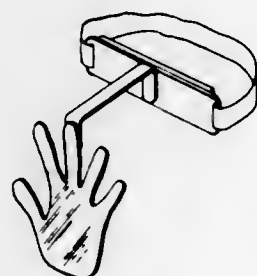
**232,096**  
**DENTAL FLOSS HOLDER**  
 Gary Lee Fender, 820 Crescent Drive,  
 Sidney, Ohio 45365  
 Filed Oct. 24, 1972, Ser. No. 300,300  
 Term of patent 14 years  
 Int. Cl. D24—99

U.S. Cl. D24—1 D



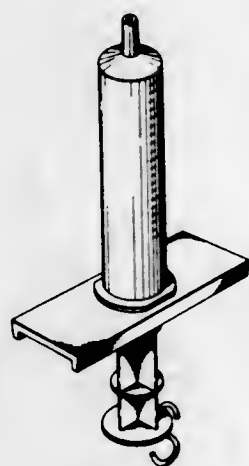
**232,097**  
**TRAINING AID FOR BASKETBALL PLAYERS**  
**OR THE LIKE**  
 Robert L. Kirchner, 544 Kling Drive,  
 Dayton, Ohio 45419  
 Filed Dec. 4, 1972, Ser. No. 312,204  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



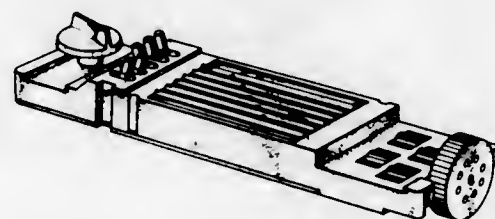
**232,098**  
**TEACHING AID FOR DEMONSTRATING**  
**PRINCIPLES IN PHYSICS**  
 John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey,  
 N.J., assignors to Xerox Corporation, Stamford, Conn.  
 Filed Dec. 26, 1972, Ser. No. 318,312  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



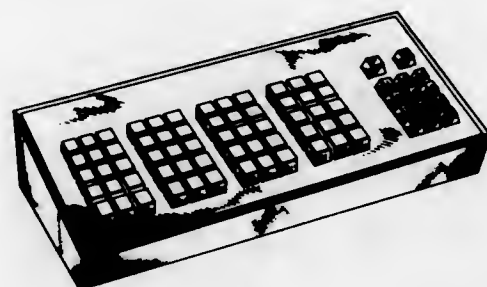
**232,099**  
**RADIO RECEIVER TUNER**  
 Hirohiko Tonari, Kyoto, Kazumi Iwasaki, Moriguchi,  
 Minoru Ohwada, Suita, and Ippei Kurihara, Yokohama,  
 Japan, assignors to Matsushita Electric Industrial Co.,  
 Ltd., Osaka, Japan  
 Filed Jan. 6, 1972, Ser. No. 215,982  
 Claims priority, application Japan Sept. 10, 1971  
 Term of patent 14 years  
 Int. Cl. D14—03, 99

U.S. Cl. D26—14 L



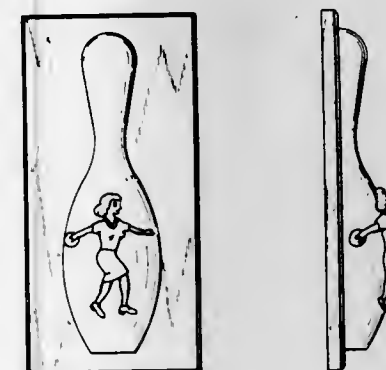
**232,100**  
**TELEPHONE DIALING INSTRUMENT**  
 Ronald Binks, Chambersburg, Pa., assignor to Global  
 Systems Design Corporation, Chambersburg, Pa.  
 Filed Aug. 17, 1972, Ser. No. 281,400  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D26—14 A



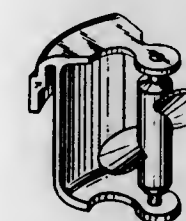
**232,101**  
**BOWLING TROPHY**  
 Chester Urban, 2832 Wilmot St.,  
 Philadelphia, Pa. 19137  
 Filed Feb. 15, 1973, Ser. No. 332,842  
 Term of patent 14 years  
 Int. Cl. D11—02

U.S. Cl. D29—28 A



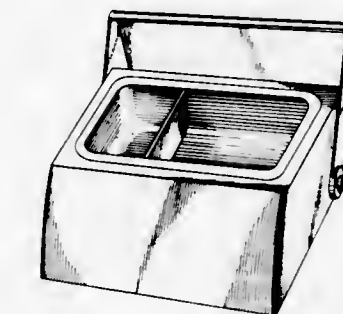
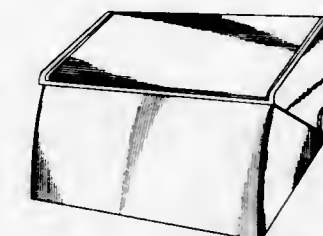
**232,102**  
**FLUID-FLOW INDICATOR FOR AN AQUARIUM**  
**FILTER OR THE LIKE**  
 Allan H. Willinger, New Rochelle, and Albert J. Dinner-  
 stein, Brooklyn, N.Y., and Avihu Kagan, Union, N.J.,  
 assignors to Metaframe Corporation, Maywood, N.J.  
 Filed Apr. 10, 1972, Ser. No. 242,899  
 Term of patent 14 years  
 Int. Cl. D30—99

U.S. Cl. D30—12



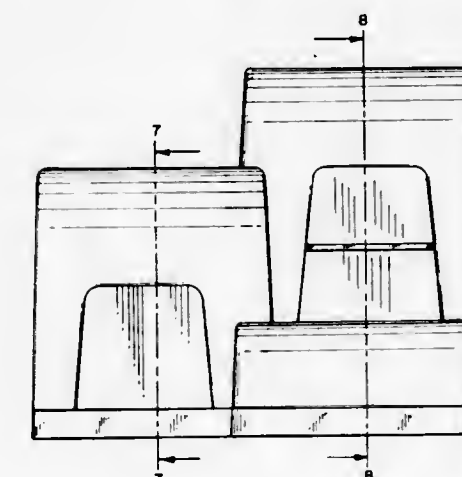
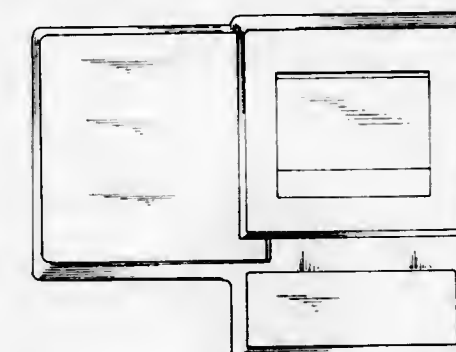
**232,103**  
**COMBINED FEEDING DISH AND COVER**  
**THEREFOR**  
 Haruo Suzuki, Saitama, Japan, assignor to Toytown  
 Corporation, Tokyo, Japan  
 Filed Feb. 14, 1973, Ser. No. 332,407  
 Term of patent 14 years  
 Int. Cl. D30—03

U.S. Cl. D30—13



**232,104**  
**NEST BOX**  
 Jacques Le Baigue, Westbury, N.Y., assignor to  
 Metaframe Corporation, Maywood, N.J.  
 Filed July 12, 1972, Ser. No. 271,025  
 Term of patent 14 years  
 Int. Cl. D30—06

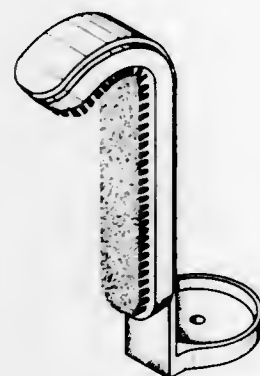
U.S. Cl. D30—41





**232,105**  
**ANIMAL SCRATCHING DEVICE**  
 Franciscus J. Claassen, 270 Ridgeway St.,  
 Philadelphia, Pa. 19116  
 Filed Nov. 8, 1972, Ser. No. 304,796  
 Term of patent 14 years  
 Int. Cl. D30—99

U.S. Cl. D30—40



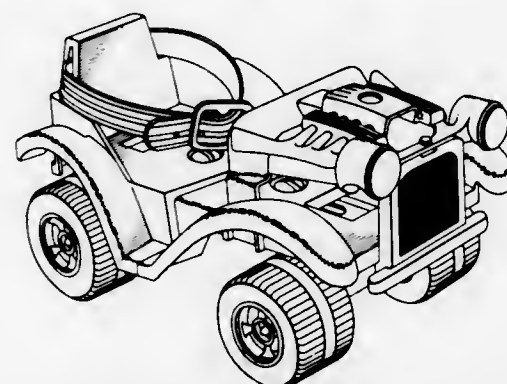
**232,107**  
**TENNIS RACQUET**  
 Joseph K. Dana, Wilbraham, Mass., assignor to  
 Questor Corporation, Toledo, Ohio  
 Filed Sept. 5, 1972, Ser. No. 286,432  
 Term of patent 14 years  
 Int. Cl. D21—02

U.S. Cl. D34—5 ST



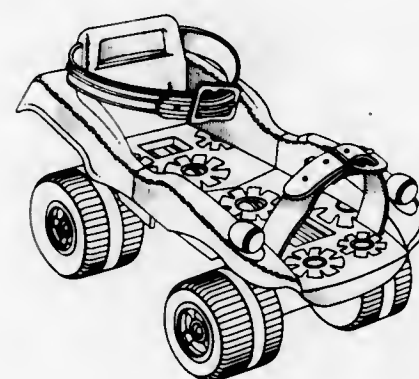
**232,108**  
**ROLLER SKATE**  
 Daniel F. Krause, Loveland, Colo., assignor to  
 Samsonite Corporation, Denver, Colo.  
 Filed Aug. 9, 1972, Ser. No. 278,974  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—14 C



**232,109**  
**ROLLER SKATE**  
 Daniel F. Krause, Loveland, Colo., assignor to  
 Samsonite Corporation, Denver, Colo.  
 Filed Aug. 9, 1972, Ser. No. 278,976  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—14 C



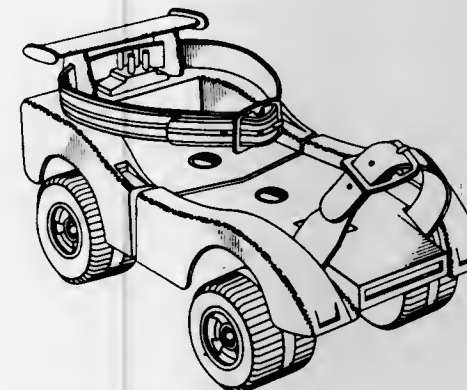
**232,106**  
**TENNIS RACQUET**  
 Joseph K. Dana, Wilbraham, and Peter R. Flak, North-  
 ampton, Mass., assignors to Questor Corporation,  
 Toledo, Ohio  
 Filed Aug. 3, 1972, Ser. No. 277,812  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—5 ST



**232,110**  
**ROLLER SKATE**  
 Daniel F. Krause, Loveland, Colo., assignor to  
 Samsonite Corporation, Denver, Colo.  
 Filed Aug. 10, 1972, Ser. No. 279,537  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—14 C



**232,111**  
**STYLIZED MODEL TOY VEHICLE**  
 Eugene T. Daniel, Walnut, Calif., assignor to Monogram  
 Models, Inc., Morton Grove, Ill.  
 Filed Aug. 31, 1972, Ser. No. 285,147  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 AJ



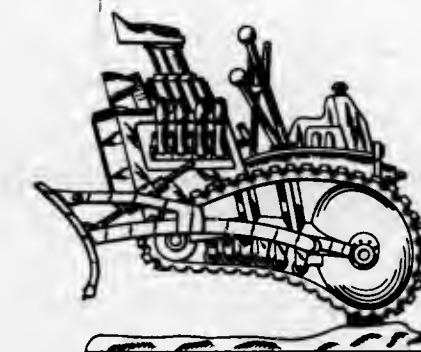
**232,112**  
**STYLIZED MODEL TRUCK**  
 Eugene T. Daniel, Walnut, Calif., assignor to Monogram  
 Models, Inc., Morton Grove, Ill.  
 Filed Aug. 31, 1972, Ser. No. 285,273  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 AJ



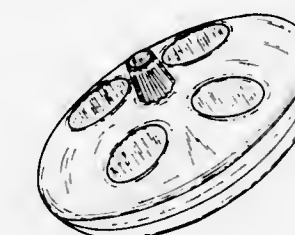
**232,113**  
**STYLIZED MODEL TOY VEHICLE**  
 Eugene T. Daniel, Walnut, Calif., assignor to Monogram  
 Models, Inc., Morton Grove, Ill.  
 Filed Aug. 31, 1972, Ser. No. 285,274  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 AJ



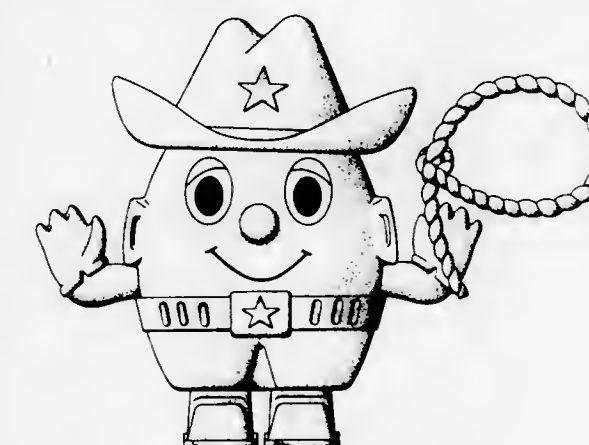
**232,114**  
**TOY SPINNER**  
 Eugene J. Echterling, Woodland Hills, Calif., assignor to  
 Questor Corporation, Toledo, Ohio  
 Filed Jan. 24, 1973, Ser. No. 326,489  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 AH



**232,115**  
**HUMPTY DUMPTY SHERIFF TOY**  
 Paul L. Luzius, Brentwood, Tenn., and Jerrold J. Krum-  
 holz, West Orange, N.J., assignors to Kusan, Inc.,  
 Nashville, Tenn.  
 Filed May 22, 1973, Ser. No. 362,654  
 Term of patent 14 years  
 Int. Cl. D21—01

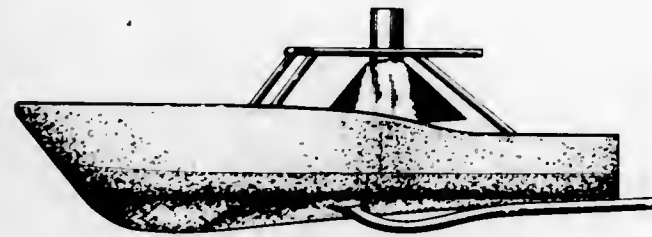
U.S. Cl. D34—15 AD





**232,116**  
**TOY JET PROPELLED BOAT**  
 Demetrios Theodosis, 2177 31st St.,  
 New York, N.Y. 11105  
 Filed Aug. 22, 1973, Ser. No. 390,547  
 Term of patent 14 years  
 Int. Cl. D21-01

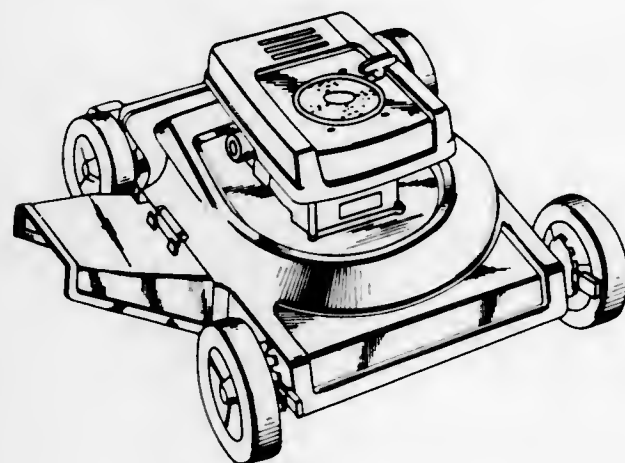
U.S. Cl. D34-15 JJ



**232,117**  
**COMBINED HOUSING, DEFLECTOR AND MOTOR SHROUD ARRANGEMENT FOR A ROTARY LAWNMOWER**

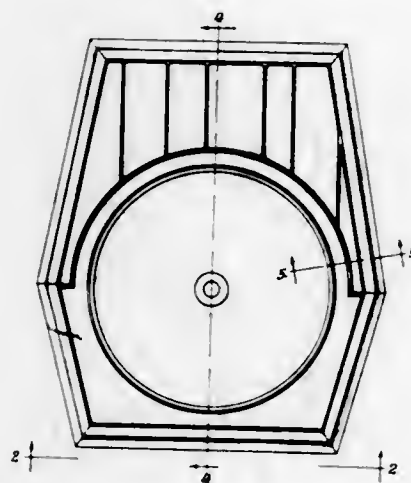
Larry M. Cognata, Nashville, Tenn., assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.  
 Filed Jan. 19, 1973, Ser. No. 324,972  
 Term of patent 14 years  
 Int. Cl. D15-03

U.S. Cl. D40-1 B



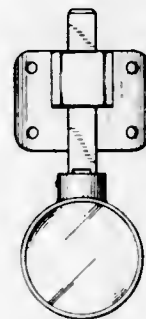
**232,118**  
**CLOCK HOUSING**  
 Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.  
 Filed June 30, 1972, Ser. No. 267,787  
 Term of patent 14 years  
 Int. Cl. D10-01

U.S. Cl. D42-7 R



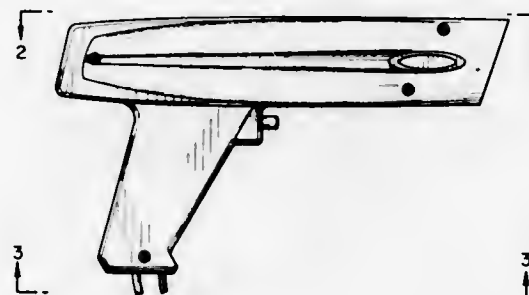
**232,119**  
**FIBEROPTIC ILLUMINATION ASSEMBLY FOR SURGEON'S HEADBAND**  
 Jacobus Kloots, Sturbridge, and Rato Buhler, Brimfield, Mass., assignors to Applied Fiberoptics Incorporated, Southbridge, Mass.  
 Filed Feb. 2, 1973, Ser. No. 328,937  
 Term of patent 14 years  
 Int. Cl. D26-99

U.S. Cl. D48-20 H



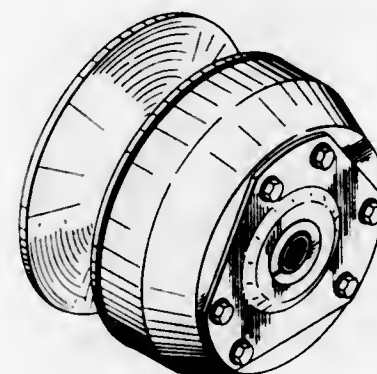
**232,120**  
**TIMING LIGHT**  
 Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.  
 Filed Nov. 16, 1972, Ser. No. 307,160  
 Term of patent 14 years  
 Int. Cl. D10-05

U.S. Cl. D52-6 R



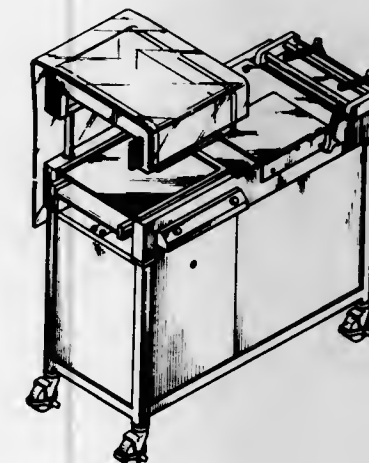
**232,121**  
**TORQUE-CONVERTER CLUTCH**  
 Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.  
 Filed Oct. 6, 1972, Ser. No. 295,514  
 Term of patent 14 years  
 Int. Cl. D15-01

U.S. Cl. D55-1 G



**232,122**  
**PACKAGING MACHINE FOR COMESTIBLES**  
 Bernard Katz, Greenwich, Conn. (% Tele-sonic Trescott, Division of Empsco, Inc., 18-35 38th St., Long Island City, N.Y. 11105)  
 Filed Jan. 2, 1973, Ser. No. 320,494  
 Term of patent 14 years  
 Int. Cl. D15-08

U.S. Cl. D55-1 C



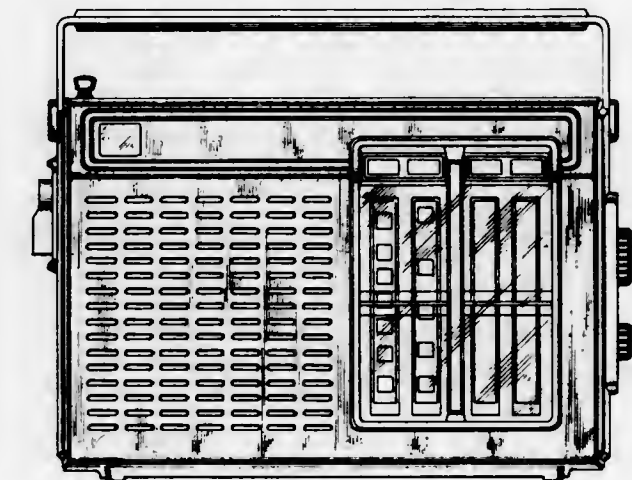
**232,123**  
**SYRINX WIND INSTRUMENT**  
 John S. Sumner, 728 N. Sawtelle Ave., Tucson, Ariz. 85716  
 Filed June 21, 1972, Ser. No. 264,720  
 Term of patent 14 years  
 Int. Cl. D17-02

U.S. Cl. D56-1 C



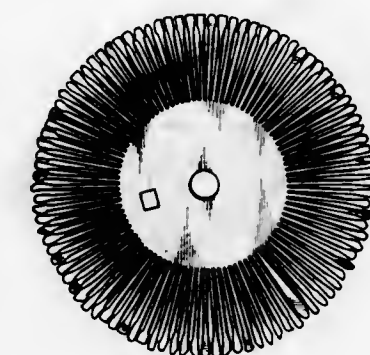
**232,124**  
**MULTIBAND PORTABLE RADIO**  
 Paul J. Klincznik, Manlius, N.Y., assignor to General Electric Company  
 Filed Jan. 12, 1973, Ser. No. 322,934  
 Term of patent 14 years  
 Int. Cl. D14-01

U.S. Cl. D56-4 B



**232,125**  
**CHARACTER PRINT MEMBER**  
 Sen Lin Lee, Oakland, Calif., assignor to Xerox Corporation, Stamford, Conn.  
 Filed Feb. 15, 1973, Ser. No. 332,942  
 Term of patent 14 years  
 Int. Cl. D18-99

U.S. Cl. D64-11 R



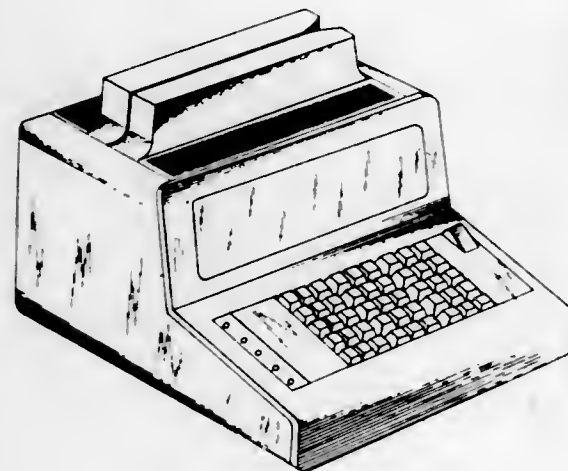


**232,126**  
**TELLER STATION**

Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, and David L. Schaum, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 14, 1973, Ser. No. 370,183  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D64—11 B

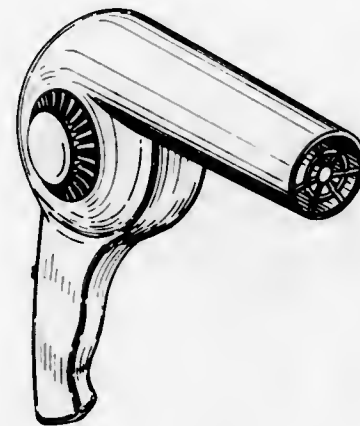


**232,128**  
**ELECTRIC HAIR DRYER**

Leandro P. Rizzuto, Brooklyn, N.Y., assignor to Continental Hair Products, Inc.

Filed Apr. 12, 1973, Ser. No. 350,432  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D86—10 F

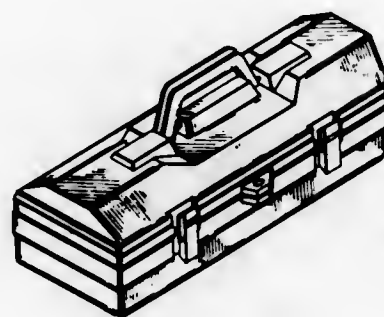


**232,129**  
**TOOL BOX OR SIMILAR ARTICLE**

Jack Evans, Flossmoor, Ill., assignor to J. E. Industrial Molding Inc., Grant Park, Ill.

Filed Aug. 18, 1972, Ser. No. 281,989  
Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—1 R



**232,127**  
**FINGERNAIL CLIPPER OR THE LIKE**

Bernard M. Rock, 1311 York St., Denver, Colo. 80206

Filed Nov. 20, 1972, Ser. No. 308,016  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D86—10 B



**232,130**  
**PURSE**

David L. Burkett, 2566A Alpaca Pass, Dallas, Tex. 75266

Filed Jan. 12, 1973, Ser. No. 322,909  
Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—3 F

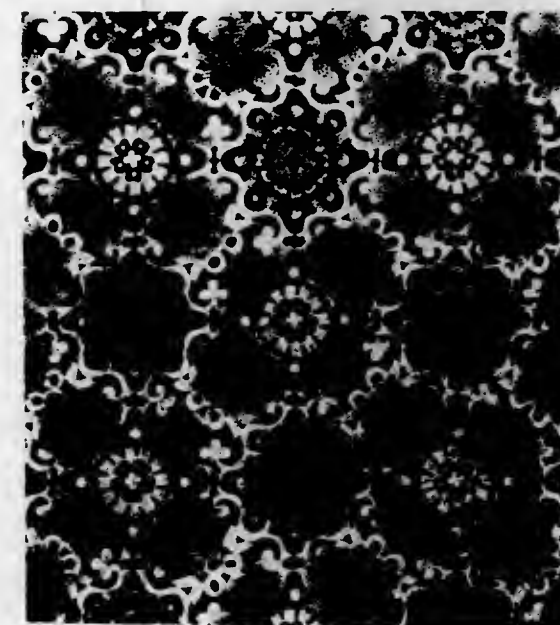


**232,131**  
**CARPET**

Evan Armstrong, Jr., and Doyle Hill, Dalton, Ga., assignors to World Carpets, Dalton, Ga.

Filed Nov. 9, 1972, Ser. No. 305,111  
Term of patent 14 years  
Int. Cl. D6—04

U.S. Cl. D92—4

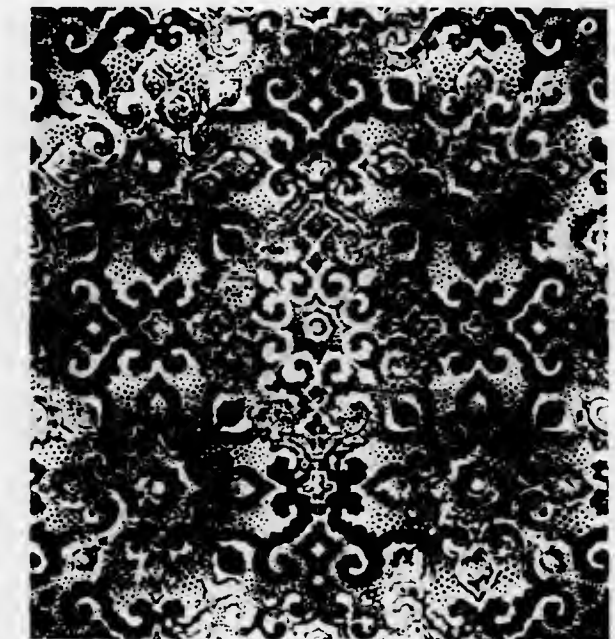


**232,132**  
**CARPET**

Jon Blumenaus, Dalton, Ga., assignor to World Carpets, Dalton, Ga.

Filed Nov. 9, 1972, Ser. No. 305,114  
Term of patent 14 years  
Int. Cl. D6—04

U.S. Cl. D92—4

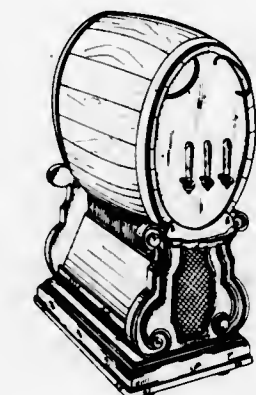


**232,133**

**COMBINED WINE DISPENSER AND CART**  
Irving L. Metzner, Dover, and Daniel O'Connell, Pound Ridge, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,377  
Term of patent 14 years  
Int. Cl. D9—01; D12—02

U.S. Cl. D94—3 C





# LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- AA Quality Construction Material, Inc.: *See—*  
Weiant, David S., 3,824,107.
- AB Bofors: *See—*  
Stalfors, Rolf Lennart, 3,824,019.
- AB Hammars Mekaniska Verkstad: *See—*  
McDonald, Edwin Robert, 3,823,632.
- Abbott, Randle Leslie, to GKN Transmissions Limited. Variable ratio traction drive. 3,823,613, Cl. 74-200.000.
- Abita, Joseph L., to United States of America, Navy. Relief mask for high resolution photolithography. 3,824,014, Cl. 355-75.000.
- Abney, Paul C.: *See—*  
Parenti, Frank V.; Abney, Paul C.; and Spaleny, George R., 3,823,934.
- Abraham, Andreas: *See—*  
Stoetzer, Ernst-Joachim; Wassmuth, Heinrich; and Abraham, Andreas, 3,824,108.
- ACF Industries, Incorporated: *See—*  
Natho, Paul J.; and Whaley, William L., 3,823,911.
- Acme United Corporation: *See—*  
Cummings, Clinton M., 3,823,719.
- Adair, Paul F., to Aeordex, Incorporated. Deceleration fuel flow and emission control for internal combustion engines. 3,823,699, Cl. 123-119.0db.
- Adams, Arnold G.: *See—*  
Fiddler, Theodore E.; and Adams, Arnold G., 3,824,356.
- Adams, Paul B.; Justice, Benjamin; and Marusak, Francis J., to Corning Glass Works. Self-degradable glass containers. 3,824,106, Cl. 106-52.000.
- Adamson, Gerald P., to Dresser Industries, Inc. Digital count rate meter and depth delay system for well logging. 3,824,533, Cl. 340-18.0dc.
- Addor, Roger Williams; and Lamb, Glentworth, to American Cyanamid Company. Thiosemicarbazone fungicides. 3,824,317, Cl. 424-277.000.
- Adler, Robert; and Knitter, Roger W., to Zenith Radio Corporation. Stacked piezoelectric transducer acting as quarter-wave resonator for recording video information. 3,824,352, Cl. 179-100.41p.
- Adventure Products, Inc.: *See—*  
Collins, Walter Wells, 3,823,421.
- Forgett, Valmore J. Jr., 3,823,422.
- Advertisers Display & Exhibits, Inc.: *See—*  
Spitz, Leonard, 3,823,500.
- Aeordex, Incorporated: *See—*  
Adair, Paul F., 3,823,699.
- Aerazur Construtions Aeronautiques: *See—*  
Morel, Georges, 3,823,712.
- Aerazur Construtions Aeronautiques Anciens Etablissements Claude Ethatton: *See—*  
Hatton, Gildas, 3,823,711.
- Agefv, Leonid Matveevich: *See—*  
Vydrin, Vladimir Nikolaevich; and Agefv, Leonid Matveevich, 3,823,593.
- AGFA-Gevaert AG: *See—*  
Schneider, Siegfried; Thate, Kurt; Geyken, Erwin; Kempe, Horst; and Macher, Stephen, 3,823,456.
- Agfa-Gevaert Aktiengesellschaft: *See—*  
Flieser, Engelbert; Pustka, Karel; and Wagensooner, Eduard, 3,824,605.
- Zangenfeind, Helmut; and Nagel, Erich, 3,823,888.
- Agua Marine Manufacturing Limited: *See—*  
Infanger, Arthur W.; and Brownlie, Alan W., 3,823,617.
- Ahmed, Samir A.: *See—*  
Pappalardo, Romano G.; and Ahmed, Samir A., 3,824,423.
- Aidn, Martin; and Ruhland, Alois, to Siemens AG. Electromagnetic relay. 3,824,511, Cl. 335-202.000.
- Air Factors, Inc.: *See—*  
Lambert, Robert R., 3,823,652.
- Air Products and Chemicals, Inc.: *See—*  
Huntzinger, Elwood E.; and Schwartz, Nelson N., 3,824,204.
- Aisin Seiki Kabushiki Kaisha: *See—*  
Torii, Nozomu, 3,823,966.
- Aizawa, Tatsuo: *See—*  
Nihyakumen, Kouzi; Yokoyama, Taizo; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 3,824,101.
- Akashi, Goro; Kitamoto, Tatsuji; and Fujiyama, Massaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,824,128, Cl. 117-235.000.
- Akashi, Teruo: *See—*  
Kubo, Seitoku; Akashi, Teruo; and Hayashi, Chihiro, 3,823,621.
- Akiyama, Tadashi; Fukuda, Ryuhei; Ando, Masanobu; Wada, Norikazu; Umeda, Toshio; and Shiga, Tatsuhide, to Honeywell Inc. Pneumatic control apparatus. 3,823,725, Cl. 137-86.000.
- Akiyama, Tadashi; Fikuda, Ryuhei; Ando, Masanobu; Wada, Norikazu; Umeda, Toshio; and Shiga, Tatsuhide, to Honeywell Inc. Pneumatic control unit. 3,823,726, Cl. 137-86.000.
- Aktiebolaget CTC: *See—*  
Stroberg, John Emil; Thunblom, Nils Birger; and Henriksson, Lars-Goran, 3,823,583.
- Akzona Inc.: *See—*  
Lacoume, Bernard, 3,824,314.
- Akzona Incorporated: *See—*  
Derks, Leendert L. J.; and Koster, Olav E., 3,823,949.
- Griset, Ernest J., Jr., 3,823,449.
- Albertson, Clarence E., to Borg-Warner Corporation. Anti-evasion system for vehicle unsupervised breath testers. 3,824,537, Cl. 340-53.000.
- Albsmeier, Hans; and Gunther, Alfhart, to Siemens Aktiengesellschaft. Method and apparatus for trimming mechanical filters. 3,823,470, Cl. 29-593.000.
- Alden, Paul Peter. Pocket-size dispenser. 3,823,853, Cl. 222-361.000.
- Alderson, S., Company Limited: *See—*  
Wells, Anthony Russell, 3,823,523.
- Aldridge, Alan Albert: *See—*  
Cooper, Ronald Charles; and Aldridge, Alan Albert, 3,824,143.
- Aleksoff, Carl C., to Du Pont de Nemours, E. I., and Company. Mode selective laser line-scanner. 3,824,488, Cl. 331-94.50k.
- Ales, David Edward: *See—*  
Holoubek, George Henry; Ales, David Edward; Harms, Harland Elmer; Erickson, Warren E.; Ditmars, Maurice A.; and Brookhart, J. Keith, 3,823,850.
- Alexandrov, Vladimir Ilich; Osiko, Vyacheslav Vasilievich; and Tatarintsev, Vladimir Mikhailovich. Method of growing monocrystals of ruby from a molten charge. 3,824,302, Cl. 423-625.000.
- Alger, Trygve O., to Harrel Incorporated. Controller with digital integration. 3,824,479, Cl. 328-69.000.
- Allain, Althea S. Color keyed education apparatus. 3,823,492, Cl. 35-35.00j.
- Allen Electric and Equipment Company: *See—*  
Heese, William E., 3,823,758.
- Allen, George Rodger, Jr.; and McEvoy, Francis Joseph, to American Cyanamid Company. 3-Alkyl-3-(benzoyl)propionitriles. 3,824,271, Cl. 260-465.00d.
- Allen, John W., to Stanray Corporation. Reinforced fiberglass plastic roof for box cars. 3,823,518, Cl. 52-53.000.
- Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Multiple solvent miscible flooding technique for use in petroleum formation over-laying and in contact with water saturated porous formations. 3,823,777, Cl. 166-266.000.
- Allen-Bradley Company: *See—*  
Schlicke, Heinz M., 3,824,431.
- Allgemeine Elektrizitaets-Gesellschaft AEG-Telefunken: *See—*  
Etter, Peter; and Hengsberger, Jurgen, 3,824,445.
- Allied Chemical Corporation: *See—*  
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- Allis-Chalmers Corporation: *See—*  
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- Allman, William T.; and Solmax, Gungor M., to Celanese Corporation. Energy absorbent textile structure. 3,823,748, Cl. 139-383.00r.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*  
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- Alnor Instrument Company; div. of Illinois Testing Laboratories, Inc.: *See—*  
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- Alps Electric Co., Ltd.: *See—*  
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- Alverson, Robert L.; and Morris, Howard W., to Carrier Corporation. Air filter retainer. 3,823,533, Cl. 55-493.000.
- Ambrose, Jere B., to Northern Fibre Products Company. Frame spacer. 3,823,429, Cl. 5-345.000.
- American Air Filter Company, Inc.: *See—*  
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- American Cyanamid Company: *See—*  
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Anderson, Arnold L., to Michigan Chemical Corporation. Polyester plastic compositions containing halogenated aryl flame retardants. 3,824,209, Cl. 260-45.90r.  
Anderson, Bror E.; and Schick, Margery L., to Weber Marking Systems, Inc. Stencil sheet and method of making an imaged stencil sheet. 3,824,116, Cl. 117-35.500.  
Anderson, Bror E.; Schick, Margery L.; and Wedyck, Janis E., to Weber Marking Systems, Inc. Stencil sheet and method of making an imaged stencil sheet. 3,824,117, Cl. 117-35.500.  
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Archer, John L.; Tocci, Leonard R.; and Chen, Thomas T., to North American Rockwell Corporation. Multiple bar bubble domain generator. 3,824,565, Cl. 340-174.0tf.

Arciprete, Genio R.; and Martin, Peter G., to Little, Arthur D., Inc. Releasable buffer memory for data processor. 3,824,551, Cl. 340-172.500.  
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Arve, Harold. Machine for thinning and cultivating seedling plants. 3,823,509, Cl. 47-1.430.  
Asada, Chiaki; and Watanabe, Toshiyuki, to Daido Seiko Kabushiki Kaisha. Manganese-nickel-aluminum-copper-molybdenum system age-hardenable steel for plastic molds. 3,824,096, Cl. 75-124.000.  
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Ashley, James R.; and Palka, Frank M., to Sperry Rand Corporation. Stabilized oscillator with output having high spectral purity. 3,824,485, Cl. 331-55.000.  
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Baird, Joseph M., to Hughes Aircraft Company. Millimeter wave imaging system using direct carrier injection. 3,824,593, Cl. 343-17.000.  
Baker, Charles Taft, to Texas Instruments Incorporated. Method of determining concentrations. 3,824,453, Cl. 324-29.000.  
Bakewell, John, to GKN Transmission Limited. Method of and apparatus for machining curved surfaces. 3,823,626, Cl. 82-1.00c.  
Bakke, Elmer L. Combined harvester, grain auger and cleaner. 3,823,819, Cl. 209-12.000.  
Balan, Nicolae Cornel, to Trustul de Constructii Industriale Cluj. Prismatic cooling-element assembly for water-cooling towers. 3,823,925, Cl. 261-98.000.

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Beaussay, Guy; Morand, Jean Francois; and Rossignol, Pierre, to Electronique Marcel Dessault. Apparatus for maintaining electronic equipment in an airplane below a certain temperature. 3,824,598, Cl. 343-705.000.  
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Benowitz, Sander. Electromagnetic material handling system utilizing offset pole spacing. 3,824,516, Cl. 335-284.000.  
Berg, Edward A., to Data Transmission Company. Data transmission network. 3,824,597, Cl. 343-204.000.  
Berg, Knut Ivar. Rotary hydraulic device with nutating gear. 3,823,649, Cl. 91-480.000.  
Berger, John M., to HMW Industries, Inc. Solid state watch display switch. 3,823,550, Cl. 58-50.00r.  
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Bishop, Thomas M. Stabilizer for steerable wheels of a vehicle. 3,823,957, Cl. 280-94.000.

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Bloomquist, Orville E. Vertical take-off and landing aircraft. 3,823,897, Cl. 244-12.000.

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Bogelsberg, Dieter; and Stricker, Gunter. Method of twisting elements to form an electrical cable having a twist whose direction alternates from section to section. 3,823,536, Cl. 57-34.000.

Boggs, Jack L. Fifth wheel safety lock. 3,823,960, Cl. 280-432.000.

Boggs, Roger L.; Balzer, David John; and Haslett, Melvin, to Caterpillar Tractor Co. Track pin with vented rubber plug. 3,823,989, Cl. 305-14.000.

Bok, Hendrik F.; and St. Onge, Eugene, to In-Line Technology, Inc. Solution agitation process. 3,824,137, Cl. 156-18.000.

Boley, Robert D.; and Grass, William E., to Square D Company. Relay with time delay coil. 3,824,434, Cl. 317-141.000.

Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, to Hoffman-La Roche Inc. Substituted hydrazine derivatives and process for the manufacture thereof. 3,824,288, Cl. 260-565.000.

Bolton, Theodore S., to Carrier Corporation. Apparatus for opening exhaust and vent ports of an air conditioning unit. 3,823,574, Cl. 62-262.000.

Bombardi, Aldo L. Page turning mechanism. 3,823,638, Cl. 84-503.000.

Boom, Abraham A., to Celanese Corporation. Vacuum luck for plasma treatment of substrates. 3,823,489, Cl. 34-242.000.

Boom, Abraham A., to Celanese Corporation. Method for plasma treatment of substrates. 3,824,398, Cl. 250-325.000.

Boosen, Karl-Josef, to Lonza Ltd. Process for the production of tetrionic acid. 3,824,255, Cl. 260-343.600.

Borden, John V. Pulsed air toothbrush and method. 3,823,710, Cl. 128-40.000.

Borello, Giuseppe. Detergent compositions and methods for making same. 3,824,189, Cl. 252-99.000.

Borg-Warner Corporation. See—  
Albertson, Clarence E., 3,824,537.

Hoppesch, Joseph P., 3,823,601.

Venema, Harry J., 3,824,079.

Borner, Manfred, to Licentia Patent-Verwaltungs-GmbH. Electro-mechanical delay line wherein core exhibits higher mean refractive index than envelope. 3,824,505, Cl. 333-30.000.

Bornzin, James H.; and Swanson, William C., to International Harvester Company. Sickle bar mower and drive therefor. 3,823,534, Cl. 56-296.000.

Bosch, Robert, GmbH. See—  
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Mutschler, Ulrich; and Rittmannsberger, Norbert, 3,823,696.

Tittmann, Egon; and Rometsch, Werner, 3,823,558.

Bosse, Frank, to Windmoller & Holscher. Method of impulse welding layers of plastic material. 3,824,144, Cl. 156-306.000.

Bott, Wolfgang. See—  
Hirn, Helmut; and Bott, Wolfgang, 3,823,741.

Bottoff, Richard D. Football practice apparatus. 3,823,939, Cl. 273-55.000.

Boulton, Cecil Leslie, to Smiths Industries Limited. Trip mechanisms. 3,823,612, Cl. 74-100.000.

Bout, Bernardus J. See—  
Van Der Walt, Nicolaas; Bout, Bernardus J.; and Newton, Timothy J., 3,824,422.

Boutaine, Jean-Louis; Bujas, Roko; and Tortel, Jean, to Commissariat a l'Energie Atomique. Method and apparatus for checking positions of bottom end walls of blind holes formed in a part and in particular in a graphite block. 3,824,396, Cl. 250-312.000.

Bouy, Pierre; and Malzac, Guillaume. Dismantleable bipolar electrodes including electrical contact means between the electrode portions. 3,824,173, Cl. 204-284.000.

Bowser, Harold O. Livestock watering fountain. 3,823,692, Cl. 119-78.000.

Boyer, Wilhelm. See—  
Ritter, Josef; Gott, Hans; Ritter, Klaus; Gamillscheg, Otto; Boyer, Wilhelm; and Ritter, Gerhard, 3,823,749.

Boyles, Robert L., to General Electric Company. Digital clock. 3,823,552, Cl. 58-125.000.

BP Chemicals International Limited. See—  
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Brachthausen, Kunibert; and Langmaack, Jurgen, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method of increasing the cooling effect of a rotary kiln-satellite cooler and device for carrying out the method. 3,824,069, Cl. 432-80.000.

Bracich, Louis A., to Nu-Air Humidifier Corporation. Humidifier. 3,823,926, Cl. 261-106.000.

Bradley, Howard B.; and Jellinek, Maurice H., to Union Carbide Corporation. Production of silicon metal from dichlorosilane. 3,824,121, Cl. 117-106.000.

Brady, Thomas Eugene. See—  
Loffelman, Frank Fred; and Brady, Thomas Eugene, 3,824,188.

Brain, Alfred E., to American Express Investment Management Company. System for differential particle counting. 3,824,393, Cl. 250-222.000.

Bratko, Rudolph S. Infra-red process burner. 3,824,064, Cl. 431-328.000.

Braun Aktiengesellschaft. See—  
Gersing, Eberhard, 3,824,432.

Braverman, Maynard. See—  
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Bre, Michel, to Saint-Gobain Industries. Acoustical panels. 3,823,794, Cl. 181-33.000.

Brehm, Michael; and Rutsch, Peter, to Freudenberg, Carl. Foam polyurethane boot with lining. 3,823,493, Cl. 36-2.500.

Breiter, Marcus. Patch pocket construction. 3,823,420, Cl. 2-247.000.

Breitbart, George J. Adjustable trouser-like garment. 3,823,419, Cl. 2-227.000.

Brennan, Ambrose K., Jr.; and Lewis, Michael J., to Teledyne, Inc. Continuous processor for treating material. 3,823,921, Cl. 259-192.000.

Brenner, William; and Cooper, Herbert. Pollution control device. 3,823,970, Cl. 294-19.000.

Bretton, David Charles; and Chown, Peter Charles. Apparatus for marshalling elongated articles. 3,823,815, Cl. 198-33.000.

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Tomalia, Donald A.; Brewbaker, James L.; and Ojha, Narayanlal D., 3,824,269.

Bricout, Rene Leon. Automatically and continuously variable transmission. 3,823,620, Cl. 74-675.000.

Bridge, Edward W. Jr. Meat tenderizer. 3,823,441, Cl. 17-26.000.

Brienza, Michael J.; and Clobes, Arnold R., to United Aircraft Corporation. Solid state single frequency laser. 3,824,492, Cl. 331-94.500.

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Bronner, Jean Yves Rene Lucien; Mougél, Didier Jean; and Himmelsbauer, Alain Jacques, to U.S. Philips Corporation. Arrangement for collecting and/or distributing information via transmission lines. 3,824,543, Cl. 340-151.000.

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Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, to Hoffmann-La Roche Inc. Intermediates for the preparation of alkyl substituted resorcinols. 3,824,272, Cl. 260-468.000.

Brown & Root, Inc. See—  
Crout, Jesse W.; Koehler, Albert M.; and Shaw, Larry K., 3,823,564.

Brown, Barry M.; and Ray, Elbert L., to Eastman Kodak Company. Simplified process for manufacturing cellulose acetate reverse osmosis membranes. 3,824,299, Cl. 264-41.000.

Brown Group, Inc. See—  
Welsh, Ivan Eugene II; and Heckman, Ray Flow, 3,823,430.

Brown, Harold J., to Lorain Products Corporation. Regulator circuit having a clamped regulating wave. 3,824,443, Cl. 321-5.000.

Brown, Melancthon Starr, deceased (by Kohn, Gustave K., Administrator), to Chevron Research Company. 1-Carboxamidothio-3-aryl ureas. 3,824,281, Cl. 260-545.000.

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Brown, William R.; and Mullikin, Noel C., to Malloy, P. R., & Co., Inc. Electrical timer with improved gear-cam structure. 3,824,357, Cl. 200-38.000.

Brownlie, Alan W. See—  
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Broyer, Robert, to Regie Nationale des Usines Renault and Automobiles Peugeot. Steering wheels for automobile vehicles. 3,823,618, Cl. 74-552.000.

Brunel, L. E. Andre, to Microsystems International Limited. Driver circuit. 3,824,408, Cl. 307-214.000.

Bruun, Peter. Foam-tightened edge joint for structural panels. 3,823,525, Cl. 52-758.000.

Bryan, John; and Hart, Frederick Harry, to Pilkington Brothers Limited. Welded multiple glazing units. 3,824,088, Cl. 65-40.000.

Bryers, Richard William; and Shenker, Jack David, to United States of America, Environmental Protection Agency. Fluidized bed heat exchanger. 3,823,693, Cl. 122-2.000.

Buchanan, James B., to Du Pont de Nemours, E. I., and Company. Substituted 0-carbamylhydroxamate insecticides. 3,824,320, Cl. 424-298.000.

Buchner, Robert Bertold, to U.S. Philips Corporation. Method of transferring information. 3,824,349, Cl. 179-15.000.

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Buczek, Carl J.; Chenausky, Peter P.; and Freiberg, Robert J., to United Aircraft Corporation. Unstable ring laser resonators. 3,824,487, Cl. 331-984.500.

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Budzinski, Roger R., to Park-Ohio Industries, Inc. Method and apparatus for hardening irregular internal surfaces. 3,823,927, Cl. 266-5.000.

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Bulten, Eric Jan, to Cosan Chemical Corporation, mesne. Preparation of monohydrocarbyl tin trihalides. 3,824,264, Cl. 260-429.700.

Bumuelier, Hermann Karl. Articulated vehicle. 3,823,902, Cl. 248-2.000.

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Burch, James Morris; Wilton, Raymond John; Reid, Colin David; and Wall, Michael Richard, to Holotron Corporation, mesne. Method of and apparatus for detecting surface form irregularities. 3,823,604, Cl. 73-71.300.

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Butler, Vaughn H., to Burlington Industries, Inc. Assembly for both rotatably driving the suction draw-off tube and operating the slitter mechanism of a circular knitting machine. 3,823,582, Cl. 66-147.000.

Buu-Hoi, Nguyen Phuc; Lambelin, Georges; and Gillet, Claude, to Madan AG. 4-Allyloxy-3-chloro-phenylacetic acid. 3,824,277, Cl. 260-521.000.

Buzano, Michel, to Societe Rhodiaca. Effect voluminous yarn. 3,823,541, Cl. 57-144.000.

Bybee, Samuel M. Hook setter apparatus. 3,823,501, Cl. 43-15.000.

Cachat, John F., to Park-Ohio Industries, Inc. Apparatus for heating a viscous liquid. 3,824,364, Cl. 219-10.510.

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Caldwell, David H.; and Barth, Edwin F., to United States of America, Environmental Protection Agency. Ammonia elimination system. 3,824,185, Cl. 210-3.000.

Campbell, Trevor G.; and Russey, James W., to Caterpillar Tractor Co. Electromagnetic bucket positioner for heavy equipment vehicles and the like. 3,823,647, Cl. 91-358.000.

Camras, Marvin, to IIT Research Institute. Transducer system. 3,824,619, Cl. 360-36.000.

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Carlson, Norman R.; Halcy, Paul H.; and Enns, Mark K., to Westinghouse Electric Corporation. System and method for converging iterations for loadflow solutions in a hybrid loadflow computer arrangement having transient stability analysis capability. 3,824,24, Cl. 444-1.000.

Carlson, Richard L. Flat stock cutter. 3,823,635, Cl. 83-384.000.

Carlstrom, Borge Ingmar. Fiber-reinforced plastic tubing with continuous fibers, for pressurized water conduits in the ground. 3,823,746, Cl. 138-144.000.

Carnall, Edward, Jr.; and Parsons, William F., to Eastman Kodak Company. Cadmium sulfide infrared transmitting optical elements. 3,824,301, Cl. 423-561.000.

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Cochran, Thomas L., Jr., to American Air Filter Company, Inc. Freeze protection device in heat pump system, 3,823,572, Cl. 62-160.000.  
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- Cole, Edward N., to General Motors Corporation. Internal combustion engine and method of operation for exhaust emission control, 3,823,555, Cl. 60-274.000.  
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Cotton, Curran D., to Maytag Company, The. Ground sensitive control for electrical apparatus, 3,824,477, Cl. 328-4.000.  
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- Economics Laboratory, Inc.: See—  
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- Edmond, Tibor O.: See—  
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- Edwards, Joseph L.; Penland, William D.; and Warren, James B., to Square D Company. Calibratable pressure switch with adjustment means. 3,824,358, Cl. 200-83.00s.
- Edwards, Rebecca M.: See—  
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- Egan, Daniel J., to Londa Aetz Fabric Co. Alkali soluble rayon textile material and process for producing same. 3,824,078, Cl. 8-120.000.
- Eickmann, Karl. Hydraulically controlled fluidstream-driven aircraft. 3,823,898, Cl. 244-55.000.
- Eisenberg, Alvin S., to Q-TV, Inc. Prompting device for lecturers and television announcers. 3,824,339, Cl. 178-7.810.
- Eklund, Phillip R., to United States of America, Air Force. Unbonded flexure seal design. 3,823,951, Cl. 277-208.000.
- Elder, George; and Lehnhoff, Hans F., to Schlage Lock Company. Method of producing lock key blanks. 3,823,596, Cl. 72-324.000.
- Eldridge, Ralph Gray: See—  
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- Electron Emission Systems, Inc.: See—  
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- Electronic Associates, Inc.: See—  
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- Patmore, James R.; and Sidoti, Joseph E., 3,823,871.
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- Electronique Marcel Dessault: See—  
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- Electroprint, Inc.: See—  
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- Elitex Zavody textilního strojírenství, generalni reditelství: See—  
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- Elkamet-Werk Lahn-Kunststoffe GmbH: See—  
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- Ellis, Charles W., to Lorain Products Corporation. Phase responsive control circuit. 3,824,406, Cl. 307-87.000.
- Ellis, Vincent Simon, to Imperial Chemical Industries Limited. Process for bonded fibrous structure and product thereof. 3,824,146, Cl. 161-150.000.
- Elsby, Ian Eric. Valve. 3,823,732, Cl. 137-436.000.
- Elward, John R.; and Inglis, Stanley B., to Fibreboard Corporation. Tear strip arrangement for containers. 3,823,866, Cl. 229-51.0ts.
- Emerson, John Ernest. Pipe joint. 3,823,965, Cl. 285-174.000.
- Energetics Science, Inc.: See—  
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- Oswin, Harry G.; and Blurton, Keith F., 3,824,168.
- Engel, F. William; Engel, Robert S.; Derbes, Gerald J.; and Dusseau, M. Walter. Portable radio/tape recorder charging and locking system. 3,824,472, Cl. 325-355.000.
- Engel, Robert S.: See—  
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- Engineering Technology Analysts, Inc.: See—  
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- English Clays Lovering Pochin & Company Limited: See—  
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- Enk, Larry G.: See—  
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- Enns, Mark K.: See—  
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- Enshu Limited: See—  
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- Enviro/Tech Sciences, Inc.: See—  
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- Envirotech Corporation: See—  
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- Epstein, Joseph William; and Goldman, Leon, to American Cyanamid Company. 7,8,9,10-Tetrahydro-2-methoxy-7-morpholinomethylcyclohept [6] indol-6 (5H) one. 3,824,234, Cl. 260-247.50r.
- Epstein, Martin P.: See—  
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- Erickson, Allen H.; Pogonis, Edmunds M.; and Teletzke, Gerald H., to Sterling Drug Inc. Biotreatment process. 3,824,186, Cl. 210-7.000.
- Erickson, Warren E.: See—  
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- Ericson, Per E.: See—  
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- Erikson, Uno: See—  
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- Ermoglio, Roger: See—  
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- Ernst, Richard J.: See—  
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- Eshelman, Wayne Lee, to Tektronix, Inc. Vector generator. 3,824,382, Cl. 235-150.530.
- Eshghy, Siavash: See—  
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- Eshraghian, Kamran, to U.S. Philips Corporation. Sequential switching device. 3,824,480, Cl. 328-75.000.
- Esser, Wilhelm Cornelis Johannes, to AMP Incorporated, mesne. Connector for coaxial cable. 3,824,528, Cl. 339-97.00c.
- Esso Research and Engineering Company: See—  
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- Estradier, Françoise: See—  
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- Gorsich, Richard D., 3,824,265.
- Etter, Peter; and Hengsberger, Jurgen, to BBC Brown Boveri & Company Limited and Allgemeine Elektrizitäts-Gesellschaft AEG-Telcfunken. Choke arrangement for limiting switch-in current flow through thyristor valves of high-voltage converter circuit. 3,824,45, Cl. 321-11.000.
- Evans, Anthony Glyn: See—  
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- Evans, William Robert, to AMP Incorporated. Wire-in-slot electrical connections. 3,824,527, Cl. 339-97.00r.
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- EVG Entwicklungs- u. Verwertungsgesellschaft m.b.H.: See—



- Ritter, Josef; Gott, Hans; Ritter, Klaus; Gamillscheg, Otto; Boyer, Wilhelm; and Ritter, Gerhard, 3,823,749.
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- Fabri, Jean; Friberg, Jean; and Siestrunk, Raymond, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Centrifugal super-sonic compressor. 3,824,029, Cl. 415-109.000.
- Fabrica Espanola Magnetos, S.A.: See—  
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- Factory Mutual Research Corporation: See—  
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- Fagan, Franklin G., Jr., to Mallory, P. R., & Co., Inc. Heart pacer rechargeable cell and protective control system. 3,824,129, Cl. 136-6.00r.
- Faille, Harold E., to Guilford Mills, Inc. Beam shafting apparatus. 3,823,451, Cl. 28-41.000.
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- Farwerke Hoechst AG: See—  
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- Farley, Larry, to Narad, Inc. Ceiling supported load spacer. 3,823,675, Cl. 105-369.00b.
- Farmos, George T. Drafting device. 3,823,478, Cl. 33-30.00c.
- Farrell, Robert E., to Improved Machinery Inc. Track-type molding apparatus and carriage means therefor. 3,824,062, Cl. 425-451.000.
- Fasulati, Rado Kirilovich: See—  
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- Fava, Ermengildo; and Sibilia, Ermanno, to Oce-vander Grinten N.V. Endless belt aligning system. 3,823,614, Cl. 74-241.000.
- Feauchet, Jacob Edward, to Dresser Industries, Inc. Method and apparatus for controlling hydraulic drifters. 3,823,784, Cl. 173-1.000.
- Federal-Mogul Corporation: See—  
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- Fehner, Francis P. Active thin film device based on crossed discontinuous thin films and method. 3,824,436, Cl. 317-234.00r.
- Fehrenbacher, Wolfgang: See—  
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- Feldman, Bernard, to Transparent Conductors, Inc. Electronically actuated liquid crystal watchface with conventional time format. 3,823,549, Cl. 58-50.00r.
- Fellows, Thomas George: See—  
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- Fellows, Thomas George; Garstin, David John Ivor; and Charity, Michael, to Tracked Hovercraft Limited. High speed ground transportation systems. 3,823,672, Cl. 104-148.00s.
- Fencil, Vernon R.; Rozc, Albert; and Naureckas, Edward M., to Grotnes Machine Works, Inc. Apparatus for wrapping pipe with multiple strips. 3,823,883, Cl. 242-7.230.
- Fennell, John Richard: See—  
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- Ferranti Limited: See—  
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- Ferrara, Rose S. Easy-on bands for rolled meats. 3,823,442, Cl. 24-16.00r.
- Feucht, Alfred; and Guidi, Vincenzo, to BBC Aktiengesellschaft Brown, Boveri & Cie. Apparatus for producing arcuate grooves in a cylindrical member. 3,823,643, Cl. 90-15.00a.
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- Fibreboard Corporation: See—  
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- Fiddler, Theodore E.: See—  
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- Fiddler, Theodore E.; and Adams, Arnold G., said Adams assor. to said Fiddler, Theodore E. Actuator for electro-motive force and fluid pressure force. 3,824,356, Cl. 200-61.860.
- Fikuda, Ryuhei: See—  
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- Financial Security Systems, Inc.: See—  
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- Finger, John F., to Sioux Steam Cleaner Corporation. Air conditioning apparatus. 3,823,768, Cl. 165-48.000.
- Finkelstein, Morris Baer, to RCA Corporation. Recording web tension control. 3,823,896, Cl. 242-191.000.
- Fioravanti, Leonardo, to Carrozzeria Pininfarina S.p.A. Motor vehicle bodywork with rigid sunshine roof. 3,823,977, Cl. 296-137.00b.
- Fiorella, John J. Flavored stitter for alcoholic beverages. 3,824,322, Cl. 426-134.000.
- Fischer, Robert Frederick; Schmidt, Paul Herman; and Spencer, Edward Guerrant, to Bell Telephone Laboratories, Incorporated. Single wall domain propagation arrangement. 3,824,568, Cl. 340-174.00f.
- Fisher, William J., 1/2% to Braverman, Maynard. Machine for processing flexible metallic conduit. 3,823,454, Cl. 29-33.00k.
- Fitzgerald, Thomas; and Edwards, Rebecca M., to Singer Company, The, mesne. Information segregation apparatus. 3,823,963, Cl. 283-66.000.
- Flax, Valar, to Continentalplastic AG. Apparatus for bonding a thermoplastic tubular part to the periphery of a thermoplastic tube head. 3,824,145, Cl. 156-580.000.
- Feigle, Donald Earl, to Black and Decker Manufacturing Company, The. Air tool muffler. 3,823,795, Cl. 181-36.00a.
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- Forgett, Valmore J. Jr., to Adventure Products Inc. Apparel belt and buckle therefor. 3,823,422, Cl. 2-321.000.
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- Fortune, William S. Raw material feeder system. 3,823,628, Cl. 82-2.700.
- Fowler, James E., to Deering Milliken Research Corporation. Apparatus to produce nonwoven fabric. 3,824,052, Cl. 425-83.000.
- Fowler, John T., to Laitram Corporation, The, mesne. Dual mode angle encoder. 3,824,587, Cl. 340-347.00p.
- Fox, Ralph W., to Philco-Ford Corporation. Document restraining and reading apparatus. 3,824,376, Cl. 235-61.11j.
- Frank, Albrecht; and Traber, Walter, to Ciba-Geigy Corporation. Esters of phenoxyphenylalkenoic acids. 3,824,274, Cl. 260-473.00r.
- Frederick, John E.; and Peterson, Howard H., to Anaconda Company, The. Strand package. 3,823,894, Cl. 242-137.100.
- Freeman, Michael Walter. Segmental dies. 3,823,598, Cl. 72-467.000.
- Freeman, Raymond; and Hill, Howard D. W., to Varian Associates. Pulse modulated fourier transform magnetic resonance spectrometer utilizing quadrature phase detection and high pass filter to eliminate undesired strong resonance lines. 3,824,451, Cl. 324-0r.
- Freeman, Raymond; and Hill, Howard D. W., to Varian Associates. Fourier transform nuclear magnetic resonance spectrometer employing means for generating random pulse intervals to avoid anomalies due to net transverse magnetization. 3,824,452, Cl. 324-50r.
- Freiberg, Robert J.: See—  
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- French, Richard Charles, to U.S. Philips Corporation. Privacy transmission system. 3,824,467, Cl. 325-32.000.
- Frenkel, Mark Isaakovich. Uniflow valve. 3,823,735, Cl. 137-512.150.
- Frenzl, Otto, to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation. Nozzle for use in hot liquid ejector pumps, and related process. 3,823,872, Cl. 239-8.000.
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- Fries, Bernard A.; and Parker, Charles K., to Chevron Research Company. Radiometric assay of particulate matter in fluids. 3,824,395, Cl. 250-308.000.
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- Fritzlen, Thomas L., to Reynolds Metal Company. Clad composites and aluminous metal compositions for cladding. 3,824,083, Cl. 29-197.500.
- Fry, Arthur Francis, to Applied Chemicals Pty. Ltd. Foaming system and improved foaming device. 3,823,727, Cl. 137-88.000.
- Fry, Douglas James; and Keogh, Patrick Joseph, to Ilford Limited. Production of selenium compounds. 3,824,282, Cl. 260-551.00r.
- Fuhr, Karl: See—  
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- Fujiwara, Hisao; and Sakamoto, Kentaro, to Kabushiki Kaisha Keiaisha Seisakusho. Buffer device used for industrial robot machine. 3,823,800, Cl. 188-303.000.
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- Fussell, Theodore John, Jr., to Eastech, Inc. Bluff body flowmeter utilizing a moveable shutter ball responsive to vortex shedding. 3,823,610, Cl. 73-194.00h.
- Galantay, Eugene E., to Sandoz-Wander, Inc. 1,6-Disubstituted pyrocatechol derivatives. 3,824,278, Cl. 260-521.00r.
- Galyon, George Tipton, to International Business Machines Corporation. Method of determining the thickness of contiguous thin films on a substrate. 3,824,017, Cl. 356-108.000.
- Gamillscheg, Otto: See—  
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- Garland, Thomas H.; Duck, Sherman W.; Jeffers, Frederick J.; and McClure, Richard J., to Bell & Howell Company. Multi-color magnetic image recording and media. 3,824,601, Cl. 346-74.100.
- Garner, Lloyd L., to Smith International, Inc. Drill bit center jet. 3,823,789, Cl. 175-340.000.
- Garnier, Andre, to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies. Process and apparatus for unnealing the weld bead of a welded metallic tube. 3,824,366, Cl. 219-10.770.
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- Garrison, Erskine P.; and Tschirky, John E., to Smith International, Inc. Reverse circulating sub for fluid flow systems. 3,823,788, Cl. 175-94.000.
- Garst, John M., to Owens-Corning Fiberglass Corporation. Method and apparatus for control of conditions in a process. 3,824,387, Cl. 235-151.100.
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- General Electric Company: See—  
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- General Motors Corporation: See—  
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- General Signal Corporation: See—  
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- Gentile, Charles J., to Orange Products, Inc. Game ball component and game ball made therefrom. 3,823,940, Cl. 273-59.00r.
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- Gersing, Eberhard, to Braun Aktiengesellschaft. Battery igniter. 3,824,432, Cl. 317-79.000.
- Gerstien, David E. Device for forming lightweight paper into rolls without any core. 3,823,887, Cl. 242-56.200.
- Gerum, Erich, to Diehl. Crystal oscillator, especially for clocks and watches. 3,824,495, Cl. 331-116.00r.
- Getz, Gary R., to McNeil Corporation. Tire holder and handler. 3,824,048, Cl. 425-28.00r.
- Geyken, Erwin: See—  
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- Giehler, Herbert, to Elkamet-Werk Lahn-Kunstsoble GmbH. Device for making hollow bodies from thermoplastic material by rotation-melting. 3,824,061, Cl. 425-435.000.
- Gilbert, Howard E. Adjustable frame. 3,823,499, Cl. 40-155.000.
- Gilbert, Kenneth E., to United States of America, Army. Etching of aluminum fluidic devices. 3,824,136, Cl. 156-8.000.
- Gilbert, Ronald Albert, to Rolls-Royce (1971) Limited. Turbine casing for a gas turbine engine. 3,824,031, Cl. 415-135.000.
- Gilinson, Philip J., Jr., to Massachusetts Institute of Technology. Capacitive-inductive bridge type electrical suspension. 3,823,990, Cl. 308-10.000.
- Gill, Robert E., 1/2 to Snyder, Harry A. Joint combination actuated and key actuated padlock. 3,823,584, Cl. 70-21.000.
- Gillet, Claude: See—  
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- Gillette, Timothy C., to Concord Computing Corporation. Touch-tone signal generation system. 3,824,484, Cl. 331-48.000.
- Gilmore, John J.: See—  
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- Girling Limited: See—  
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- Ogilvie, Martin Bruce, 3,823,651.
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- GKN Transmission Limited: See—  
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- GKN Transmissions Limited: See—  
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- Glaser, David; and Levine, Joel M., to Burroughs Corporation. Gas panel display apparatus. 3,824,582, Cl. 340-336.000.
- Glaser, Donald A., to Widde-Glaser, Inc. Expandable roll core shaft unit. 3,823,892, Cl. 242-72.000.
- Glass, Floyd M., to United States of America, Atomic Energy Commission. Magnetic self-latching pressure switch. 3,824,512, Cl. 335-205.000.
- Glaunsinger, Heinz: See—  
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- Glaze, Thurman A. Automatic wiper and light control. 3,824,405, Cl. 307-10.00s.
- Gloge, Detlef Christoph; and Marcattili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Graded-index optical fiber. 3,823,997, Cl. 350-96.00w.
- Glover, Douglas Wade, to AMP Incorporated. Electrical connector assembly. 3,824,524, Cl. 339-60.00r.
- Glover, Douglas Wade, to AMP Incorporated. Positive stop high voltage connector. 3,824,526, Cl. 339-94.00r.
- Glover, Douglas Wade; Gardner, Mervin Amos; and Johnson, Erlon Fitch, to AMP Incorporated. Low voltage terminal strip capable of withstanding high voltage transients. 3,824,553, Cl. 339-198.00a.
- Glushko, Mikhail Fedorovich; Skaltsky, Viktor Klimentievich; Anastasiadi, Emmanuil Filipovich; and Davydov, Jury Lvovich. Method of making spun multi-wire articles. 3,823,543, Cl. 57-166.000.
- Glyco-Metall-Werke Daelen & Loos GmbH: See—  
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- Golden, Alvin C. Gaff hook. 3,823,971, Cl. 294-26.000.



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Gordon, Robert E., to Monsanto Company. Tank with integral remotely controlled power actuated bottom valve. 3,823,731, Cl. 137-395,000.  
Gordon, Ronnie D., to Continental Oil Company. Preparation of ethers. 3,824,295, Cl. 260-614,000.  
Gorsich, Richard D., to Ethyl Corporation. Tri-n-amy lead salt of saturated aliphatic monocarboxylic acid. 3,824,187, Cl. 252-1,000.  
Gorsich, Richard D., to Ethyl Corporation. Preparation of trialkyl lead salts of aliphatic monocarboxylic acids. 3,824,265, Cl. 260-436,000.  
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Gott, Hans: See—  
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Gould, George K.; and Sarabia, Armando Belmares, to Teletronics International, Inc. Editing system and method. 3,824,336, Cl. 178-6,800.  
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Griffin, Alfonso. Desalination system. 3,824,156, Cl. 202-180,000.  
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Griset, Ernest J., Jr., to Akzona Incorporated. Apparatus for interlacing yarns. 3,823,449, Cl. 28-1,400.  
Grob, Konrad, to Gutmann, Alfred Gesellschaft fur Maschinenbau. Device for crushing large molding sand pieces and for separating residual iron parts therefrom. 3,823,881, Cl. 241-79,100.  
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Gucker, George C., to Potter Instrument Company, Inc. System for reducing cross talk of unselected magnetic heads into a selected head. 3,824,623, Cl. 360-124,000.  
Guichard, Jean, to Centre d'Etudes Techniques des Industries de l'Habillement. Machine for turning in the edge of a piece of flexible sheet material, especially a textile fabric. 3,823,935, Cl. 270-61,000.  
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- Hoffman, Simon J. Blade attachment means for saber saw assembly. 3,823,473, Cl. 30-338.000.
- Hoffman-La Roche Inc.: See—  
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- Hofmann, Gottfried; and Wagner, George J., to United States Steel Corporation. Ramp-type apparatus for disconnecting and storing a flexible starter bar. 3,823,763, Cl. 164-282.000.
- Hofmeister, Helmut: See—  
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- Hojnacki, Donald G., to Coilecraft, Inc. Convergence magnet and housing assembly. 3,824,514, Cl. 335-210.000.
- Holanek, Stanislaw; and Stolpa, Karel, to Chirana Zavody Zdravotnickej techniky Odborovy podnik. Suppository introducer. 3,823,715, Cl. 128-264.000.
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- Holmes, Billy G., to Mobil Oil Corporation. Oil recovery method by oxidation and forming surfactants in situ. 3,823,776, Cl. 166-261.000.
- Holmes, Karl A.; Kneppshield, James R.; and Knutsen, Dale E., to United States of America, Navy. Aerial launch system. 3,823,901, Cl. 244-118.00r.
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- Akiyama, Tadashi; Fukuda, Ryuhei; Ando, Masanobu; Wada, Norikazu; Umeda, Toshio; and Shiga, Tatsuhide, 3,823,726.
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- Horvath, Paul J. Vehicle tamper alarm system. 3,824,539, Cl. 340-65.000.
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- Kanno, Masashi; Miki, Sukeichi; and Takczaki, Tsunco, to Matsushita Electric Industrial Co., Ltd. FM stereo demodulator. 3,824,346, Cl. 79-15.0bt.
- Karafian, Maxim: See—  
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- Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, to Telephon- und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne. Process and apparatus for joining a tubular thermoplastic container jacket, by means of ultrasonics, to a thermoplastic cap to form a liquid-tight seal. 3,824,138, Cl. 156-69.000.
- Kartaschoff, Peter. Atomic beam resonator having a confocal conies field geometry in the second state selector. 3,824,394, Cl. 250-251.000.
- Kashimoto, Mitsugi, to Alps Electric Co., Ltd. Multichannel magnetic head. 3,824,622, Cl. 360-125.000.
- Kasubick, Robert V., to Pfizer Inc. Direct mono-esterification of aryl-malonic acids. 3,824,275, Cl. 260-475.0sc.
- Kato, Hiroshi: See—  
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- Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Takahisa, Kato; Nagai, Masayuki; and Iwatani, Akitoshi, to Daikin Kogyo Kabushiki Kaisha. Oil- and water repellent composition consisting of a fluorine containing polymer, selected salts and an antistatic gent. 3,824,126, Cl. 117-139.50r.
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- Kawasaki, Harumi; and Nakajima, Tohru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Pattern recognizing systems. 3,824,546, Cl. 340-146.30f.
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- Kaye, Howard, to Research Corporation. Non-cyclopolymerized poly-l-vinyluracils. 3,824,225, Cl. 260-88.30r.
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- King, Laurence F., to Esso Research and Engineering Company. Organotin salts of hydroxy-substituted alkanolic acids stabilizers for polyvinyl chloride. 3,824,210, Cl. 260-45.75k.

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- Kurkjian, Gregory A., Jr., to Pratt, Henry, Company. Valve for installation in flume. 3,823,913, Cl. 251-305.000.
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- Lilly, Malcolm Douglas; Kay, Garth; Wilson, Richard John Hugh; and Sharp, Alistair Kimball, to National Research Development Corporation. Enzyme bound to polymeric sheet with a triazine bridging group. 3,824,150, Cl. 195-63.000.

- Limb, John Ormond, to Bell Telephone Laboratories, Incorporated. Adaptive interpolating video encoder. 3,824,590, Cl. 340-347.0ad.
- Limberg, Allen Le Roy: See—  
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- Loffelman, Frank Fred; and Brady, Thomas Eugene, to American Cyanamid Company. Halogen-substituted azine compounds as peroxide bleach activators. 3,824,188, Cl. 252-95.000.
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 Miyagawa, Frank H.; Kipnis, Daniel D.; and Mills, Thomas C., to Tremont Research Co., Inc. String tensioning mechanism, 3,823,609, Cl. 73-145.000.  
 Miyakawa, Seiichi: See—  
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Hama, Kazuaki; Yo, Ikuko; Tsutsui, Hiroko; Nishi, Fusako; and Fujii, Setsuro, 3,824,267.  
 Miyashita, Tsuneo; and Chaussy, Leon Michel, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for separating and collecting fine particles in gas with stream of falling molten metal drops, 3,823,530, Cl. 55-72.000.  
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 Morcl, Georges, to Aerazur Constructions Aeronautiques. Pneumatic apparatus for holding the posture of paralyzed, diseased, disabled or wounded persons, 3,823,712, Cl. 128-87.004.  
 Morcy, Frederick E., III: See—  
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Muranyi, Istvan; Voros, Attila; Varga, Janos; and Orosz, Ivan, to Labor Mueszeripari Muevek. Baking oven. 3,824,066, Cl. 432-57.000.

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Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Unsymmetrically-substituted-s-triazines. 3,824,240, Cl. 260-249.500.

Natho, Paul J.; and Whaley, William L., to ACF Industries, Incorporated. Seats for gate valves. 3,823,911, Cl. 251-167.000.

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National Forge Company: See—  
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Nedau, Herbert G.; and Stengard, Robert A., to Upjohn Company, The. Process for preparing self-skinned polyurethane foam. 3,824,199, Cl. 260-2.5az.

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Nihon Architects Engineer & Consultant Inc.: See—  
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Nihyakumen, Kouzi; Yokoyama, Taizo; Kamezawa, Yasutoki; and Aizawa, Tatsuo, to Mita Industrial Company, Limited. Diazo-type multicolor reproduction process. 3,824,101, Cl. 96-49.000.

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Nippon Electric Varian, Ltd.: See—  
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Nishi, Fusako: See—  
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Nix, William R. Method for cutting openings in paneling or the like. 3,823,754, Cl. 144-323.000.

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Noack, Dieter; and Marin, Heiner, to Siemens Aktiengesellschaft. High-voltage electric circuit breaker. 3,824,361, Cl. 200-148.00f.

Noca, Joseph A.: See—  
Seymour, Samuel L.; and Noca, Joseph A., 3,824,090.

Nolan, Robert W. Anti-theft device for bicycles and the like. 3,824,541, Cl. 340-65.000.

Noltingk, Bernard Edward; and Robinson, Norman Edgar, to Central Electricity Generating Board. Methods of and apparatus for flame monitoring. 3,824,391, Cl. 250-208.000.

Nomoto, Yutaka: See—  
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Nu-Air Humidifier Corporation: See—  
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Nusbaum, Milton S.: See—  
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N. V. Optische Industrie De Oude Delft: See—  
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Obayashi, Nobuharu; and Sakashita, Tetsuzi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument capable of transposing. 3,824,325, Cl. 84-1.010.

Obayashi, Nobuharu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Vibrato signal generating apparatus for an electronic musical instrument. 3,824,326, Cl. 84-1.250.

Oberkirch, Wolfgang: See—  
Guntner, Peter; Oberkirch, Wolfgang; Pampus, Gottfried; Haas, Friedrich; and Marwede, Gunter, 3,824,226.

O'Brien, Francis E.: See—  
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O'Brien, Michael; and West, Clinton L., to University of California, The Regents of, The. Sampler for bulk grapes. 3,823,615, Cl. 73-425.200.

Oce-vander Grinten N.V.: See—  
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Ochi, Shikanosuke; and Masuda, Norio, to Kabushiki Kaisha Sega Enterprises. Diversified motion device in a steering game amusement machine. 3,823,941, Cl. 273-86.00b.

Odawara, Yohji: See—  
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Oehler, Kenneth L., to Oehler Research Incorporated. Inductance type velocity measuring apparatus. 3,824,463, Cl. 324-179.000.

Oehler Research Incorporated: See—  
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Offereins, Rienk Pieter, to Hollandse Signaalapparaten B.V. Apparatus for determining the momentary tilt of a vehicle or craft. 3,824,386, Cl. 235-150.270.

Ogilvie, Martin Bruce, to Girling Limited. Hydraulic assemblies. 3,823,651, Cl. 92-2.000.

Ohkubo, Hachiro, to Kinki Printing Company Limited. Container with a catch for pressing and opening a lid. 3,823,864, Cl. 229-19.000.

Ohno, Isamu, to Yokogawa Electric Works, Ltd. Signal magnitude display device for converting an input electric signal into a visual display. 3,824,581, Cl. 340-324.00r.

Ohta, Kazuo; and Sawada, Seiji, to Nippon Steel Corporation and Nihon Architects Engineer & Consultant Inc. Steel structure for prefabricated buildings. 3,823,520, Cl. 52-73.000.

Ohtsuka, Kunio: See—  
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Olier, Claude; and David, Guy Albert Jules, to U.S. Philips Corporation. System for the transmission of data signals by linear frequency modulation employing circuit in a receiver tuned to a central frequency. 3,824,466, Cl. 325-30.000.

Olin Corporation: See—  
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Ono, Mitsuaki: See—  
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Oishi, Tadashi: See—  
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Orosz, Ivan: See—  
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Orr, Howard S.: See—  
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Ort, Wolfgang; and Reibl, Michael, to Eastman Kodak Company. Camera adapted for percussively ignitable flashlamps. 3,824,610, Cl. 354-139.000.

Ortheil, Hans, to Kane and Company. Liquid ammonia-caustic dye solution and dyeing therewith. 3,824,076, Cl. 8-82.000.

Osakeyhtio, A. Ahlstrom: See—  
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Alexandrov, Vladimir Ilich; Osiko, Vyacheslav Vasilievich; and Tatarintsev, Vladimir Mikhailovich, 3,824,302.

Osterreichische Stickstoffwerke Aktiengesellschaft: See—  
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Ostrowski, Piotr, to Girling Limited. Plural self-energizing spreading disc brake assembly. 3,823,798, Cl. 188-71.400.

Oswald, Richard Alan; and Stark, Bernard Peter, to Ciba-Geigy Limited. Sulphur-containing epoxides. 3,824,259, Cl. 260-348.00r.

Oswin, Harry G.; and Blurton, Keith F., to Energetics Science, Inc. Gas detecting and measuring device. 3,824,167, Cl. 204-195.00r.

Oswin, Harry G.; and Blurton, Keith F., to Energetics Science, Inc. Gas detecting and quantitative measuring device. 3,824,168, Cl. 204-195.00r.

Otto, C., Dr., & Comp., G.m.b.H.: See—  
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Outboard Marine Corporation: See—  
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Owens, Dave L., to Grace, W. R., & Co. Vacuum nozzle device. 3,823,750, Cl. 141-65.000.

Owens-Corning Fiberglass Corporation: See—  
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Perry, Jack L., 3,823,860.

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Pabon, Hendrik Jacob Johannes: See—  
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Palm, Christoph: See—  
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Palmieri, Joseph Michael: See—  
Klein, Keith William; and Palmieri, Joseph Michael, 3,824,555.

Pampus, Gottfried: See—  
Guntner, Peter; Oberkirch, Wolfgang; Pampus, Gottfried; Haas, Friedrich; and Marwede, Gunter, 3,824,226.

Panaccione, Sergio, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Automatically positionable gate assembly. 3,823,510, Cl. 49-247.000.

Pantermuehl, Pontie J.; and Munsch, George F., to Southern Gas Association, mesne. Torque transducer. 3,823,608, Cl. 73-136.00a.

Pappalardo, Romano G.; and Ahmed, Samir A., to GTE Laboratories Incorporated. Electric discharge lamp. 3,824,423, Cl. 313-225.000.

Parcel, Jean-Marie, to University of Melbourne, The. Cryogenic apparatus. 3,823,575, Cl. 62-514.000.

Parenti, Frank V.; Abney, Paul C.; and Spaleny, George R., to Standard Register Company, The. Production of multiple-copy business forms. 3,823,934, Cl. 270-18.000.

Parfitt, Maurice; and Langley, Keith William, to Westinghouse Brake and Signal Company, Limited. Braking systems. 3,823,984, Cl. 303-3.000.

Park-Ohio Industries, Inc.: See—  
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Parliament, Thomas H.; Epstein, Martin P.; Clinton, William P.; Scarpellino, Richard; and Soakup, Robert J., to General Foods Corporation. Selected mercaptopyrazines as flavoring agents. 3,824,321, Cl. 426-65.000.

Parris, William J., to Westinghouse Electric Corporation. Microwave filter. 3,824,504, Cl. 333-73.00w.

Parsons, Roger C.; and Yang, Kang, to Continental Oil Company. Method for upgrading coal gasification products. 3,823,775, Cl. 166-260.000.

Parsons, William F.: See—  
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- Benedikter, Karl, 3,823,919.  
 Patil, Suhas S., to Massachusetts Institute of Technology. Arbitrator circuits. 3,824,409, Cl. 307-232.000.  
 Patmore, James R.; and Sidoti, Joseph E., to Electronic Associates, Inc. Air turbulence simulation apparatus. 3,823,871, Cl. 235-197.000.  
 Patmore, James R.; and Sidoti, Joseph E., to Electronic Associates, Inc. Localized simulator apparatus. 3,824,324, Cl. 35-10.200.  
 Patnode, LeRoy K. Folding camper. 3,823,974, Cl. 296-23.0mc.  
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 Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,240.  
 Pawson, Beverly Ann; and Saucy, Gabriel, to Hoffmann-La Roche Inc. 4-(3-Hydroxy-1,5-dimethylhex-1-yl) -1-cyclohexene-1-carboxaldehyde. 3,824,291, Cl. 260-598.000.  
 Pease, Logan L., to Eaton Corporation, mesnc. Retroreflective fine position sensing means. 3,824,020, Cl. 356-152.000.  
 Pedersen, Haakon O., to De Laval Turbine, Inc. Improved pressure vented wear ring assembly for use in rotary machinery. 3,823,950, Cl. 277-70.000.  
 Pelz, Alfred; and Jilek, Franz, to Österreichische Stickstoffwerke Aktiengesellschaft. Additive composition. 3,824,110, Cl. 106-284.000.  
 Pemberton, Denver L., to Anaconda Company, The, mesnc. Method of making compact conductor. 3,823,542, Cl. 57-161.000.  
 Penaloza, Arturo Castrejon. Cinematographic system. 3,823,517, Cl. 52-6.000.  
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 Perkin-Elmer Corporation, The: See—  
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 Hauke, Gary F., 3,823,437.  
 Perry, Jack L., to Owens-Illinois, Inc. Web guiding apparatus. 3,823,860, Cl. 226-199.000.  
 Perry, Walter Merton; and Perry, Walter Scott. By-pass fiber collection system. 3,824,086, Cl. 65-9.  
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 Petit, Pierre; and Verjux, Pierre, to Institut De Recherches De La Siderurgie Francaise (Irsid). Method of, and apparatus for, the optical measurement of the speed at a moving product. 3,824,015, Cl. 356-28.000.  
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 Pinchot, Louis. Toaster-broiler stacking unit. 3,823,658, Cl. 99-340.000.  
 Pinckaers, B. Hubert, to Honeywell Inc. Electronic stroke adjust for motor control. 3,824,439, Cl. 318-667.000.  
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- Kurkjian, Gregory A., Jr., 3,823,913.  
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 Ray, McNally S. Water hose attachment holder. 3,823,905, Cl. 248-87.000.  
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- Akiyama, Tadashi; Fukuda, Ryuhei; Ando, Masanobu; Wada, Norikazu; Umeda, Toshio; and Shiga, Tatsuhide, 3,823,726.
- Shikishima Tipton Manufacturing Company Limited: See—  
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- Shintani, Tadashi; and Yasuda, Shingo, to LogEtronics, Inc. Automatic film processor wash tanks having washed squeegee rollers. 3,824,615, Cl. 354-331.000.
- Shionogi & Co. Ltd.: See—  
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- Shlyandin, Viktor Mikhailovich: See—  
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- Shoe, Theodore W.; and Smith, Robert E., to Flexicore Co., Inc., The. Method of constructing a composite form with liner plates. 3,823,465, Cl. 29-471.300.
- Shoe, Theodore W.; and Wise, Mark J., to Flexicore Co., Inc., The. Screeder. 3,824,055, Cl. 425-220.000.
- Shoemaker, John Robert: See—  
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- Shotwell, Daniel B., to Caterpillar Tractor Company. Multi-plate vibration damper. 3,823,619, Cl. 74-574.000.
- Shroff, Shrenik: See—  
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- Patmore, James R.; and Sidoti, Joseph E., 3,824,324.
- Siegenthaler, Walter, to Maschinenfabrik Scherer. Apparatus for winding materials, such as threads, yarns or bands into cross-wound bobbins. 3,823,886, Cl. 242-43.100.
- Siemens AG.: See—  
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- Siemens Aktiengesellschaft: See—  
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- Skrzypczyk, William G., to General Electric Company. Traction motor inspection cover. 3,824,419, Cl. 310-89.000.
- Slamecka, Ernst; Martschini, Karl; Pflaum, Eckhard; and Schramm, Heinz-Helmut, to Siemens Aktiengesellschaft. Compressed gas electrical circuit breaker. 3,824,360, Cl. 200-148.00a.
- Slemp, Cecil. Footwear with heel and toe positions reversed. 3,823,494, Cl. 36-2.50r.
- Slemp, Cecil, 1/2 to Mullins, Shelly. Motor vehicle operator monitoring system. 3,824,538, Cl. 340-53.000.
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- Smith, Dudley C.; Hurley, Jasper E.; and Harris, John D., to Mitchell, John E., Company. Machine for dispensing a semi-frozen carbonated beverage including a system for automatically controlling the quality of the beverage through timed modes. 3,823,571, Cl. 62-136.000.
- Smith, Harry Niles. Fishing sinker. 3,823,503, Cl. 43-43.130.
- Smith, Homer A., Jr., to Eastman Kodak Company. Method and apparatus for capture and retention of a transient image. 3,824,008, Cl. 353-26.000.
- Smith, Horace L., Jr., to Smitherm Industries, Inc. Roasting apparatus. 3,823,662, Cl. 99-468.000.
- Smith, Horace L., Jr., to Smitherm Industries, Inc. Method for expanding tobacco. 3,823,722, Cl. 131-140.00p.
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- Smith, James, to General Electric Company. Gas turbine with removable self contained power turbine module. 3,823,553, Cl. 60-39.16r.
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- Smith, Randlow; Strickland, John C.; Sanwald, John W.; and Jones, Henry B., to Texaco, Inc. Vertical reactor for two-phase vapor-liquid reaction charge. 3,824,081, Cl. 23-288.00r.
- Smith, Robert C., to Rochester Shoe Tree Company, Inc. Spreader for shoe stretcher. 3,823,433, Cl. 12-117.200.
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- Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and Manufacturing Company. Process for reacting active hydrogen containing compounds with polycationically active polymers. 3,824,198, Cl. 260-2.00d.
- Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and Manufacturing Company. Process for preparing polycationically active polymers of tetrahydrofuran. 3,824,219, Cl. 260-79.30r.
- Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and Manufacturing Company. Polycationically active polymers. 3,824,220, Cl. 260-79.30r.
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- Sorenson, Jess Frank, to Sorenson Engineering Inc. Workpiece positioner and ejector. 3,823,595, Cl. 72-312.000.
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- Spira, Joel S.; and Licata, Joseph, to Lutron Electronics Co., Inc. High frequency fluorescent tube lighting circuit and A-C driving circuit therefor. 3,824,428, Cl. 315-105.000.
- Spisak, Edward G., to S&S Product Engineering Service, Inc. Hub cap for molded vehicle wheel. 3,823,982, Cl. 301-37.00p.
- Spitalnik, Robert, to U.S. Philips Corporation. Microwave oscillator. 3,824,489, Cl. 331-107.00r.
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- Stone, Ray L. Plastic safety razor. 3,823,471, Cl. 30-85.000.
- Straitz, John F., III, to Combustion Unlimited, Incorporated. Flare stack gas burner. 3,824,073, Cl. 431-284.000.
- Straumsnes, O. Robert. System for transfer of goods on railroad trains when in motion. 3,823,671, Cl. 104-18.000.
- Straumsnes, O. Robert. Underseas transport system. 3,823,680, Cl. 114-50r.
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- Merriam, Donald R., 3,824,350.
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- Styrkiewicz, Stanley J., to Guardian Electric Manufacturing Company. Mold for mounting switch blades and the like. 3,824,053, Cl. 425-123.000.
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- Suzuki, Kozi, to Tokyo Sanyo Electric Co., Ltd. and Sanyo Electric Co., Ltd. Multi-channel tape playing device. 3,824,621, Cl. 360-78.000.
- Suzuki, Ryuzo; Miyakawa, Seiichi; and Watanabe, Masanori, to Katsuragawa Denki Kabushiki Kaisha. Transfer printing apparatus of electrophotographic apparatus. 3,824,011, Cl. 355-3.000.
- Suzuki, Takami, to Ricoh Co., Ltd. Rotary print wheel mechanism with hammering bracket. 3,823,807, Cl. 197-55.000.
- Suzuki, Takuji; and Imao, Norihisa. Television receiver power supply. 3,824,338, Cl. 178-7.30r.
- Suzuki, Toshiyuki, to Enshu Limited. Photoelectric type weft sensing process and weft sensor. 3,824,401, Cl. 250-561.000.
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- Takabayashi, Teruo, to Kohshoh Limited. Plastic buckle or adjuster. 3,823,444, Cl. 24-191.000.
- Takada, Masaharu; Yamada, Koichi; and Hamahata, Kozo, to Sasakura Engineering Co., Ltd. Evaporating method and apparatus. 3,824,154, Cl. 202-174.000.
- Takada, Masaharu, to Sasakura Engineering Co. Ltd. Multiple effect evaporating apparatus. 3,824,155, Cl. 202-174.000.
- Takada, Takezo, to Takata Kogyo Co., Ltd. Method and apparatus for laying thermoplastic pipe. 3,823,565, Cl. 61-72.100.
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- Takamizawa, Akira; and Hirai, Kentaro, to Shionogi & Co. Ltd. Thiozolum salt composition and method for treatment of coccidiosis therewith. 3,824,308, Cl. 424-251.000.
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- Winzeler, James E.; and McClure, William M., to Caterpillar Tractor Company. Clutch with controlled coolant flow. 3,823,802, Cl. 192-113,000.
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- Wisniewski, Wladyslaw; Piotrowski, Jan; and Szelc, Zbigniew W., to Centrum Techniki Okretowej, Przetwornicow Panstwowe Wyodrebnione. Variable-capacity sliding-vane pump. 3,824,045, Cl. 418-30,000.
- With, Bror. Ski binding of the toe binding type. 3,823,953, Cl. 280-11,350.
- Wixon, Thomas G. Automatic repertory dialer. 3,824,351, Cl. 179-90,000.
- Westman, John W., 1/2 to Zuritsky, Joseph S. and 1/2 to Zuritsky, Herman and Zuritsky, Lee. Apparatus for refracting eyes. 3,824,005, Cl. 351-8,000.
- Wolf, Peter, to International Business Machines Corporation. Method and apparatus for allocating storage addresses to data elements. 3,824,561, Cl. 340-172,500.
- Wolfe, Robert L.; and Trebnik, Augustine, to Reliance Electric Company. Method for improving wear characteristics of bronze. 3,824,132, Cl. 148-13,200.
- Wolff, Walter M., to United States of America, Air Force. Pneumatic linear accelerator. 3,823,600, Cl. 73-12,000.
- Wondris, Erich F., to National Steel Corporation. Roll-couple, continuous-strip caster. 3,823,762, Cl. 164-277,000.
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- Wood, Chester W.: See—  
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- Woodruff, Ray A.; and Lech, Jerome F. Combined sample collection and vaporization system for spectro-chemical analysis. 3,824,016, Cl. 356-85,000.
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- Zackheim, Eli A., to Silver, Jules. Pre-punctured closure. 3,823,840, Cl. 215-247,000.
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- Zangenfeind, Helmut; and Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for detecting and guiding the leaders of photographic roll films. 3,823,888, Cl. 242-55,000.
- Zechmeister, Hartwin; and Zeilinger, Hans, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Ski. 3,823,956, Cl. 280-11,131.
- Zegers, Leo Eduard; and Snijders, Wilfred, to U.S. Philips Corporation, mesne. System for transmitting information in the prescribed frequency-band. 3,824,468, Cl. 324-32,000.
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- Ziaylek, Theodore, Jr. Positive locking device. 3,823,907, Cl. 248-313,000.
- Zinno, Oscar, to Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A. Support and drawing device for rotary converters and rotary converters so obtained. 3,823,930, Cl. 266-36,000.
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PATENTS WERE ISSUED ON THE 16TH DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Augustsson, Bengt O., and R. D. Southwick, to Glass Container Manufacturers Institute, Inc. Vapor deposition apparatus including air mask. Re. 28,076, 7-16-74, Cl. 118-48.
- Caravan Products Co., Inc.: See—  
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- Glass Container Manufacturers Institute, Inc.: See—  
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- Kavanaugh, Richard J., to North American Phillips Corp. Double claw tooth stator synchronous and stepping motor with indicator. Re. 28,075, 7-16-74, Cl. 310-49.
- Meltzer, Morris, and D. D. Meyer. Automatic meat cutting machine. Re. 28,077, 7-16-74, Cl. 83-101.

- Meyer, Donald D.: See—  
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- Miller, Jason A.: See—  
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- North American Phillips Corp.: See—  
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- Smerak, Louis J., and J. A. Miller, to Caravan Products Co., Inc. Yeast Leavened bread dough composition and process of manufacture. Re. 28,074, 7-16-74, Cl. 426-20.
- Southwick, Russell D.: See—  
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- Benzing, Walter C., to Applied Materials Technology, Inc. Automatic fluid flow control unit. 232,085, 7-16-74, Cl. D16-2.
- Binks, Ronald, to Global Systems Design Corp. Telephone dialing instrument. 232,100, 7-16-74, Cl. D26-14.
- Bjarsch, Otto. Ventilator. 232,084, 7-16-74, Cl. D23-151.
- Blumensau, Jon, to World Carpets. Carpet. 232,132, 7-16-74, Cl. D92-4.
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- Classen, Francis J. Animal scratching device. 232,105, 7-16-74, Cl. D30-40.
- Clark, John. Non-clog gutter or similar article. 232,091, 7-16-74, Cl. D23-45.
- Cognata, Larry M., to The Murray Ohio Mfg. Co. Combined housing, deflector and motor shroud arrangement for a rotary lawnmower. 232,117, 7-16-74, Cl. D40-1.
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- Krause, Daniel F., to Samsonite Corp. Roller skate. 232,108, 7-16-74, Cl. D34-14.
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## CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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247	3,823,419		3,823,476	52	3,823,537	23	3,823,601	337	3,823,657	179R	3,823,701
277	3,823,420		3,823,477	73	3,823,538	28	3,823,602	340	3,823,658	188M	3,823,702
321	3,823,421		CLASS 33	73	3,823,539	67.9	3,823,603	353	3,823,659		CLASS 126
	3,823,422		30E	88	3,823,540	71.3	3,823,604	386	3,823,660	271	3,823,703
1	3,823,423		76R	144	3,823,541	89	3,823,605	468	3,823,661	392	3,823,704
22	3,823,424		86	161	3,823,542	115	3,823,606		3,823,662		CLASS 128
			96	166	3,823,543	136A	3,823,607			1R	3,823,705
			169R		CLASS 58	145	3,823,608	97	3,823,663	2.05F	3,823,706
53	3,823,425		174PA	3	3,823,544	194B	3,823,609		3,823,664	2.05G	3,823,707
172	3,823,426		174QA	23R	3,823,545	231R	3,823,610	41	3,823,665	2.06A	3,823,708
255	3,823,427		203.14		3,823,546	425.2	3,823,611	66	3,823,666	20	3,823,709
			366		3,823,547		3,823,612	91	3,823,667	40	3,823,710
331	3,823,428		CLASS 34	39.5	3,823,548	100	3,823,613	93C	3,823,668	78R	3,823,711
345R	3,823,429		10	44	3,823,549	200	3,823,614		3,823,669	87R	3,823,712
			156	50R	3,823,550	241	3,823,615	38	3,823,670	157	3,823,713
9	3,823,430		242	125C	3,823,551	471	3,823,616	64	3,823,671	229	3,823,714
			CLASS 35		3,823,552	498	3,823,617		3,823,672	264	3,823,715
10	3,824,074		10	39.16R	3,823,553	552	3,823,618		3,823,673	275	3,823,716
	3,824,075		10.2	249	3,823,554	574	3,823,619	18	3,823,674	303.1	3,823,717
37	3,824,077		35J	274	3,823,555	675	3,823,620	148MS	3,823,675	305	3,823,718
82	3,824,076		35R	288	3,823,556	752A	3,823,621	148R	3,823,676	322	3,823,719
120	3,824,078		CLASS 36	325	3,823,557	759	3,823,622		3,823,677	350R	3,823,720
			2.5R	329	3,823,558		CLASS 75	366R	3,823,678	524	3,823,721
1R	3,823,431		3,823,494	508	3,823,559	58	3,824,095	369B	3,823,679		CLASS 131
8P	3,823,432		CLASS 37	527	3,823,560	124	3,824,096		3,823,680	140P	3,823,722
			66	592	3,823,561	226	3,824,097		3,823,681	5	3,823,723
117.2	3,823,433		142A	35	CLASS 61	101A	3,823,623	38.3	3,824,112		CLASS 136
129.4	3,823,434		CLASS 38	46.5	3,823,562		3,823,624	52	3,824,106	6R	3,824,129
			77.6	72.1	3,823,563	58.1	3,823,625	64	3,824,105	20	3,824,131
79	3,823,435		77.83	85	3,823,564	59.1	3,823,626	93	3,824,107	83R	3,824,130
250.32	3,823,436		CLASS 40		3,823,565		3,823,627	128	3,824,108		CLASS 137
250.42	3,823,437		155		3,823,566		3,823,628	281R	3,824,109	15	3,823,724
304	3,823,438		219	3	CLASS 62	1C	3,823,626	284	3,824,110	86	3,823,725
			155	7	3,823,567	2A	3,823,627	308N	3,824,111	88	3,823,726
94D	3,823,439		CLASS 43	55	3,823,568	2.7	3,823,628		3,823,677	100	3,823,727
139	3,823,440		15	56	3,823,569		3,823,629	1C	3,823,678	100	3,823,728
			20	136	3,823,570		3,823,630	84	3,823,679	100	3,823,729
			43.13	160	3,823,571		3,823,631	235	3,823,680	100	3,823,730
26	3,823,441		61.5	238	3,823,572		3,823,632		3,823,681	100	3,823,731
			81.5	262	3,823,573		3,823,633		3,823,682	100	3,823,732
254E	3,824,079		112	514	3,823,574		3,823,634		3,823,683	100	3,823,733
288R	3,824,080		CLASS 44		3,823,575		3,823,635		3,823,684	100	3,823,734
	3,824,081		1R	8	CLASS 64	384	3,823,636		3,823,685	100	3,823,735
			7B	11R	3,823,576	511	3,823,637		3,823,686	100	3,823,736
16R	3,823,442		CLASS 46		3,823,577		3,823,638		3,823,687	100	3,823,737
181	3,823,443		220	9	CLASS 65	1.01	3,824,325		3,823,688	100	3,823,738
191	3,823,444		CLASS 47	32	3,824,086	1.25	3,824,326		3,823,689	100	3,823,739
205.1R	3,823,445		1.2	40	3,824,087		3,823,637	5.2	3,824,113	100	3,823,740
205.14R	3,823,446		1.43	109	3,824,088		3,823,638	21	3,824,114	100	3,823,741
			CLASS 49	114	3,824,089	470	3,823,639		3,824,115	100	3,823,742
2	3,823,447		247		3,824,090	503	3,823,640		3,824,116	100	3,823,743
			CLASS 51		3,823,582	62	3,823,641		3,824,117	100	3,823,744
1.4	3,823,448		CLASS 51		3,823,583	154	3,823,642		3,824,118	100	3,823,745
	3,823,449		34R		3,823,584		3,823,643		3,824,119	100	3,823,746
	3,823,450		164		3,823,585		3,823,644		3,824,120	100	3,823,747
41	3,823,451		170EB		3,823,586		3,823,645		3,824,121	100	3,823,748
72FT	3,823,452		281P		3,823,587		3,823,646		3,824,122	100	3,823,749
	3,823,453		322		3,823,588		3,823,647		3,824,123	100	3,823,750
25.14	3,823,453		358		3,823,589		3,823,648		3,824,124	100	3,823,751
33K	3,823,454		CLASS 52		3,823,590		3,823,649		3,824,125	100	3,823,752
33R	3,823,455		6		3,823,591		3,823,650		3,824,126	100	3,823,753
148.4D	3,823,456		53		3,823,592		3,823,651		3,824,127	100	3,823,754
157.3D	3,823,457		65		3,823,593		3,823,652		3,824,128	100	3,823,755
157.3R	3,823,458		73		3,823,594		3,823,653		3,824,129	100	3,823,756
194	3,824,082		285		3,823,595		3,823,654		3,824,130	100	3,823,757
197.5	3,824,083		641		3,823,596		3,823,655		3,824,131	100	3,823,758
200R	3,823,459		648		3,823,597		3,823,656		3,824,132	100	3,823,759
203L	3,823,460		729		3,823,598		3,823,657		3,824,133	100	3,823,760
203P	3,823,461		758D		3,823,599		3,823,658		3,824,134	100	3,823,761
268	3,823,462		758F		3,823,600		3,823,659		3,824,135	100	3,823,762
417	3,823,463		CLASS 53		3,823,601		3,823,660		3,824,136	100	3,823,763
470.5	3,823,464		183		3,823,602		3,823,661		3,824,137	100	3,823,764
471.3	3,823,465		198R		3,823,603		3,823,662		3,824,138	100	3,823,765
568	3,823,466		CLASS 55		3,823,604		3,823,663		3,824,139	100	3,823,766
580	3,823,467		16		3,823,605		3,823,664		3,824,140	100	3,823,767
588	3,823,468		72		3,823,606		3,823,665		3,824,141	100	3,823,768
589	3,823,469		233		3,823,607		3,823,666		3,824,142	100	3,823,769
593	3,823,470		357		3,823,608		3,823,667		3,824,143	100	3,823,770
			493		3,823,609		3,823,668		3,824,144	100	3,823,771
85	3,823,471		CLASS 56		3,823,610		3,823,669		3,824,145	100	3,823,772
131	3,823,472		296		3,823,611		3,823,670		3,824,146	100	3,823,773
138R	3,823,473				3,823,612		3,823,671		3,824,147	100	3,823,774



## CLASSIFICATION OF PATENTS

148	3,824,142	303	3,823,800	CLASS 215	247	3,823,840	12R	3,823,897	302SD	3,824,246	234	3,823,959
157	3,824,143	CLASS 192		247	3,823,841	12R	3,823,897	306.8D	3,824,247	432	3,823,960	
306	3,824,144	87.19	3,823,801	CLASS 193		10.51	3,824,364	307F	3,824,248		3,823,961	
580	3,824,145	113B	3,823,802	CLASS 194		10.55	3,824,365	308D	3,824,249	514	3,823,962	
		2.88	3,823,803	CLASS 195		10.77	3,824,366	310A	3,824,250		CLASS 283	
CLASS 157				10.51	3,824,364				319.1	3,824,251	66	3,823,963
1.24	3,823,757			10.55	3,824,365			CLASS 248	327S	3,824,252		CLASS 285
1.3	3,823,756			10.77	3,824,366				343.2S	3,824,253	46	3,823,964
CLASS 160				10.79	3,824,367				343.6	3,824,254	174	3,823,965
188	3,823,758	63	3,824,150	121EB	3,824,369	18	3,823,902		343.9	3,824,255		CLASS 292
CLASS 161		142	3,824,151	121LM	3,824,368	23	3,823,903		346.2R	3,824,256		3,823,966
150	3,824,146			208	3,824,370	87	3,823,905		348R	3,824,257		3,823,967
162	3,824,147	6.1	3,823,804	230	3,824,371	279	3,823,906		348.5L	3,824,258		CLASS 293
188	3,824,148	19	3,823,805	287	3,824,372	313	3,823,907		397.1	3,824,259	71P	3,823,968
190	3,824,149	33	3,823,806	494	3,824,373	351	3,823,908		403	3,824,260	84	3,823,969
CLASS 162		55	3,823,807	510	3,824,374	452	3,823,909		409	3,824,261		CLASS 294
301	3,824,152	133R	3,823,808	CLASS 220		1B	3,823,842	CLASS 249	410.6	3,824,262	19R	3,823,970
CLASS 164		25	3,823,809	1B	3,823,842	42A	3,823,843	CLASS 250	429.7	3,824,263	26	3,823,971
52	3,823,759	26	3,823,810	CLASS 221		13	3,823,844	208	436	3,824,264	73	3,823,972
113	3,823,760	29	3,823,811	221	3,823,845	59	3,823,845	222PC	453AB	3,824,265		3,823,973
273R	3,823,761	31AB	3,823,812	251	3,823,846			251	455R	3,824,266		CLASS 296
277	3,823,762	76	3,823,813	294	3,823,847			294		3,824,267		3,823,974
282	3,823,763	273	3,823,815	CLASS 222		70	3,823,848	312	456A	3,824,268	23MC	3,823,975
288	3,823,764			79	3,823,847	82	3,823,848	308	465B	3,824,269	23R	3,823,976
303	3,823,765	1R	3,824,354	96	3,823,849	96	3,823,849	320	465D	3,824,270	35R	3,823,977
CLASS 165		16F	3,824,355	107	3,823,850	107	3,823,850	312	468J	3,824,271	137B	3,823,978
1	3,823,766	38B	3,824,357	146HA	3,823,851	146HA	3,823,851	336	473R	3,824,272		CLASS 297
48	3,823,768	61.86	3,824,358	185	3,823,852	185	3,823,852	352	475SC	3,824,273	330	3,823,979
76	3,823,769	83S	3,824,358	361	3,823,853	361	3,823,853	361	490	3,824,274	388	3,823,978
148A	3,823,770	146R	3,824,359	CLASS 223		73	3,823,854	565	521A	3,824,275	455	3,823,980
80	3,823,771	148F	3,824,360	CLASS 224		96	3,823,855	CLASS 251	521R	3,824,276		CLASS 299
81	3,823,772	153J	3,824,362	36	3,823,856			167	535P	3,824,277	4	3,823,981
5	3,823,773	328	3,824,363	42.24	3,823,857	CLASS 226		305	544C	3,824,278	37P	3,823,982
252	3,823,774	174	3,824,154	118	3,823,858	118	3,823,858	CLASS 252	545R	3,824,279	43	3,823,983
260	3,823,775	180	3,824,155	199	3,823,859	199	3,823,860	1	551R	3,824,280		CLASS 301
261	3,823,776	18	3,824,177	153	3,823,861	153	3,823,861	95	555A	3,824,281		CLASS 303
266	3,823,777	17	3,824,157	CLASS 227		44CB	3,823,865	99	559AT	3,824,282		3,823,984
313	3,823,778	17	3,824,157	CLASS 228		51TS	3,823,866	106	561R	3,824,283	7	3,823,985
39	3,823,779	17	3,824,157	CLASS 229		69	3,823,867	378R		3,824,284	21F	3,823,986
CLASS 169		1T	3,824,157	19	3,823,868	19	3,823,868	400A	565	3,824,285		3,823,987
CLASS 172		55R	3,824,158	44CB	3,823,865	44CB	3,823,865	412	583H	3,824,286		3,823,988
150	3,823,780	58	3,824,159	51TS	3,823,866	51TS	3,823,866	461	583P	3,824,287		CLASS 305
192	3,823,781	89	3,824,160	69	3,823,867	69	3,823,867	455R	598	3,824,288	14	3,823,989
292	3,823,782	108	3,824,162	CLASS 233		20A	3,823,868	38	602	3,824,289		CLASS 307
802	3,823,783	130	3,824,163	20R	3,823,869	20R	3,823,869	45R	607A	3,824,290		10AT
CLASS 173		159.23	3,824,164	61.11J	3,824,376	61.11J	3,824,376	38	611B	3,824,291		3,824,403
1	3,823,784	180G	3,824,165	61.7B	3,824,375	61.7B	3,824,375	478	614R	3,824,292		10LS
90	3,823,785	195M	3,824,166	92PD	3,824,377	92PD	3,824,377	CLASS 254	633	3,824,293		3,824,405
26	3,823,786			92PE	3,824,378	92PE	3,824,378	2D		3,824,294		10R
CLASS 174				117R	3,824,379	117R	3,824,379	2.5AZ	CLASS 261	3,824,295		3,824,406
171F	3,824,327			150.2	3,824,380	150.2	3,824,380	2.5R	92	3,823,922		3,824,407
52PE	3,824,328			150.22	3,824,381	150.22	3,824,381	18TN	93	3,823,923		3,824,408
65R	3,824,329			150.27	3,824,382	150.27	3,824,382	23XA	94	3,823,924		3,824,409
102D	3,824,330			150.3	3,824,383	150.3	3,824,383	23YH	95	3,823,925		3,824,410
135	3,824,331			150.33	3,824,384	150.33	3,824,384	29.1R	96	3,823,926		3,824,411
CLASS 175				151.1	3,824,385	151.1	3,824,385	29.7P	106	3,823,927		3,824,412
24	3,823,787			151.12	3,824,386	151.12	3,824,386	33.6AO	106	3,823,928		3,824,413
94	3,823,788			151.12	3,824,387	151.12	3,824,387	37B	25	3,823,929		3,824,414
340	3,823,789			151.12	3,824,388	151.12	3,824,388	37N	25	3,823,930		3,824,415
CLASS 176				151.12	3,824,389	151.12	3,824,389	45.75K	41	3,823,931		3,824,416
78	3,824,153			151.12	3,824,390	151.12	3,824,390	45.9R	41	3,823,932		3,824,417
CLASS 178				151.12	3,824,391	151.12	3,824,391	47EP	41	3,823,933		3,824,418
5.1	3,824,332			151.12	3,824,392	151.12	3,824,392	47C	41	3,823,934		3,824,419
5.8R	3,824,333			151.12	3,824,393	151.12	3,824,393		41	3,823,935		3,824,420
6	3,824,334			151.12	3,824,394	151.12	3,824,394		41	3,823,936		3,824,421
6.6A	3,824,335			151.12	3,824,395	151.12	3,824,395		41	3,823,937		3,824,422
6.8	3,824,336			151.12	3,824,396	151.12	3,824,396		41	3,823,938		3,824,423
7.1	3,824,337			151.12	3,824,397	151.12	3,824,397		41	3,823,939		3,824,424
7.3R	3,824,338			151.12	3,824,398	151.12	3,824,398		41	3,823,940		3,824,425
7.81	3,824,339			151.12	3,824,399	151.12	3,824,399		41	3,823,941		3,824,426
69.5DC	3,824,340			151.12	3,824,400	151.12	3,824,400		41	3,823,942		3,824,427
88	3,824,341			151.12	3,824,401	151.12	3,824,401		41	3,823,943		3,824,428
CLASS 179				151.12	3,824,402	151.12	3,824,402		41	3,823,944		3,824,429
1CN	3,824,344			151.12	3,824,403	151.12	3,824,403		41	3,823,945		3,824,430
1GO	3,824,342			151.12	3,824,404	151.12	3,824,404		41	3,823,946		3,824,431
1VL	3,824,345			151.12	3,824,405	151.12	3,824,405		41	3,823,947		3,824,432
1E	3,824,343			151.12	3,824,406	151.12	3,824,406		41	3,823,948		3,824,433
15BM	3,824,347			151.12	3,824,407	151.12	3,824,407		41	3,823,949		3,824,434
15B	3,824,349			151.12	3,824,408	151.12	3,824,408		41	3,823,950		3,824,435
15BT	3,824,346			151.12	3,824,409	151.12	3,824,409		41	3,823,951		3,824,436
18AB	3,824,348			151.12	3,824,410	151.12	3,824,410		41	3,823,952		3,824,437
	3,824,350			151.12	3,824,411	151.12	3,824,411		41	3,823,953		3,824,438
90B	3,824,351			151.12	3,824,412	151.12	3,824,412		41	3,823,954		3,824,439
100.41P	3,824,352			151.12	3,824,413	151.12	3,824,413		41	3,823,955		3,824,440
164	3,824,353			151.12	3,824,414	151.12	3,824,414		41	3,823,956		3,824,441
CLASS 180				151.12	3,824,415	151.12	3,824,415		41	3,823,957		3,824,442
6.66	3,823,791			151.12	3,824,416	151.12	3,824,416		41	3,823,958		3,824,443
6.7	3,823,790			151.12	3,824,417	151.12	3,824,417		41	3,823,959		3,824,444
82	3,823,792			151.12	3,824,418	151.12	3,824,418		41	3,823,960		3,824,445
CLASS 181				151.12	3,824,419	151.12	3,824,419		41	3,823,961		3,824,446
33G	3,823,794			151.12	3,824,420	151.12	3,824,420		41	3,823,962		3,824,447
33K	3,823,793			151.12	3,824,421	151.12	3,824,421		41	3,823,963		3,824,448
36A	3,823,795			151.12	3,824,422	151.12	3,824,422		41	3,823,964		3,824,449
49	3,823,796			151.12	3,824,423	151.12	3,824,423		41	3,823,965		3,824,450
CLASS 184				151.12	3,824,424	151.12	3,824,424		41	3,823,966		3,824,451
16	3,823,797			151.12	3,824,425	151.12	3,824,425</					

## CLASSIFICATION OF PATENTS

	3,824,444	107R	3,824,489	258R	3,824,557	CLASS 343		CLASS 356		CLASS 424	
11	3,824,445		3,824,490	268S	3,824,556	13R	3,824,592	28	3,824,015	47	3,824,303
12	3,824,446	109	3,824,491			17	3,824,593	85	3,824,016	74	3,824,304
15	3,824,447	111	3,824,494	CLASS 340		108R	3,824,594	108	3,824,017	78	3,824,305
	CLASS 322	116R	3,824,495	3R	3,824,531	113R	3,824,595	112	3,824,018	118	3,824,306
2	3,824,448	132	3,824,496	15	3,824,532		3,824,596	145	3,824,019	225	3,824,307
	CLASS 323	141	3,824,497	18DC	3,824,533	204	3,824,597	152	3,824,020	245	3,824,308
6	3,824,449		CLASS 332	24	3,824,534	405	3,824,598	200	3,824,021	251	3,824,309
23	3,824,450	9R	3,824,498	27NA	3,824,535	822	3,824,599				
	CLASS 324	16R	3,824,499	52R	3,824,536	895	3,824,600	CLASS 360			
.5R	3,824,451		CLASS 333	53	3,824,537			16	3,824,617	267	3,824,310
29	3,824,452	6	3,824,500	54	3,824,538	CLASS 346		22	3,824,618	269	3,824,311
32	3,824,453	18	3,824,501	55	3,824,539	74.1	3,824,601	36	3,824,619	272	3,824,309
34FL	3,824,454	24.1	3,824,502	56	3,824,540	141	3,824,602	38	3,824,620	273	3,824,310
34FL	3,824,455	26	3,824,503	57	3,824,541		3,824,603	78	3,824,621	274	3,824,313
34R	3,824,456	30R	3,824,504	58	3,824,542	CLASS 350		96	3,823,945		3,824,314
35R	3,824,457	73W	3,824,504	59	3,824,543	96WG	3,823,995	121	3,824,622	275	3,824,316
57R	3,824,458	81A	3,824,506	60	3,824,544		3,823,996	124	3,824,623	277	3,824,317
60CD	3,824,459			61	3,824,545	150	3,823,997				3,824,318
61R	3,824,460		CLASS 334	62	3,824,546	160LC	3,823,998	6	3,824,021	278	3,824,319
73PC	3,824,461	47	3,824,507	63	3,824,547		3,824,001	193	3,824,024	298	3,824,320
179	3,824,462		CLASS 335	64	3,824,548	173	3,824,004	258	3,824,023		CLASS 425
186	3,824,464	16	3,824,508	65	3,824,549	216	3,823,999	48	3,824,025	28R	3,824,048
	CLASS 325	132	3,824,509	66	3,824,550	245	3,824,000			71	3,824,049
16	3,824,465	160	3,824,510	67	3,824,551	305	3,824,001	210	3,824,026	72	3,824,050
30	3,824,466	202	3,824,511	68	3,824,552			225	3,824,027	78	3,824,051
32	3,824,467	205	3,824,512	69	3,824,553	CLASS 351				83	3,824,052
	3,824,468	207	3,824,513	70	3,824,554	8	3,824,005			123	3,824,053
39	3,824,469	210	3,824,514	71	3,824,555	106	3,824,006	CLASS 415		149	3,824,054
45	3,824,470	217	3,824,515	72	3,824,556			53	3,824,028	220	3,824,055
321	3,824,471	284	3,824,516	73	3,824,557	CLASS 352		109	3,824,029	266	3,824,056
355	3,824,472		CLASS 336	74	3,824,558	130	3,824,007	135	3,824,031	329	3,824,057
375	3,824,473	83	3,824,517	75	3,824,559			136	3,824,032	338	3,824,058
420	3,824,474	96	3,824,518	76	3,824,560	CLASS 353		150	3,824,033	424	3,824,059
470	3,824,475	192	3,824,519	77	3,824,561	26	3,824,008	151	3,824,034	425	3,824,060
	CLASS 328		CLASS 337	78	3,824,562	27	3,824,009	217	3,824,035	435	3,824,061
4	3,824,476	161	3,824,520	79	3,824,563			219C		451	3,824,062
	3,824,477		CLASS 338	80	3,824,564	CLASS 354					CLASS 426
37	3,824,478	275	3,824,521	81	3,824,565	5	3,824,604	CLASS 416		20	Re.28,074
69	3,824,479		CLASS 339	82	3,824,566	42	3,824,605	95	3,824,036	65	3,824,321
75	3,824,480		CLASS 340	83	3,824,567	50	3,824,606	136	3,824,037	134	3,824,322
162	3,824,481		CLASS 341	84	3,824,568		3,824,607	180	3,824,038	429	3,824,323
	CLASS 330		CLASS 342	85	3,824,569	102	3,824,608	CLASS 417			CLASS 431
4.9	3,824,482	21R	3,824,522	86	3,824,570	139	3,824,609	48	3,824,039	255	3,824,063
	CLASS 331	59R	3,824,523	87	3,824,571	202	3,824,610	204	3,824,040		3,824,072
1A	3,824,483	60R	3,824,524	88	3,824,572	266	3,824,611	310	3,824,041	284	3,824,073
48	3,824,484	91R	3,824,525	89	3,824,573	281	3,824,612	440	3,824,042	328	3,824,074
55	3,824,485	94R	3,824,526	90	3,824,574	292	3,824,613		3,824,043		CLASS 432
65	3,824,486	97R	3,824,527	91	3,824,575	331	3,824,614	CLASS 418		14	3,824,065
94.5C	3,824,487	99R	3,824,528	92	3,824,576	339	3,824,615	12	3,824,044	57	3,824,066
94.5H	3,824,488		CLASS 343	93	3,824,577		3,824,616	30	3,824,045	74	3,824,067
94.5K	3,824,489	128	3,824,529	94	3,824,578	CLASS 355		82	3,824,046	80	3,824,068
94.5	3,824,490	198GA	3,824,530	95	3,824,579	3R	3,824,010	171	3,824,047		3,824,069
	3,824,491		3,824,531	96	3,824,580		3,824,011	139	3,824,048	214	3,824,070
	3,824,492	221R	3,824,532	97	3,824,581		3,824,012	661	3,824,049	241	3,824,071
	3,824,493	246	3,824,533	98	3,824,582		3,824,013	525	3,824,050		CLASS 444
	3,824,494		3,824,534	99	3,824,583			621	3,824,051	1	3,824,624
	3,824,495		3,824,535	100	3,824,584						
	3,824,496		3,824,536		3,824,585						
	3,824,497		3,824,537		3,824,586						
	3,824,498		3,824,538		3,824,587						
	3,824,499		3,824,539		3,824,588						
	3,824,500		3,824,540		3,824,589						
	3,824,501		3,824,541		3,824,590						
	3,824,502		3,824,542		3,824,591						
	3,824,503		3,824,543		3,824,592						
	3,824,504		3,824,544		3,824,593						
	3,824,505		3,824,545		3,824,594						
	3,824,506		3,824,546		3,824,595						
	3,824,507		3,824,547		3,824,596						
	3,824,508		3,824,548		3,824,597						
	3,824,509		3,824,549		3,824,598						
	3,824,510		3,824,550		3,824,599						
	3,824,511		3,824,551		3,824,600						
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	3,824,513		3,824,553		3,824,602						
	3,824,514		3,824,554		3,824,603						
	3,824,515		3,824,555		3,824,604						
	3,824,516		3,824,556		3,824,605						
	3,824,517		3,824,557		3,824,606						
	3,824,518		3,824,558		3,824,607						
	3,824,519		3,824,559		3,824,608						
	3,824,520		3,824,560		3,824,609						
	3,824,521		3,824,561		3,824,610						
	3,824,522		3,824,562		3,824,611						
	3,824,523		3,824,563		3,824,612						
	3,824,524		3,824,564		3,824,613						
	3,824,525		3,824,565		3,824,614						
	3,824,526		3,824,566		3,824,615						
	3,824,527		3,824,567		3,824,616						
	3,824,528		3,824,568		3,824,617						
	3,824,529		3,824,569		3,824,618						
	3,824,530		3,824,570		3,824,619						
	3,824,531		3,824,571		3,824,620						
	3,824,532		3,824,572		3,824,621						
	3,824,533		3,824,573		3,824,622						
	3,824,534		3,824,574		3,824,623						
	3,824,535		3,824,575		3,824,624						
	3,824,536		3,824,576		3,824,625						
	3,824,537		3,824,577		3,824,626						
	3,824,538		3,824,578		3,824,627						
	3,824,539		3,824,579		3,824,628						
	3,824,540		3,824,580		3,824,629						
	3,824,541		3,824,581		3,824,630						
	3,824,542		3,824,582		3,824,631						
	3,824,543		3,824,583		3,824,632						
	3,824,544		3,824,584		3,824,633						
	3,824,545		3,824,585		3,824,634						
	3,824,546		3,824,586		3,824,635						
	3,824,547		3,824,587		3,824,636						
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	3,824,549		3,824,589		3,824,638						
	3,824,550		3,824,590		3,824,639						
	3,824,551		3,824,591		3,824,640						
	3,824,552		3,824,592		3,824,641						
	3,824,553		3,824,593		3,824,642						
	3,824,554		3,824,594		3,824,643						
	3,824,555		3,824,595		3,824,644						
	3,824,556		3,824,596		3,824,645						
	3,824,557		3,824,597		3,824,646						
	3,824,558		3,824,598		3,824,647						
	3,824,559		3,824,599		3,824,648						
	3,824,560		3,824,600		3,824,649</						



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## PATENTS

4 : 3,823,486	3,823,981	3,823,840	3,823,664	18 : 3,824,619	3,823,494
3,823,971	3,823,983	3,824,018	3,823,667	3,823,431	3,823,611
3,823,975	3,824,002	3,824,022	3,823,668	3,823,447	3,823,795
3,824,024	3,824,003	3,824,086	3,823,674	3,823,469	3,823,962
3,824,373	3,824,010	3,824,135	3,823,676	3,823,533	3,823,963
3,824,375	3,824,099	3,824,141	3,823,682	3,823,542	3,824,014
3,824,478	3,824,148	3,824,199	3,823,690	3,823,754	3,824,094
3,824,491	3,824,149	3,824,275	3,823,704	3,823,791	3,824,104
3,824,494	3,824,163	3,824,285	3,823,733	3,824,289	3,824,289
6 : 3,823,425	3,824,165	3,824,378	3,823,753	3,823,880	3,824,319
3,823,473	3,824,229	3,824,479	3,823,783	3,823,939	3,824,417
3,823,477	3,824,261	3,824,487	3,823,802	3,823,964	3,824,496
3,823,478	3,824,281	3,824,492	3,823,821	3,823,976	3,824,497
3,823,481	3,824,290	3,824,544	3,823,822	3,824,132	3,824,503
3,823,498	3,824,351	3,824,555	3,823,823	3,824,233	3,824,504
3,823,535	3,824,353	3,824,122	3,823,844	3,824,246	3,824,538
3,823,549	3,824,390	3,824,203	3,823,875	3,824,292	3,824,573
3,823,559	3,824,393	3,824,320	3,823,883	3,824,298	3,824,588
3,823,595	3,824,395	3,823,509	3,823,890	3,824,305	3,824,595
3,823,596	3,824,424	3,823,522	3,823,912	3,824,357	3,823,428
3,823,597	3,824,448	3,823,531	3,823,913	3,824,411	3,823,490
3,823,602	3,824,451	3,823,575	3,823,922	3,824,507	3,823,515
3,823,615	3,824,452	3,823,658	3,823,926	3,823,480	3,823,552
3,823,628	3,824,472	3,823,699	3,823,928	3,823,572	3,823,553
3,823,644	3,824,516	3,823,765	3,823,942	3,823,577	3,823,703
3,823,652	3,824,540	3,823,861	3,823,967	3,823,650	3,823,731
3,823,684	3,824,548	3,823,877	3,823,989	3,823,751	3,823,751
3,823,708	3,824,557	3,824,026	3,824,001	3,823,979	3,823,812
3,823,714	3,824,560	3,824,405	3,824,027	3,824,476	3,823,990
3,823,718	3,824,563	3,824,425	3,824,041	3,824,477	3,824,007
3,823,723	3,824,565	3,824,578	3,824,053	3,823,501	3,824,130
3,823,734	3,824,571	3,823,421	3,824,054	3,823,505	3,824,137
3,823,738	3,824,572	3,823,721	3,824,079	3,823,782	3,824,166
3,823,744	3,824,586	3,823,899	3,824,114	3,823,892	3,824,218
3,823,766	3,824,593	3,823,957	3,824,116	3,824,065	3,824,323
3,823,772	3,824,601	3,823,814	3,824,117	3,824,247	3,824,328
3,823,785	3,824,614	3,823,958	3,824,147	3,824,404	3,824,368
3,823,788	8 : 3,823,462	3,824,456	3,824,180	3,823,904	3,824,371
3,823,789	3,823,519	3,823,454	3,824,352	3,823,959	3,824,400
3,823,804	3,823,705	3,823,518	3,824,362	3,824,172	3,824,409
3,823,817	3,823,848	3,823,529	3,824,427	3,824,434	3,824,418
3,823,839	3,824,485	3,823,534	3,824,470	3,823,492	3,824,423
3,823,841	3,824,603	3,823,585	3,824,471	3,823,573	3,824,441
3,823,866	Re:28,075	3,823,601	3,824,509	3,823,586	3,824,454
3,823,870	3,823,524	3,823,609	3,824,514	3,823,739	3,824,455
3,823,873	3,823,532	3,823,619	3,824,529	3,823,831	3,824,484
3,823,889	3,823,544	3,823,634	3,824,537	3,824,187	3,824,518
3,823,895	3,823,603	3,823,639	3,824,550	3,824,265	3,824,520
3,823,901	3,823,666	3,823,647	3,824,552	3,823,876	3,824,541
3,823,905	3,823,719	3,823,648	3,824,585	3,824,577	3,824,551
3,823,974	3,823,818	3,823,661	3,824,604	3,823,467	3,824,556

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

26	3,824,564	3,823,580	3,823,433	3,824,457	3,823,567	3,823,637
	3,824,587	3,823,581	3,823,436	3,824,460	3,823,568	3,823,640
	3,824,611	3,823,584	3,823,445	3,824,482	3,823,599	3,823,691
	3,823,429	3,823,610	3,823,446	3,824,509	3,823,616	3,823,706
	3,823,463	3,823,638	3,823,452	3,824,502	3,823,625	3,823,729
	3,823,466	3,823,669	3,823,461	3,824,534	3,823,660	3,823,730
	3,823,484	3,823,670	3,823,468	3,824,536	3,823,686	3,823,773
	3,823,555	3,823,693	3,823,471	3,824,543	3,823,692	3,823,774
	3,823,576	3,823,737	3,823,497	3,824,567	3,823,695	3,823,776
	3,823,590	3,823,747	3,823,499	3,824,575	3,823,745	3,823,777
	3,823,598	3,823,755	3,823,503	3,824,589	3,823,761	3,823,778
	3,823,642	3,823,871	3,823,513	3,824,602	3,823,762	3,823,838
	3,823,698	3,823,896	3,823,516	3,824,623	3,823,779	3,823,845
	3,823,702	3,823,940	3,823,548	3,823,448	3,823,836	3,823,911
	3,823,803	3,823,944	3,823,574	3,823,449	3,823,851	3,823,936
	3,823,813	3,823,945	3,823,617	3,823,451	3,823,863	3,823,948
	3,823,816	3,823,980	3,823,633	3,823,623	3,823,907	3,824,080
	3,823,894	3,823,996	3,823,671	3,824,125	3,823,908	3,824,081
	3,823,982	3,823,997	3,823,680	3,824,160	3,823,921	3,824,134
	3,823,985	3,824,008	3,823,681	3,824,358	3,823,929	3,824,178
	3,823,987	3,824,021	3,823,688	3,824,530	3,823,950	3,824,179
	3,824,067	3,824,036	3,823,707	3,823,819	3,824,005	3,824,225
	3,824,097	3,824,040	3,823,728	3,823,437	3,824,023	3,824,256
	3,824,208	3,824,078	3,823,770	3,823,465	3,824,033	3,824,257
	3,824,209	3,824,082	3,823,805	3,823,482	3,824,073	3,824,295
	3,824,230	3,824,084	3,823,806	3,823,502	3,824,077	3,824,433
	3,824,239	3,824,098	3,823,859	3,823,551	3,824,089	3,824,453
	3,824,240	3,824,107	3,823,862	3,823,600	3,824,090	3,824,463
	3,824,269	3,824,133	3,823,867	3,823,624	3,824,105	3,824,498
	3,824,276	3,824,164	3,823,874	3,823,677	3,824,111	3,824,513
	3,824,356	3,824,188	3,823,887	3,823,685	3,824,181	3,824,533
	3,824,469	3,824,200	3,823,914	3,823,752	3,824,183	3,824,580
	3,824,488	3,824,202	3,823,961	3,823,756	3,824,204	3,824,596
	3,824,506	3,824,213	3,823,970	3,823,758	3,824,211	49 : 3,823,557
	3,824,576	3,824,231	3,823,972	3,823,784	3,824,217	3,823,724
	3,824,579	3,824,238	3,823,973	3,823,833	3,824,227	3,823,827
	3,824,599	3,824,241	3,823,995	3,823,846	3,824,242	3,823,992
27	3,823,526	3,824,244	3,824,000	3,823,860	3,824,312	3,824,020
	3,823,665	3,824,271	3,824,006	3,823,920	3,824,316	3,824,043
	3,823,781	3,824,272	3,824,013	3,823,924	3,824,318	50 : 3,823,767
	3,823,847	3,824,278	3,824,017	3,823,927	3,824,331	51 : 3,823,417
	3,823,857	3,824,279	3,824,049	3,823,934	3,824,347	3,823,588
	3,823,897	3,824,291	3,824,100	3,823,951	3,824,376	3,823,662
	3,823,909	3,824,293	3,824,103	3,823,960	3,824,419	3,823,710
	3,824,047	3,824,303	3,824,106	3,824,009	3,824,428	3,823,722
	3,824,071	3,824,311	3,824,112	3,824,046	3,824,440	3,823,748
	3,824,176	3,824,315	3,824,123	3,824,048	3,824,465	3,824,156
	3,824,184	3,824,317	3,824,124	3,824,055	3,824,524	3,824,547
	3,824,197	3,824,324	3,824,127	3,824,057	3,824,525	3,824,562
	3,824,198	3,824,330	3,824,129	3,824,059	3,824,527	3,824,597
	3,824,219	3,824,332	3,824,136	3,824,064	3,824,553	53 : 3,823,566
	3,824,220	3,824,340	3,824,167	3,824,113	3,824,624	3,823,635
	3,824,365	3,824,342	3,824,168	3,824,158	3,824,531	3,823,675
	3,824,439	3,824,344	3,824,174	3,824,185	3,824,583	3,823,769
	3,824,464	3,824,377	3,824,175	3,824,201	3,824,584	3,823,903
	3,824,532	3,824,381	3,824,190	3,824,206	3,823,539	3,824,363
	3,824,554	3,824,388	3,824,192	3,824,307	3,823,720	3,824,461
28	3,823,570	3,824,398	3,824,214	3,824,364	3,823,750	54 : 3,824,121
29	3,823,491	3,824,403	3,824,215	3,824,367	3,824,052	55 : 3,823,435
	3,823,500	3,824,413	3,824,234	3,824,374	3,824,076	3,823,455
	3,823,832	3,824,450	3,824,243	3,824,387	3,824,142	3,823,547
	3,823,906	3,824,490	3,824,268	3,824,406	3,824,142	3,823,700
	3,824,083	3,824,493	3,824,283	3,824,438	3,823,768	3,823,709
	3,824,085	3,824,501	3,824,299	3,824,443	3,823,430	3,823,801
30	3,824,016	3,824,519	3,824,301	3,824,486	3,823,582	3,823,825
31	3,823,855	3,824,535	3,824,321	3,823,775	3,824,193	3,823,933
	3,823,858	3,824,568	3,824,322	3,823,787	3,824,354	3,824,044
33	3,823,506	3,824,582	3,824,327	3,823,790	3,824,475	3,824,157
	3,824,062	3,824,590	3,824,334	3,824,177	3,824,512	3,824,186
34	Re:28,074	3,824,594	3,824,336	3,824,195	3,823,554	3,824,329
	3,823,422	3,824,600	3,824,339	3,823,879	3,823,563	3,824,359
	3,823,427	3,824,609	3,824,341	3,824,382	3,823,564	3,824,370
	3,823,442	35 : 3,824,402	3,824,343	Re:28,077	3,823,571	3,824,407
	3,823,489	36 : 3,823,419	3,824,348	3,823,418	3,823,592	3,824,431
	3,823,527	3,823,420	3,824,350	3,823,441	3,823,607	3,824,444
	3,823,560	3,823,426	3,824,436	3,823,550	3,823,608	3,824,510



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## PATENT OFFICE NOTICES

### Return to Printing of Claims in Patent Official Gazette

In the notice of May 22, 1972 (899 O.G. 820) interested parties were requested to submit written comments as to whether claims or abstracts should be printed in the Patent Official Gazette. In view of the comments received, the Patent Office has decided to return to the pre-1968 practice of printing the broadest claim or claims, as selected by the examiner, in the Patent Official Gazette. The printing of claims will begin with the October 1, 1974 issue of the Patent Official Gazette. Abstracts will continue to be printed on patents.

C. MARSHALL DANN,  
Commissioner of Patents.

### Short Titles for International Trademark Classes

The United States Patent Office will, effective immediately, associate the following word titles with the respective international trademark class numbers:

#### Goods

- 1 Chemicals
- 2 Paints
- 3 Cosmetics and cleaning preparations
- 4 Lubricants and fuels
- 5 Pharmaceuticals
- 6 Metal goods
- 7 Machinery
- 8 Hand tools
- 9 Electrical and scientific apparatus
- 10 Medical apparatus
- 11 Environmental control apparatus
- 12 Vehicles
- 13 Firearms
- 14 Jewelry
- 15 Musical instruments
- 16 Paper goods and printed matter
- 17 Rubber goods
- 18 Leather goods
- 19 Non-metallic building materials
- 20 Furniture and articles not otherwise classified
- 21 Housewares and glass
- 22 Cordage and fibers
- 23 Yarns and threads
- 24 Fabrics
- 25 Clothing
- 26 Fancy goods
- 27 Floor coverings

- 28 Toys and sporting goods
- 29 Meats and processed foods
- 30 Staple foods
- 31 Natural agricultural products
- 32 Light beverages
- 33 Wines and spirits
- 34 Smokers' articles

#### SERVICES

- 35 Advertising and business
- 36 Insurance and financial
- 37 Construction and repair
- 38 Communication
- 39 Transportation and storage
- 40 Material treatment
- 41 Education and entertainment
- 42 Miscellaneous

These short titles are not an official part of the international classification. Their purpose is to provide a means by which the general content of numbered international classes can be quickly identified. Therefore the titles selected consist of short terms which generally correspond to the major content of each class but which are not intended to be more than merely suggestive of the content. Because of their nature these titles will not necessarily disclose the classification of specific items. The titles are not designed to be used for classification but only as information to assist in the identification of numbered classes. For determining classification of particular goods and services and for full disclosure of the contents of international classes, it is necessary to refer to the Alphabetical List of Goods and Services and to the names of international classes and the explanatory notes in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied," published by the World Intellectual Property Organization (WIPO). The full names of international classes appear also in Section 6.1 of the Trademark Rules of Practice.

The short titles are being printed in the OFFICIAL GAZETTE in association with the international class numbers under MARKS PUBLISHED FOR OPPOSITION, Sections 1 and 2, under TRADEMARK REGISTRATIONS ISSUED, PRINCIPAL REGISTER, Section 1, and under SUPPLEMENTAL REGISTER, Sections 1 and 2.

Adoption of the international classification by the United States as its system of classification was announced in the OFFICIAL GAZETTE of June 26, 1973 (911 O.G. TM 210).

Date: June 18, 1974.

RENE D. TEGTMEYER,  
Assistant Commissioner for Trademarks.

JULY 23, 1974

U. S. PATENT OFFICE

753

### Certificates of Correction for the Week of July 23, 1974

P.P. 3,212	3,760,277	3,773,096	3,783,124
P.P. 3,469	3,760,841	3,773,151	3,783,172
Re. 27,748	3,761,442	3,773,899	3,783,624
3,507,618	3,761,682	3,775,123	3,783,945
3,532,519	3,762,598	3,775,252	3,784,288
3,578,367	3,763,934	3,775,959	3,784,294
3,582,812	3,764,212	3,776,687	3,785,342
3,598,691	3,764,516	3,776,966	3,785,848
3,644,463	3,764,531	3,777,169	3,785,944
3,646,586	3,765,076	3,777,361	3,786,319
3,684,390	3,765,288	3,777,511	3,787,362
3,686,211	3,765,403	3,777,556	3,787,809
3,689,137	3,765,488	3,778,157	3,787,818
3,690,680	3,765,585	3,778,231	3,787,932
3,700,549	3,766,021	3,778,241	3,788,237
3,711,487	3,766,250	3,778,437	3,788,906
3,721,171	3,766,837	3,778,474	3,790,392
3,727,537	3,767,599	3,778,619	3,790,475
3,729,467	3,767,619	3,778,869	3,791,439
3,732,360	3,767,699	3,778,928	3,791,558
3,736,944	3,767,756	3,779,143	3,791,775
3,739,154	3,768,487	3,779,283	3,791,882
3,740,448	3,768,560	3,779,526	3,791,968
3,741,072	3,768,666	3,779,829	3,792,099
3,741,874	3,768,667	3,779,883	3,792,177
3,741,918	3,769,271	3,780,337	3,796,273
3,749,425	3,769,581	3,780,837	3,796,336
3,749,582	3,770,310	3,780,879	3,796,341
3,750,830	3,770,419	3,780,951	3,796,371
3,751,561	3,770,573	3,781,248	3,796,455
3,752,090	3,770,698	3,781,514	3,796,545
3,752,667	3,770,888	3,781,616	3,796,584
3,752,745	3,771,361	3,781,796	3,796,636
3,753,694	3,771,524	3,782,208	3,796,800
3,754,926	3,771,546	3,782,428	3,796,872
3,755,484	3,772,477	3,782,925	3,796,896
3,757,097	3,772,510	3,782,960	
3,758,647	3,772,865	3,782,987	



# PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JULY 6, 1974

### PATENT EXAMINING GROUPS

#### CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-19-73
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	6-18-73
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oro and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director.....	11-15-73
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director.....	8-23-73
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..	7-3-73
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	

#### ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	11-28-74
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	2-1-73
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	11-1-73
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.....	4-11-73
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	12-10-73
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 260—C. D. QUARFORTH, Director.....	1-12-73
Industrial Arts; Household, Personal and Fine Arts.	

#### MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director.....	1-2-74
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	10-17-73
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director.....	11-2-73
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director.....	9-10-73
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director.....	11-1-73
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during July 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,797,414 to 2,801,413, inclusive  
Plant Patents..... Numbers 1,612 to 1,625, inclusive

# REISSUES

JULY 23, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,078

## INSULATED ALUMINUM ALLOY MAGNET WIRE

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Original No. 3,513,252, dated May 19, 1970, Ser. No. 814,201, Apr. 7, 1969, which is a continuation-in-part of application Ser. No. 795,038, Jan. 29, 1969, which is a continuation-in-part of application Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of application Ser. No. 730,933, May 21, 1968, all now abandoned. Application for reissue Oct. 12, 1972, Ser. No. 296,941

Int. Cl. H01b 5/08  
U.S. Cl. 174—120 SR 20 Claims



An insulated solid magnet wire, prepared from an aluminum alloy wire having an acceptable electrical conductivity of at least sixty-one percent (61%) based on the International Annealed Copper Standard and a minimum of fifteen percent (15%) ultimate elongation, has improved physical properties of increased tensile strength and fatigue resistance when compared to conventional magnet wire. The aluminum alloy wire contains substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals and annealed after the final draw. After annealing, the wire has the aforementioned novel and unexpected properties of a minimum of fifteen percent (15%) ultimate elongation, electrical conductivity

of at least sixty-one percent (61%) of the International Annealed Copper Standard and increased tensile strength, bendability and fatigue resistance.

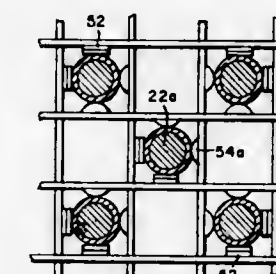
28,079

## MEANS FOR SUPPORTING FUEL ELEMENTS IN A NUCLEAR REACTOR

Harry N. Andrews, Murrysburg, and Herbert W. Keller, Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Original No. 3,379,617, dated Apr. 23, 1968, Ser. No. 458,634, May 25, 1965. Application for reissue June 15, 1971, Ser. No. 153,203

Int. Cl. G21c 3/32  
U.S. Cl. 176—78 30 Claims



1. A grid structure for a nuclear reactor fuel assembly comprising a plurality of connecting members forming [respective openings] peripheral and inner fuel element openings through each of which openings an [which] elongated fuel [elements are] elements is adapted to extend, at least two rigid spaced projections extending into each of [at least some of] said peripheral and inner [grid] fuel element openings from at least one of said members, and at least one resilient means extending into each of said [some] peripheral and inner openings from at least another of said members and disposed generally opposite to said two rigid projections with its innermost protrusion being positioned in alignment with the region intermediate said spaced projections.

28,080

## HOT TOP CASING FOR CASTING MOLDS

Per Davidson, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

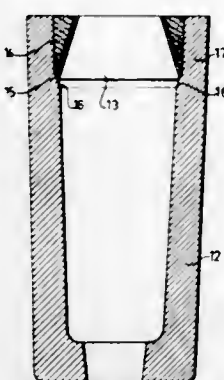
Original No. 3,072,981, dated Jan. 15, 1963, Ser. No. 861,098, Dec. 21, 1959. Reissue No. 25,915, dated Nov. 23, 1965, Ser. No. 438,446, Jan. 5, 1965. This application for reissue June 7, 1971, Ser. No. 150,005

Int. Cl. B22d 7/10  
U.S. Cl. 106—38.23 11 Claims

A hot top casing for an ingot casting mold consisting of a molded mixture containing 2 to 15% by weight fibrous organic material, 4 to 10% by weight organic binder, up to 4% by weight inorganic fibrous material, and the balance a granular fireproof material. Suitable fireproof materials are refractory silicates such as quartz



and sand, burned dolomite, and cinders. The fireproof material preferably has an average grain size within the range



ing wheel or multiple grinding wheels (22-26) and the centerline of a cylindrical workpiece (W) on a grinding machine. Two gage heads (43, 44) are automatically advanced during the grinding cycle at the extreme ends of the workpiece portions being ground. A differential circuit (48) directly compares the voltage output of the right hand (R.H.) and the left hand

of from 0.6 to 0.05 mm. The organic fibrous material is preferably paper pulp or mechanical pulp.

28,081

**ELECTRONIC CREDIT CARD ACCEPTOR**

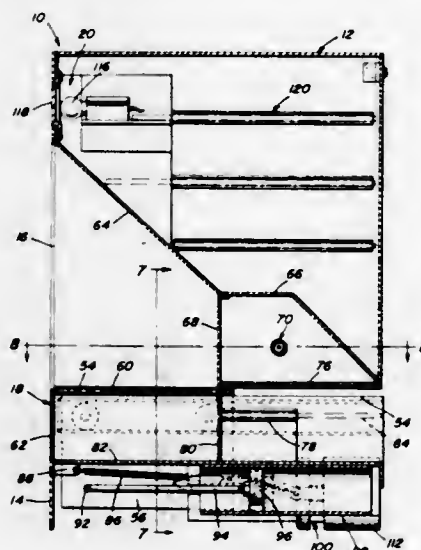
Jerry E. Travioli, Jackson, Mich., assignor to Transaction Technology, Inc., Cambridge, Mass.

Original No. 3,536,894, dated Oct. 27, 1970, Ser. No. 474,239, July 23, 1965. Application for reissue Oct. 26, 1972, Ser. No. 300,891

Int. Cl. G01n 21/30; G06k 7/12, 19/02, 21/04

U.S. Cl. 235-61.11 E

21 Claims



Apparatus for rapidly determining the credit of a person bearing a credit card by means of a credit checking computer wherein the credit card incorporates infra red transmitting portions for transmitting infra red radiation emitting from an infra red radiation source to reading means producing signal pulses which are fed to the computer, and the computer produces output signals indicating the credit condition pertaining to the card read.

28,082

**MEANS FOR ADJUSTING THE ANGULAR RELATIONSHIP BETWEEN A WORKPIECE TO BE GROUND AND A TOOL**

Ralph E. Price, Waynesboro, Pa., assignor to

Landis Tool Company

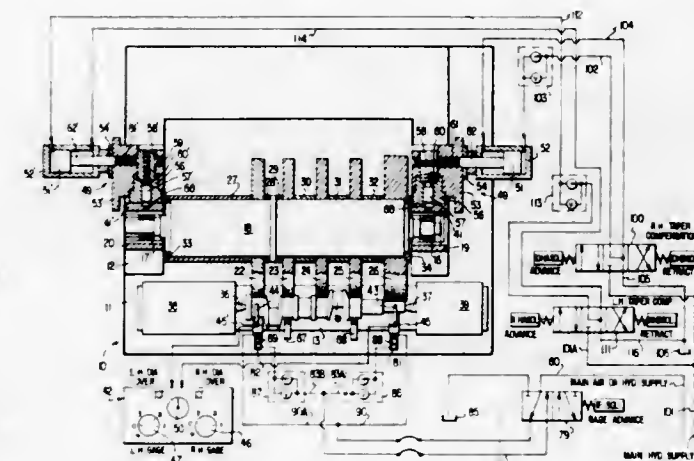
Original No. 3,690,072, dated Sept. 12, 1972, Ser. No. 98,807, Jan. 16, 1970. Application for reissue Feb. 1, 1973, Ser. No. 328,664

Int. Cl. B24b 49/04

U.S. Cl. 51-165 R

10 Claims

An automatic taper compensator is used to maintain a parallel relationship between the axis of a wide grind-



(L.H.) gage heads (43, 44) and generates a signal when the difference varies by more than a predetermined amount. Compensation is effected by deflecting the appropriate wheel spindle bearing support (41 or 41') in a forward direction, as separate force applying means (49, 49') are provided at each end of the wheel spindle (18) for that purpose.

28,083

**ELECTROLYTIC PROCESS OF PREPARING PURE HYDROGEN**

Mutsuaki Shinagawa, Amagasaki, and Hiroyuki Nezu, Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original No. 3,458,412, dated July 29, 1969, Ser. No. 623,426, Mar. 15, 1967. Application for reissue Nov. 1, 1971, Ser. No. 194,762, which is a continuation of abandoned application Ser. No. 51,289, June 30, 1970

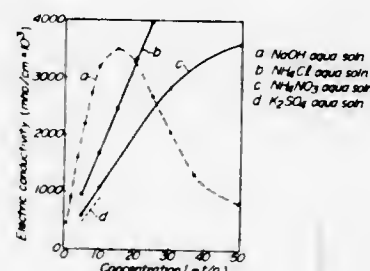
Claims priority, application Japan, Mar. 30, 1966,

41/20,482

Int. Cl. C01b 13/04

U.S. Cl. 204-129

18 Claims



The preparation of pure hydrogen by electrolyzing water in a cell having a mercury cathode, the water being in an aqueous solution of an electrolyte such as ammonium salts where a semiconductor material having a forbidden band spacing less than 3.6 eV. is suspended. Examples of such semiconductors are  $\text{Bi}_2\text{Te}_3$ ,  $\text{Te}$ ,  $\text{InAs}$ ,  $\text{CdSb}$ ,  $\text{Ge}$ ,  $\text{Si}$ ,  $\text{CdTe}$  and  $\text{ZnS}$ .

**PATENTS**

GRANTED JULY 23, 1974

**GENERAL AND MECHANICAL**

3,824,625

**DISPOSABLE GOWN WITH MULTIPLE FLAPS AND CLOSURES**

Angelica G. Green, Fort Lee, N.J., assignor to Kimberly-Clark Corporation, Neenah, Wis.

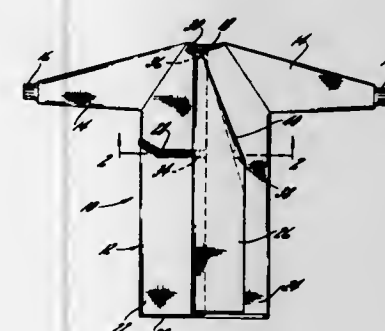
Continuation of Ser. No. 158,299, June 30, 1971, abandoned.

This application Apr. 18, 1973, Ser. No. 352,244

Int. Cl. A41d 13/00

U.S. Cl. 2-114

1 Claim U.S. Cl. 2-146



An adjustable wraparound gown comprising a body portion having a continuous front, a pair of sleeves and a neck opening, the back of which is comprised of two panels, one having a flap adapted to cover a substantial portion of the other panel when unfolded. The gown has means for adjustably fastening the panels together and for holding the flap in either a folded or unfolded position.

3,824,626

**COLLAR ORNAMENT**

Jose Ros Navarro, Rambla San Carlos, 20, Tarragona, Spain

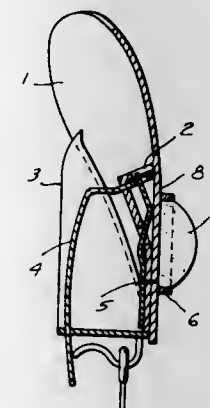
Filed Mar. 2, 1973, Ser. No. 337,739

Claims priority, application Spain, June 5, 1972, 181136

Int. Cl. A41d 25/04

U.S. Cl. 2-145

7 Claims



A collar ornament for collars of shirts, blouses and the like has a generally V-shaped ornamental member, provided with a rib extending along a lower edge portion of the inner side thereof, and also provided with a clamping arrangement fastened to the inner side releasably engaging a collar in the vicinity of the chin of a wearer.

3,824,627

**NECK-TIE OR THE LIKE AND METHOD OF MANUFACTURE THEREOF**

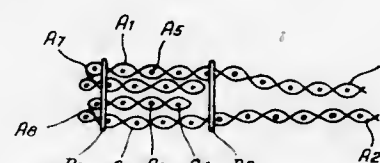
Nutrizio Maria Schon, and Loris Abate, both of Via Montenapoleone 2, Milan, Italy

Filed Dec. 5, 1972, Ser. No. 312,369

Claims priority, application Italy, Dec. 6, 1971, 32115/71

Int. Cl. A41d 25/06

10 Claims



A neck-tie or the like and a method for its manufacture, constituted of two superimposed layers or components of a textile fabric, the edges of which are folded and tucked between the layers of the fabric and joined by a row of stitches to form a rib around the edge of the neck-tie. At least one other edge of stitches may be located in parallel spaced relationship with the first row of stitches so as to define the extent of the edge region of the neck-tie.

3,824,628

**METHOD AND EQUIPMENT FOR SEWING**

Patricia A. Bannister, 540 Bird Ave., San Jose, Calif. 95126

Filed June 7, 1973, Ser. No. 367,785

Int. Cl. A41d

U.S. Cl. 2-243 R

3 Claims



Method of sewing employing a standard pattern with marking dots, applying pins through the pattern and goods at the marking dots, removing the pattern while leaving the pins, applying adhesive rings over each pin so as to adhere to the goods, carrying out any necessary folding (e.g., folding into a dart) along the lines mapped out by the adhesive rings, and sewing along such lines.

3,824,629

**PIVOTED DISCOID HEART VALVE HAVING A CHANGING PIVOT AXIS**

Donald P. Shiley, 11022 Huntington, Santa Ana, Calif.

Continuation of Ser. No. 809,754, March 24, 1969,

abandoned. This application May 6, 1971, Ser. No. 140,900

Int. Cl. A61f 1/22

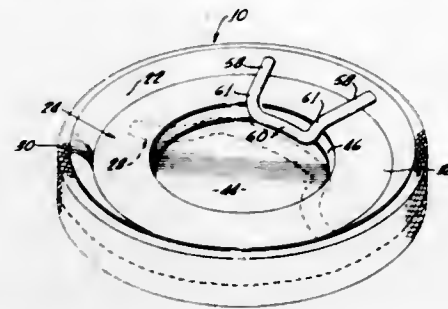
U.S. Cl. 3-1

23 Claims

A heart valve prosthesis having a discoid poppet mounted therein for pivotal movement between a closed and opened



position. The poppet is supported for movement by opposed, spaced support struts which form an eccentric pivot point for the medullary canal of two metacarpals and has an extension on the other end for reception within the radius. Methyl-



opening of the valve and a changing pivot point for closing of the valve. The spacing between the struts is sufficient to enable rotational movement of the poppet during operation.

3,824,630

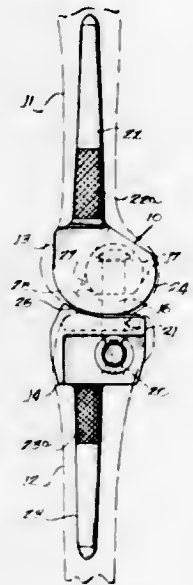
**PROSTHETIC JOINT FOR TOTAL KNEE REPLACEMENT**  
L. Lyle Johnston, Syracuse, Ind., assignor to Zimmer Manufacturing Co., Warsaw, Ind.

Filed June 23, 1972, Ser. No. 265,577

Int. Cl. A61F 1/24

U.S. Cl. 3-1

8 Claims



The embodiment disclosed herein illustrates a joint prosthesis for total knee replacement. The joint prosthesis includes a first prosthetic member including a stem member adapted for insertion into a first skeleton element and further including a first joint-forming member at one end of the stem member to provide a convexly shaped articulation surface. A second prosthetic member includes a stem for insertion into a second skeleton element disposed adjacent the first skeleton element and is also provided with a second joint-forming member at the other end thereof to provide a concavely shaped articulation surface. The convexly shaped articulation surface cooperates with the concavely shaped articulation surface by means of a connecting link having a ball joint at one end and a pivot joint at the other end. The movement of the prosthesis closely approximates that of the actual knee joint movement.

3,824,631

**BONE JOINT FUSION PROSTHESIS**

Albert H. Burstein, Shaker Heights, and Kingsbury G. Heiple, Cleveland, both of Ohio, assignors to The Sampson Corporation, Pittsburgh, Pa.

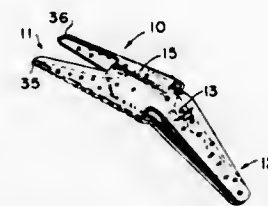
Filed May 11, 1973, Ser. No. 359,458

Int. Cl. A61F 1/24

U.S. Cl. 3-1

10 Claims

A prosthesis for use in fusion of a bone joint especially for managing the severely disabled rheumatoid wrist. The prosthesis serves as a bridge across the joint and is formed of an appropriate metal of hollow construction and is bifurcated at one end to provide projections which are received within



methacrylate or other appropriate settable cement is packed within and about the prosthesis to provide, upon setting, a strong, rigid joint bridge.

3,824,632

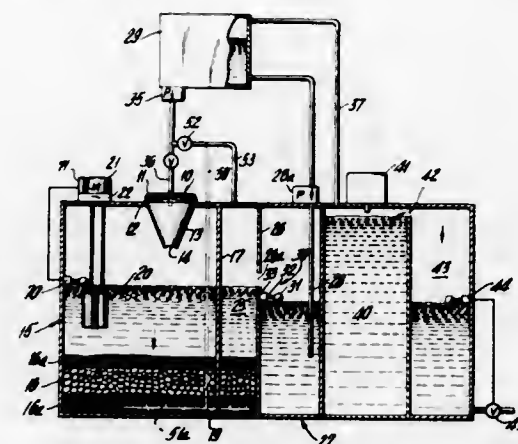
**SELF-CONTAINED WATER CLOSET AND DIGESTER**  
Bert Bach, New York, N.Y., and Robert Lemcke, Middleton, Wis., assignors to Pure Way Corporation, East Moline, Ill.

Filed Oct. 6, 1972, Ser. No. 295,686

Int. Cl. E03d 5/016; Co2c 1/16; C02c 1/40

U.S. Cl. 4-12

4 Claims



A water closet and digester are parts of a sewage disposal unit that includes filter beds, tanks for bacterial action, and a recirculating flushing water line. The solid wastes can be disintegrated by a maserator. In one embodiment the maserator applies pressure to the waste by using motor driven rollers having flexible surfaces.

3,824,633

**DISPENSER ASSEMBLY AND METHOD**

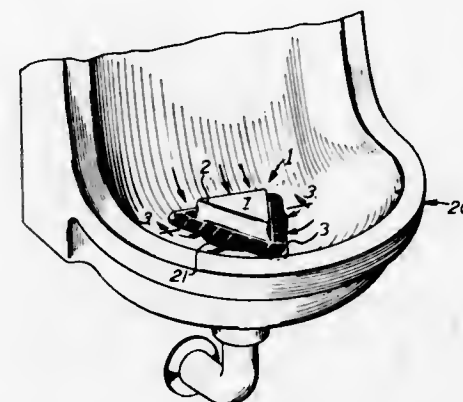
Eftichios Van Vlahakis, Northbrook, Ill., assignor to Venus Laboratories, Inc., Bensenville, Ill.

Filed Oct. 2, 1972, Ser. No. 294,102

Int. Cl. E03d 13/00, 9/02

U.S. Cl. 4-109

10 Claims



A disposable dispenser for fluid-soluble chemicals that must be slowly released at prescribed times, and a method of manu-

facture of the chemical and the dispenser in unitary form. The novel chemical composition has a relatively high melting point which permits it to be cast into a substantially imperforate protective cup in a fluid condition, and thereafter allowed to set, thereby becoming unitary with the dispenser. In one manufacture embodiment, the chemical solidifies around appropriate attaching means in the cup in a ready-for-use position. One embodiment of the article is a dispenser for antiseptic and/or deodorizing chemicals for a urinal. The chemical is protected from direct action of urine by a substantially imperforate, inverted cup in which the chemical is located. A perforated flange serves to support the dispenser cup in the desired location within the urinal while also serving to allow effective drainage of the urine. The fluid soluble chemical is released in desired amounts only at the effective time of flushing by the turbulence of the flush water. The chemical-water solution then uniformly washes and deodorizes the urine receptacle to provide protection from odor, bacteria and disease. The chemical is not again released from the dispenser until flushing occurs at a later time.

3,824,634

**ARRANGEMENT IN SWIMMING POOLS**

Stig Ture Lindqvist, Farsta, Sweden, assignor to Ingenjorsfirman Vattenanlaggningar, Stockholm, Sweden

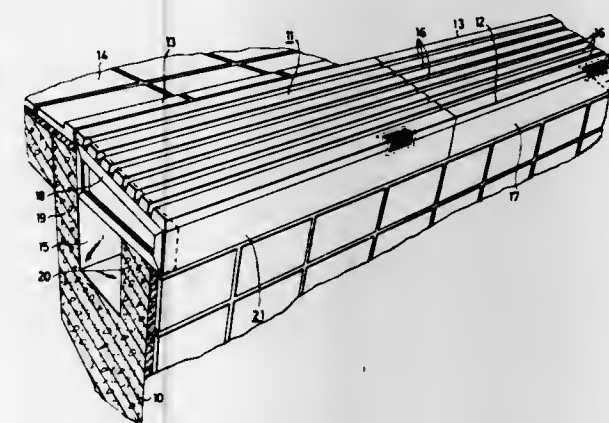
Filed Apr. 27, 1972, Ser. No. 248,306

Claims priority, application Sweden, Apr. 29, 1971, 5574/71

Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.17

12 Claims



An arrangement in swimming pools or bathing pools surrounded by a brim of which at least a portion thereof slopes downward towards the pool water so that its lower edge is located substantially on the same level as the surface of the pool water. A drainage channel for collecting and draining pool water is located beneath the sloping brim portion and the brim portion is provided with perforations to form a perforated cover member for the drainage channel.

3,824,635

**CIRCULATING HAND-HOLD FOR SWIMMING POOLS**  
Milton K. Spaulding, 2715 Exeter Pl., Santa Barbara, Calif. 93105

Filed Aug. 13, 1973, Ser. No. 387,744

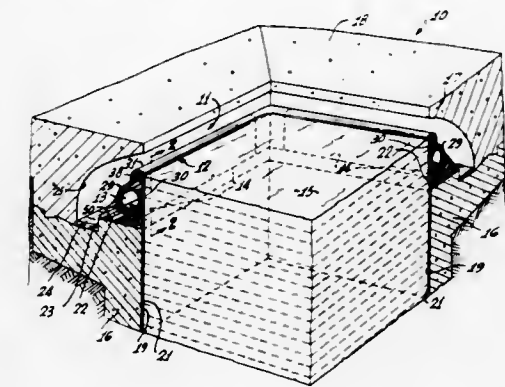
Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.18

12 Claims

A water-circulating hand-hold for swimming pools and a method for fabricating the same, the hand-hold forming one side of a peripheral gutter into which the water is skimmed over a lip structure of the hand-hold, and also providing a conduit for the water which is recirculated to the pool through openings in the hand-hold. The hand-hold is formed in sections, each comprising a fiber glass shell molded around a length of pressure-tight, prefabricated pipe, and has a shaped lip structure above the pipe, over which water is skimmed from the pool into the gutter. The lip structure is filled with

polyurethane foam, and the remaining space within the shell, below the pipe, is filled with a hard-setting resin. The resin forms a rigid base for the hand-hold, the sections of which are



installed around the pool in end-to-end relation, joined by telescoped connecting sleeves and miter-shaped corner sections, and leveled by means of screw jacks.

3,824,636

**WASH BASIN ADAPTED FOR SECUREMENT TO A SUPPORT**

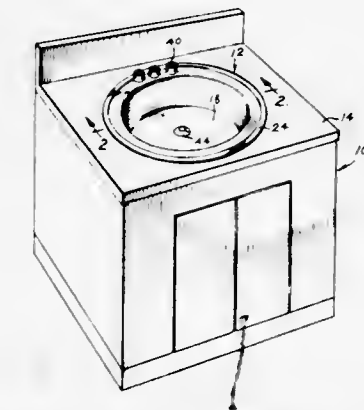
Glenn R. Brown, Bristol, Ind., assignor to Bristol Products, Inc., Bristol, Ind.

Filed July 3, 1972, Ser. No. 268,694

Int. Cl. E03c 1/32, 1/18

U.S. Cl. 4-187 A

4 Claims



A wash basin having a liquid collecting part and a flanged part which extends peripherally about and outwardly from the upper margin of the liquid collecting part. The flanged part of the basin carries a pressure sensitive adhesive which allows the basin to be secured to the top of a support.

3,824,637

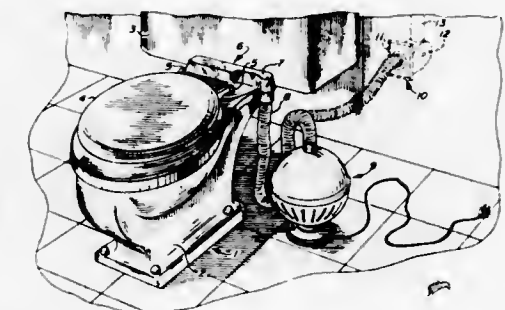
**VENTILATING ATTACHMENT FOR WATER CLOSET**  
Clyde J. Hunnicutt, Jr., 3026 E. Garfield St., Phoenix, Ariz. 85008

Filed Nov. 8, 1972, Ser. No. 301,581

Int. Cl. A47k 3/22; E03d 9/04, 13/00

U.S. Cl. 4-213

4 Claims



In order to provide very efficient and effective ventilation of a water closet, a collector having an exhaust coupled to suc-



tion means is disposed directly beneath the seat at the rear thereof. The collector is held in place by and between the hinge bolts of the seat, and has a downwardly directed inlet opening which extends over the center rear portion of the bowl. A passageway, which is taller than its narrowest portion, extends laterally between the seat and the water reservoir of the water closet to effect a conduit between the inlet and exhaust openings. The exhaust opening is coupled, by means of a flexible hose, to the suction means comprising a motor driven centrifugal air pump. The air pump may discharge to a conduit leading outdoors or to another convenient discharge space, or the air from the bowl may be pulled by the suction pump through filtering means, such as activated charcoal, after which it is discharged into the local environment. With the latter configuration, a self-contained pump/filter unit is provided, and the activated charcoal is disposed within a chamber having a baffle which prevents "tunneling" of the flowing air through the charcoal after a period of use. The collector is provided with upwardly directed lips about both the inlet and exhaust openings to achieve a double trap against any water which might inadvertently enter the collector, thereby preventing any water from entering the flexible tubing to prevent electrical malfunctions of the motor driving the air pump.

3,824,638

## ADJUSTABLE BED FRAME

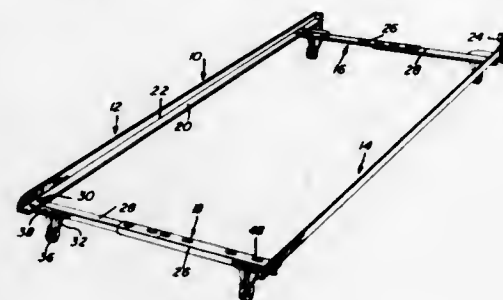
Earl M. Bogar, Jr., P.O. Box 4152, Houston, Tex. 77014

Filed Aug. 21, 1972, Ser. No. 282,006

Int. Cl. A47c 19/04

U.S. Cl. 5—181

7 Claims



A bed frame for use in supporting a spring and mattress assembly in a Hollywood type bed which is foldable and adjustable to receive different sizes of bedding and provided with an insertable center support for use when supporting the largest standard size bedding.

3,824,639

## SPRING LOCATING APPARATUS FOR BOX SPRING ASSEMBLIES

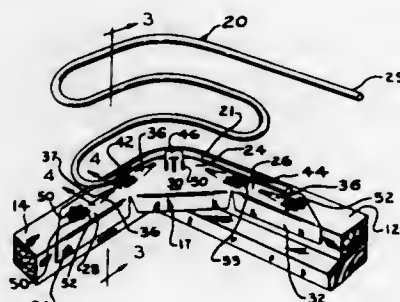
Jack C. Mandusky, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Continuation-in-part of Ser. No. 264,818, June 21, 1972, abandoned. This application May 17, 1973, Ser. No. 361,137

Int. Cl. A47c 23/02

U.S. Cl. 5—260

10 Claims



A corner assembly for a box spring frame which forms a reinforced corner and which supports and locates a corner

spring element. The corner assembly can be in the form of an individual bracket which also connects wooden frame rails.

3,824,640

## BED COVER

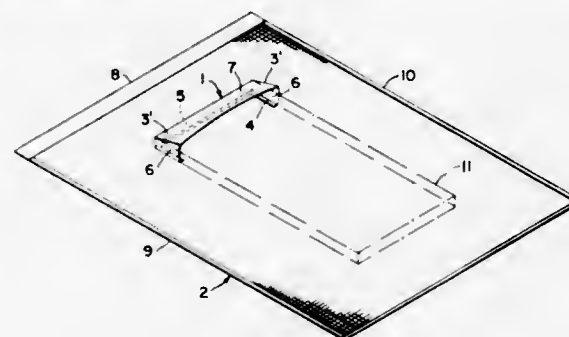
Clara Cella Golden, P.O. Box 63, Rockaway Park, Far Rockaway, New York, N.Y. 11694

Filed Dec. 11, 1972, Ser. No. 313,807

Int. Cl. A47g 9/00

U.S. Cl. 5—334 C

2 Claims



A bed cover consisting of a main section having longitudinal and transverse dimensions long enough to cover the upper surface of the bed mattress and drape therefrom to the ground from the foot and sides thereof, and a pocket fastened to the underside of the main section at a point where the drape over the foot begins. The pocket is fastened so that its opened end runs across the transverse dimension of the main section and is sufficiently wide to accept the foot edge of the mattress with sufficient surplus space to accept the feet of the occupant of the bed.

3,824,641

## CAMPING TOOL

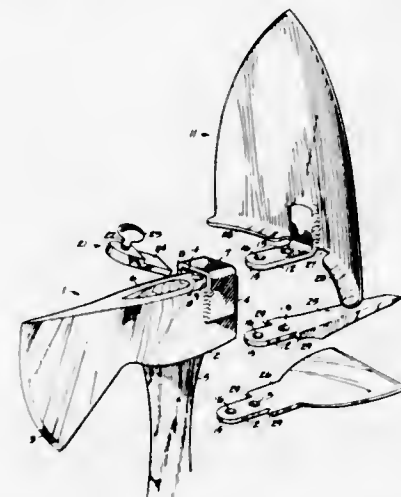
Frederick Shandel, Alhambra, Calif. 95410

Filed July 31, 1972, Ser. No. 276,587

Int. Cl. B25f 1/02; B25g 3/12

U.S. Cl. 7—14.55

7 Claims



An ax with a flat top on its poll; a lug projecting from the top of the poll spaced from but near the heel of the poll; the lug has a substantially flat cavity extending longitudinally of the ax and has a prong extended from the poll inside the cavity. Several attachments for various camping implements have a flat securing flange slideably fitting into the lug cavity and each flange has a hole engageable with the prong in the cavity and an indentation on the portion of the flange projecting beyond said cavity. A securing wedge is insertable into said cavity oppositely to said flange so as to tightly fill the space between the flange and the top of the cavity in the lug and a

set screw on said wedge is engageable in said indentation in the flange in the securing position to hold the camping implement securely in position.

3,824,642

## MACHINE FOR PULLING OVER AND CEMENT LASTING OF THE FOREPART OF A SHOE UPPER

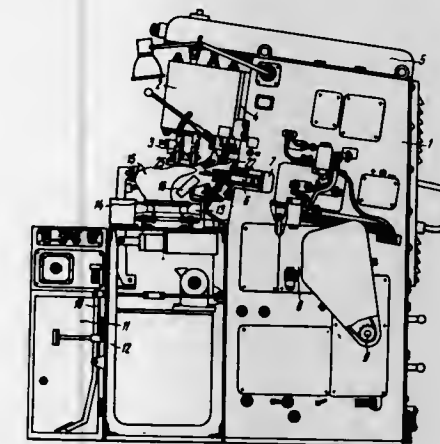
Mikhail Dmitrievich Smirnov, Moskovsky prospekt, 175, kv. 7; Boris Alexandrovich Ershov, Drovyanol pereulok, 10, kv. 17; Vladilen Nikolaevich Savitsky, Zanevsky prospekt, 32, kv. 83, all of Leningrad; Boris Dmitrievich Breev, Krasnopresnenskaya naberezhnaya, 1/2, kv. 28, Moscow; Anatoly Alexandrovich Atkarsky, Derbenevskaya naberezhnaya, 13/17, korpus 3, kv. 78, Moscow; Svyatoslav Viktorovich Shardakov, Samarkandsky bulvar, 32, korpus 1, kv. 106, Moscow; David Aronovich Slnajuk, Bolotnikovskaya ulitsa, 38, korpus 1, kv. 6, Moscow; Vladimir Nikolaevich Stukalov, ulitsa 111 Internatsionala 135, kv. 48, and Leonid Vasilievich Puzynya, prospekt Engelsa 22, kv. 5, both of Leningrad, all of U.S.S.R.

Filed July 10, 1973, Ser. No. 377,913

Int. Cl. A43d 21/00

U.S. Cl. 12—10.5

3 Claims



A machine for pulling over and cement lasting of the forepart of a shoe upper is provided with a drafting head with lasting tools or pincers positioned above a last with a shoe upper thereon and mounted on power-driven slides adapted to advance the head together with the lasting tools in perpendicular directions for longitudinal drafting and transverse pulling over of a shoe upper on the last. One of said lasting tools is stationary with respect to the housing of the head, while the other tool, the toe one, is mounted on an individual slide adapted to advance this last-mentioned tool to underlie the toe part of the last and thus to grip the forepart of the upper. The machine is further provided with lasting plates spaced from the last and mounted on a power-driven slide adapted to advance the plates horizontally toward the last at lasting.

3,824,643

## APPARATUS FOR APPLYING WELTING TO A SHOE COMPONENT

John Decoulos, Peabody, Mass., assignor to Boston Machine Works Co., Lynn, Mass.

Filed June 28, 1973, Ser. No. 374,508

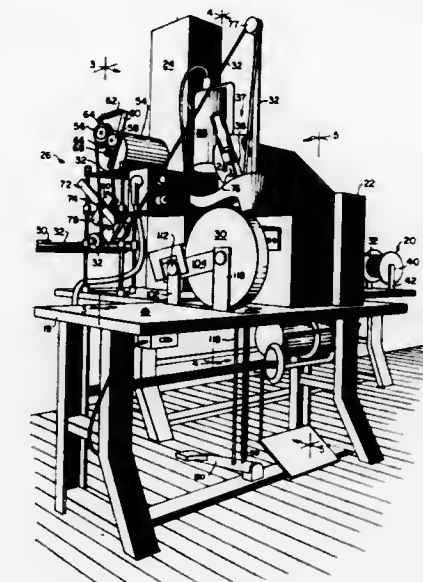
Int. Cl. A43d 45/00

U.S. Cl. 12—67 K

9 Claims

Continuous wetting, in sequence, is wetted with cement which is dried to provide a bonding stratum, is metered out to provide slack increments each equal in length to the perimeter of a shoe component, is advanced together with the perimeter of the shoe component through the nip between a pair of pressure applying wheels, is heated at the nip to reactivate the bonding stratum which causes the wetting to adhere to the perimeter of the shoe component, and is severed at incremental demarcations. The wheels are designed specifically to ad-

vance the marginal edge of the shoe component and the welt through the nip and to apply pressure across any cross-section securely in position.



tional portion in the nip notwithstanding differences in the peripheral thicknesses of the shoe component.

3,824,644

## FLOATING ELEMENT, FLOATING ASSEMBLY, AND CONNECTING BOLT

Hermann Stranzinger, Reitberg 40 A, 5301 Eugendorf, Austria

Filed Aug. 15, 1972, Ser. No. 280,834

Claims priority, application Austria, Aug. 19, 1971, 7240/71

Int. Cl. E01d 15/14

U.S. Cl. 14—27

10 Claims



A floating element comprises a substantially prismatic, floatable body having a plurality of rounded corner edges, and a plurality of outwardly protruding eye lugs which are disposed on different levels, each lug being fixed to the body at one of its corner edges and being formed outwardly of the body with a hole adapted to register with a hole in a similar lug fixed to and protruding from an adjacent floating element. A connecting bolt comprises a conical head and a substantially cylindrical shank adapted to extend through the registering holes in eye lugs of adjacent floating elements for linking them together, the shank carrying projections which are interlockingly engageable with recesses in the corner edges upon rotation of the bolt from an insertion position into a retaining position.

3,824,645

## SCRUBBING MACHINE

Keith N. Krier; Neil F. Brown, and Steven J. A. Waldhauser, all of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed May 22, 1972, Ser. No. 255,612

Int. Cl. A47l 11/292

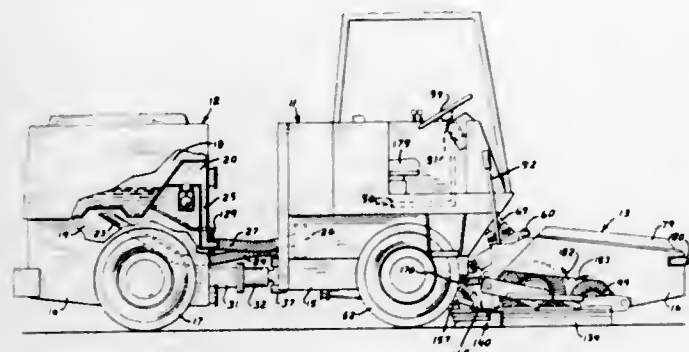
U.S. Cl. 15—50 C

40 Claims

A scrubbing machine that includes an articulated vehicle having a power unit and a trailer unit coupled thereto, said trailer unit having cleaning and dirty solution tanks thereon, a



squeegee assembly on the power unit having a central liquid take-up tube and a second take-up tube at one end portion thereof, controls operated by turning the vehicle in the appropriate direction for switching the application of vacuum from the central tube to the second tube, a scrubber head unit



and an assembly for mounting and carrying the scrubber unit on the vehicle and raising and lowering the scrubber unit including an articulated joint to permit limited pivotal movement of the scrubber head about a generally vertical axis and an axis perpendicular thereto.

3,824,646

# COMBINATION DRILLING AND BRUSHING TOOL IN A PIPE CLEANING MACHINE

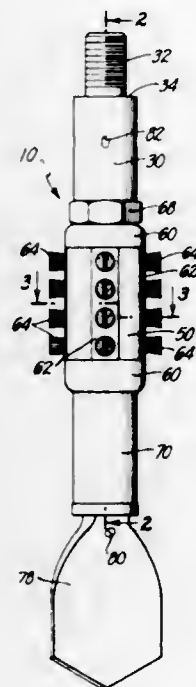
Marlyse Janean Baldwin Jal, 3155 French Rd. Apt. 223, Beaumont, Tex. 77704

Filed Nov. 17, 1972, Ser. No. 307,337

Int. Cl. B08b 9/02

U.S. Cl. 15—104.1 R

5 Claims



A machine for use in cleaning the interior of a pipe constructed so as to include a hollow rod, a cleaning tool located on one end of the rod, means for moving the rod in a lengthwise direction coupled to the other end of the rod, means for rotating the rod as it is so moved and means for conveying a fluid through the rod to adjacent to the cleaning tool may be improved through the use of a combination drilling and brushing tool as a cleaning tool. Such a drilling and brushing tool includes a hollow sleeve attached to the end of the rod, brushing elements located on the exterior of the sleeve and a cutting blade located on the end of the sleeve remote from the rod, this blade having at least one hole leading to its

surface which is in communication with the interior of a rod through the sleeve. The tool preferably has a flushing housing provided with ports leading from its interior to its exterior located between the sleeve and a rod.

3,824,647

# DEVICE FOR GUIDING A FLAT PAINT BRUSH

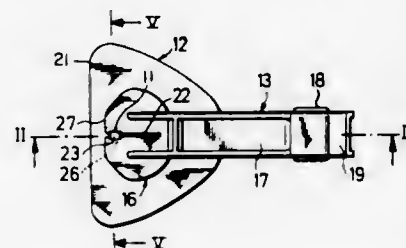
Fritz Deck, Gellertstrasse 25, and Norbert Keim, Karl-Schurz-Strasse 40, both of Karlsruhe, Germany

Filed Dec. 27, 1972, Ser. No. 318,879

Int. Cl. A46b 17/00; B44d 3/22

U.S. Cl. 15—248 R

2 Claims



A flat paint brush is guided in a device which comprises a base plate and a guide plate pivotally mounted on the base plate for pivoting parallel to the brush plane. The base and guide plates are interconnected by a pivot pin. One end of the pivot pin is rectangular and frictionally engaged in a like opening in the guide plate while the other pivot pin is oval and frictionally engaged in a like oval slot portion in the base plate, which slot portion extends from the outer edge of the base plate, with an elongated slot portion extending upwardly therefrom. A cover plate larger than the pivot ends is mounted over each end.

3,824,648

# WINDSHIELD WIPER ASSEMBLY

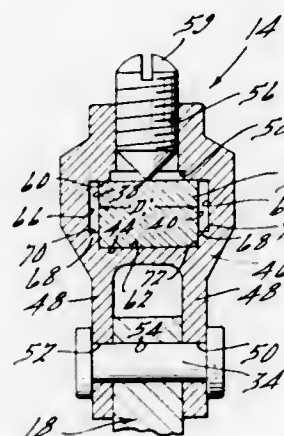
Johan H. van den Berg, and Alex H. A. Van Eckelen, both of Hasselt, Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Filed Nov. 10, 1972, Ser. No. 305,529

Int. Cl. B60s 1/40

U.S. Cl. 15—250.32

1 Claim



A connector for operatively securing a windshield wiper blade assembly to selected of associated wiper arms having different size connecting end portions thereon, the connector including a body having means thereon for attaching the same to the blade assembly and defining a cavity having means therein defining first and second size areas adapted to receive corresponding size connecting end portions of selected wiper arms.

3,824,649

# DOOR BUMPER

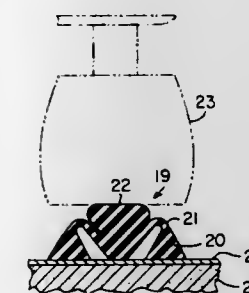
Donald F. Kempf, 435 N. Lincoln St., Orange, Calif. 92666

Filed Dec. 4, 1972, Ser. No. 311,932

Int. Cl. F16f 1/36

U.S. Cl. 16—86 A

4 Claims



A wall mounted door knob bumper having a resilient cushioning member attached to a flexible adhesive carrying backing member such as a flexible sheet of plastic attached to and extending beyond the periphery of the cushioning member to form a decorative border. The cushioning member may be made in various cross-sectional configurations some of which are solid and some having apertures therein. The exposed portion of the backing member may be made in any number of different designs such as flowers, geometric patterns, or any other desired motif. The bumper is attached to a wall simply by peeling a protective cover off the adhesive backing and pressing the bumper in the desired location on a wall where it will be contacted by a doorknob.

3,824,650

# APPARATUS AND PROCESS FOR TRANSFERRING A FIBER WEB

Moriichi Watanabe, Aichi, Japan, assignor to Nagoya Metallic Card Co., Ltd., Aichi-ken, Japan

Continuation of Ser. No. 755,182, Aug. 26, 1968, abandoned.

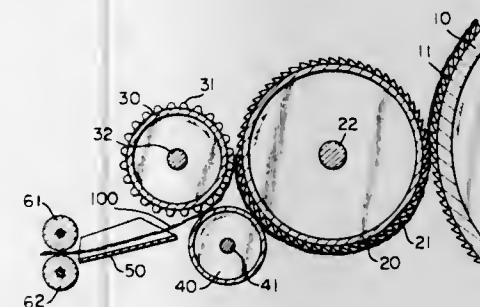
This application Nov. 24, 1970, Ser. No. 92,500

Claims priority, application Japan, Apr. 19, 1968, 43-25822

Int. Cl. D01g 15/46, 15/50

U.S. Cl. 19—114

3 Claims



Apparatus and process for separating a web of fibers from a doffer in a carding machine whenever a roller comb is provided adjacent to the peripheral surface of a doffer, said roller comb being wound on its circumference with a metallic wire in the form of tooth defined by an outwardly projecting portion forming a roundish curve. The roller comb is rotated in the same direction as that of the doffer at a lower rate of surface speed than that of the doffer. A web roller having a smooth surface is located adjacent to both said doffer and said roller comb below a straight line connecting the center of the doffer and the axis of the roller comb. The web roller is rotated in the direction opposite to that of the doffer at a lower rate of surface speed than that of said roller comb thereby forming a space in the form of triangle by said three means of the doffer, the roller comb and the web roller comb.

3,824,651

# FALLER BAR CONSTRUCTION

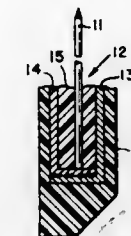
Howard G. Goff, 402 Shallow Ford, Chattanooga, Tenn. 37411

Continuation-in-part of Ser. No. 222,815, Feb. 2, 1972, abandoned. This application Feb. 23, 1973, Ser. No. 335,129

Int. Cl. D01g 19/10

U.S. Cl. 19—129 R

2 Claims



A faller bar for a textile combing machine comprising a pair of L-shaped reinforcing members extending substantially throughout the length of the bar and being spot welded or otherwise secured to one another to form a channel in which is disposed in spaced relationship a series of pins and retained in the channel by means of a plastic material extending therein. A pair of metal plates are provided at each end of the bar and are retained in their respective positions by means of a suitable plastic material extending thereover. The metal plates are secured to the channel forming members as by a line of weld in order to increase the rigidity of the bar.

3,824,652

# APPARATUS FOR PREPARING AIRFELT

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

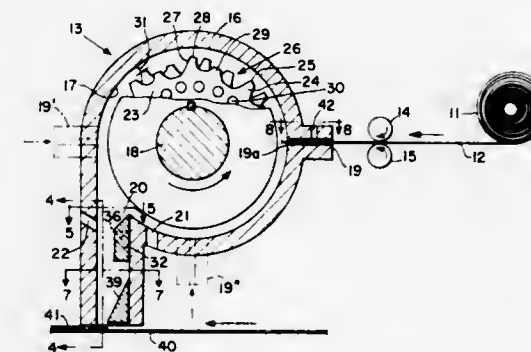
Division of Ser. No. 182,795, Sept. 22, 1971. This application

June 22, 1973, Ser. No. 372,729

Int. Cl. D01g 25/00

U.S. Cl. 19—156.3

4 Claims



Apparatus and process for continuously converting dried cellulosic fibrous sheet material into a dispersion of individual fibers in air and thereafter forming said individual fibers into an airfelt.

3,824,653

# WIRE GRIP

Robert L. Sholler, 1871 Shelley Dr., Santa Rosa, Calif. 95401

Filed June 13, 1973, Ser. No. 369,480

Int. Cl. B25b 25/00

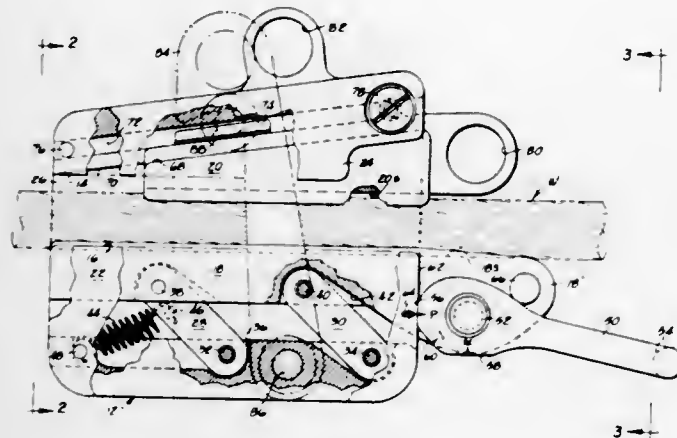
U.S. Cl. 24—134 KB

5 Claims

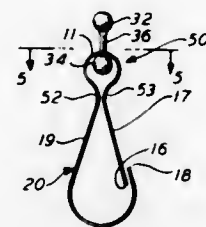
A grip for wires and cables for use by linemen when applying tension to such wires and cables during installation thereof. The grip includes a rigid housing that defines a laterally accessible pathway for the wire. Wire engaging jaws are disposed on opposite sides of the pathway for movement toward the pathway so as to grip a wire residing therein. One



jaw is supported on a four bar linkage arrangement that maintains the jaw surface in parallelism with the pathway. Associated with such jaw is a bail to which tension is applied when pulling the wire so that the force on the wire is proportional to the tension applied to the bail. The other jaw is wedge shaped and the housing has a diverging bearing surface so that movement of the second jaw along the surface moves the wire



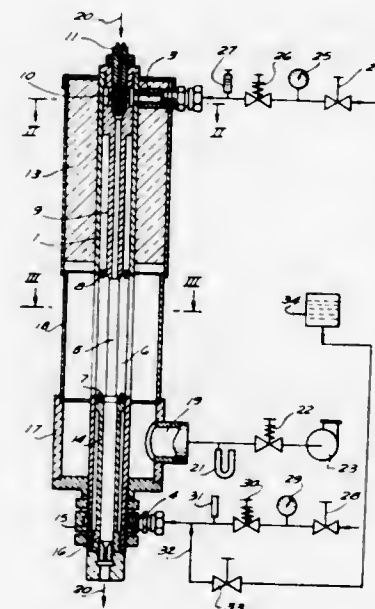
**3,824,655**  
**SNAP HOOK**  
Marvin S. Hills, 125 Springfield Rd., Elizabeth, N.J. 07208  
Filed Oct. 13, 1972, Ser. No. 298,714  
Int. Cl. A44b 13/02  
U.S. Cl. 24—237  
1 Claim



There is provided a novel Snap Hook of the type commonly known as lanyard hooks having a suspending means readily adaptable for use in key cases.

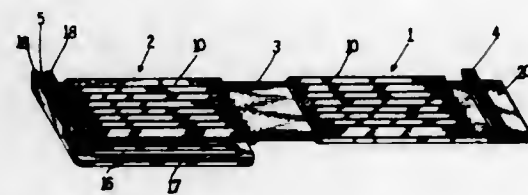
gripping portion of the second jaw into engagement with wire in the pathway. The second jaw is provided in a variety of sizes so that one grip can be used on a wide range of wire diameters. The mounting for the first jaw includes a spring for biasing the first jaw away from the wire pathway and a cam member for positioning the first jaw against the force of the spring so that the grip will remain on the wire in the absence of tension and until intentionally dislodged by movement of the cam.

**3,824,656**  
**APPARATUS FOR CRIMPING OF FILAMENTARY MATERIALS**  
Ernst Bauch, Bordesolm, Germany, assignor to Neumunsterschl Maschinen-und Apparatebau Gesellschaft GmbH, Neumunster, Germany  
Division of Ser. No. 214,238, Dec. 30, 1971. This application  
Feb. 2, 1973, Ser. No. 329,189  
Int. Cl. D02g 1/20  
U.S. Cl. 28—1.3  
10 Claims



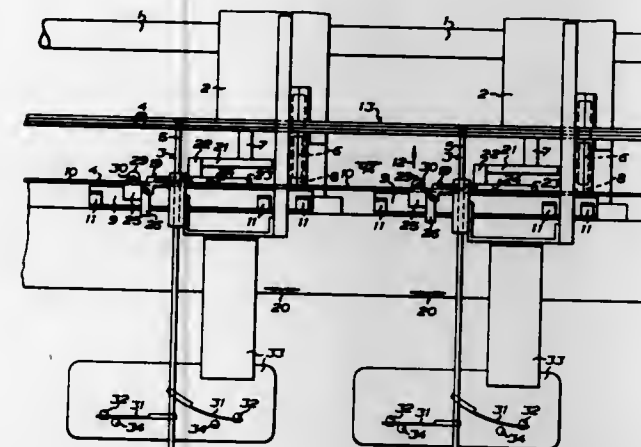
A crimping chamber is provided having an axially spaced inlet and outlet and intermediate the same radial venting ports. A filamentary material to be crimped is entrained and inserted into the inlet of the chamber with a stream of hot fluid which, upon entry into the chamber becomes vented through the venting ports. Into the chamber in the region of the outlet there is admitted in counterflow to the filamentary material a stream of cool gas which also subsequently vents through the outlet ports, and admitted into this stream of cool gas is a liquid to be finely dispersed therein.

**3,824,654**  
**CONNECTOR OR AN ADJUSTER**  
Teruo Takabayashi, Kyoto, Japan, assignor to Korin Limited, Kyoto, Japan  
Filed Aug. 28, 1972, Ser. No. 284,255  
Claims priority, application Japan, Dec. 27, 1971, 46-1518  
Int. Cl. A44b 21/00, 11/00  
U.S. Cl. 24—198  
1 Claim



The present invention relates to a connector or an adjuster such as buckles, fasteners and the like comprising a first plate member, a second plate member, a pivotal member for connecting the plate members to each other and for governing the opening and closing movements of said plate members, and a locking means for immobilizing the closed condition of both plate members, and said members and means are molded integrally of plastic material.

**3,824,657**  
**GUIDING DEVICE IN A MACHINE FOR MANUFACTURING VENETIAN BLINDS**  
Stig Albert Nilsson, Foreningsgatan 38, 211 52 Malmö, Sweden  
Filed Apr. 3, 1973, Ser. No. 347,595  
Claims priority, application Sweden, Apr. 12, 1972, 4702/72  
Int. Cl. B23p 19/04  
U.S. Cl. 29—24.5  
8 Claims



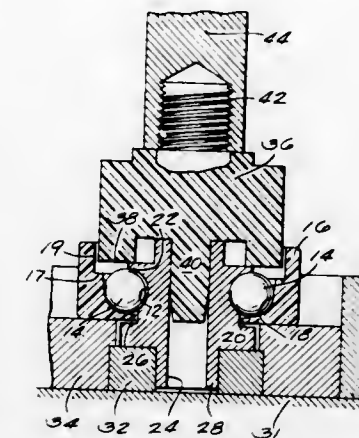
In a machine for manufacturing Venetian blinds which consist of slats and ladder tapes carrying the slats and having longitudinal parts and transverse parts, each transverse part comprising a carrying element and a supporting element between which the slat for its insertion is moved in its longitudinal direction along a slat insertion path towards and through ladder tape positions, a guiding device is used at each ladder tape position for secure insertion of each slat between the carrying and supporting elements of each transverse part of the ladder tapes, said guiding device having a guide means which is movable in the longitudinal direction of the ladder tape, when the tape is stepwise moved in its longitudinal direction, and also movable towards and away from the ladder tape along the slat insertion path and which is provided with an operating means defining together with part of the guide means a groove for the supporting element and protruding forwardly from the guide means, counted in the direction of insertion of the guide means between the carrying element and the supporting element of the ladder tape.

**ERRATUM**  
For Class 29—130 see:  
Patent No. 3,825,412

**3,824,658**  
**METHOD OF FABRICATING A BEARING ASSEMBLY**  
Jerome T. Donahue, Oconomowoc, Wis.; Walter F. Hess, Deerfield, Ill.; Gordon W. Knoebel, Madison, and Donald E. Sydow, Oconomowoc, both of Wis., assignors to Oconomowoc Mfg. Corp., Oconomowoc, Wis.  
Filed Apr. 19, 1973, Ser. No. 352,838  
Int. Cl. B23p 11/00; F16c 33/00  
U.S. Cl. 29—148.4 A  
5 Claims

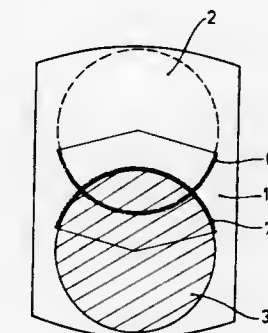
A bearing and roller assembly having a unitary inner race which is grooved on its outer periphery to receive a plurality of bearing balls. A unitary, resilient outer race is dimensioned on its inner periphery to receive the bearing balls and to fit over the inner race with one axial end of the outer race being spaced from the corresponding axial end of the inner race by a distance which is smaller than the diameter of the bearing

balls but large enough to permit the bearing balls to be forced therethrough. In assembling the bearing, the balls are positioned adjacent to the space between the axial ends of the inner and outer races and are forced by a hydraulically



powered plunger into the space between the two races. The outer race deforms elastically as the balls are forced past its axial end and then snaps back to its original dimensions to hold the balls in place between the two races.

**3,824,659**  
**CRANKSHAFT WITH HARDENED TRANSITION PORTIONS AND ITS MANUFACTURE**  
Richard Sommer, Augsburg, Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Augsburg, Germany  
Filed Mar. 5, 1973, Ser. No. 338,131  
Int. Cl. B21d 53/10  
U.S. Cl. 29—149.5 R  
9 Claims



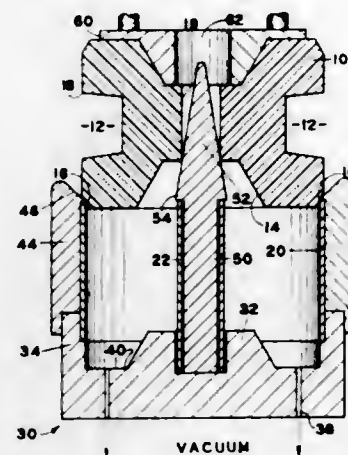
The crankshaft blank is first machined to provide oversize bearing pin thickness. Relief grooves provide transition fillets. Heat hardening is provided in a portion of these fillets, mainly in the portion of their periphery that falls within the longitudinal overlap of adjacent bearing pins. The bearing pins are then machined to design dimensions, parallelism and alignment, at the same time eliminating the effect of any warp arising from the hardening process.

**3,824,660**  
**METHOD AND APPARATUS FOR VACUUM ASSEMBLING OF BUSHINGS**  
Jere L. Lowe, Logansport, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio  
Filed May 16, 1973, Ser. No. 357,152  
Int. Cl. B21d 53/10  
U.S. Cl. 29—149.5 NM  
9 Claims

A method and apparatus for assembling articles, especially bushings, of the type having a generally cylindrical or oval elastomeric insert, a rigid outer sleeve, and a rigid inner core. The sleeve and the core are positioned within the fixture of the present invention and the bottom portion of the insert is located within the top portion of the outer sleeve. The posi-



tioning of the parts is such that the outer sleeve, the insert, the inner core, and the apparatus define an included chamber which is substantially air-tight. A vacuum is then applied to the enclosed chamber and the resulting suction on the bottom



portion of the insert, together with any additional external force that may be required, cause the insert to move into assembled position, radially compressed, between the inner core and the outer sleeve.

3,824,661

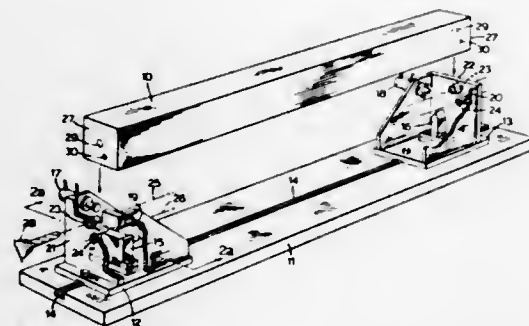
# PROCESS FOR THE FABRICATION OF STRUCTURAL COLUMN MEMBERS

Richard N. Dobson, Village of Creemore, Ontario, and Gordon A. Webster, Town of Dundas, Ontario, both of Canada, assignors to Dominion Foundries & Steel Limited, Hamilton, Ontario, Canada

Division of Ser. No. 220,297, Jan. 24, 1972. This application Jan. 29, 1973, Ser. No. 327,347  
Int. Cl. B23p 17/00

U.S. Cl. 29—155 C

5 Claims



In a process for the production of a structural column member of solid cross-section the member is rolled directly from a steel billet; the billet is mounted in suitable apparatus (an example of which is described in the specification) establishing a theoretical axis along the column and its ends are squared relative to this axis. One end is provided with two accurately-located pins which are a close fit in corresponding accurately-located holes in the adjacent end of an abutting member. The aligned pin and hole in the opposite ends of each member establish the said theoretical axis which is used for locating brackets etc. fastened to the column member, despite any deviations of the member from straight. This theoretical axis is also used in assembling the members in a structure incorporating them.

## 3,824,662 PROCESS FOR PRODUCING AN OIL SEAL TO BE APPLIED TO THE ROTARY PISTON ENGINE

Hiroshi Minegishi, Kawagoe, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo and Toyo Kogyo Company, Hiroshima-ken, both of Japan

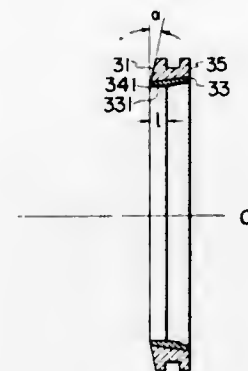
Filed Feb. 8, 1972, Ser. No. 224,551

Claims priority, application Japan, Feb. 8, 1971, 46-4739

Int. Cl. B23p 15/06

U.S. Cl. 29—156.6

3 Claims



A process for producing an oil seal for use in a rotary piston engine, which comprises the steps of forming an inner peripheral surface of an oil seal base body into an angled circumferential surface with a solid angle of  $2\theta$  from a sliding surface side of the body toward a rear surface side or into an indented circumferential surface, cutting out partly the inner peripheral surface on the rear surface side along the inner peripheral surface, plating a hard metal layer on the slant or indented inner circumferential surface, and then honing exclusively a partial zone of the hard layer surface on the sliding surface side.

3,824,663

# METHOD OF WELDING A TUBE TO A TUBE SHEET

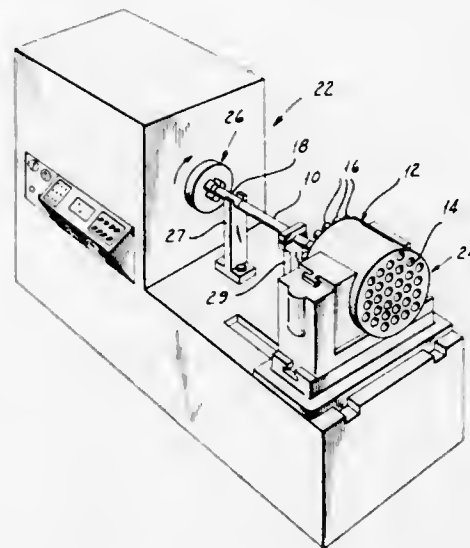
Jesse Sohn, Newton, N.J., and Louis A. Gunther, Maspeth, N.Y., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Feb. 7, 1973, Ser. No. 330,312

Int. Cl. B23p 15/26

U.S. Cl. 29—157.4

8 Claims



The method welding of tubes to a tube sheet comprises butt welding an elongated bar to one end of a tube to be welded so that the bar is in substantial axial alignment with the tube and, thereafter, welding the opposite end of the tube to a tube sheet by friction or inertia welding using the bar to at least partially support the tube for movement relative to the tube sheet.

After the tube is welded to the tube sheet, the bar is cut a predetermined distance from the point of attachment of the bar to the tube to form a cap, if desired. The bar then may be worked to provide the cap with a desired configuration.

3,824,664

# CLADDING SHEETS

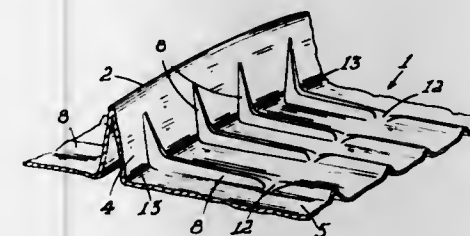
Morris Seeff, 11 First Ave., Houghton, Johannesburg, Transvaal, South Africa

Continuation of Ser. No. 239,166, March 29, 1972, abandoned. This application Dec. 11, 1973, Ser. No. 423,764

Int. Cl. B21d 13/10

U.S. Cl. 29—180 SS

16 Claims



A method of bending a corrugated sheet about an axis extending at right angles to the corrugations is disclosed wherein a plurality of rib formations are pressed in those corrugations having their apices nearest the axis, the rib formations all projecting from the same surface of the sheet relative to the axis and extending at an angle to the corrugations over at least part of the side portions and at least part of the intermediate portions of the corrugations.

In one form of the invention the corrugated sheet comprises a metal cladding sheet.

Also disclosed is a corrugated sheet bent about an axis extending at right angles to the corrugations including a plurality of rib formations projecting from the same surface of the sheet when viewed from the axis, the rib formations being at an angle to the corrugations and extending over at least part of the side portions and at least part of the intermediate portions of the corrugations.

3,824,665

# APPARATUS FOR PRODUCING AN ASSEMBLY OF A METAL TUBING AND SERRATED ROD

Shigeru Salto, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

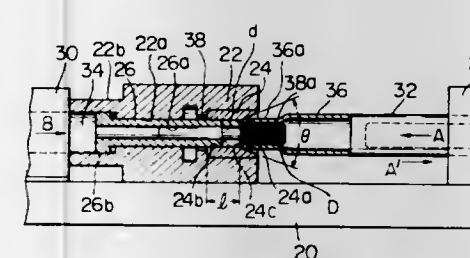
Filed Oct. 13, 1972, Ser. No. 297,335

Claims priority, application Japan, Oct. 14, 1971, 46-80557

Int. Cl. B23p 19/00

U.S. Cl. 29—200 B

8 Claims



Herein disclosed are an improved method and apparatus for manufacturing an assembly of a hollow metal tubing and a rod having a serrated portion which is closely inserted into a reduced end portion of the tubing which has an inside diameter substantially larger than an outside diameter of the serrated portion of the rod. The rod is first loosely inserted through its serrated portion into the tubing and thereafter the reduced end portion of the tubing is radially squeezed by a swaging process so that the reduced end portion of the tubing is deformed under radial compression and closely fitted onto the serrated portion of the rod with an excess of wall of the

reduced end flown into the grooves between the individual serrations of the rod. The assembly thus produced is specifically adapted to constitute a collapsible type steering column assembly which is used for the protection of a driver of a motor vehicle during a frontal collision.

3,824,666

# APPARATUS FOR INSTALLING CEILINGS

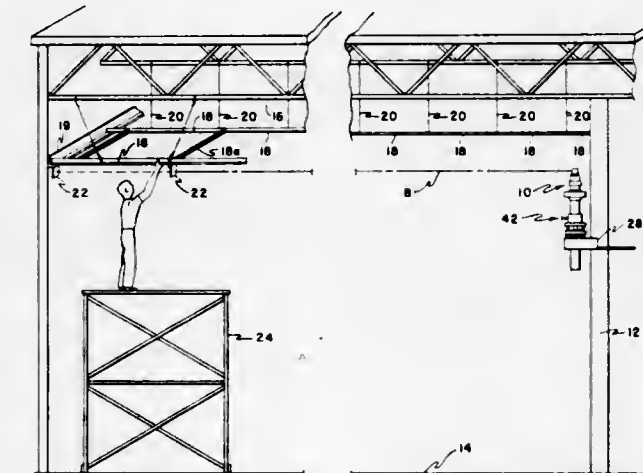
Roger J. Roodvoets, Grand Rapids, and Edward G. Nielsen, Wyoming, both of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Division of Ser. No. 152,298, June 11, 1971. This application Jan. 2, 1973, Ser. No. 320,259

Int. Cl. B23p 19/00; B23q 17/00

U.S. Cl. 29—200 P

13 Claims



A device which emits a rotating beam of collimated light, preferably a laser source assembly, is mounted at a level which has a predetermined relationship to the level desired for a suspended ceiling. A target is placed on a ceiling panel supporting member and the member is elevated until the target is intercepted by the light beam at a predetermined line on the target. At this point, the ceiling supporting member is fixed in place. When it is desirable to bend the supporting wires before the ceiling supporting members are installed, the target may be moved along adjacent the wire and the wire bent at a given distance from the point where the light beam intercepts the target.

3,824,667

# HYDRAULIC VALVE SEAT EXPANDER

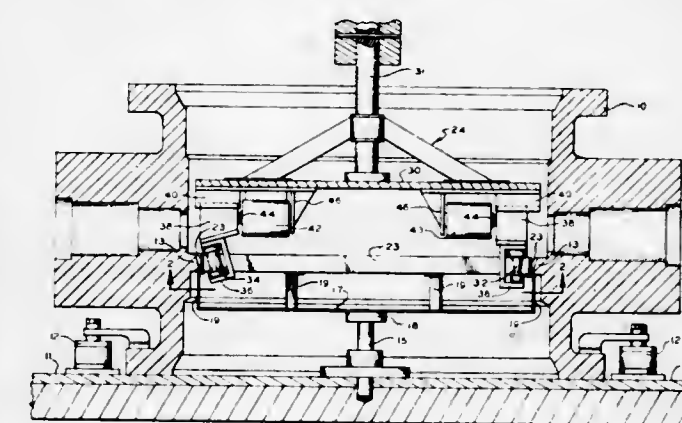
Joseph W. Smith, and Eugene A. Hollencamp, both of Dayton, Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Filed June 5, 1973, Ser. No. 367,259

Int. Cl. B23p 19/00

U.S. Cl. 29—200 B

5 Claims



A valve seat liner ring formed of relatively thin material is positioned in a valve body in registration with a valve seat. The



valve body is rotated. A circular series of liner ring expanding and forming rolls are carried by a support plate and moved in the valve with the rolls in registration with the liner ring. A roll mover is connected to each roll. The roll movers are operable when actuated to move the rolls radially outward into engagement with the liner ring to expand the same against the seat and form the liner ring in close engagement with the seat. The roll movers are preferably in the form of fluid operated piston and cylinder structures.

3,824,668

# CONTINUOUS STROKE TUBE INSERTION AND EXPANDING DEVICE

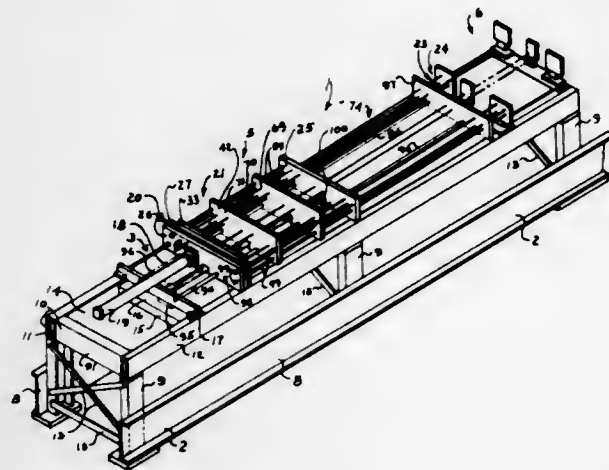
Lawrence W. Wightman, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 26, 1973, Ser. No. 327,244

Int. Cl. B23p 15/26; B23q 7/10

U.S. Cl. 29—202 D

25 Claims



A continuous stroke tube insertion and expanding device is provided for automatic and continuous tube insertion and expansion, useful in the manufacture of electronic air filter cells. The apparatus of this invention includes a tube magazine and a plurality of pusher rods which travel longitudinally of the apparatus, engaging the ends of a plurality of metal tubes during travel. The pusher rods have expanding means attached at their ends which engage the tubes. The pusher rods and expanding means drive the tubes through the plates of a cell assembly for an electronic air filter cell until the leading ends of the tubes engage a stop at one end of the apparatus. Tube stop engagement prevents further tube travel. However, pusher rod movement continues, driving the expanding means through the tubes in one continuous operation. Expansion of the tubes combines the tubes and plates into an integral unit. After the tube expanding means has joined a predetermined number of tubes and plates, the tube stop is removed. Tube expansion thereafter is accomplished with the tubes being held only by the expansion joint made between tubes and plates previously combined in the expansion process. Because tube expansion is progressing toward the free end of the tubes, the tubes remain in tension. Maintaining the tubes in tension during expansion enables the apparatus of this invention to prevent undesirable tube bending and distortion.

3,824,669

# HAND-OPERATED CRIMPING TOOL

John Leslie Hilton, Ringwood, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Mar. 8, 1973, Ser. No. 339,462

Claims priority, application Great Britain, Mar. 9, 1972, 11163/72

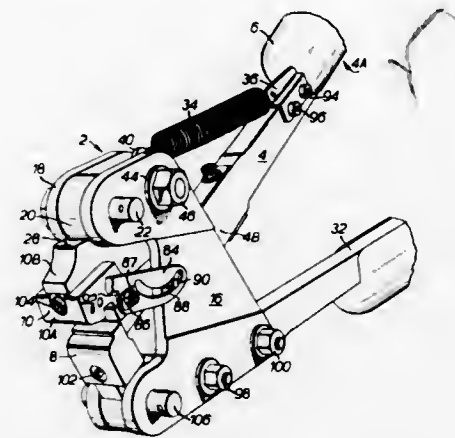
Int. Cl. H01r 43/04

U.S. Cl. 29—203 H

6 Claims

A hand-operated crimping tool which comprises two handles; a crimping arrangement positioned on one and including

a fixed crimping die and a movable crimping die; spring biasing means such as a leaf spring biasing the movable die away from the fixed die and a rotatable cam for rolling over a surface of the movable die; the cam and the said surface of the movable die being so shaped relatively to each other that depression of the said one handle causes the cam to roll over



the surface and move the movable die from an open position in which the two dies are spaced apart to allow insertion of a device to be crimped, to a crimping position in which the two dies effect a desired crimping of the device, and then to a release position in which the two dies are spaced apart to allow removal of the crimped device. Swinging cutters on either side of the movable die are preferred.

3,824,670

# CONTACT INSERTION AND REMOVAL TOOL

Kenneth M. Clark, Beaumont, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

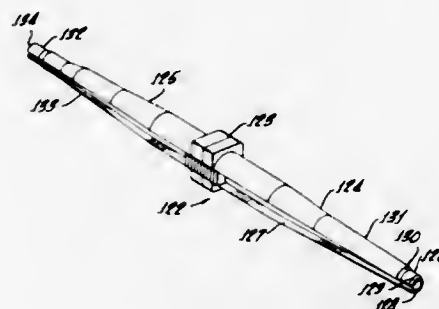
Division of Ser. No. 167,317, July 29, 1971, Pat. No.

3,727,172, which is a continuation-in-part of Ser. No. 83,782, Oct. 26, 1970, abandoned. This application Apr. 4, 1973, Ser. No. 347,849

Int. Cl. H01r 43/00

U.S. Cl. 29—203 H

7 Claims



A tool for installing and removing contacts in an electrical connector that includes an insert having continuous openings between the forward and rearward ends, each of the openings receiving a contact which is retained between a rearwardly facing shoulder in each opening and integral resilient fingers on the insert, which incline forwardly and inwardly from the circumferential wall of the opening to engage the rearward contact shoulder. The openings for the contacts include tapering surfaces which contract the longitudinally split insertion and removal tool so that it can enter a smaller portion of the opening adjacent the spring fingers as the contact is installed and removed, allowing the tool to be more readily manufactured in smaller sizes with a relatively wide longitudinal slot.

3,824,671

# APPARATUS FOR CLIPPING FOLDED ARTICLES OF CLOTHING AND THE LIKE

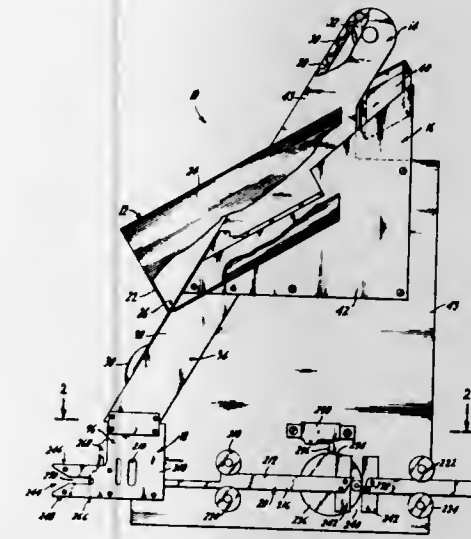
Theodore Watkin, Stamford, Conn., assignor to Theodore Watkin; Maurice W. Friedman, both of Long Island and Alfred S. Friedman, Woodmere, Long Island, all of N.Y.

Continuation of Ser. No. 158,772, July 1, 1971, Pat. No. 3,740,823, and a continuation-in-part of Ser. No. 53,409, July 9, 1970, abandoned. This application Nov. 21, 1972, Ser. No.

308,317

Int. Cl. B23q 7/10

U.S. Cl. 29—211 R



An apparatus is provided for placing spring clips over the edges of folded articles and the like in an automated manner. The apparatus generally includes a slide for properly orienting the clips and loading them into a supply chute, a drive for taking the clips one at a time from the supply chute and transporting each clip toward and over the edge of the folded article and a ramp cooperating with the drive, for opening the mouth of each clip as the clip approaches the edge of the folded article and then releasing the clip mouth when the clip is properly positioned over said edge.

3,824,672

# BALL STUD REMOVER

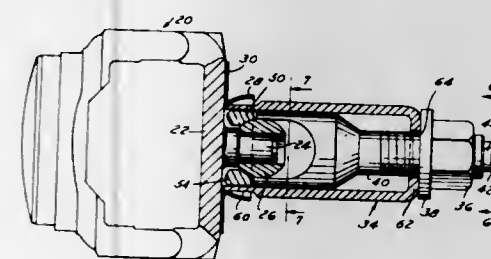
Jacob Michelsen, Aabenraa, Denmark, assignor to Kent-Moore Corporation, Warren, Mich.

Filed Apr. 5, 1973, Ser. No. 348,337

Int. Cl. B23p 19/02

U.S. Cl. 29—263

4 Claims



A ball stud removing tool for removing a ball from a stud on which it is press-fitted, wherein a cup-shaped shield surrounds the stud adjacent the ball; comprising a first member having an externally threaded upper end and a yoke-shaped lower end, the free ends of the yoke being dimensioned to embraceably engage the ball below its diameter so that it may be pulled from the stud. A second sleeve-like member is received over the first member after assembly of the latter on the ball, its threaded portion extending through an aperture in the upper sleeve end. An internally threaded nut is then threaded onto the first member, which is thereby retracted into the sleeve, drawing the ball from the stud.

3,824,673

# METHOD OF TRANSPORTING AND PROCESSING IRRADIATED FUEL ELEMENTS

Joseph G. Wurm, Boeretang, and Paul R. Heylen, Lijsterdreef, both of Belgium, assignors to European Atomic Energy Community (Euratom), European Center Kirchberg, Luxembourg

Filed July 11, 1972, Ser. No. 270,839

Claims priority, application Netherlands, Aug. 4, 1971, 7110751

Int. Cl. B23p 7/00; G21f 9/00

U.S. Cl. 29—403

5 Claims

A method for the treatment of irradiated fuel elements of the type consisting of a can containing one or more fissile fuel rods. The space between the fuel rods and the can is filled with an alloy having a melting point of at least 700°C and the alloy is allowed to solidify. The alloy usually has good thermal conductivity.

The method is particularly useful when irradiated fuel elements are to be transported to a processing factory.

3,824,674

# AUTOMATIC ASSEMBLY CONTROL METHOD AND DEVICE THEREFOR

Tadao Inoyama, Yokohama; Tatsuo Goto, Nishitama, and Kiyoo Takeyasu, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

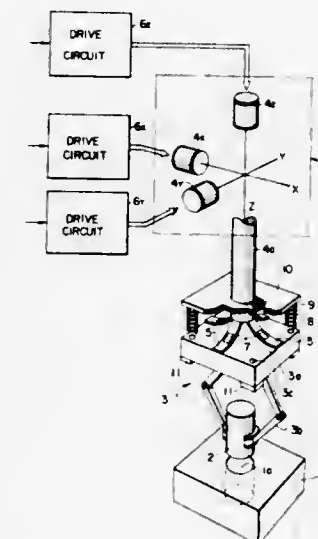
Filed July 19, 1973, Ser. No. 380,558

Claims priority, application Japan, Jan. 29, 1973, 48-11086; Jan. 31, 1973, 48-11954; Mar. 7, 1973, 48-26114; July 19, 1972, 47-71659; Dec. 1, 1972, 47-119820

Int. Cl. B23q 17/00

U.S. Cl. 29—407

21 Claims



An automatic assembly control device employs a holding mechanism for holding a piston coupled to a positioning mechanism through elastic coupling means, so that the positioning mechanism may be controlled in response to signals representative of the displacement or deflection of the elastic coupling means. The piston is first placed upon the external part out of a range of variation in position of the center of a cylinder into which is fitted the piston, and then moved toward the center while the piston is pressed against the external part with a predetermined pressure. The completion of the above coarse positioning or adjustment is detected by detecting the partial insertion of the piston into the cylinder, and then the piston is gradually inserted into the cylinder while its position is corrected by the positioning mechanism.



3,824,675

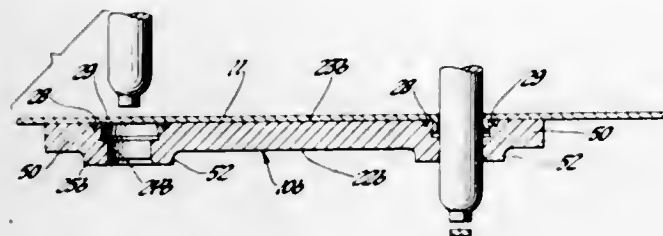
**METHOD OF MAKING EXTRUDED PANEL AND NUT ASSEMBLY**

David B. Ballantyne, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Division of Ser. No. 154,084, June 17, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,110

Int. Cl. B23p 9/00

U.S. Cl. 29—445

1 Claim



A panel extruding nut for use with a thread forming screw and adapted to be mechanically secured to a flat sheet basal member, the nut including a body having opposed flat surfaces and opposed coaxial first and second bores, the first bore having a diameter slightly larger than the minor diameter of the screw thread, the second bore having a diameter which, together with two extruded or drawn thicknesses of the basal member, is substantially equal to the diameter of the first bore. A punch is used to pierce the basal member and to extrude and shape an integral neck into the second bore which mechanically secures the panel extruding nut. The neck and the panel extruding nut are then threaded by the thread forming screw.

3,824,676

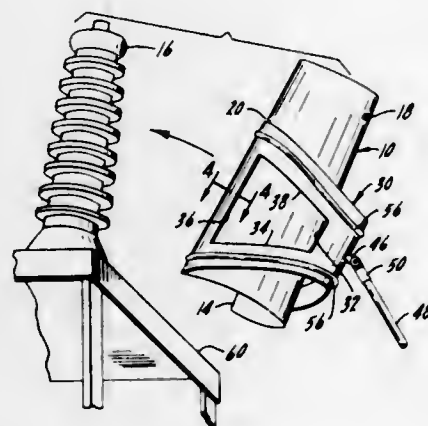
**METHOD OF APPLYING A REMOVABLE COVER TO AN ELECTRICAL INSULATOR BUSHING**

Lloyd A. Ebert, 2349 Meadow Ln., Green Bay, Wis. 54301  
Filed Nov. 15, 1972, Ser. No. 306,710

Int. Cl. H01b

U.S. Cl. 29—450

2 Claims



A bushing cover with an application tool and the method of employing them to cover bushings in a multi-KV high voltage electrical system so as to allow painting, sandblasting and other maintenance operations of the system to be performed without shutting off the power to the system, damaging the bushings, or endangering workmen.

**METHOD OF MANUFACTURING A FIELD EFFECT TRANSISTOR**

Werner Scherber, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Division of Ser. No. 206,635, Dec. 10, 1971, Pat. No. 3,791,023. This application July 23, 1973, Ser. No. 381,507  
Claims priority, application Germany, Dec. 21, 1970, 2062810

Int. Cl. B01j 17/00

U.S. Cl. 29—571

1 Claim



A method of manufacturing a field effect transistor comprises forming a nitride layer on the surface of a semiconductor body of a first type of conductivity containing two spaced regions of a second type of conductivity; forming an oxide layer on the nitride layer; forming windows in the nitride and oxide layers extending to the surface of the semiconductor body above the two regions of the second type of conductivity and above the zone between the two regions; forming a thin oxide layer in the window above the zone between the two regions; forming a gate electrode in the window above the zone between the two regions and forming contacts in the windows above the two regions.

3,824,678

**PROCESS FOR LASER SCRIBING BEAM LEAD SEMICONDUCTOR WAFERS**

Ronald E. Harris, Placentia, and Darrel F. Cullen, Costa Mesa, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

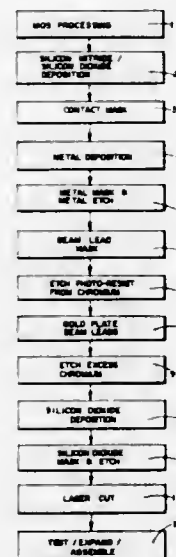
Continuation of Ser. No. 68,283, Aug. 31, 1970, abandoned.

This application Oct. 25, 1972, Ser. No. 300,548

Int. Cl. B01j 17/00

U.S. Cl. 29—578

10 Claims



Microelectronic circuits are produced in semiconductor wafers with beam leads having adhering and non-adhering portions. The non-adhering portions comprise the projecting part of the beam lead. The wafer is divided into chips having beam leads by partially cutting the wafer from the reverse side



a diametral plane. Certain of the rings are wound with two like sets of windings of wire of one gage, each set confined to its own side of said plane. The remaining rings are similarly wound, but with wire of a different gage. Every ring is then severed on its said diametral plane, thus forming stator elements of two kinds that can be assembled to engines singly or in pairs, as needed.

3,824,683

# METHOD FOR REDUCING CORONA IN A DYNAMOELECTRIC MACHINE

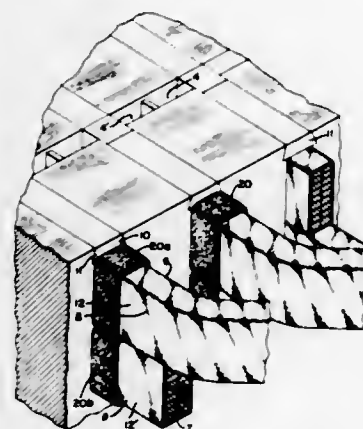
Ralph Gene Rhudy, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 13, 1973, Ser. No. 388,009

Int. Cl. H02k 15/02

U.S. Cl. 29—596

9 Claims



A method of reducing corona in a dynamoelectric machine is provided wherein electrically conductive paint is applied to the sides of stator winding bars and the sides of stator slots in contact therewith while the conductor bars are operably mounted within the stator slots. In addition, electrically conductive paths are formed between pre-selected portions of the conductor bars and the magnetic stator punchings adjacent thereto by positioning bodies of electrically conductive silicone rubber between each of the selected points on the conductor bars and the adjacent stator punchings. Means are provided for efficiently positioning the bodies of silicone rubber in operating position and then curing the rubber to assure its stability.

3,824,684

# METHOD OF ASSEMBLING AN ELECTRIC MOTOR DEVICE AND HEAT SINK

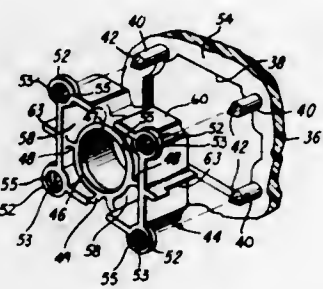
Dale Kenneth Wheeler, Tarboro, N.C., assignor to The Black & Decker Manufacturing Company, Towson, Md.

Filed Aug. 27, 1973, Ser. No. 391,812

Int. Cl. H02k 15/14

U.S. Cl. 29—596

6 Claims



An electric motor housing and heat sink, and the method of assembling the same, in which a housing, constructed of electrically insulating material subject to thermal distortion, in-

cludes integral means for orienting and securing a metal heat sink therein, the latter having passages through which cooling air is drawn. The orienting means comprises deformable or meltable means such as pins integral with the housing and adapted to extend through apertures in the heat sink. The method includes assembling and retaining the heat sink into an operative integral position in the housing by deforming, for example, melting the interfitted housing pins into retaining relation against the heat sink. In addition, a shaft bearing may either be preassembled in the heat sink before assembly to the housing, or the heat sink bored and the bearing inserted therein after the heat sink is assembled to the housing.

3,824,685

# METHOD OF MAKING A FERRITE HEAD

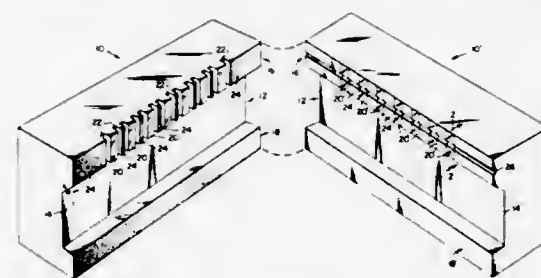
Nathan L. Burch, Los Angeles, and Leonard G. Tapla, Baldwin Park, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 14, 1972, Ser. No. 225,898

Int. Cl. G11b 5/42

U.S. Cl. 29—603

23 Claims



In a method of manufacturing a ferrite magnetic head, a thin layer of glass is sputtered onto one or more discrete portions of a planar surface of each of two ferrite members, at least one of the glass layers extending out of a gap defined when the two members are positioned with their respective planar surfaces in confronting relation. A layer of refractory material is deposited on other portions of the ferrite surfaces, to a thickness equal to the desired gap length, to serve as a spacer when the two members are so positioned. A quantity of glass is placed adjacent the gap and in contact with at least one of the sputtered glass layers, and the assembly is heated to soften the glass layers and the quantity of glass; the quantity of glass is drawn into the remaining portion of the gap apparently in response to a reduced resistance to capillary flow provided by the softened glass layers within the gap.

3,824,686

# A METHOD OF TERMINATING A SEMI-RIGID COAXIAL CABLE

Edgar Wilmot Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

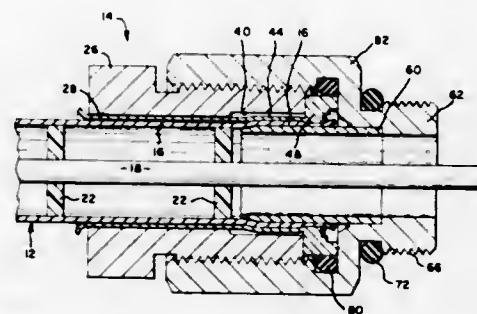
Division of Ser. No. 252,791, May 12, 1972. This application

Aug. 24, 1973, Ser. No. 391,393

Int. Cl. H05k 43/00

U.S. Cl. 29—628

4 Claims



This invention relates to a coaxial cable connector featuring inner and outer ferrules between which the outer conductor of

a semi-rigid cable is squeezed. The assembly of the connector onto the cable is accomplished with ordinary standard hand wrenches operating on an outer coupling containing the outer ferrule nut threadedly engaging a connector body containing the inner ferrule. The structure of the connector preserves the critical diameters of the coaxial cable thereby reducing or eliminating reflective loss of radio frequency energy.

3,824,687

# DRY SHAVER

Kurt Baumann, Solingen, Germany, assignor to Robert Krups, Solingen-Wald, Germany

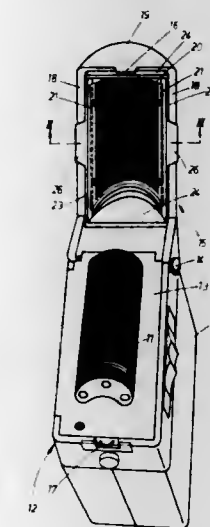
Filed Jan. 26, 1973, Ser. No. 326,865

Claims priority, application Germany, Jan. 28, 1972, 2203926

Int. Cl. B26b 19/04

U.S. Cl. 30—43.92

16 Claims



A shear head is provided on a housing of a dry shaver and a replaceable unit can be releasably connected with the shear head so that it can be replaced in toto. The unit comprises a frame and an apertured shear foil which is mounted in the frame in curved operating condition and can be inserted into and removed from the shear head together with the frame.

3,824,688

# ENVELOPE OPENER

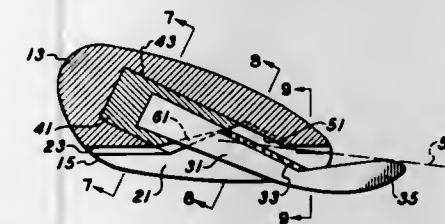
William L. Goffe, 301 Burnett Rd., Webster, N.Y. 14580

Filed May 30, 1973, Ser. No. 365,075

Int. Cl. B26b 29/00

U.S. Cl. 30—294

16 Claims



An envelope opener having a small body to be manually grasped, with a groove along one edge of the body, sufficiently wide to receive an edge of an envelope to be opened. An oblique knife blade lies entirely within the groove, and a small guiding member projects forwardly from the forward end of the knife blade, to a visible position beyond the edge of the body, so that the guiding member may be inserted between the envelope flap and the rear wall of the envelope, at one corner of the envelope, to guide the top fold or crease of the envelope into the groove, whereupon the knife blade will cut the top fold when the top edge of the envelope is slid along the groove.

3,824,689

# PIERCING OF AIR SUCTION HOLES IN ABRASIVE SHEET MATERIAL

Alma A. Hutchins, 49 North Lotus Ave., Pasadena, Calif. 91107

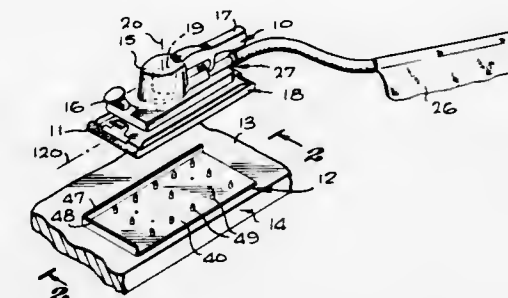
Division of Ser. No. 282,155, Aug. 21, 1972, Pat. No.

3,788,011. This application July 16, 1973, Ser. No. 379,341

Int. Cl. B26f 1/24

U.S. Cl. 30—368

3 Claims



Apparatus including a portable sander having a power driven shoe adapted to carry a sheet of sandpaper or the like and containing suction holes through which air and abraded particles are drawn by suction to a collection bag, and a coating piercing tool adapted to punch suction holes in a sheet of sandpaper carried by the shoe when the sander and piercing tool are moved relatively toward one another.

3,824,690

# DENTAL BRACE BAND FOR UPPER INCISOR TEETH

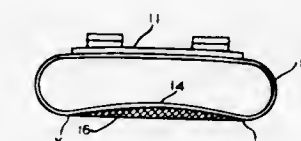
Herbert L. Ruff, 2058 Genesee St., Utica, N.Y. 13502

Filed June 20, 1973, Ser. No. 371,776

Int. Cl. A61c 7/00

U.S. Cl. 32—14 A

4 Claims



An orthodontic band for the upper incisor teeth which have a concavely curved lingual surface has its lingual aspect thickened to prevent this aspect from being pulled away from the tooth by tension on the band for securing it around the tooth. The thickening is done with provision for forming a convexly curved portion closely conforming to the concavely curved lingual surface of the tooth to prevent an enlarged cement filled space between band and tooth to minimize cement washout from this space.

3,824,691

# ADJUSTABLE SPLIT ARTIFICIAL TOOTH WITH MICROMETER WHEEL MEANS FOR DYNAMICALLY ADJUSTING THE MESIO-DISTAL TOOTH DIMENSION

Raul Acevedo, Arzuaga No. 9, Rio Piedras, San Juan, P.R.

Filed Nov. 6, 1973, Ser. No. 413,215

Int. Cl. A61c 19/00

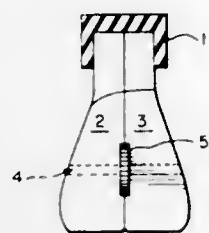
U.S. Cl. 32—71

1 Claim

An adjustable split artificial tooth comprising a micrometric wheel on a threaded rod which separates the tooth halves per-



mits very precise dynamic adjustments of the mesio-distal tooth dimension while an elastomer sleeve holds the tooth halves at the top in tight mating relation. This dynamic metri-



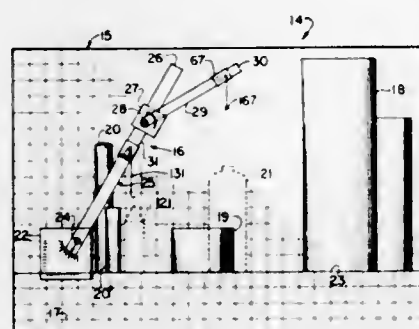
cally adjustable tooth is highly useful for illustrating tooth conditions to patients and can be used as a study model for educational purposes.

3,824,692

## LIFT PLANNING APPARATUS

John W. Guffey, 306 Headlee Bldg., Odessa, Tex. 79761, and Richard D. Gillham, Box 2192, Odessa, Tex. 79760  
Filed Oct. 2, 1972, Ser. No. 294,357  
Int. Cl. B43I 7/06

U.S. Cl. 33-1 AA



Lift planning apparatus for computing the required length, angular position, and free capacity of the boom of a crane apparatus, especially where the apparatus must work in a confined space.

The apparatus of the invention includes a base scale calibrated into predetermined horizontal and vertical units related to distance; a protractor indicative of a crane; and a replica of a boom and a point section.

The replica of the protractor, boom, and point section are arranged relative to the base scale so that various objects located within the area in which the actual crane is to work can likewise be scaled and placed onto the base scale thereby enabling one to ascertain by computation the optimum length and angular displacement of the boom.

The apparatus further includes a replica of a jib having a point section slidably received thereon, with the jib being journaled to a second protractor, and with the second protractor being slidably captured along the replica of the boom, thereby enabling the optimum boom length and angular displacement, the optimum jib length and angular displacement, and the free lifting capacity at either of the point sections to be calculated.

3,824,693

## NAVIGATIONAL DEVICES

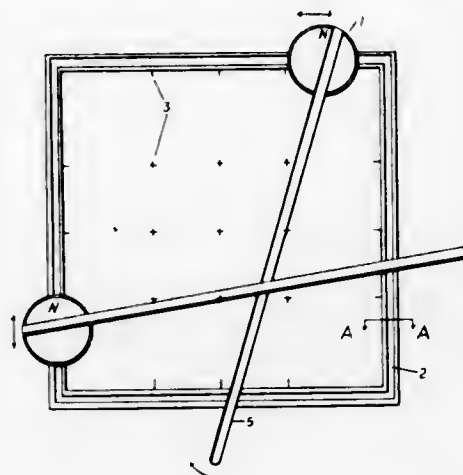
Kenneth Floyd Cherry, 1533 Eastgate St., Toledo, Ohio 43614  
Filed Feb. 26, 1973, Ser. No. 335,583  
Int. Cl. B43I 7/06, 13/08

U.S. Cl. 33-76 R

1 Claim

The multi-arm navigational device is an improvement in navigational chart instruments. Movable arm protractors

fitted in tracks and placed over the chart eliminate some operations in alignment and/or drawing in common naviga-



tional problems, thereby resulting in a decrease of time and effort in solving the problems.

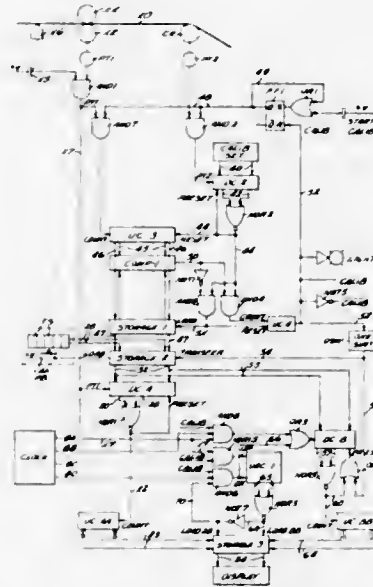
3,824,694

## LENGTH MEASURING SYSTEM HAVING AUTOMATIC UPDATE OF ROLL DIAMETER COMPENSATION VALUE

Lawrence M. Lesperance, West Allis; Hugh S. Drewry, and Gunars Vegners, both of Wauwatosa, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.  
Filed Jan. 17, 1973, Ser. No. 324,345  
Int. Cl. G06m 7/00; G01b 7/04

U.S. Cl. 33-141 R

34 Claims



A strip length measuring system has a pulse tachometer driven by a measuring roll engaging the strip, a presettable footage downcounter for the pulses which is preset to a roll diameter compensation factor "calibration" count representing one foot of strip held in a storage register and counts backward to zero and is reset, and a total length counter which is incremented each time the footage counter is reset. The calibration constant count is automatically determined and updated to compensate for changes in measuring roll diameter by engaging the strip with a calibration roll of accurately known diameter, accurately measuring one foot of strip by counting the pulses from a pulse tachometer driven by the calibration roll when the strip is at running speed so no slippage can occur, in a downcounter preset to a calibration set-point count representing one foot of movement of the circumference of the calibration roll, accumulating the pulses from the measuring roll tachometer in a measuring roll upcounter

while the calibration roll downcounter is counting backward to zero to measure one foot of strip, and transferring the count accumulated in the measuring roll upcounter during movement of one foot of strip to the storage register so that the footage counter is preset to the updated roll diameter compensation factor calibration count.

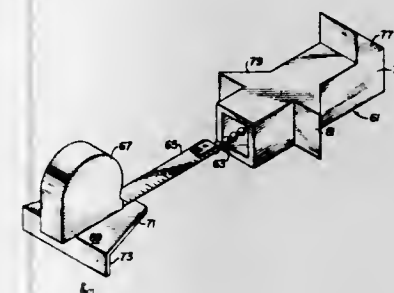
3,824,695

## MULTIPLE GAUGING DEVICE

Alexander W. McClay, Jr., 1679 Brandon Ave., Petersburg, Va. 23803  
Filed July 10, 1970, Ser. No. 53,951  
Int. Cl. G01b 3/10

U.S. Cl. 33-137 R

10 Claims



For use in laying out duct or box-like structures, a gauging device having multiple sides, including appendages in predetermined positions, with rotatable connection means for attaching the gauge to a measuring tape (or it can be integral with a measuring bar), with the appendages serving to position the tape or the bar so as to add various predetermined lengths to the tape or bar equivalent to material lapped or cut away in the fabrication of corner and lap joints or seams with the measuring tape or bar indicating directly in terms of the specified or finished inside dimensions of the structure. The appendages are configured to enable measuring from points on each of several variously oriented planes.

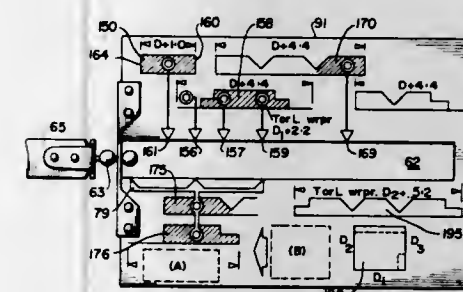
3,824,696

## MULTIPLE GAUGING DEVICE

Alexander W. McClay, Jr., 1679 Brandon Ave., Petersburg, Va. 23803  
Filed Sept. 8, 1971, Ser. No. 178,750  
Int. Cl. G01b 3/10

U.S. Cl. 33-137 R

2 Claims



For use in laying out duct or box like structures, a gauging device in the form of a plate, with a slot, of appreciable width, lying preferably along the longitudinal centerline thereof, including spanning brackets and locating marks in predetermined positions, with rotatable connection means for attaching the gauge to a measuring tape (or it may be integral with a measuring bar), with the spanning brackets and locating marks serving to position the tape or bar so as to add several predetermined lengths to the tape or bar equivalent to the material lapped or cut away in the fabrication of corner or lap joints or seams with the tape or bar indicating directly in terms of the specified, or finished, inside dimensions of the

structure. The spanning brackets are designed to enable the user to position the gauge over a point within or defining a groove by positioning the gauge directly over the intersection, or intersections, of a depending plane and the upper surface of the material being fabricated.

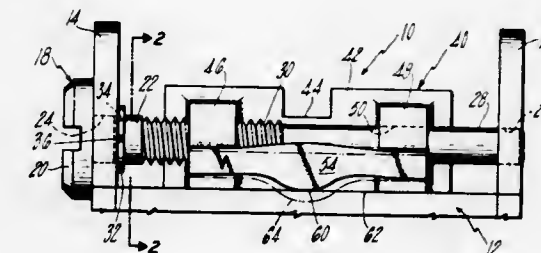
3,824,697

## SIGHT ASSEMBLY

Henry A. Into, Farmington, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.  
Filed Aug. 10, 1972, Ser. No. 233,482  
Int. Cl. F41g 1/10, 1/26

U.S. Cl. 33-252

7 Claims



A one-piece resilient sight movable for windage adjustment along the axis of a screw mounted on a firearm wherein the sight has spaced bearing abutment portions on opposite diametrical sides of the screw and is stressed when assembled to urge the bearing abutment portions into engagement with the firearm for taking up manufacturing variations and tolerances and positively retaining the sight by the resiliency of its own material in a selected adjusted position.

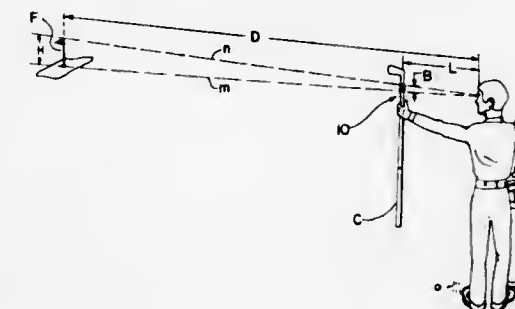
3,824,698

## GOLF-CLUB SELECTION AID

William S. Brucker, 1500 Providence Rd., Towson, Md. 21204  
Filed Aug. 2, 1972, Ser. No. 277,144  
Int. Cl. G01c 3/00

U.S. Cl. 33-277

7 Claims



A mathematically proportioned sequentially related, color-identified set of markers for use in training as integral parts of respective golf clubs of a set and adapted to indicate correct club selection; the golfer makes a "one-time" calibration with regard to his own characteristics and to characteristic flagstick height on the course played to determine which color he should use of a sequence displayed on each device of the set, and after that selects all his clubs with reference to that single color.



3,824,699

**AIMING DEVICE FOR INDIRECT FIRE GUNS**

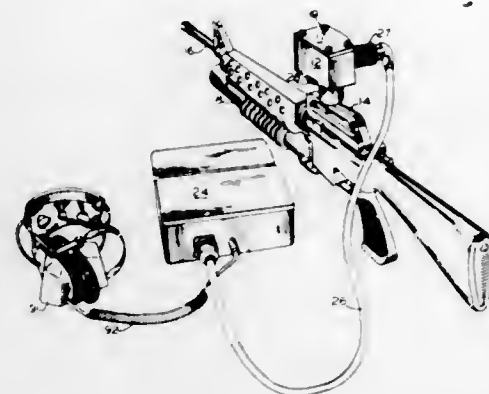
Ludwig J. Lenz, Muscatine, and Robert Stanley Thompson, Bennett, both of Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 19, 1972, Ser. No. 264,213

Int. Cl. G01c 9/34; F41g 3/14

U.S. Cl. 33—334

4 Claims



In firearms which must be aimed at elevated firing angles in order to provide the fired projectile with an arcuate trajectory capable of hitting a hidden target, the attainment of the proper firing angle is automatically signaled by the return to zero inclination of a gravity sensing electrolytic switch which has been set at an angle corresponding to the degree of rotation required to position a range indicator at the estimated or known range of the target. A second gravity sensing switch may also be utilized to signal the absence of any transverse canting of the firearm when the required firing angle is attained.

3,824,700

**LEVEL WITH NOVEL VIAL MOUNTING ARRANGEMENT**

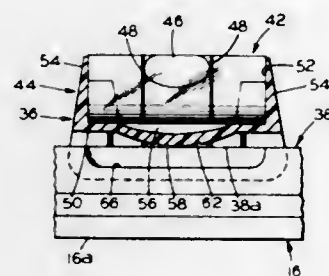
Edward Charles Ratty, Portland, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Oct. 6, 1972, Ser. No. 295,517

Int. Cl. G01c 9/28

U.S. Cl. 33—379

8 Claims



A combination square consisting of a level and rule has mounted thereon a level vial holder comprising a mounting member and a level vial. The level vial is retained in the mounting member in a manner such that with the level vial holder mounted on the combination square the level vial is exposed for a 360° reading. The level vial is retained in the mounting member in a recess which receives both ends of the vial with a snap fit whereby to mechanically lock the vial in place. For purposes of mounting the level vial holder on the combination square, the mounting member is provided with a pair of spaced depending arms between which there is formed an arcuate surface. The level vial holder is mounted by adhesive or other suitable means on a seat comprising a planar surface formed at the outer end of an upstanding portion pro-

vided on one leg of the level such that the depending arms of the mounting member straddle the upstanding portion in abutting relation thereto and the arcuate surface is in engagement with the planar surface.

3,824,701

**PORTABLE CENTRIFUGAL DRIER FOR SMALL ARTICLES**

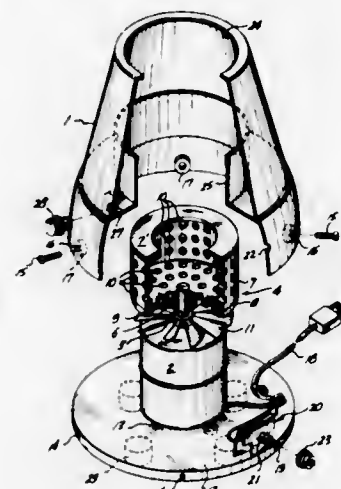
Bernard W. Norquist, 13320 10th N.E., Seattle, Wash. 98125

Filed Sept. 5, 1972, Ser. No. 286,229

Int. Cl. F26b 17/24

U.S. Cl. 34—58

3 Claims



An electric motor carries on its upright shaft a rigid perforated spinning cup and such motor is mounted on a stabilizing weight disk. A frustoconical housing is secured in spaced relationship to the edges of the stabilizing weight disk to provide an annular air passage. The housing top is open to provide an air intake and access to the spinning cup, and such housing includes a water collection trough below the cup bottom. The stabilizing weight disk rests on a plurality of resilient feet.

3,824,702

**HOT AIR HEATER FOR CARTON SEALING MACHINE**

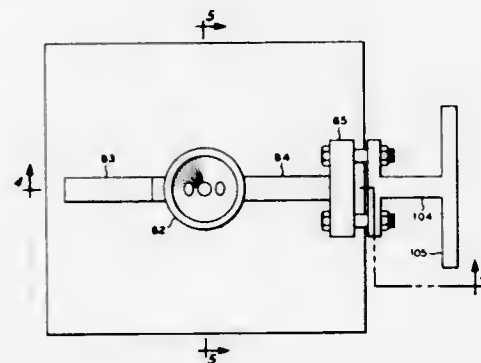
Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,033

Int. Cl. F26b 25/00

U.S. Cl. 34—104

10 Claims



In a machine for filling and sealing cartons such as the thermoplastic coated paperboard milk cartons, the heater head for heating the upper portion of the carton prior to sealing comprises a first hot air plenum chamber which enters the open end of the carton and has a continuous outer perforated wall facing the inner surface of the carton and a second hot air plenum chamber which surrounds the outside of the upper end of the carton and has a continuous inner perforated wall

facing the outside surface of the carton. The outer wall of the first plenum chamber and the inner wall of the second plenum chamber form a continuous annular space for receiving the top marginal portion of a carton, with the perforations in both walls being spaced to provide heating of both the inner surface and the outer surface of the full extent of the top marginal portion of the carton. The outer wall of the first plenum chamber extends downwardly and inwardly toward the central vertical axis of the carton while the inner wall of the second plenum chamber extends downwardly and outwardly with respect to the central vertical axis of the carton.

3,824,703

**APPARATUS FOR THE BATCH TREATMENT OF SOLID MATERIAL**

Paul Moyne, Benite, France, assignor to Rhone-Poulenc S.A., Paris, France

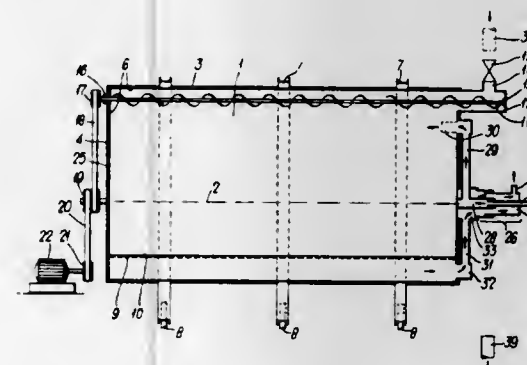
Filed Apr. 6, 1973, Ser. No. 348,521

Claims priority, application France, Apr. 7, 1972, 72.12280

Int. Cl. F26b 11/02

U.S. Cl. 34—130

10 Claims



Apparatus for the batch treatment of solid material, for example for drying the material, in which a chamber is rotatable about a substantially horizontal axis and is divided into two compartments by a horizontal gas permeable partition. A pipeline for the introduction and/or withdrawal of gas or vapour opens into at least one of the compartments and an endless screw conveyor is mounted within the chamber adjacent at least one longitudinal wall thereof. At least one tube for the passage of solid material communicates with the interior of the chamber adjacent the endless screw and a supply and withdrawal conduit are positioned above and below the chamber, respectively, at locations whereby, when said chamber is rotated to one position, said at least one tube can be connected to receive material to be treated from said supply conduit, and, when said chamber is rotated to another position, said at least one tube can be connected to feed treated material to said withdrawal conduit.

3,824,704

**ROTARY DRYER**

Richard E. G. Neville, Salisbury, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,370

Claims priority, application Great Britain, Aug. 26, 1971, 40050/71

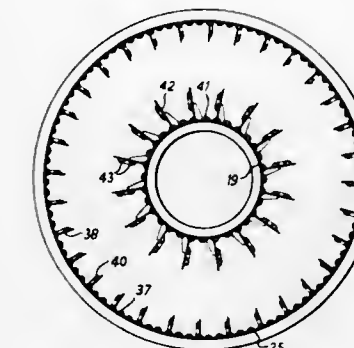
Int. Cl. F26b 11/02

U.S. Cl. 34—134

8 Claims

A rotary dryer, which comprises an outer rotatable cylinder, a plurality of inwardly projecting outer paddles mounted to

the inner surface of the outer cylinder, an inner rotatable cylinder of smaller diameter than the outer cylinder mounted coaxially within the outer cylinder, providing an annular space between the two cylinders for receiving material to be dried, a



plurality of outwardly projecting inner paddles mounted to the outer surface of the inner cylinder, the inner paddles being spaced from the outer paddles, means for heating the inner and outer paddles, and means for rotating the inner and outer cylinders.

3,824,705

**APPARATUS FOR DRYING GRAIN**

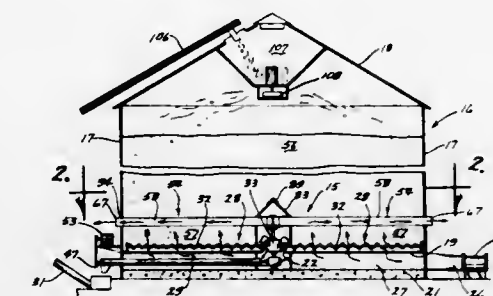
Norton C. Ives, Rolfe, Iowa 50581

Filed Oct. 16, 1972, Ser. No. 297,813

Int. Cl. F26b 17/14

U.S. Cl. 34—170

3 Claims



The method and apparatus provides a continuous counter-flow grain drying system for a round bin. An air duct assembly positioned transversely of and over the cross-sectional area of the bin functions as a partition to form an upper wet grain supply chamber and a lower grain drying chamber. The duct assembly is comprised of a plurality of radially extended duct members having open lower sides and circumferentially spaced so as to form grain passages, between adjacent duct members, interconnecting the upper wet grain supply chamber and the lower grain drying chamber. Heated air from the bin floor moves continuously upwardly through the lower drying chamber for discharge to the atmosphere through the duct members, concurrently with a uniform continuous downward flow of grain from the wet grain supply chamber into the lower grain drying chamber and a continuous and uniform removal of dried grain from the bin floor.



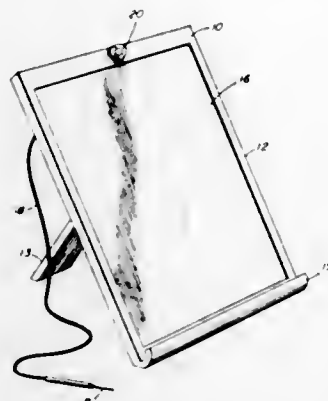
### 3,824,706 EDUCATIONAL DEVICE

Paul P. Scopa, 21 Windsor Dr., Hingham, Mass. 02043, and Naomi S. Kelman, 367 Newton St., Chestnut Hill, Mass. 02167

Filed May 9, 1973, Ser. No. 358,593  
Int. Cl. G09b 7/06

U.S. Cl. 35—9 C

3 Claims



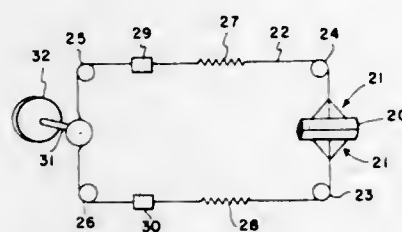
A flexible sheet having indicia and orifices on its front. The sheet has a median conducting layer and rear orifices registerable with selected front orifices. Used with a support containing a source of power and a signal a child actuates the signal when the probe goes into the correct orifice.

**3,824,707  
APPARATUS FOR APPLYING SIMULATOR G-FORCES TO AN ARM OF AN AIRCRAFT SIMULATOR PILOT**  
Billy R. Ashworth, Newport News, and John T. Merrill, IV, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 9, 1972, Ser. No. 261,183  
Int. Cl. G09b 9/00

U.S. Cl. 35—12 E

8 Claims



This invention is a device to be used with an aircraft simulator to apply positive and negative g-forces to the pilot's arm. An arm harness fits around the the pilot's arm that he uses to operate the throttle. The device allows the harness to track intentional arm movements without exerting any restraining forces and at the same time applies through the harness g-forces to the pilot's arm that are computed by the aircraft simulator computer.

The invention described herein was made by employees of the United States Government and may be manufactured and used by or for the government for governmental purposes without the payment of any royalties thereon or therefor.

### 3,824,708 EDUCATIONAL DEVICE

John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.

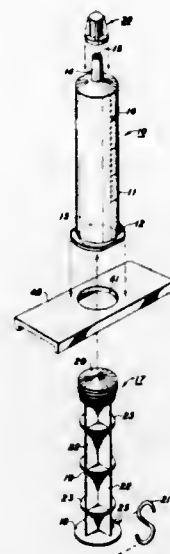
Filed Dec. 26, 1972, Ser. No. 318,313  
Int. Cl. G09b 23/12

U.S. Cl. 35—19 R

11 Claims

A simple, durable, and inexpensive educational device for demonstrating pressure-volume relationships especially

adapted for use by educational institutions below the college level is described. The device comprises a chamber for containing a gas said chamber having openings at its upper and lower end portions. Piston means is provided for selectively controlling the volume and pressure of the gas in the chamber,



the piston means capable of being inserted in the chamber through the opening at its lower end portion. Means are included for sealing the upper opening in the chamber. The device also includes means secured the piston at its lower end portion, said means adapted to support a weight, and means for supporting the device.

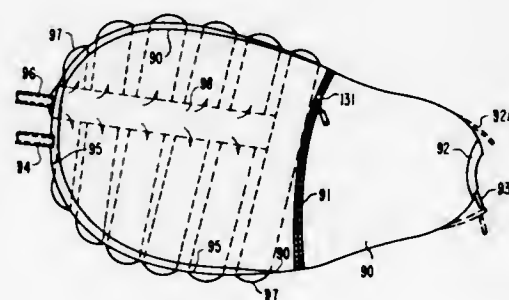
### 3,824,709 DYNAMIC CHILDBIRTH SIMULATOR FOR TEACHING MATERNITY PATIENT CARE

Charles F. Knapp, and George S. Endes, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Division of Ser. No. 308,542, Nov. 21, 1972. This application Nov. 5, 1973, Ser. No. 412,756  
Int. Cl. G09b 23/32

U.S. Cl. 35—17

4 Claims

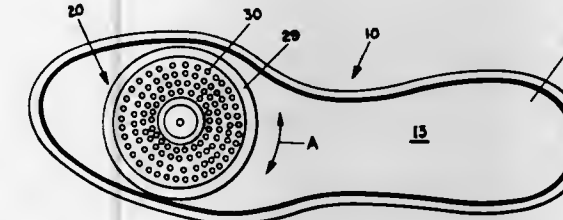


A programmable patient simulator for teaching maternity patient care includes a life size manikin with a pelvis, vaginal canal, uterus, placenta, umbilical cord, and a fetal doll from which heart sounds are emitted. A programmable electro-pneumatic system controls the simulated uterine contractions, position of the uterus, rupture of membranes, expulsion of fetal doll, and fetal heart rate during labor and delivery sequence. The invention described herein was made in the course of work under a grant or award from the Department of Health, Education and Welfare.

**3,824,710  
FRICTION-TYPE SWIVEL SHOE**  
Robert B. Egtvedt, Comstock Park, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.  
Filed Sept. 10, 1973, Ser. No. 395,927  
Int. Cl. A43b

U.S. Cl. 36—2.5 AE

15 Claims

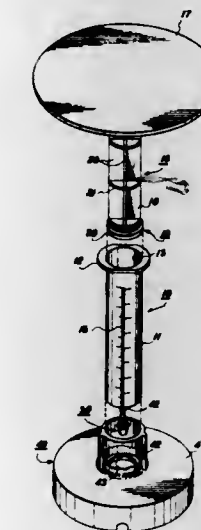


The ball of an athletic shoe sole includes a rotating swivel with a configured surface engaging bottom. The swivel is integrally molded within the sole of the shoe with a lubricating film positioned between the shoe sole and swivel. The generally circular swivel includes an upwardly and outwardly extending central holding member and a peripheral outwardly extending shoulder for securing the swivel within the shoe sole. A reinforcing ring is integrally molded in the shoe sole and extends around the periphery of the frictional member below the peripheral shoulder to prevent the deflection of the sole material away from the area adjacent the swivel.

**3,824,711  
EDUCATIONAL DEVICE**  
John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.  
Filed Dec. 26, 1972, Ser. No. 318,314  
Int. Cl. G09b 23/12

U.S. Cl. 35—19 R

11 Claims

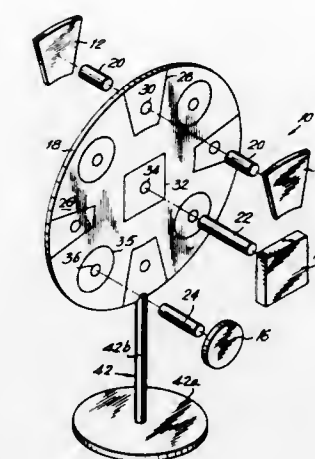


A simple, durable, and inexpensive educational device for demonstrating pressure-volume relationships especially adapted for use by educational institutions below the college level is described. The device comprises a chamber for containing a gas, said chamber having openings at its upper and lower end portions. Piston means is provided for selectively controlling the volume and pressure of the gas in the chamber, the piston means capable of being inserted in the chamber through the opening at its upper end portion. Means are included for sealing the lower opening in the chamber. The device also includes a base member for supporting the chamber at its lower end portion, the base member adapted to be in releasable engagement with the chamber.

**3,824,712  
ART SCULPTURE**  
Charles W. Powell, 227 E. 50th St., New York, N.Y. 10022  
Filed June 9, 1972, Ser. No. 261,387  
Int. Cl. G09b 1/06

U.S. Cl. 35—26

2 Claims

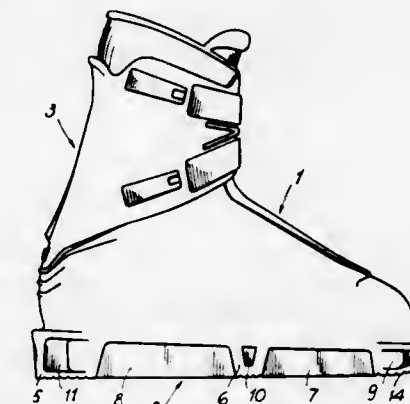


An art sculpture is adapted to be assembled from a plurality of components. The art sculpture includes a plurality of geometrically-shaped cutouts adapted to be mounted on a base member by a plurality of mounting pegs of diverse lengths which are secured to the base member and the shaped cutouts. The base member may include a schematic representation of the geometrically-shaped cutouts and a schematic representation of mounting peg locations in order to facilitate in the assembly of the art sculpture.

**3,824,713  
SKI BOOT**  
Franco Vaccari, Via Paleoveneti, Montebelluna, 31044  
Filed Dec. 26, 1972, Ser. No. 317,978  
Int. Cl. A43b

U.S. Cl. 36—2.5 AL

2 Claims



This invention discloses a ski boot consisting of an upper and a sole integral with one another. The sole is formed with a plurality of recesses at the outer border thereof. The ski boot also includes a leg piece or ankle section connected to the upper at an articulation point arranged on the rear part of the boot.

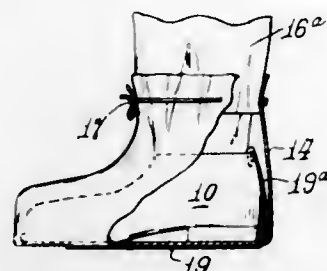


**3,824,714**  
**ELECTRICALLY CONDUCTIVE COVERING FOR SHOES**  
 Jacob A. Glassman, 1680 Meridian Ave., Miami Beach, Fla. 33139

Filed Dec. 20, 1972, Ser. No. 317,068  
 Int. Cl. A43b 3/16

U.S. Cl. 36—7.1 R

5 Claims



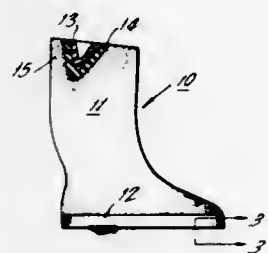
A sanitary covering for a shoe fabricated from a blank of disposable flexible material to provide a total covering for a shoe and having an electrically conductive tape in the bottom or sole portion thereof arranged to have direct conductive contact with the shoe and with a floor surface.

**3,824,715**  
**RUBBER OVERSHOES**  
 William A. Vaughan, Jr., Dover, and James Clough, Wyoming, both of Del., assignors to International Playtex Corporation, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,418  
 Int. Cl. A43b 1/10

U.S. Cl. 36—7.3

7 Claims

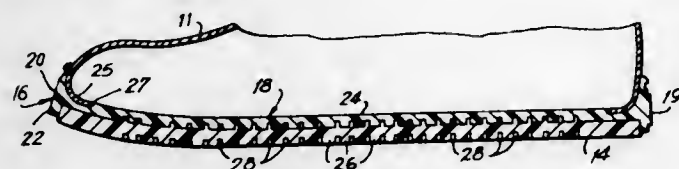


Rubber overshoes in which a flock layer is embedded in and bonded to the rubber overshoe body and, preferably, an outer rubber layer is in turn bonded to the flock layer to define the outer sole of the overshoe. The composite structure imparts improved tear-resistance to the overshoe body and increases resistance of the sole portion thereof to delamination and to abrasion, the resulting product simultaneously exhibiting an attractive, esthetically pleasing appearance.

**3,824,716**  
**FOOTWEAR**  
 Anthony George Di Paolo, 175 E. 74th St., New York, N.Y. 10021  
 Division of Ser. No. 216,610, Jan. 10, 1972, abandoned. This application Nov. 8, 1973, Ser. No. 414,107  
 Int. Cl. A43b 13/04

U.S. Cl. 36—32 R

3 Claims



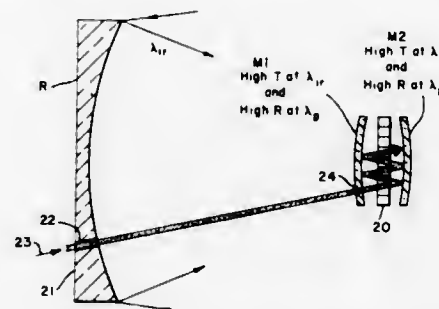
The invention disclosed is directed to skid-resistant footwear having an outer sole provided with grooves and wavy ribs

spaced apart by the grooves. Also disclosed is an improved process for making the footwear, including injection molding a bottom onto a footwear upper employing a mold with a bottom plate having wavy elongate uprights.

**3,824,717**  
**ENHANCED FIELD OF VIEW PARAMETRIC IMAGE CONVERTER**  
 Viktor Evtuhov; Bernard H. Soffer, both of Pacific Palisades, and David Y. Tseng, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.  
 Filed July 30, 1973, Ser. No. 383,935  
 Int. Cl. H03F 7/00

U.S. Cl. 307—88.3

13 Claims

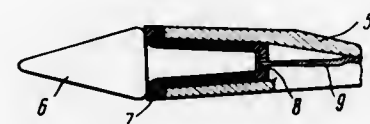


There is disclosed an optical frequency up-conversion system which uses a pair of dichroic mirrors positioned on the optical axis of an infrared collector to produce a multipass traverse of a nonlinear crystal positioned between the mirrors by a beam of pumping radiation in order to enhance the field of view, the conversion efficiency and the resolution of the system. The crystal is placed in the optical path at the interaction area of the infrared beam and the pump beam and between the dichroic mirrors. One of the mirrors is transparent to the infrared frequency and the other is transparent to the up-converter sum frequency. Both mirrors are reflective at the pump frequency. The system may be passive and collect a thermal image or it may utilize a pulsed ir illuminator laser in conjunction with a synchronously pulsed pump laser in order to increase the output power level.

**3,824,718**  
**EXCAVATOR BUCKET WITH ELECTROMAGNETIC FIELD WEAKENING TEETH**  
 Lev Borisovich Nekrasov, ulitsa Zheleznovodskaya, 46, kv. 13; Jury Mikhailovich Mismik, Slezdovskaya ulitsa, 7, kv. 2; Zolya Samullovich Tsukernik, Novo-Izmallovsky prospekt, 34, kv. 3; Semen Davidovich Kriger, prospekt Slavy 17, korpus 1, kv. 200, and Renat Shakhimardanovich Kilkeev, prospekt Maklina, 11, kv. 4, all of Leningrad, U.S.S.R.  
 Filed Apr. 2, 1973, Ser. No. 346,885  
 Int. Cl. E02f 3/00; H05b 9/06

U.S. Cl. 37—118 R

3 Claims



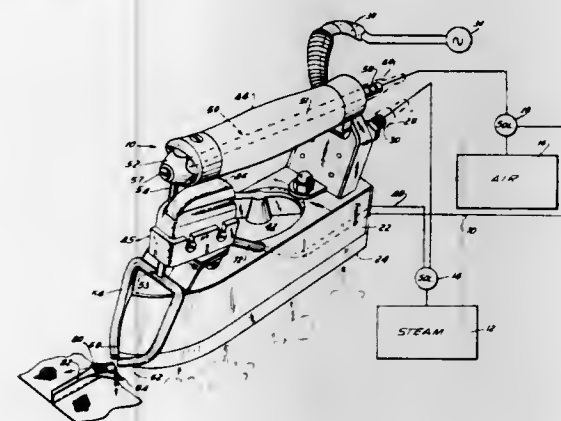
An excavator bucket including soil-breaking teeth mounted on the wall of the bucket, the teeth being in the form of electrodes electrically insulated from one another and electrically connected to a high-frequency generator so that each pair of adjacent teeth forms a capacitor adapted to produce an electromagnetic field reducing the mechanical strength of frozen soil, owing to dielectric heating thereof, whereby effective progress of these soil-breaking teeth into the soil is promoted.

The present invention permits earth-moving jobs to be carried out under conditions of season-long and several years' long freezing of soil, using for this purpose commonly known single-bucket excavators.

**3,824,719**  
**SEAMBUSTER IRON**  
 Samuel H. Miranker, Brooklyn, N.Y., assignor to Automatic Steam Products Corp., Long Island City, N.Y.  
 Filed Aug. 10, 1973, Ser. No. 387,431  
 Int. Cl. D06f 75/06

U.S. Cl. 38—77.3

16 Claims



A seambuster iron for pressing "opened" seam edges during construction of a garment is provided with nozzles which emit in a predetermined pattern jets of compressed gas to "bust" or open the seam edges and lay the separated edges flat for subsequent pressing by the iron.

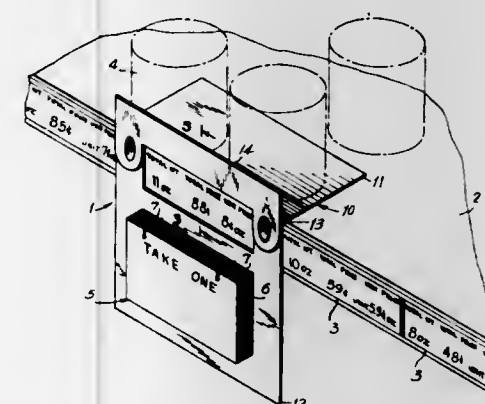
**3,824,720**  
**SHELF DISPLAY ARTICLE**  
 John D. Langwell, Freeport, N.Y., assignor to Herman Alexander, Merrick, N.Y.  
 Filed Sept. 28, 1973, Ser. No. 401,885  
 Int. Cl. G09f 3/18

U.S. Cl. 40—10

11 Claims

U.S. Cl. 40—64 R

1 Claim

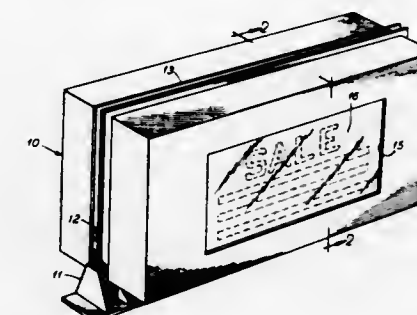


A shelf display device comprising a folded element having a horizontal leaf, and a depending vertical leaf, the horizontal leaf being adapted for placement on a shelf with the vertical leaf in front of the front edge of the shelf. The vertical leaf has a cut-out therein extending horizontally proximate the fold line to expose the front edge of the shelf. The vertical leaf has opposite marginal edge portions at the lateral edges of the cut-out by which the vertical leaf is integrally connected to the horizontal leaf. A bridge portion is connected by interlocking tabs to the marginal edge portions of the vertical leaf and the bridge portion extends across the vertical leaf and above the level of the horizontal leaf while leaving the cut-out substantially open to enable viewing of tags mounted on the edge of the shelf.

**3,824,721**  
**OUTDOOR DISPLAY DEVICE FOR SEQUENTIALLY DISPLAYING A SERIES OF PANELS**  
 Robert G. Burns, Sioux Falls, S. Dak., assignor to Pylon Incorporated, Sioux Falls, S. Dak.  
 Filed June 22, 1972, Ser. No. 265,262  
 Int. Cl. G09f 11/28

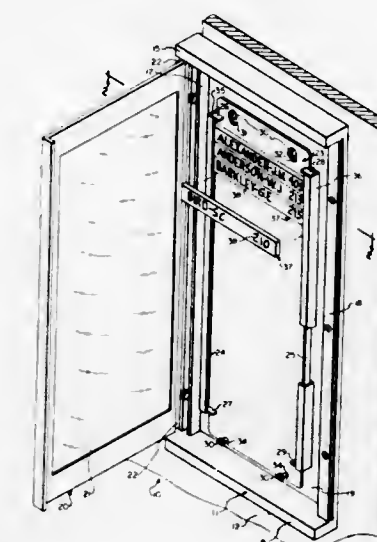
U.S. Cl. 40—32

9 Claims



Outdoor traveling display device for a series of panels having signs thereon, in which panels are suspended in end-to-end relation from an endless chain trained in a horizontal plane adjacent and beneath the top wall of a housing for the device. The chain is driven with a series of equally spaced dwells, to index a panel behind a viewing screen of the device and hold the panel in position for viewing for a preselected time interval, and then index a next succeeding panel into position for viewing.

**3,824,722**  
**BUILDING DIRECTORY**  
 John Maruscak, and Dale E. Sine, both of Brockville, Ontario, Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.  
 Continuation of Ser. No. 199,605, Nov. 17, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,454  
 Int. Cl. G09f 7/08



A modular wall mountable directory comprises a base plate having side channels for receiving the ends of indicia carrying strips. The retaining lip of the side channels is of a soft material to permit the front lip to be pulled back to allow an individual strip to be removed while retaining the rest. The strips are also made of a combined stiff and resilient material to facilitate the insertion of letters.



3,824,723

**MULTIPLE TRANSPARENCY DISPLAY UNIT AND SEQUENCING CONTROL THEREFOR**

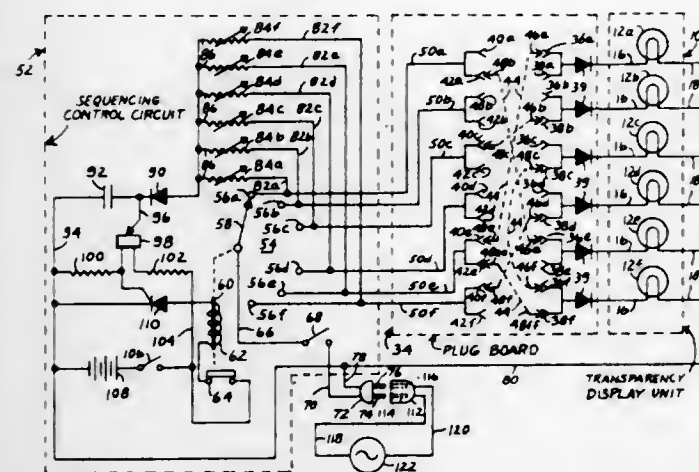
Frank A. Gargas, Minneapolis, Minn., assignor to Storyboard Display, Inc., Minneapolis, Minn.

Filed July 10, 1972, Ser. No. 270,329

Int. Cl. G09F 13/10

U.S. Cl. 40—106.1

5 Claims



The display unit comprises an electric lamp located in each of its compartments. Various transparencies, each containing an advertising or educational message thereon, are placed over the compartment openings. A plug board enables certain lamps to be selectively energized. A control circuit provides a sequenced energization of the lamps and also an adjustable display period for each lamp.

3,824,724

**POLE SIGN CONSTRUCTION**

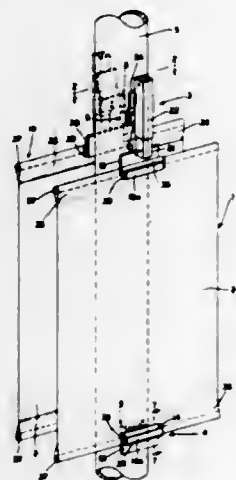
Wendell V. Miller, and Thomas Friedrichsen, both of Massillon, Ohio, assignors to The Massillon Cleveland Akron Sign Company, Stark County, Ohio

Filed Sept. 20, 1972, Ser. No. 290,715. The portion of the term of this patent subsequent to July 23, 1971 has been disclaimed.

Int. Cl. G09F 7/18, 17/00

U.S. Cl. 40—125 G

3 Claims



A pole banner sign construction which has rugged permanent hardware for supporting a flexible banner generally in a fixed position on a pole. The hardware except for simple mounting plates at the upper and lower ends of the banner may be removed from the pole. A simple rectangular flexible banner is supported under tension on the hardware and is adapted to be folded into a small package for shipment in an envelope. Rigid pull rods are located in the hems at the upper and lower edges of the flexible banner. The hardware support means at the upper and lower ends of the flexible banner positions the pull rods endwise, holds the pull rods against rota-

tion, holds the pull rods in parallelism, and maintains longitudinal tensional pull on the flexible banner between the rigid parallel pull rods. The hardware in maintaining the pull rod parallelism under tension also holds the pull rods against pivotal movement on, or twisting and turning movement about, the pole. A pair of flexible banners may be mounted in the same way on opposite sides of the pole, and any banner may be changed from time to time without the use of any tools merely by detaching the pull rods from the support means, then transferring pull rods from an initial banner to a replacement banner, and then reengaging the pull rods of the replacement banner in place.

3,824,725

**POLE BANNER SIGN CONSTRUCTION**

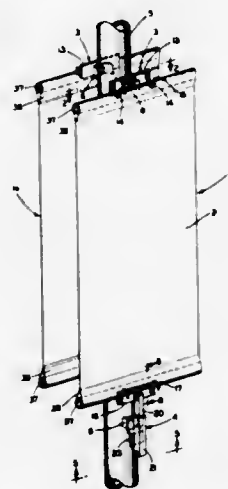
Thomas Friedrichsen, Massillon, Ohio, assignor to The Massillon-Cleveland-Akron Sign Company, Massillon, Ohio

Filed Aug. 23, 1972, Ser. No. 283,100

Int. Cl. G09F 07/18, 17/00

U.S. Cl. 40—125 G

3 Claims



A pole banner sign construction which has rugged permanent hardware for supporting a flexible banner generally in a fixed position on a pole. All of the hardware excepting simple mounting plates at the upper and lower ends of the banner is removable from the pole. A simple rectangular flexible banner is supported under tension on the hardware and is adapted to be folded into a small package for shipment in an envelope. Rigid pull rods are located in hems at the upper and lower edges of the flexible banner. The hardware support means at the upper and lower ends of the flexible banner holds the pull rods in parallelism and maintains longitudinal tensional pull on the flexible banner between the rigid parallel pull rods. The hardware in maintaining the pull rod parallelism under tension also holds the pull rods against pivotal movement on, or twisting and turning movement about, the pole. A pair of flexible banners may be mounted in the same way on opposite sides of the pole, and any banner may be changed from time to time without the use of any tools merely by unhooking several hooks from banner engagement, then transferring pull rods from an initial banner to a replacement banner, and then hooking the replacement banner in place.

3,824,726

**CHANGEABLE MULTIPLE IMAGE DISPLAY APPARATUS**

Wilfried Schubert, Bensenville, Ill., assignor to National Advertising Company, Bedford Park, Ill.

Filed Oct. 4, 1972, Ser. No. 294,791

Int. Cl. G09F 13/04

U.S. Cl. 40—132 R

4 Claims

An improved removable display film carrier for changeable copyboards including a carrier panel frame with a display sur-

3,824,728

**CROSS BOLT SAFETY FOR SINGLE ACTION REVOLVERS**

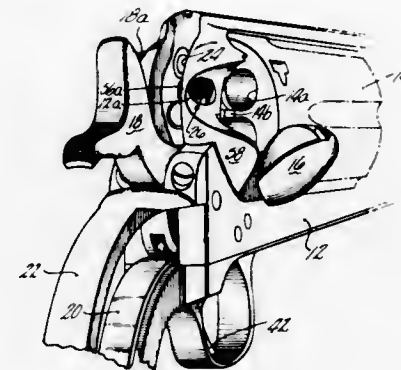
Ralph C. Kennedy, Wapping, Conn., assignor to Colt Industries Operating Corp. (Firearms Division), Hartford, Conn.

Filed May 17, 1973, Ser. No. 361,043

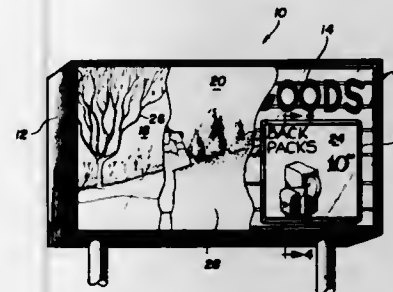
Int. Cl. F41c 17/04, 1/00

U.S. Cl. 42—66

4 Claims



face, means for removably mounting the frame onto changeable copyboards, a flexible display film bearing an image on at least one face, and a plurality of elastomeric tensioning members, each tensioning member having one end attachable to a panel frame corner, another end attachable to the flexible film corner, and a stretchable middle portion, the flexible display film being held under constant tension on the carrier frame, centered on and slightly spaced from the inside display surface. The display film can be readily changed and replaced as desired to correlate with a worded message. A three-in-one display including a supporting structure, a light diffusion plate



having a background image mounted rearwardly in the supporting structure, a changeable display film mounted in a carrier frame and in front of the diffusion plate, the display film bearing an image which is compatible for display purposes when viewing the diffusion plate image overlaid by the display film image, elastomeric tensioning members for mounting the display film in constant tension suspension within the carrier frame, and a changeable copyboard mounted to the front side of the carrier frame. The three-in-one display can accommodate a smaller display film carrier panel removably mounted on the changeable copyboard to provide a four-in-one display.

3,824,727

**MINI-CALIBER FIREARM FOR LAUNCHING HYPERVELOCITY PROJECTILES**

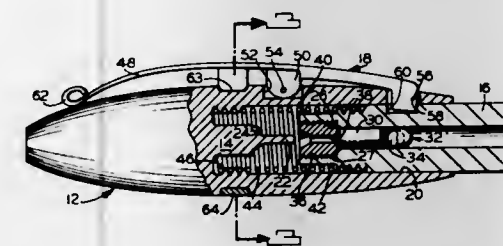
Colin M. Hudson, Moline, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1973, Ser. No. 388,310

Int. Cl. F41c 9/02

U.S. Cl. 42—1 J

7 Claims



In order to provide an accurate, low-mass, highly effective personal weapon, a firearm has been designed. The projectile mass is such that the ratio thereof to the firearm mass will provide a weapon of extremely light weight and yet heavy enough to be virtually unaffected by the recoil forces generated during the firing thereof, but sufficient for excellent lethality. The components of the weapon are limited to a hand-held receiver, a barrel slidably disposed in the forward end of the receiver, a coiled tension spring for coupling the barrel to the receiver, a sear for releasably retaining the barrel in a forward cocked position against the bias of the spring, and an optional safety for blocking release of the sear. Upon release by the sear, the barrel is biased rearwardly to bring the cartridge chambered therein into firing contact with a fixed striker in the receiver.

3,824,729

**REVOLVER LOADER**

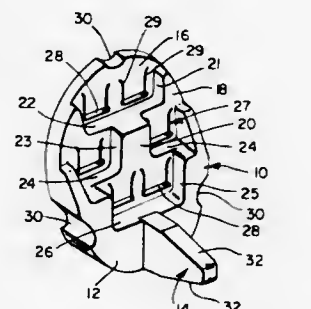
Paul P. Kubik, 304 Llewellyn Rd., Ambler, Pa. 19002

Filed June 28, 1973, Ser. No. 374,383

Int. Cl. F42b 39/04

U.S. Cl. 42—89

16 Claims



A revolver loader having a base element with self-entrapped retaining elements placed so as to secure ammunition thereto. In a preferred embodiment, a camming element projects from the base member and during the coaxial loading thrust of the loader toward the revolver cylinder the camming element will cause the ammunition to be released from the retaining elements as it is deposited in the revolver cylinder ammunition chambers. In another preferred embodiment, the base element is stepped to secure ammunition at three levels to assist in its initial placement into the revolver cylinder chambers.

3,824,730

**FISHING ROD HOLDER**

Robert L. Johnson, P.O. Box 100, Glendive, Mont. 59330

Filed June 27, 1973, Ser. No. 374,181

Int. Cl. A01k 97/12

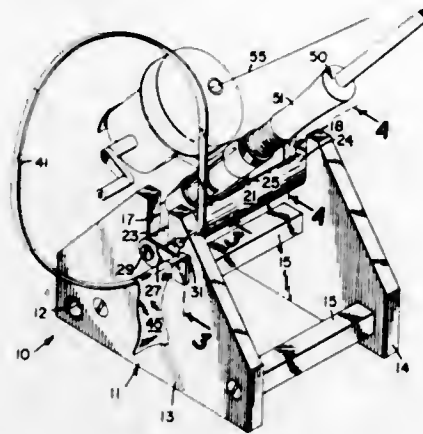
U.S. Cl. 43—17

7 Claims

The disclosed device comprises a frame mounting a rotatable shaft for holding a fishing rod in a suitable position for fish-



ing. The device permits the rod to move downwardly in response to a pull on the fishing line. This downward movement rotates the shaft and a keeper plate mounted thereon releases a signaling device. Preferably, a stop element



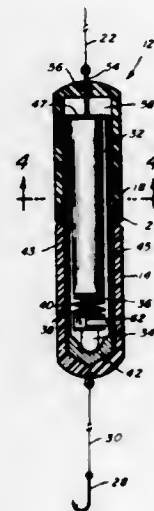
mounted on the frame under the travel of the keeper plate ensures that the signaling device will be released, and adjustment of the relative positions of the shaft and/or keeper can determine the sensitivity of the signaling function of the device.

### 3,824,731 FISH LINE LIGHT

Delmer J. Sandchaper, 3301 S. Trenton, Tulsa, Okla. 74105  
Filed Sept. 18, 1972, Ser. No. 289,595  
Int. Cl. A01k 75/02

U.S. Cl. 43—17.5

4 Claims



This invention describes a fishing line light which is designed to have negative buoyancy so that it will sink in the water. It comprises a water-tight case, at least the bottom part of which is of translucent material. Inside the case is a lamp, a battery and a pair of contacts normally held apart by spring means. The device is supported by a cord attached to a float on the surface of the water, and a fish hook is attached to a cord which also is attached to a part of the device.

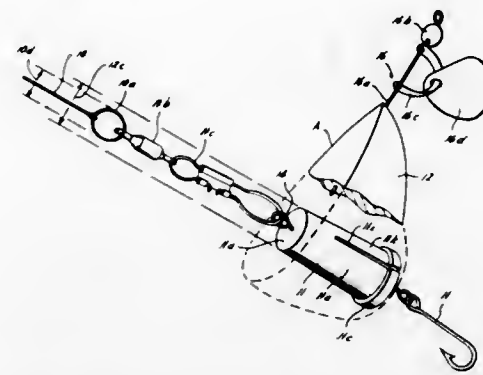
In one version of the apparatus the contacts are mounted one on each of the battery and the lamp. The fish line is attached to the battery while the support cord is attached to the lamp and the case. When the fish pulls on the hook, the contacts are brought together and the lamp is lighted. The lamp is on the bottom end of the case and illuminates the water area around the case for the purpose of attracting fish. The spring is fairly weak so that a very small pull on the hook will cause the lamp to be lighted. It is the flickering light due to momentary or extended contacts that is used to attract the fish to the hook.

### 3,824,732 FISHING LURE

Robert L. Boone, P.O. Box 11101, Houston, Tex. 77016  
Filed Sept. 5, 1972, Ser. No. 286,176  
Int. Cl. A01k 85/00

U.S. Cl. 43—42.05

5 Claims



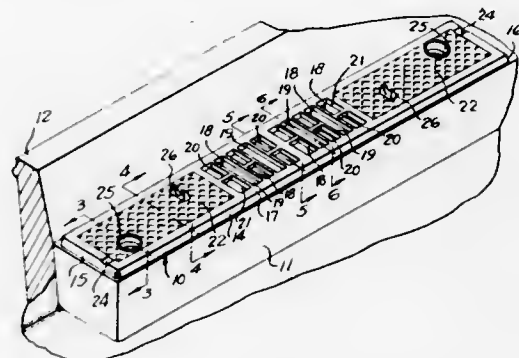
A releasable fishing lure including a base member and hook attached to a fishing line and a lure body having a bore therethrough, the lure body being mounted on the base member with releasable, frictional connection therebetween whereby the lure body is releasable for movement along the fishing line away from the hooked fish.

### 3,824,733 OPEN TOP COMPARTMENTED LID

Carl R. Cordell, Jr., P.O. Box 2020, Hot Springs, Ark. 71901  
Filed Dec. 22, 1972, Ser. No. 317,777  
Int. Cl. A01k 97/06

U.S. Cl. 43—54.5 R

4 Claims



An open top compartmented lid is integrally formed of plastic and has a plurality of generally rectangular compartments of varying sizes formed centrally in the upper surface thereof to receive a plurality of fishing tackle items supported therein temporarily while other items are being used for fishing. A support for a fishing rod is formed in the plastic lid and includes a well to receive the reel on the rod without requiring the removal therefrom. A plurality of stiffening members extend waffle-like across two end portions of the lid for strengthening the lid and providing small compartments for temporarily storing relatively small items of fishing gear or tackle. The lid includes substantially upright side walls supporting a generally horizontal top wall integrally formed thereon.

### 3,824,734 INSECT TRAP

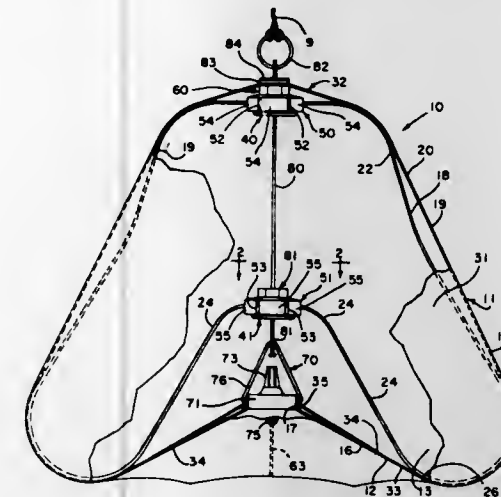
Baltasar Bottos, 361 Marlton Ave., Camden, N.J. 08105  
Filed June 6, 1973, Ser. No. 367,634  
Int. Cl. A01m 1/10

U.S. Cl. 43—121

4 Claims

A collapsible construction for an insect trap adapted to be suspended over a pet feeding bowl, the trap being downwardly

concave and comprising a downwardly divergent circumferential outer wall and an inner wall extending upwardly and inwardly about the lower region of the outer wall, both walls



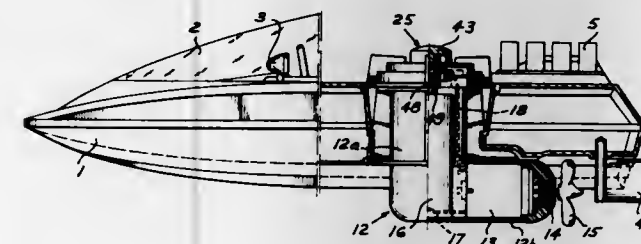
combining to enclose a space therebetween. The inner wall terminates at a central opening in which bait support means is mounted for enticing insects upwardly through the opening into the enclosed space.

### 3,824,735 TOY BOAT WITH SEPARATE COMPARTMENT FOR BATTERY AND MOTOR

Horst Brandstatter, Zirndorf, Germany, assignor to Georg Brandstatter, Zirndorf, Germany  
Continuation-in-part of Ser. No. 161,043, July 9, 1971, abandoned. This application July 25, 1973, Ser. No. 382,593  
Int. Cl. A63h 23/04

U.S. Cl. 46—243 MV

9 Claims



There is disclosed a power driven toy boat, the power plant of which is accommodated within the hull of the body. For this purpose a housing containing an electric motor driving a propeller and a battery for energizing the motor are provided. This housing is insertable into an opening extending crosswise through the hull of the boat and is retained therein by self-engaging shoulders on the housing and the wall of the opening. The housing is sealed off except for an opening to permit exchange of the battery or repairs. This opening which is closable by a lid, is above water when the boat is floating so that there is no danger of leakage of water into the housing. A switch is provided on the lid to actuate the motor.

### 3,824,736 METHOD AND APPARATUS FOR PRODUCING PLANTS

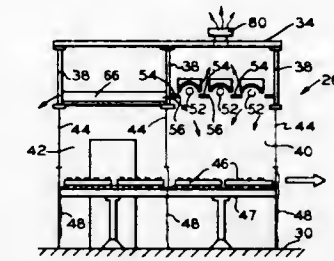
Noel Davis, Russell, Ohio, assignor to Integrated Development and Manufacturing Company, Chagrin Falls, Ohio  
Continuation of Ser. No. 87,795, Nov. 9, 1970, abandoned.  
This application Jan. 22, 1973, Ser. No. 325,713  
Int. Cl. A01g 9/24

U.S. Cl. 47—17

5 Claims

A method and apparatus for the continuous production of plants. The method comprises moving the plants through a

corridor wherein closely controlled conditions of temperature and humidity are maintained. The corridor is preferably formed by a series of modular units each of which includes an



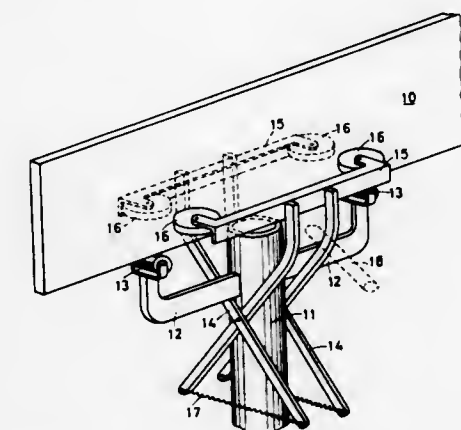
illuminated section and a darkened section. Each modular unit is arranged to constitute one twenty-four hour growth period so that merely by varying the number of modules, growing cycles of any desired duration can be provided.

### 3,824,737 APPARATUS FOR GRIT BLASTING THE EDGE OF A PLATE LIKE MEMBER

David Wenzel Alexander Jansson, Smedbodalsvagen, Sweden, assignor to ESAB-Hebe Aktiebolag, Orebro, Sweden  
Filed Nov. 21, 1972, Ser. No. 308,470  
Claims priority, application Sweden, Dec. 1, 1971, 15379/71  
Int. Cl. B24c 3/32

U.S. Cl. 51—8

1 Claim



An apparatus for grit blasting the edge of a plate or the like comprises a frame carrying shield means enclosing a portion of the edge, at least one jet nozzle for directing a stream of blasting grit and compressed air towards the enclosed portion of the edge, and two sets of rollers for positioning said nozzle in relation to the edge. One set of said rollers is mounted on a loaded pincer like tool to make the apparatus suited to work on plates of different thicknesses.

### 3,824,738 PIPE CLEANING APPARATUS

Wayne C. Hall, deceased, late of Salt Lake City, Utah; by Scott D. Allen, executor, Oregon City, Oreg., and Wayne C. Hall, Jr., 20100 S. Beavercreek Rd., Oregon City, Oreg. 97045  
Filed Nov. 1, 1972, Ser. No. 302,637  
Int. Cl. B24c 3/32

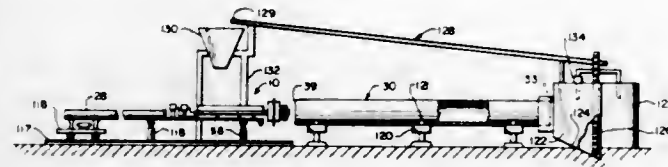
U.S. Cl. 51—9

12 Claims

An apparatus and method for cleaning the inside of pipes by throwing abrasive material into contact with the internal surface of the pipe from a rotating wheel moving longitudinally therethrough, wherein the abrasive material and the material abraded from the pipe are expelled from an open end of the pipe during the cleaning operation by an air flow created by the rotating wheel. One embodiment of the invention includes a carriage movable into and out of the pipe, an abrading wheel



rotatably mounted on a tubular housing carried on the forward portion of the carriage, an auger conveyor for supplying the wheel with abrasive material, and a shroud mounted behind the wheel for reducing the effective cross-sectional area of the pipe. The rotating abrading wheel is inserted in one open end of the pipe and, as it is moved through the pipe,



creates an air flow which moves the abrasive material and the material abraded from the pipe out of the opposite open end of the pipe. The abrasive material is then separated from the material abraded from the pipe for reuse on subsequent pipes. The abrading wheel is comprised of a front disc, a rear annulus having an outer diameter less than the diameter of the disc and a plurality of blades interconnecting the disc and the annulus.

3,824,739

# METHOD AND APPARATUS FOR CONTINUOUSLY REMOVING BURRS FROM OBJECTS

Bernard Moret, Bondy, and Jean-Louis Dufetele, Saint Etienne du Rouvray, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procédes Georges Claude, Paris, France

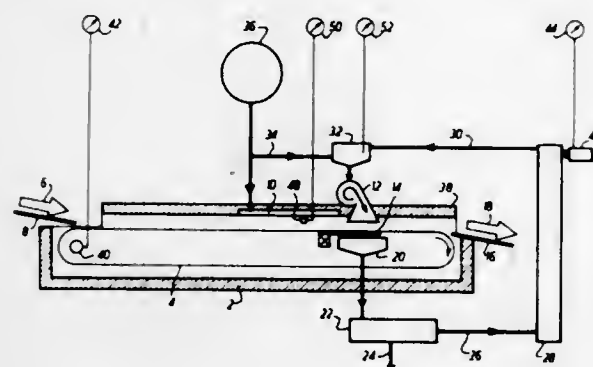
Filed Feb. 23, 1973, Ser. No. 335,317

Claims priority, application France, Feb. 29, 1972, 72.06765

Int. Cl. B24c 3/14, 5/00

U.S. Cl. 51-9

4 Claims



A device for removing burrs from objects thermally insulated from the ambient air consists of subjecting the objects to a blast of granular shot, which is re-cycled after separating-out the removed burrs and is led back to a storage hopper, the shot being continuously insulated thermally from the ambient air and being cooled, simultaneously with the objects by a cold gas in the liquefied form or in course of vaporization. The apparatus comprises a shot-blasting chamber in the form of a heat-insulated tunnel containing a continuously moving conveyor belt on which the objects are disposed.

3,824,740

# POWER FEED SANDER

Raymond C. Richardson, Rt. 2, Meridian, Idaho 83642

Continuation-in-part of Ser. No. 235,979, Mar. 20, 1972. This application Aug. 31, 1972, Ser. No. 285,411

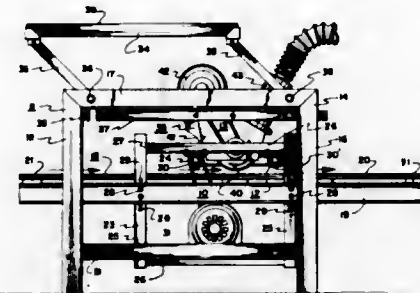
Int. Cl. B24b 7/10, 7/00

U.S. Cl. 51-33 R

4 Claims

The power feed sander comprises a frame assembly including a frame and a table, a feed assembly including suitably

driven rollers mounted transversely above the table on the frame, and a carriage assembly suitably mounted to the frame



and including a sanding subassembly controllable as to its downward sanding pressure by an inertia plate.

3,824,741

# METHOD AND APPARATUS FOR TRAVERSING A CAM FOLLOWER

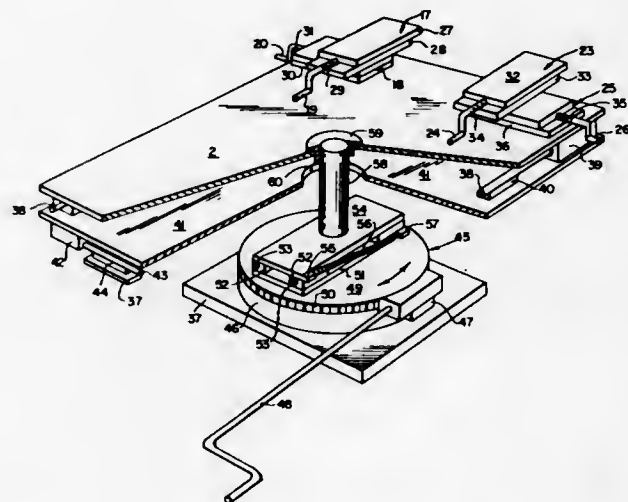
Harold R. Wilson, 708 Colonial Dr., Wilmington, N.C. 28401

Division of Ser. No. 76,653, Sept. 28, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,891

Int. Cl. B24b 17/02

U.S. Cl. 51-50 PC

8 Claims



A system for the machining of work pieces, particularly the abrading of die rolls for a tube reducing mill, where the work piece and the master pattern or cam are mounted for rotation on a common shaft and moved relative to a master follower and rotating tool, respectively, with this relative movement being biased translation with only the angle of the translation varying with respect to the axis of rotation for causing the follower to traverse the entire control surface of the master and correspondingly cause the tool to duplicate the master control surface in the work piece. The follower and tool are mounted on a common table, which table is mounted with respect to a base for only translation, that is, the table will not rotate with respect to the separately mounted master and work piece. A slide mechanism allowing only translation of the table is rotated independently of the table to traverse the direction of table translation through an angle of 180°. Elements are provided to bias the table in the direction of translation so that with the 180° rotation of the slide, the follower will traverse the entire control surface of the master, in one plane. The master is rotated about an axis parallel to the above-mentioned plane so that its entire three dimensional surface will be engaged by the follower.

3,824,742

# TORIC SURFACE GENERATING METHOD AND APPARATUS

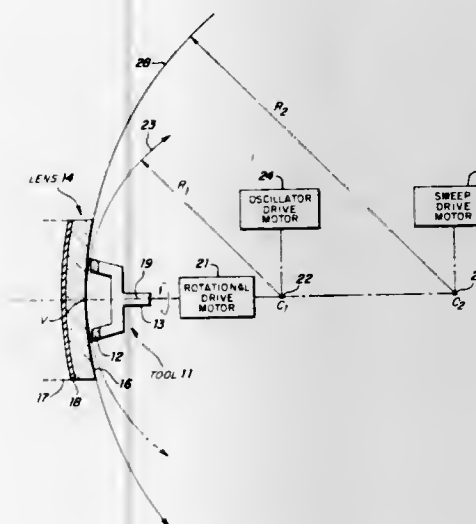
Wiktor J. Rupp, Lowell, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed July 7, 1972, Ser. No. 269,664

Int. Cl. B24b 1/00, 13/02

U.S. Cl. 51-54

14 Claims



Method and apparatus for generating a true toric surface on a lens or other work piece. In accordance with the invention, a cup-shaped surfacing tool is adapted to be moved across a lens blank in a compound motion comprised of an oscillating movement in a first curved path having a radius equal to the radius of curvature desired in the direction of one major meridian of the surface coupled with a sweeping movement in a second curved path having a radius equal to the radius of curvature desired in the direction of the second major meridian of the surface. The tool is aligned relative to the lens surface such that the oscillating movement will be within a plane parallel to the tool axis such that substantially the entire abrasive surface of the tool will operate on the lens surface. This will avoid the formation of ridges on the surface and, at the same time, permit the generation of high quality toric surfaces of any desired curvature with a single tool and with relatively simple kinematics.

3,824,743

# MACHINE TOOL CONTROL SYSTEM

Ralph E. Price, and Stanley C. Schoonover, both of Waynesboro, Pa., assignors to Landis Tool Company, Waynesboro, Pa.

Filed May 22, 1973, Ser. No. 362,877

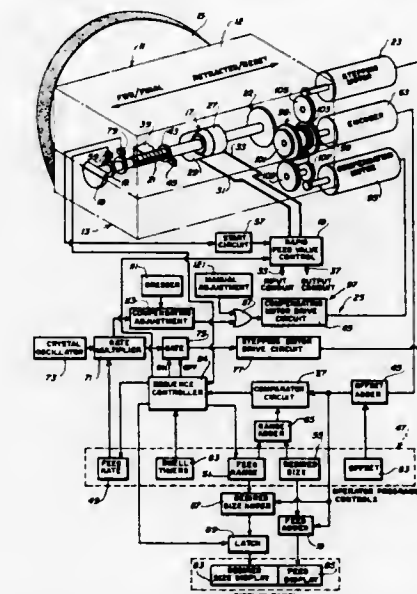
Int. Cl. B24b 49/00

U.S. Cl. 51-165.71

6 Claims

A machine tool control system moves a grinding wheel from a retracted position to a forward position by applying hydraulic fluid to a hydraulic cylinder to effect a rapid forward movement of the grinding wheel whereupon further movement of the grinding wheel to a final position is effected by supplying a predetermined number of pulses to a stepping motor for driving a feed screw in accordance with a predetermined sequence of grinding movements. The actual advancement of the grinding wheel is monitored by an absolute multiturn encoder rotatably associated with the feed screw and producing a signal which is compared to a combined signal representative of the desired size of the workpiece in the range of grinding. With each grinding sequence, the portion of the feed range signal is reduced to create a difference from a signal produced by the encoder so as to operate a sequence controller to effect advancement of the grinding wheel by supplying pulses to a stepping motor drive circuit connected to controlling relation with a stepping motor connected to a feed screw through a

gear train. When the workpiece is ground to the desired size, the sequence controller operates to reversely rotate the stepping motor and reverse the application of hydraulic fluid to return the grinding wheel to a retracted position. The desired size of the workpiece and the advancement of the grinding wheel under the control of the encoder are displayed by suitable gauges on a display panel. The mechanical relation of the encoder to the grinding wheel may be calibrated by a calibration offset signal for increasing or decreasing the signal



produced by the encoder indicating the position of the grinding wheel. To enable the actual position of the grinding wheel to be varied without disturbing the relationship between the encoder and the stepping motor in associated circuitry, the feed screw is driven through a gear train including a differential. The encoder is associated with the input gear of the differential while a compensating motor and associated circuitry are provided for rotating the output gear of the differential without effecting the rotational movement of the encoder.

3,824,744

# MULTI-PURPOSE WORK HOLDING MEANS

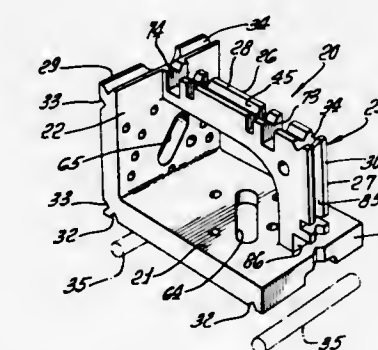
Robert G. Petrant, 1531 Silverlake Blvd., Los Angeles, Calif. 90026

Filed July 31, 1972, Ser. No. 276,392

Int. Cl. B24b 41/06; B23q 17/18

U.S. Cl. 51-217 A

6 Claims



A work holder device providing precise multipositioning of a work piece with respect to three dimensional and angular relationships for the machining, grinding and the like of surfaces on the work piece. A work holder body member of right angle type constructed and arranged to provide holding and securing of a work piece in a multitude of desired positions with a reduced set up time and providing for elimination of some set up steps normally employed in the positioning of a work piece for a working operation.



3,824,745

## SUCTION SYSTEM FOR ABRADING TOOL

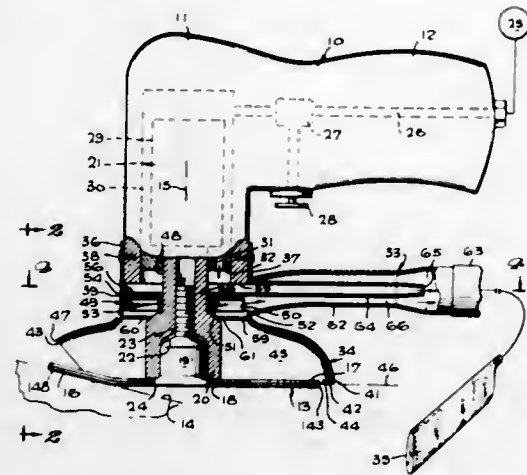
Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107

Filed Aug. 21, 1972, Ser. No. 282,340

Int. Cl. B24b 23/02, 55/06

U.S. Cl. 51-170 T

18 Claims



A work abrading tool having a suction system for withdrawing abraded particles from the work surface to a collection location. The suction system preferably includes a fan or fans driven by the motor of the abrading tool and producing a flow of air which partially or wholly creates the suction effect. For best results, the fan or fans and an aspirator coact to produce together the suction flow of air.

3,824,746

## WANKEL ENGINE CYLINDER GENERATING MACHINE

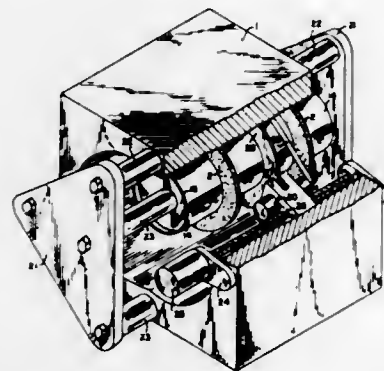
Gordon James Watt, 245 Anguowa, Apt. 106, Fairfield, Conn. 06430

Filed July 13, 1972, Ser. No. 271,538

Int. Cl. B24b 19/00, 17/00

U.S. Cl. 51-245

7 Claims



The generating machine comprises complementary tools called the lobe generator and the neck generator, together capable of machining the cylinder contour for a Wankel engine. An inside-out machine structure is disclosed wherein the tools are supported and guided by the workpiece. Compatible structural rigidity and freedom of motion is provided by hydrostatic bearing spindles and slides.

The lobe generator operates somewhat like the conventional cylindrical grinder or boring machine with the important provision of an articulated arm comprising the cutter center itself and an eccentric bearing. Said bearing is a Wankel type stator-rotor pair which produces a third harmonic radial compensation and is also used to produce torque to swing the cutter around the eccentric pivot point. Key to the generating concept is natural transfer of the cutting center to the region of the cusps of the evolutes of the arch, without radial change or change in tangential direction of the cutter edge.

The neck generator is a mechanical analogue of the Wankel rotor, having two edges which ride the arches completed by the lobe generator and a third edge which is the cutting tool. Said tool machines the cusp region of the epicycloidal cylinder to where it joins the arches already produced by the lobe generator. Key to the invention is capability of the lobe generator to complete enough of the cylinder surface to guide the neck generator.

3,824,747

## PILASTER AND WALL PARTITION COMBINATION

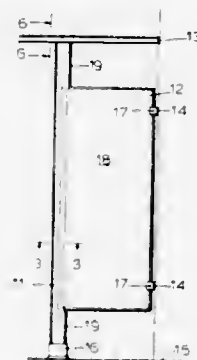
George M. Zehner, Jr., Erie, Pa., assignor to General Partitions Mfg. Corp., Erie, Pa.

Filed July 25, 1972, Ser. No. 274,882

Int. Cl. E04b 2/28

U.S. Cl. 52-239

4 Claims



A pilaster and panel combination is disclosed. The panel is adapted to be supported on a wall between the floor and the ceiling. The pilaster is made from an aluminum extrusion U-shaped in cross section and it has a recess between its spaced legs, and the pilaster is longer than the panel. The panel is received between the space legs of the pilaster at an intermediate part of the pilaster. Two trim strips are held in place between the legs of the U-shaped extrusion outboard of the panel. One strip extends from the panel to the floor and the other strip from the panel up to a head rail. The trim strips are held in place between the legs of the extrusion by a series of grooves and beads in the legs of the extrusion and the legs of the trim strips.

3,824,748

## PERMA LAND BOUND STAKE DEVICE

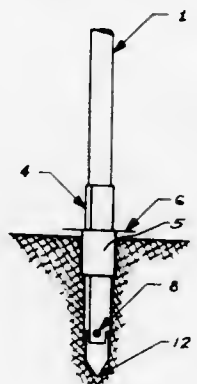
John R. Pichowicz, Westville Rd., P.O. 51, Plaistow, N.H. 03865

Filed Feb. 14, 1973, Ser. No. 331,340

Int. Cl. E04f 9/02

U.S. Cl. 52-103

5 Claims



This invention relates to a permanent marker stake for use by surveyors. The stake has a top blunt end and a bottom pointed end and carries two blades pivoted to the stake above the pointed end. The free ends of the blades are sharpened

and the pivot ends have an abutment to bear against the stake when the blades pivot outwardly. A sleeve having a flange at its upper end is slidably mounted on the stake from a lower position at which the blades are held adjacent the stake to a position above the blades. In the upper position the blades are free to pivot outwardly of the stake. A tension spring is located between each blade and the stake to urge the blades to pivot outwardly when the sleeve has moved to free the blades. Before the stake is driven in the ground the sleeve is in downward position retaining the blades against the stake. At a specific point on the ground the stake is driven into the ground by a hammer or other means. As the stake moves into the ground the flange of the sleeve contacts the ground stopping movement of the sleeve but allowing the stake to further penetrate the ground and the sleeve to release the blades. The blades are then free to pivot and move into the ground to the side of the stake. A short upward movement of the stake causes the sharpened end of the blades to penetrate the ground and move into the ground until the abutments on the blades contact the stake. The stake is then locked into the ground and cannot be removed without digging it out. The upper blunt end of the stake is covered with a cap member. The entire stake has a non-corrosive surface and the upper end of the stake may be covered with a fluorescent material below the cap for more easily locating the stake in the ground.

3,824,749

## EAVE STRUCTURE

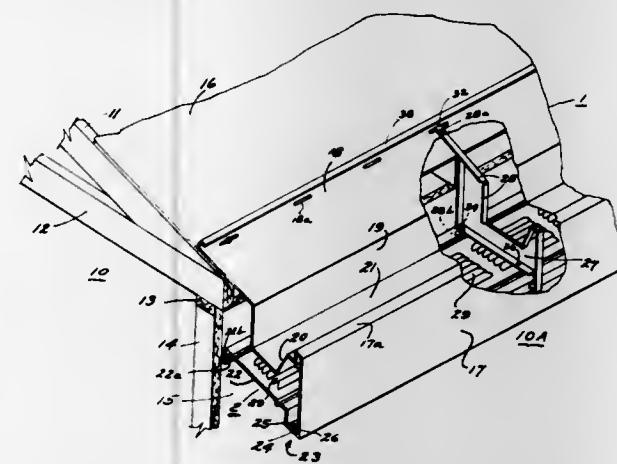
Thomas W. Scherf, Vandergrift, Pa., assignor to Aluminum Company of America, Allegheny, Pa.

Filed Nov. 29, 1972, Ser. No. 310,433

Int. Cl. E04d 13/06

U.S. Cl. 52-11

5 Claims



A structural eave assembly readily installable and attachable to a building originally constructed without an overhanging eave comprises a separately fabricated, unitary structure having combined gutter, soffit, and fascia portions.

3,824,750

## COLUMN CONNECTOR SYSTEM

Anthony A. Antoniou, 23 Baybrook Ln., Oak Brook, Ill. Continuation of Ser. No. 203,780, Dec. 1, 1971, abandoned.

This application June 18, 1973, Ser. No. 370,845

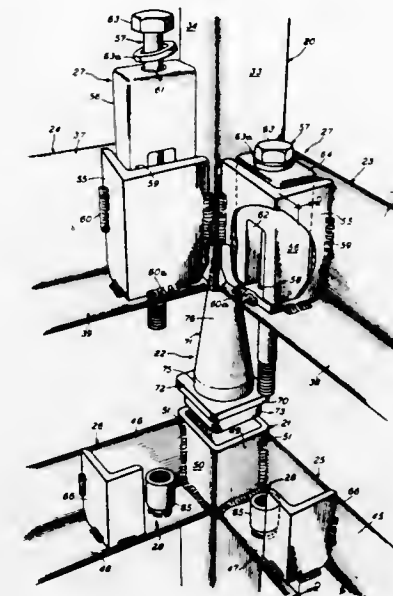
Int. Cl. E04b 1/348

U.S. Cl. 52-79

5 Claims

A mechanical connector system for interjoining and aligning tandem related tubular column sections utilizing a unitary cast connector having a planar platform portion for abutting engagement with adjacent ends of the column section members, a conical guide portion extending outwardly on one side of the platform portion and a depending polygonal flange

portion protruding from the opposite side thereof for inter-fitting engagement with the interior walls of related column section members. Ancillary tie-bolt means are also utilized



between structural support framing members associated with the column sections to positively lock the latter in assembled position.

3,824,751

## PRECAST CONCRETE WALL STRUCTURE FOR WASTE TREATMENT TANKS

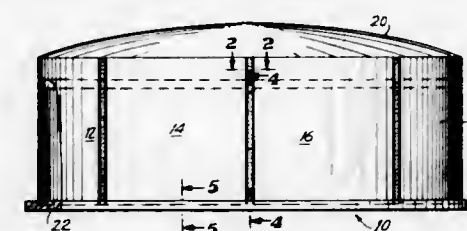
Charles Shelander, Dix Hills, N.Y., assignor to Preload Technology, Inc., Long Island City, N.Y.

Filed June 23, 1972, Ser. No. 265,594

Int. Cl. E04h 7/20

U.S. Cl. 52-173

3 Claims



A construction for a waste treatment tank comprised of a plurality of precast concrete panels extending to approximately the full height of the tank is shown. Each of the precast concrete panels has a plurality of horizontal stressing tendons which are freely movable and pass through the panels and through continuous vertical edge plates on either side of the panels. Coupling plates attached to the edge plates are butt-welded to one another at their junctions. The tension in the prestressing tendons may be controlled at any time before, during or after the erection of the tank and the construction configuration provides easy access to the prestressing tendons. The configuration is particularly well suited for the through passage of piping connection and for the attachment of internal structure to the steel coupling plates.



3,824,752

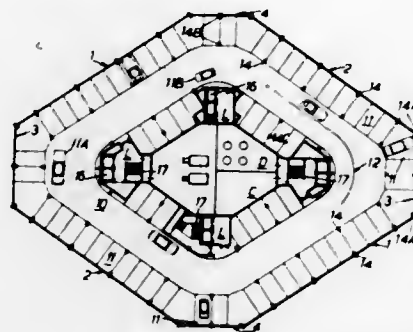
## MULTI-STOREY BUILDINGS

Maurice Weston, 70A Arlington House, Arlington St., St. James', London, S.W. 1, England  
 Filed Feb. 7, 1973, Ser. No. 330,427  
 Claims priority, application Great Britain, Feb. 8, 1972, 5879/72

Int. Cl. E04h 6/00

U.S. Cl. 52—176

36 Claims



There is described a variant of the building of U.S. Pat. No. 3,290,837, comprising a carriageway for exit and entry of vehicles with a margin at one or both sides for parking; the outline plan of the building is octagonal with opposite sides of equal length but with adjacent sides of unequal length; and the building is supported on columns with those at each apex at the shorter sides of the building arranged on radii from a centre which lies on the axis passing between the apex at the complementary opposite one and in vicinity of the arc which on the helical floorway defines the centreline of the carriageway at the apex, whereby at each apex on the usable part of carriageway vehicles can be parked.

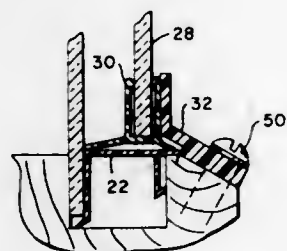
3,824,753

## WINDOW STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.  
 Filed May 18, 1970, Ser. No. 38,453  
 Int. Cl. E06b 3/28

U.S. Cl. 52—203

5 Claims



A storm sash and structure for installation of the storm sash on a prime window sash is disclosed. The storm sash includes a generally U-shaped dual durometer hardness plastic strip secured to a glazing panel around the periphery thereof. The structure for installation of the storm sash includes, in different modifications, extensions of the cross section of the glazing strip and/or various retainer clips.

3,824,754

## BUILDING STRUCTURE MADE OF STANDARDIZED COMPONENTS

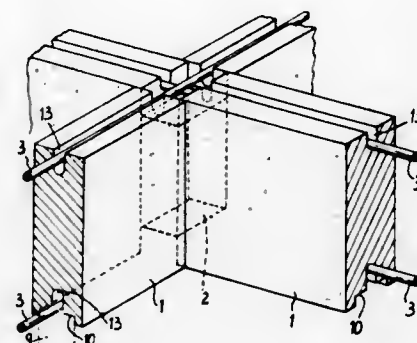
Albert Fatome, 14 rue, des Terrasses-14, Caen, and Henri Coste, 3 Place Pireire Pair 170, Paris, both of France  
 Filed June 1, 1972, Ser. No. 258,509  
 Claims priority, application France, June 7, 1970, 70.20428  
 Int. Cl. E04c 3/26, 5/08

U.S. Cl. 52—228

17 Claims

A prefabricated building structure constituted mainly by two orthogonal series of parallel rows of successive plank sec-

tions separated by gaps, all the plank sections being of substantially the same length so as to define a square meshed system, the apices of the meshes of which register with the gaps. The system is assembled at ground level with blocks filling the gaps and with horizontal tensioning wires. It is then



raised so as to form a coffered ceiling which is covered before its raising by a planking or the like covering means. The ceiling thus formed and held transiently in position is secured definitely in position by walls, partitions or uprights fitted between it and a floor slab.

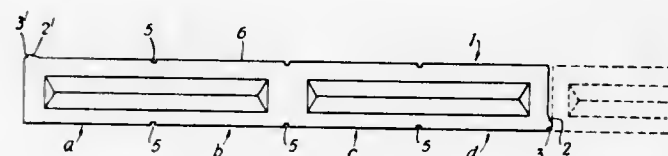
3,824,755

## RAPID LAY BUILDING BRICKS

William John Hartnell, Station Rd., Much Hadham, England  
 Continuation of Ser. No. 66,440, Aug. 24, 1970, abandoned.  
 This application Oct. 2, 1972, Ser. No. 293,855  
 Int. Cl. E04c 1/12

U.S. Cl. 52—314

1 Claim



A multiple component building brick in which grooves are used to simulate separation of the bricks, the brick being preferably of lightweight concrete material and having a projection or nib on an end face and preferably on a rear face to assist correct spacing corresponding to the grooves, including a set of bricks.

3,824,756

## NAILING CLIP FOR PLASTIC SIDING

Gerald Kessler, 388 Cransberry Rd., Boardman, Ohio 44512  
 Filed Aug. 18, 1972, Ser. No. 281,949  
 Int. Cl. E04d 1/34

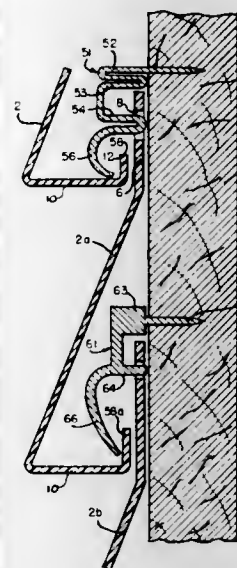
U.S. Cl. 52—548

4 Claims

Siding for house exteriors is now commonly made to simulate clapboards and has an integral top locking strip having a downward projection spaced from the body of the siding into which an upturned projecting strip, on the bottom of the next higher course of siding can be fitted when applying the siding to a house. The present disclosure eliminates this integral

locking strip and provides instead small nailing clips of a special construction which are less expensive and which are con-

being carried out by a press ram engaging one of the boards and with pressure adequate to compress the material to a smaller mass than is ultimately to be obtained. The means defining the compression chamber is removed and the press ram is then backed off a predetermined small distance, allowing the compressed mass to expand toward the desired final



structed so that the siding can be nailed in place loosely, which is desirable to permit thermal expansion and contraction of the siding.

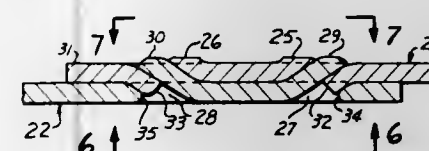
3,824,757

## METHOD OF JOINING SHEET METAL, AND SHEET METAL JOINTS

Vernon W. Coop, Pico Rivera, Calif., assignor to Brazil H. Snyder, Bell Gardens, Calif.  
 Division of Ser. No. 107,256, Jan. 18, 1971, Pat. No. 3,728,881. This application Aug. 14, 1972, Ser. No. 280,128  
 Int. Cl. F16b 5/00

U.S. Cl. 52—758 D

7 Claims



A first slit aperture means is formed in a first sheet metal portion and first protruding leg means is formed from the excess metal from the first slit aperture means. A second slit aperture means is formed in a second sheet metal portion and second protruding leg means is formed from the excess metal from the second slit aperture means. The sheet metal portions are then positioned so that a surface of the second sheet metal portion is contiguous to a surface of the first sheet metal portion and so that the second leg means extends through the first slit aperture means. The leg means are then crimped to sandwich the second leg means between the first leg means and a surface of the first sheet metal portion and to sandwich a portion of the first sheet metal portion between the second leg means and a surface of the second sheet metal portion to form the completed joint.

3,824,758

## METHOD AND APPARATUS FOR PACKING COMPRESSIBLE MATERIAL SUCH AS TOBACCO

Joel C. Hart, Richmond, Va., and Charles W. Traugher, Jr., Candler, N.C., assignors to British-American Tobacco Co., Ltd., London, England and Fisburne International, Inc., Asheville, N.C.

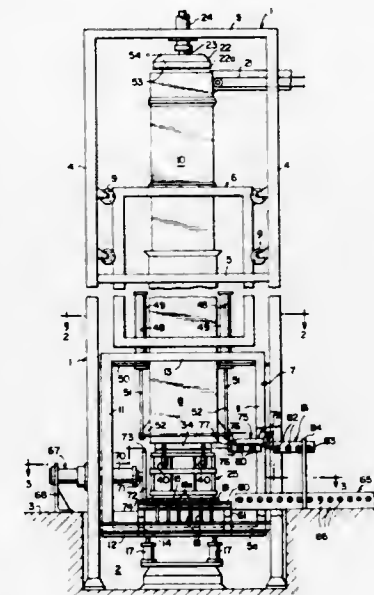
Filed May 10, 1973, Ser. No. 358,952

Int. Cl. B65b 13/20, 63/02

U.S. Cl. 53—24

10 Claims

Material such as leaf or strip tobacco is compressed between bale boards in a compression chamber, compression



size. Before the compressed mass has expanded adequately to cause excessive friction between the ram and the bale board it engages, the combination of the compressed mass and the bale boards is pushed laterally, away from the press ram, and is then retained by rollers engaging the bale boards while strapping is applied.

3,824,759

## METHOD AND APPARATUS FOR HANDLING STACKABLE BODIES

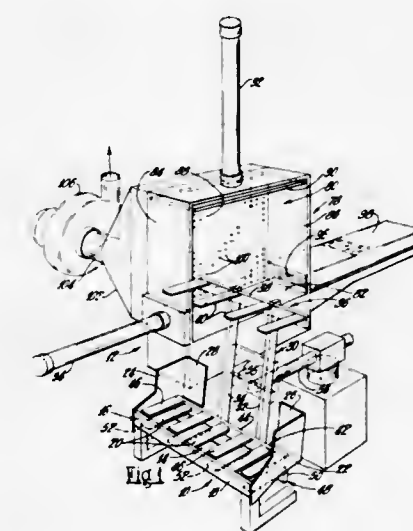
Lawrence R. Finn, and Richard L. Smith, both of Toledo, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 18, 1973, Ser. No. 324,615

Int. Cl. B65b 63/02

U.S. Cl. 53—24

21 Claims



A method and apparatus are provided for handling compressible batts of glass fiber insulation. The batts are sequentially removed from a conveyor line and stacked on one another at a loading or stacking station to a predetermined number or height. The stack of batts is moved away from the point of stacking and compressed by a bat compressing and carrying unit, and additional compressible batts are sequen-



tially removed from the conveyor line and stacked at the stacking station. The second stack of batts is then compressed adjacent the first stack by the unit and the two stacks moved together by the unit from the stacking station to a packaging station. Suction is applied to the two stacks of batts at the packaging station while fingers of the batt compressing and carrying unit, which fingers supply the compressive forces on the batts, are moved apart and retracted. The two stacks of batts are then packaged at the second station while additional batts are removed from the line and stacked at the stacking station for the next package.

3,824,760

# METHOD AND INSTALLATION FOR FABRICATING, FILLING AND SEALING SACKS MADE FROM THERMOPLASTIC HOSE MATERIAL

Anatoly Afanasievich Sinichenko, ul. Gagarina, 54, kv. 24; Anatoly Mikhailovich Romanenko, prospekt Kosmonavtov, 7, kv. 3; Evgeny Alexeevich Sukhov, ul. Lisichanskaya, 55a, kv. 30, and Grigory Fedorovich Markovsky, ul. Donetskaya, 52, kv. 53, all of Severodonetsk, U.S.S.R.

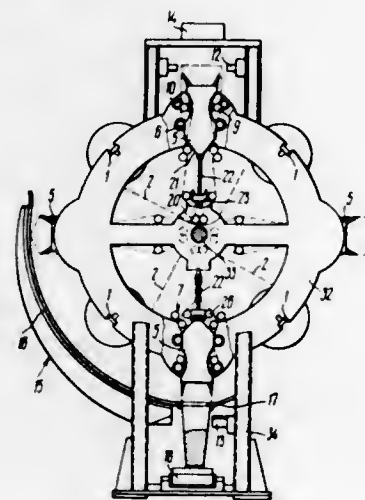
Filed Oct. 24, 1972, Ser. No. 300,363

Claims priority, application U.S.S.R., Oct. 25, 1971, 1708087

Int. Cl. B65b 9/14, 43/00

U.S. Cl. 53—29

7 Claims



A method of fabricating, filling and sealing sacks made of thermoplastic hose material and an installation for accomplishing same are intended for packaging bulk and loose products. The method and the installation are simple, and reliable in operation.

3,824,761

# METHOD OF MANUFACTURE OF CROWN CLOSURES FROM THERMOPLASTIC MATERIAL

Harold B. Wright, McLean, Va., assignor to Shenandoah Plastics Corporation, Frederick, Md.

Division of Ser. No. 34,147, May 4, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,847

Int. Cl. B65b 7/28; B67b 1/02

U.S. Cl. 53—41

6 Claims



A crown for bottles and method for continuous manufacture of the crown from thermoplastic sheet material. The crown has a shaped undersurface conformed to the mouth of bottles as an aid in sealing.

# 3,824,762 APPARATUS FOR FILLING AND HERMETICALLY SEALING THERMOPLASTIC CONTAINERS UNDER VACUUM

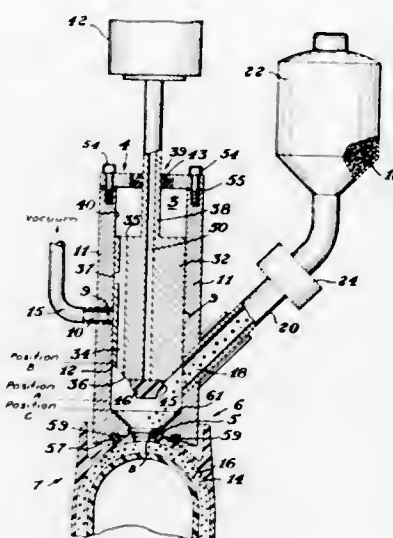
Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1973, Ser. No. 346,444

Int. Cl. B65b 31/02

U.S. Cl. 53—88

5 Claims



Thermoplastic containers are filled with materials such as particulate solids or liquids under vacuum and hermetically sealed in rapid succession by an apparatus having means for evacuating the container, means for filling and hermetically sealing the evacuated containers while retaining the vacuum.

3,824,763

# PNEUMATIC PACKAGE LOADER

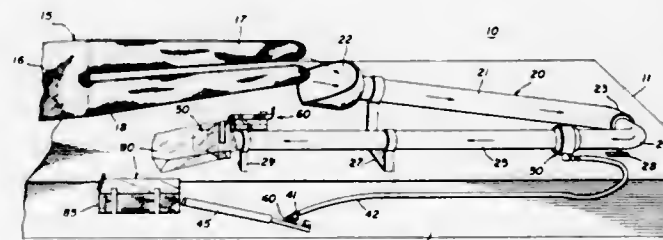
George E. Lewis, Fayetteville, Ark., assignor to Bear Brand Hosiery Co., Chicago, Ill.

Filed Jan. 26, 1973, Ser. No. 327,002

Int. Cl. B65b 1/04, 1/00

U.S. Cl. 53—255

16 Claims



Packaging apparatus for garments such as panty hose includes a cylindrical conduit having an entry end and an exit end, and a Venturi air chest on the conduit for establishing a stream of air in the conduit to draw the garment into the conduit at the entry end and eject it into a bag or other container at the exit end. A funnel-shaped nozzle on the exit end of the conduit has an outer sleeve portion spaced radially outwardly from the conduit and cooperating with a clamping device for holding the open end of the bag in surrounding relationship with the conduit and spaced therefrom, perforations in the cone-shaped part of the nozzle permitting free flow of the air stream from the bag.

3,824,764  
HOBBLE

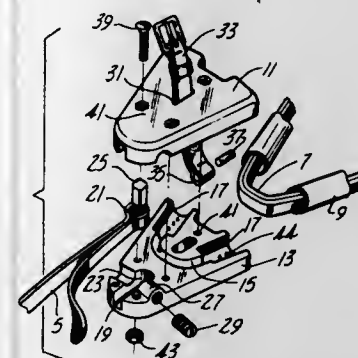
Donald H. Roberts, 500 Lockwood Rd., Ortonville, Mich. 48462

Filed May 30, 1973, Ser. No. 365,343

Int. Cl. B68b 1/00

U.S. Cl. 54—71

7 Claims



A hobble for pacer horses has front and rear leg loops connected to intermediate straps whose length is adjustable. The connection between the loops and intermediate strap is a two piece connector having loop receiving recesses that include the leg loop and a second loop formed by the strap being folded back over itself and around a non-circular member. A lock means prevents movement of the second loop relative to the connector. A shield member encloses the leg loop and terminates at its ends within the connector.

3,824,765

# GAS AND LIQUID SEPARATOR

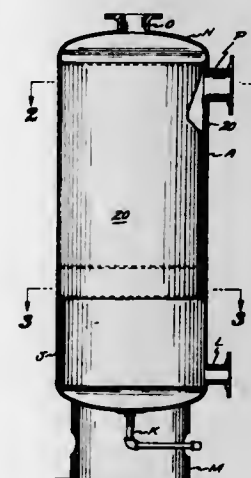
Rodney A. Williams, Los Alamitos, Calif., assignor to J. A. Campbell Company, Long Beach, Calif.

Filed July 24, 1973, Ser. No. 382,207

Int. Cl. B01d 45/12

U.S. Cl. 55—1

5 Claims



An improved apparatus for separating entrained liquid from a stream of gas by sequentially subjecting the stream to centrifugal action in first one direction and then in a second opposite direction, and the entrained liquid collecting on multiple screens as a result thereof. The separated liquid drains downwardly on the screen by gravity to a quiescent zone where it is free to flow to a settling tank, with the liquid after entering the tank stratifying into layers of oil and water that may be selectively removed from the tank by first and second valve outlets. The separated liquid when in the quiescent zone is substantially free from the action of the flowing stream as the latter flows through first and second annulus shaped spaces. The gas substantially free from entrained liquid flows upwardly from the apparatus to a desired destination.

3,824,766  
GAS PURIFICATION

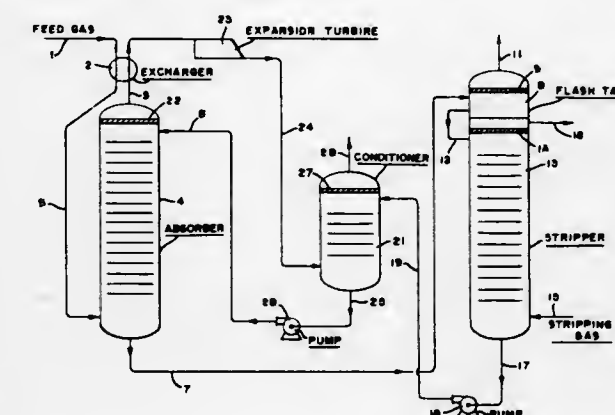
John P. Valentine, Belle Mead, and Wilbert E. Luley, Mendham, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 10, 1973, Ser. No. 359,032

Int. Cl. B01d 53/14

U.S. Cl. 55—48

12 Claims





pansion thereof. Accordingly, a portion of the gas that is demisted is then used as a coolant in the demisting process and as a consequence thereof no extraneous refrigerant or refrigerating equipment is required.

3,824,768

## APPARATUS FOR PURIFYING A GAS

Alfred Erich Wibrandt Van Diepenbroek, Ermelo, Netherlands, assignor to Bronswerk-Apparatenbouw N.V., v/h Moring & Steenaart, Nijkerk, Netherlands

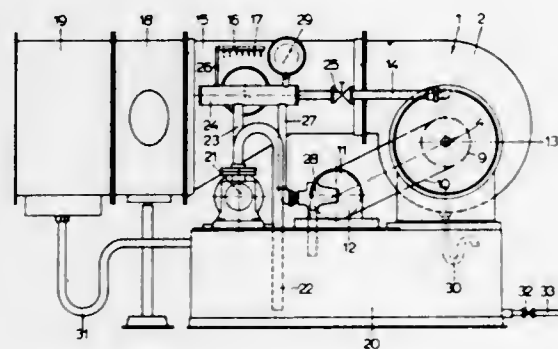
Filed July 21, 1972, Ser. No. 273,956

Claims priority, application Netherlands, July 26, 1971, 7110254

Int. Cl. B01d 47/06

U.S. Cl. 55-223

3 Claims



Apparatus for purifying a gas, in particular air. A liquid, in particular water, is converted into a liquid mist by means of an atomizer. The gas to be purified is intimately contacted with this liquid mist whereby the impurities are transferred, at least for a major part, from the gas into the liquid mist. Hereafter the gas is contacted, together with the liquid mist containing the impurities, with liquid particles large with respect to the mist particles and adapted to combine with the liquid mist containing the impurities. Then the purified gas is separated from the liquid.

3,824,769

## DEVICE FOR REMOVING NOXIOUS MATTER FROM EXHAUST GASES

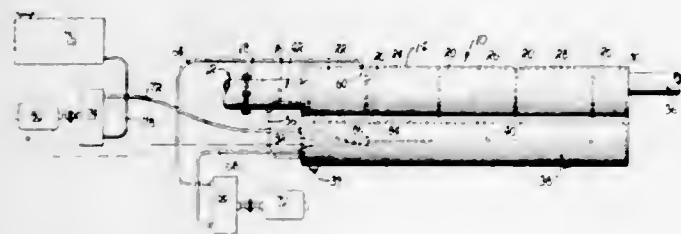
Anthony R. Santos; Ontario R. Santos, and Gerald Dean Allen, all of 3298 Avenue 192, Tulare, Calif.

Filed Oct. 10, 1972, Ser. No. 295,963

Int. Cl. B01d 47/06

U.S. Cl. 55-223

1 Claim



A device for removing noxious matter from a stream of exhaust gases as the stream is projected from an exhaust conduit. The invention is characterized by a tubular chamber which receives the exhaust gas, a water bath for washing and cooling the gas, and a circulating system including a sump located beneath the chamber for collecting granulated water and a circuit for returning water from the sump to the water bath.

3,824,770  
FILTERING DEVICE FOR REMOVING BACTERIA FROM THE VENTILATION AIR

Wolfgang Eckstein, Dorfstrasse 70, 2406 Sereetz, Germany

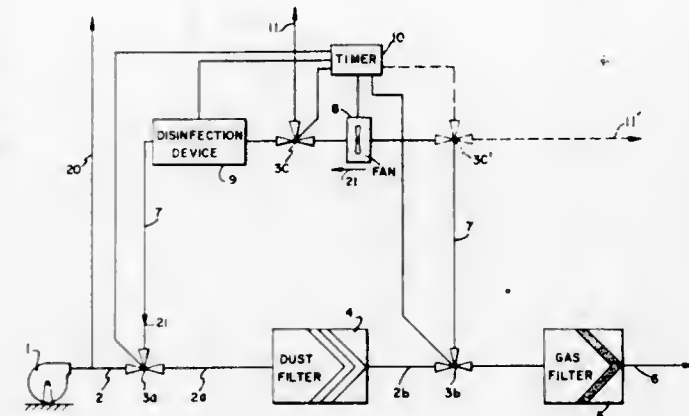
Filed July 2, 1973, Ser. No. 375,874

Claims priority, application Germany, July 6, 1972, 2233215

Int. Cl. B01d 31/00

U.S. Cl. 55-279

9 Claims



An air filtering device mounted in a ventilation system and provided to remove bacteria from the air current supplied into rooms to be held under sterile conditions comprises a suspension filter located in the air supply conduit and adapted to be shut off and connected into an air conducting disinfection circuit including a device furnishing a disinfectant in suspension and a fan circulating the air with the entrained disinfectant through the suspension filter. In the preferred embodiment, the disinfection circuit is branched to the ventilation air supply conduit upstream and downstream of the suspension filter by means of three-way control valves and the disinfection circuit comprises a vent permitting a flush air current pressed or sucked through the suspension filter and expelling the disinfectant after disinfection to escape. An electrical timing device or circuit controls the valves, the vent and the fan so that either only the filtered air is supplied, or only the disinfection of the suspension filter takes place, or only the suspension filter is passed through by a flush air current.

3,824,771

## GAS AND PARTICULATE SOLID MATERIAL SEPARATING AND SOLID MATERIAL DISCHARGING APPARATUS

John K. Williams, Waco, Tex., assignor to Central Texas Iron Works, Inc., Waco, Tex.

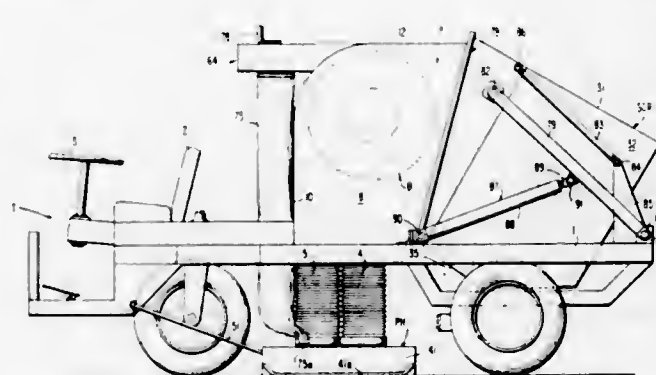
Division of Ser. No. 193,514, Oct. 28, 1971, Pat. No.

3,755,851. This application May 22, 1973, Ser. No. 362,685

Int. Cl. B01d 50/00

U.S. Cl. 55-429

8 Claims



Apparatus for separating particulate solid material from a stream of gas, such as air, entraining such material includes a blower, a solids collection receptacle, ducting connected to

the blower and to the receptacle and communicating with a source of gas with entrained particulate solid material, the blower, receptacle and ducting providing a substantially closed system in which gas is recirculated, the solid material being separated from the circulating gas and deposited in the collection receptacle. A portion of the circulating gas, usually not exceeding 30 percent by volume, is bled from the circulatory system and discharged to maintain the average pressure in the circulating system at a desired low value so as to prevent leakage blow-out of gas and entrained dust or fine solids. Means for bleeding gas off from the system is situated within structure housing the blower and a separation chamber. The solids collecting receptacle is mounted so as to be bodily movable away from the blower and ducting housing structure and so as to respond to such bodily movement by tipping to dump accumulated solids. The gas cleaning apparatus is disclosed in connection with mobile surface sweeping equipment including a pick-up head having means for regulating the flow of air from a pressure chamber against the surface being cleaned and into a suction chamber in the pick-up head.

3,824,772

## TURF MAINTENANCE MACHINE

Charles E. Sorenson, Mount Vernon; Clyde D. Stubblefield; Arnold A. DeBallie, both of Evansville, all of Ind.; Robert K. Bramley, Cleveland, and Hugh A. Bourassa, University Heights, both of Ohio, assignors to Hahn, Inc., Evansville, Ind.

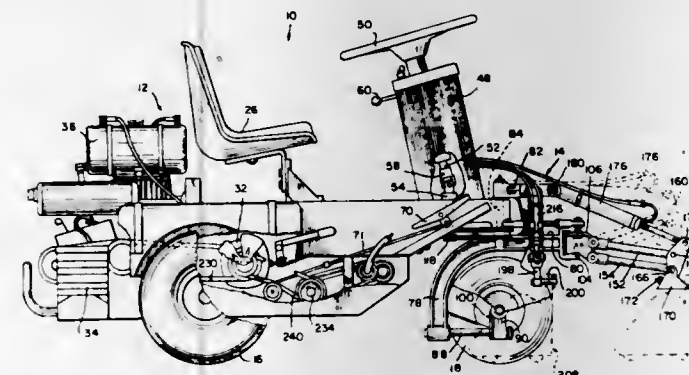
Division of Ser. No. 220,629, Jan. 25, 1972, Pat. No.

3,771,296. This application Feb. 26, 1973, Ser. No. 335,548

Int. Cl. A01d 75/30

U.S. Cl. 56-7

2 Claims



A turf maintenance machine comprising a vehicle with a plurality of reels connected to the vehicle. Each reel includes a front support roller and rear support roller between which the usual rotary blade and knife bar are disposed, and an additional rear support roller which is mounted for movement between a lower ground engaging position and an upper position. When the additional roller is in its lower position, the first said rear roller is raised above the ground to raise the knife bar. A rotary brush is provided for cleaning the first said rear roller during the cutting operation. Each reel is connected to the vehicle by a support member with the connection between the reel and the support member providing for pivotal movement of the reel relative to the support member about an axis parallel to the axis of its said front roller. Each support member is then connected to the vehicle for pivotal movement about an axis perpendicular to the axis of the front roller of its associated reel.

3,824,773

## AUTOMATIC RAKE

Harry E. Brubaker, 560 E. Lawn, Urbana, Ohio 43078

Filed Aug. 21, 1972, Ser. No. 282,027

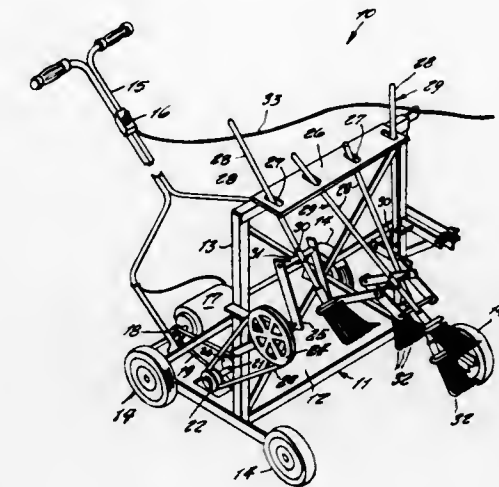
Int. Cl. A01d 81/00

U.S. Cl. 56-369

1 Claim

A rake for raking a lawn or other grounds, the device consisting of frame supported upon wheels so that it can travel

across the ground, a control handle extending rearwardly upwardly from the frame for being held by an operator walking behind, the device being powered either by a gasoline engine



or electric battery and including a series of individual hand type rakes operated by a crank shaft so as to move through a raking motion of the ground.

3,824,774

## METHOD AND APPARATUS FOR THE FABRICATION OF CONDENSER YARNS

Yasushi Kobayashi, Tokyo, Japan, assignor to Nissan Motor Company, Yokohama City, Japan

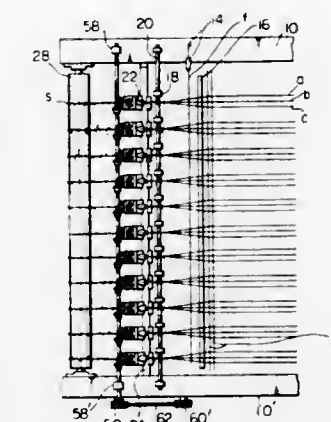
Filed Oct. 24, 1972, Ser. No. 300,253

Claims priority, application Japan, Oct. 25, 1971, 46-84482

Int. Cl. D03d 41/00; D02g 3/42

U.S. Cl. 57-24

9 Claims



A method and an apparatus for concurrently fabricating a number of condenser yarns having two or more wadder filaments twisted upon each other and twiner elements which are twined between and around the wadder filaments. The wadder filaments fed in a number of groups are shed and receive a twiner filament in shed in manners similar to the feeding of warps and wefts in a usual loom. Upon beating of the twiner filament onto the wadder filaments, the twiner filament is cut to a number of twiner elements which are allocated respectively to the individual groups of the wadder filaments. The wadder filaments thus carrying the twiner elements are then twisted upon each other so that the twiner elements are twined between and around the wadder filaments thus spun.



3,824,775

**METHOD OF AND APPARATUS FOR STRANDING ELONGATE MATERIAL**

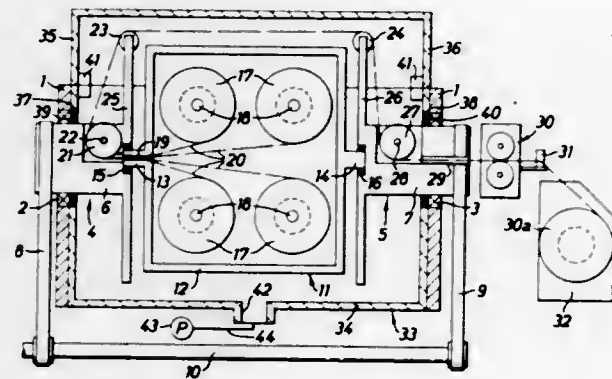
Norman John Birch, Wordsley, England, assignor to National Standard Company Limited, Worcestershire, England  
Filed Aug. 24, 1972, Ser. No. 283,558

Claims priority, application Great Britain, Aug. 26, 1971, 40070/71

Int. Cl. D07b 3/12

U.S. Cl. 57—58.52

4 Claims



In a machine for stranding elongate material for example metallic wire, comprising a first support means for receiving spools of the material to be stranded, a rotary twisting component, and a second support means for receiving a take-up spool for the stranded product, said rotary twisting component is disposed within an enclosure, means is provided for creating at least a partial vacuum within the enclosure, and sealing means is mounted in a wall of said enclosure through which the stranded product leaving the rotary twisting component is led to the take-up spool. Said first support means may also be disposed within said enclosure.

3,824,776

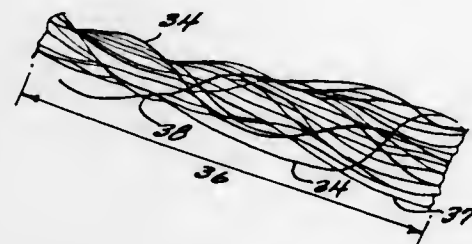
**FABRIC HAVING IMPROVED PICK RESISTANCE**

Joe F. London, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 11, 1972, Ser. No. 217,060  
Int. Cl. D02g 3/34, 1/02, 1/16

U.S. Cl. 57—140 J

6 Claims



A fabric is provided of improved pick resistance containing a textured, air jet interlaced yarn comprising a plurality of continuous synthetic thermoplastic filaments. The yarn is further characterized by uniform repeating sections of about 1/4-1 inch in length, each said section being composed of a relatively open bulky and lofty portion of false twisted multifilaments and a relatively short node portion where the multifilaments are closer together and are interlaced and encircled.

3,824,777

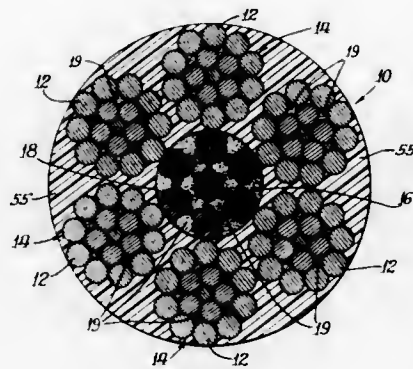
**LUBRICATED PLASTIC IMPREGNATED WIRE ROPE**

Peter Philip Riggs, Essex, England, assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Oct. 5, 1973, Ser. No. 403,797  
Int. Cl. D07b 1/16, 7/12, 7/14

U.S. Cl. 57—149

7 Claims



A wire rope, and method of making same, is provided wherein the wire rope strands are coated with a heavy viscous lubricant prior to winding the strands into rope, and the lubricated rope is impregnated with a thermoplastic material to entrap the lubricant in the strands and core. The outer strands are held in spaced relationship during the plastic impregnating step, and the plastic material does not extend beyond the outer periphery of the wire rope.

3,824,778

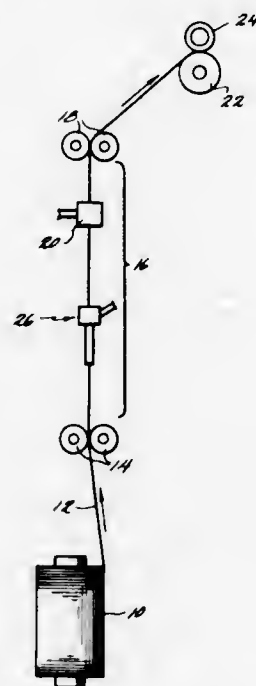
**HEATING PROCEDURE IN A FALSE TWIST TEXTURIZING PROCESS**

Harry E. Flanders, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Sept. 25, 1972, Ser. No. 291,585  
Int. Cl. D02g 1/02

U.S. Cl. 57—157 TS

10 Claims



An improved heating procedure in a yarn texturizing process by heat setting a false twist therein which comprises confining a sonic flow of superheated steam in closely adjacent surrounding relation along a predetermined longitudinal extent of the yarn continuously moving between the upstream position of twist restraint and the position at which the false twist is imparted to the yarn. The procedure makes possi-

ble the texturizing of yarn at production rates of 275 ypm utilizing a steam source at a temperature of 470°F and pressure of 55 psig with a sonic flow confining surface of approximately 6 inches in length and 0.083 inches in diameter.

3,824,779

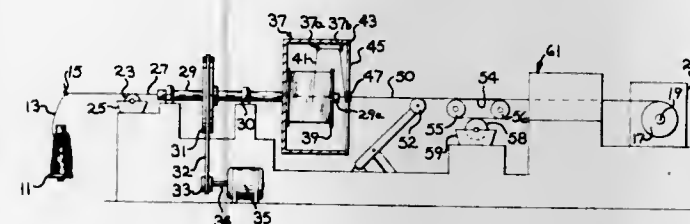
**METHOD OF MAKING MULTIFILAMENT YARNS**

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Division of Ser. No. 721,688, April 16, 1968, Pat. No. 3,620,280. This application June 4, 1971, Ser. No. 150,113  
Int. Cl. B65h 8/108; D02g 3/38, 3/48

U.S. Cl. 57—162

7 Claims



Organic and glass filaments, yarns and/or strands are combined, with the organic component as the core and the glass component as the overwrap, followed by a treatment which causes the organic to shrink, causing spaced portions of the glass component to move or to tend to move radially outwardly with respect to the longitudinal axis of the combined structure and whereby, when the combined structure is in an elastomeric matrix, the region of the matrix contiguous to the organic component is in a state of compression while the glass component exhibits greater anchoring potential with the elastomeric matrix.

3,824,780

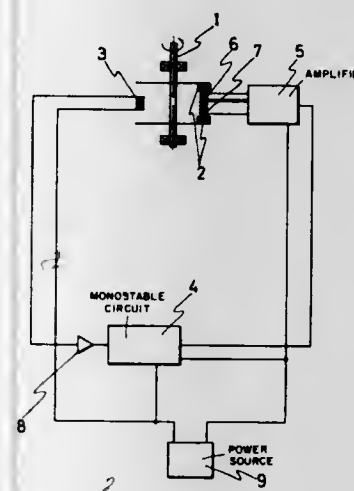
**SYSTEM FOR REGULATING ROTARY SPEED OF A SHAFT**

Jose Gracia Barba, 560 E. Lawn Guillermo 39, 40, Barcelona, Spain

Filed June 15, 1972, Ser. No. 263,275  
Claims priority, application Spain, June 15, 1971, 392242  
Int. Cl. G04c 3/04

U.S. Cl. 58—23 D

5 Claims



A pick-up attached to the shaft whose movement is to be regulated picks up a signal periodically produced by the shaft itself during its rotation. The signal triggers an electronic circuit which emits a stable signal of constant duration which acts on the pulsing system of the shaft.

3,824,781

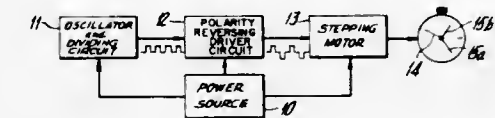
**HOROLOGICAL MOVEMENT EMPLOYING INDUCTIVE STEPPING MOTOR**

Gunther Rudolph Diersbock, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 14, 1973, Ser. No. 341,017  
Int. Cl. G04c 3/00

U.S. Cl. 58—23 R

3 Claims



An electronic watch utilizes an alternating current unidirectional induction stepping motor for electromechanical conversion. The motor is driven step-wise by an oscillator, a frequency-reducing divide circuit and a polarity reversing driver circuit. The stepping motor includes a rotor having a multipole upper disk, a multishoe bottom disk, and an axially magnetized cylindrical magnet separating and magnetizing the two multishoe disk. The stator has pole portions cooperating with both upper and lower disks.

3,824,782

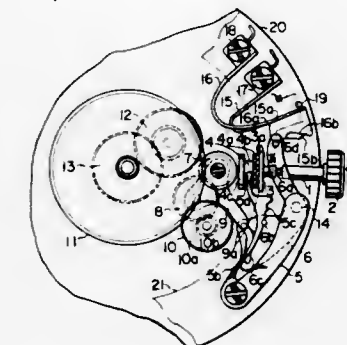
**CORRECTION SWITCHING DEVICE OF WRIST WATCH WITH ELECTRONIC BUZZER**

Yoshio Inuma, Hino, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,277  
Claims priority, application Japan, Feb. 25, 1972, 47-19550  
Int. Cl. G04c 21/34; G04b 23/12, 27/02

U.S. Cl. 58—38

2 Claims



A correction switching device for a wrist watch provided with an electronic buzzer, comprising a stem having at least three stable positions, and a setting mechanism and an electronic buzzer switch which are operated by said stem such that said setting mechanism is set in a time setting position when said winding stem is in one of said three stable positions and in an alarm setting position when said stem is in one of the other stable positions, and said electronic buzzer switch is set in the "off" position when said stem is at least in one of the stable positions other than that for time setting and in the "on" position when said stem is in the other stable positions.

3,824,783

**MANUALLY OPERABLE PIVOT PIN FOR A WRIST WATCH BAND**

Clarence S. Nadeau, 175 Greenfield St., Seekonk, Mass. 02771  
Filed July 5, 1973, Ser. No. 376,615

Int. Cl. G04b 37/00; C01d 7/18

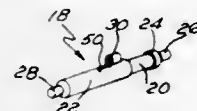
U.S. Cl. 58—88 SC

3 Claims

A manually operable pin for a wrist watch band comprising a pair of hollow, tubular members in telescopic relation. The members have extending pintles at their outer ends for engag-



ing the watch bail openings. The inner member has a longitudinal slot spaced from the inner end. The outer member has a manually engageable tab extending upwardly adjacent its inner end. Spaced from the tab, a portion of the body extends inwardly into the slot on the inner member to permit relative telescopic movement within the limits of the slot. A coil spring is mounted within the members to normally bias the members in extended position. To lock the pin to a watch bail after it



has been inserted in the end of a watch band, the pintle on the inner member is placed into one bail opening. The tab is manually moved against the action of the spring to shorten the pivot pin and allow the pintle on the outer member to be inserted in the other watch bail opening. The pivot pin is removable in the same manner, by manually engaging the tab and telescoping the members to shorten and remove the pin. No tool is necessary to insert or remove the pivot pin.

3,824,784

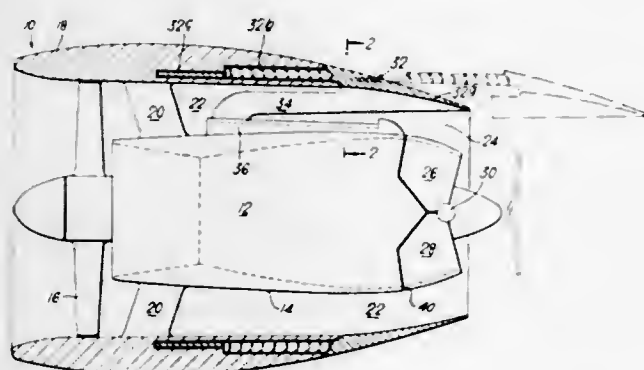
### THRUST DEFLECTORS FOR DUCTED FAN GAS TURBINE ENGINES

George Samuel Kitson, and Julian MacDonald Davison Sutton, both of Nottingham, England, assignors to The Secretary of State for Defence, London, England  
Continuation of Ser. No. 75,621, Sept. 25, 1970, abandoned.  
This application June 30, 1972, Ser. No. 267,972  
Claims priority, application Great Britain, Sept. 29, 1969, 47742/69

Int. Cl. F02c 3/06; F02k 3/06

U.S. Cl. 60—226 A

2 Claims



A ducted fan gas turbine engine has thrust reverser doors mounted at the hot gas stream exhaust nozzle and a fan cowl downstream portion which is translatable. The thrust reverser doors deflect the hot gas stream radially outwards and the hot gas stream in turn, deflects the cold fan stream radially outwards through a gap found by translation of the fan cowl downstream portion in a downstream direction.

3,824,785

### GAS TURBINE DUCTED FAN ENGINES

Marcel Robert Soligny, Chevilly-Larue, and Jean Georges Boullier, Brunoy, both of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Dec. 7, 1972, Ser. No. 313,110

Claims priority, application France, Dec. 7, 1971, 71.43865

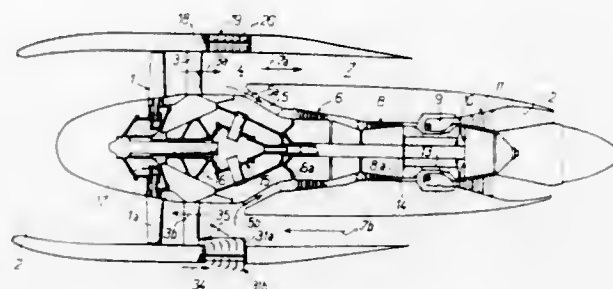
Int. Cl. F02k 3/02

U.S. Cl. 60—226 A

5 Claims

A gas turbine ducted fan engine, comprising, at the front, a fan having reversible blades which normally discharge air into a discharge duct which is divided into an internal duct through

which there passes a primary air flow which feeds the compressor of the engine and an external duct through which a secondary air flow passes from front to rear, and in order to ensure that the compressor is fed when the pitch of the vanes is reversed in order to obtain a braking effect, openings which are normally closed but which open into the region of the duct from which there diverge the two ducts and which are pro-



vided with guide-blade cascades which can be adjusted between an inoperative position, in which they are retracted into the external wall of the duct, and an operative position in which they project, on the one hand, on the outside of and, on the other hand, into the duct, in such a way as to scoop up air on the outside in order to discharge it into the said region of the duct.

3,824,786

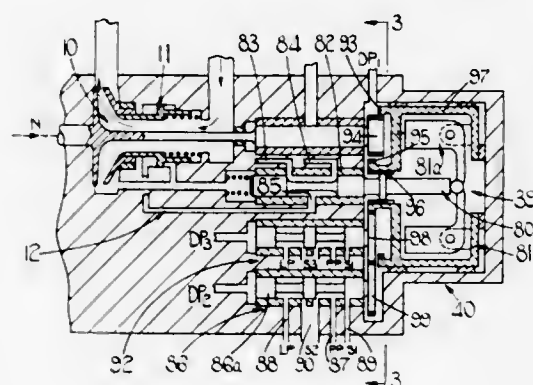
### FUEL CONTROL APPARATUS FOR GAS TURBINE ENGINE

Robert Thomas John Skinner, High Wycombe, England, assignor to Lucas Aerospace Limited, Birmingham, England  
Filed Sept. 25, 1972, Ser. No. 291,604

Int. Cl. F02k 3/08

U.S. Cl. 60—243

31 Claims



A fuel control apparatus for a gas turbine engine reheat system which includes a plurality of burners has a plurality of variable metering orifices associated with the respective burners and a plurality of servo-responsive throttle valves downstream of the respective orifices. The apparatus includes an arrangement for controlling the servo pressures applied to the throttle valves, this arrangement including a governor driven by the engine and mounted on an internal ring gear. A first valve spool is coupled to the ring gear and is axially movable by the governor. The ring gear includes a coaxial spur gear which meshes with further spur gears forming parts of respective valve spools which control the servo pressures for associated throttle valves.

3,824,787

### INTERMITTENT COMBUSTION DEVICE WITH A PAIR OF COEXTENSIVE AND COAXIAL MUTUALLY INDUCTIVE CHAMBERS

Alexander Hosen Etessam, 91 Eldorado Ave., Shemiran, Tehran, Iran

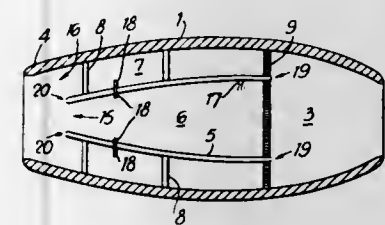
Continuation of Ser. No. 55,379, July 16, 1970, abandoned.

This application Sept. 20, 1972, Ser. No. 290,740

Int. Cl. F02k 7/04

U.S. Cl. 60—248

17 Claims



A gas generator for a turbine or jet power plant comprising a pair of coextensive combustion chambers normally coaxially arranged between the inlet and outlet and each operating on the pulse jet principle, the combustion chambers converging towards the outlet in the form of mutually inductive nozzles so that the combustion chambers operate in an alternate cycle providing continuous throughput of air from inlet to outlet. Embodiments include power plants incorporating the combustion chambers and suitable for stationary purposes such as road vehicles, subsonic aircraft and supersonic aircraft, turbine and bypass engines.

3,824,788

### INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION FOR EXHAUST EMISSION CONTROL

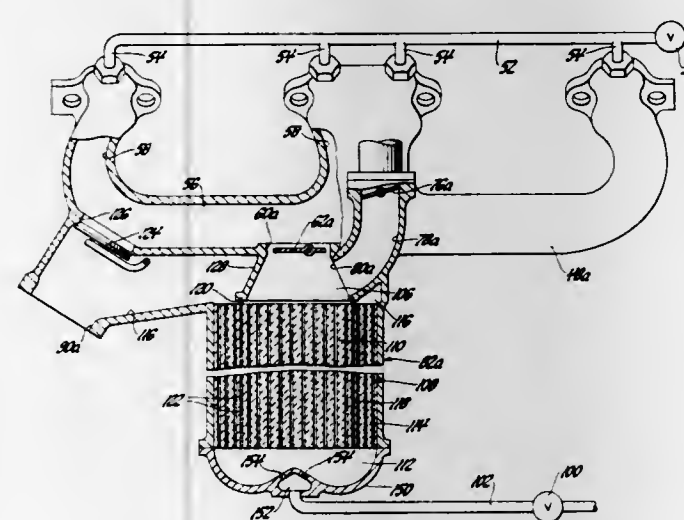
Edward N. Cole, Bloomfield Hills, and George W. Niepoth, Milford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 247,569, April 26, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,574

Int. Cl. F02b 75/10; F01n 3/14

U.S. Cl. 60—274

21 Claims



A V-8 internal combustion engine with an inlet manifold disposed between the banks of cylinders and a pair of exhaust manifolds disposed outboard of the banks of cylinders has a converter unit containing reducing and oxidizing catalyst beds coupled to each exhaust manifold. During a warm-up mode, exhaust gases from both banks of cylinders pass through a heat exchange region beneath the inlet manifold and then enter the conveyor units and pass through the catalyst beds. Air injected at the exhaust ports during the warm-up mode supports oxidation of hydrocarbons and carbon monoxide, and the hot ex-

haust gases promote evaporation of fuel in the inlet manifold and heat the catalyst beds. After the warm-up mode, a converter mode is entered in which exhaust gases are discharged from the exhaust manifolds directly into the converter units and pass through the catalyst beds. A reducing atmosphere provided in the first catalyst bed during the converter mode supports dissociation of oxides of nitrogen, and air injected between the catalyst beds provides an oxidizing atmosphere to support oxidation of hydrocarbons and carbon monoxide in the second catalyst bed. At high speeds or temperatures, a reactor mode is entered in which air injected at the exhaust ports supports oxidation of hydrocarbons and carbon monoxide in the exhaust manifolds and the exhaust gases then are discharged from the exhaust manifolds directly to the exhaust pipes to protect the catalyst beds.

3,824,789

BATTERY-OPERATED MINIATURE ALARM CLOCK  
Werner Muller, and Paul Schmalz, both of Schwenningen, Germany, assignors to Muller-Schlenker, Schwenningen, Germany

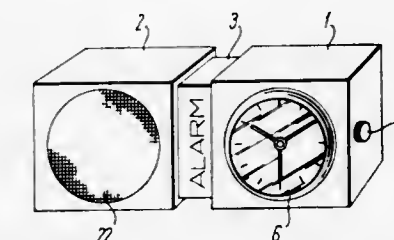
Filed Feb. 8, 1973, Ser. No. 330,617

Claims priority, application Germany, Feb. 18, 1972, 2207690

Int. Cl. G04c 21/28

U.S. Cl. 58—19 R

14 Claims



The present invention relates to a miniature alarm clock wherein a movement and an electric alarm are jointly disposed in a case comprised of two parts whose ends are telescoped into each other and which may be adjusted relative to each other between two different positions. One of said parts of the case contains the movement and a battery which feeds the alarm while the other part contains the alarm. The said two parts of the case are provided with contacts located in the electric circuit of the alarm which interrupt the circuit in the first of the two positions of said parts of the case and close the circuit in the second position of said parts of the case so that the alarm is only operative in the second position of said parts of the case.

3,824,790

### CATALYTIC EXHAUST PURIFIER FOR DIESEL ENGINES

Lazarus Thomaidis, c/o Granlin Corp., Progress Dr., East Cleveland, Ohio 18936

Filed Mar. 14, 1973, Ser. No. 341,122

Int. Cl. F01n 3/14

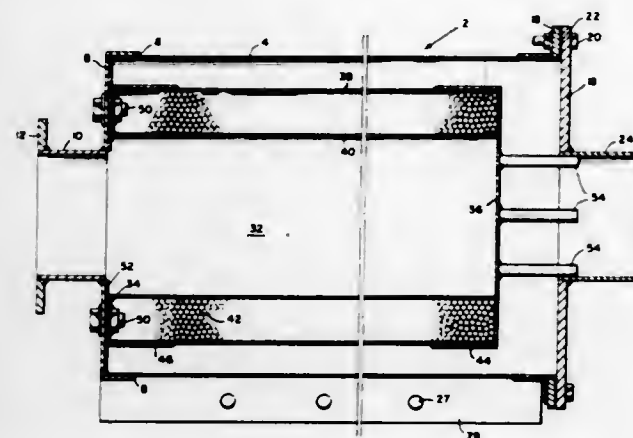
U.S. Cl. 60—299

1 Claim

A catalytic exhaust purifier for diesel engines has a housing with means forming an inlet opening substantially centrally in one end of the housing and means forming an outlet opening substantially centrally in the other end of the housing. Within the housing there is a hollow cylindrical catalyst bed having a pair of opposed end walls, inner and outer spaced cylindrical grids secured to said end walls and oxidation catalyst pellets



disposed between said grids. One bed end wall is secured to the inlet end of the housing and has a central opening communicating with the inlet opening in the housing. The other bed end wall is spaced from the other end of the housing and the outer cylindrical grid is spaced from the interior of the housing to provide a path for the flow of gas from the outer grid to the



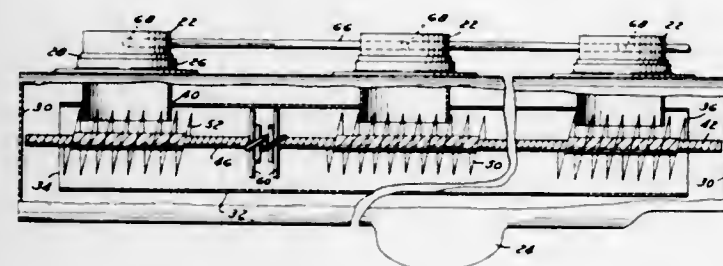
outlet opening of the housing. Support members spaced to provide for the passage of gas are fixedly secured to the bed end wall adjacent the outlet opening in the housing and slidably engage the means forming said outlet opening to support the catalyst bed and accommodate the longitudinal expansion and the contraction of the catalyst bed incident to temperature changes.

3,824,791

**METHOD OF AND APPARATUS FOR BURNING INTERNAL COMBUSTION ENGINE EXHAUST GASES**  
Herbert R. Beller, Mount Clemens, Mich., and George R. Onufer, Tulsa, Okla., assignors to Russell, Burdick & Ward, Inc., Port Chester, N.Y., by said Onufer  
Filed Apr. 14, 1972, Ser. No. 243,986  
Int. Cl. F01n 3/14

U.S. Cl. 60—303

7 Claims

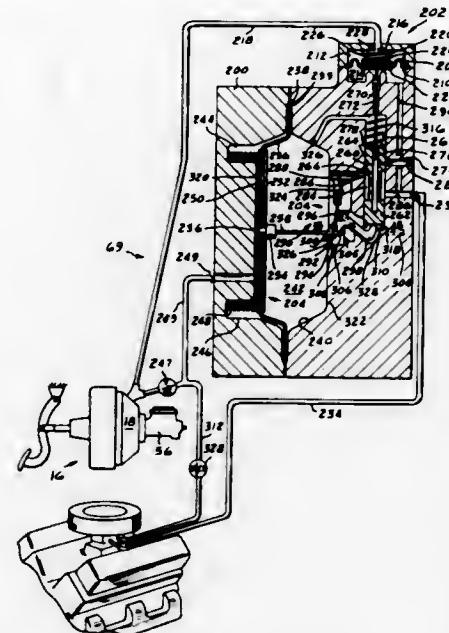


A method of and apparatus for substantially completely burning the unburned "heavy ends" of the hydrocarbon gases emanating from internal combustion engines comprising a tubular member disposed axially within the engine exhaust manifold in spaced-apart relation with the manifold walls, and one or more brush-like members disposed within the tubular member including a helically twisted core of relatively stiff wire having a multitude of relatively fine wire bristles possessing high heat retention and corrosion resistance projecting generally radially in random array from the core, and means for supporting the brush-like member within the tubular member with the distal ends of the bristles spaced from, but in close proximity to, the tubular walls.

**3,824,792**  
**VACUUM INTENSIFIED BRAKE BOOSTER SYSTEM**  
Frederick G. Grabb, and Mark E. Beck, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.  
Division of Ser. No. 143,419, May 14, 1971, Pat. No. 3,754,841. This application Oct. 2, 1972, Ser. No. 294,145  
Int. Cl. F04b 43/06

U.S. Cl. 60—411

6 Claims

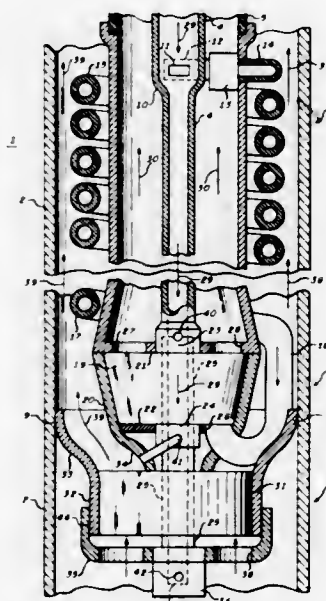


An apparatus for sensing the available vacuum in a power braking system having the ability to generate an additional source of vacuum which can be combined with the vacuum in the system to maintain the vacuum in the system within a predetermined range.

**3,824,793**  
**GEOHERMAL ENERGY SYSTEM AND METHOD**  
Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.  
Filed Oct. 24, 1972, Ser. No. 300,058  
Int. Cl. F03g 7/00; F01k 23/00

U.S. Cl. 60—641

18 Claims



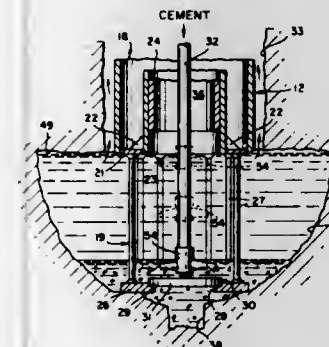
A geothermal energy transfer and utilization system makes use of thermal energy stored in hot solute-bearing well water to generate super-heated steam from an injected flow of clean water; the super-heated steam is then used for operating a tur-

bine-driven pump at the well bottom for pumping the hot solute-bearing water at high pressure and in liquid state to the earth's surface, where it is used by transfer of its heat to a closed-loop boiler-turbine-alternator combination for the generation of electrical or other power. Cooled, clean water is regenerated by the surface-located system for re-injection into the deep well and residual concentrated solute-bearing water is pumped back into the earth.

**3,824,794**  
**OFFSHORE MARINE ANCHORING STRUCTURE**  
Laurence M. Hubby, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.  
Division of Ser. No. 143,074, May 13, 1971, Pat. No. 3,745,776. This application Nov. 29, 1972, Ser. No. 310,632  
Int. Cl. E02d 5/00, 5/40, 27/32

U.S. Cl. 61—46

3 Claims

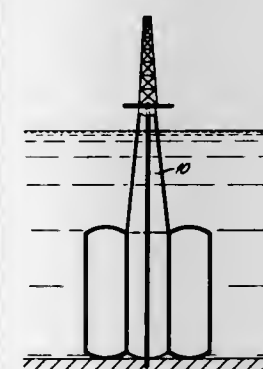


An apparatus for achieving the anchoring of an offshore marine platform having downwardly extending foundation legs. One or more legs are provided with a reinforcing cage at the lower end thereof adapted to be immersed in a cement anchoring block whereby to firmly position the platform.

**3,824,795**  
**PLATFORM STRUCTURE**  
Olva Mo, Gronsundvelen 94, Nesbru, 1370-Asker, Norway  
Filed Mar. 8, 1972, Ser. No. 232,665  
Claims priority, application Norway, Sept. 7, 1971, 3325/71; Mar. 16, 1971, 3326/71; Nov. 19, 1971, 4282/71  
Int. Cl. E02d 17/00, 27/38

U.S. Cl. 61—46.5

10 Claims

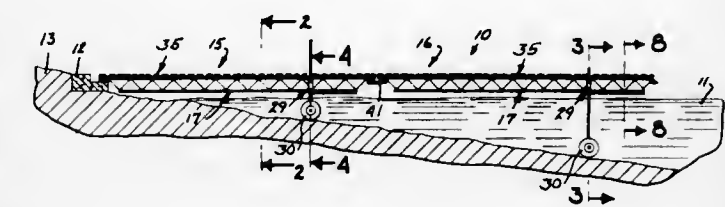


An offshore drilling platform includes a massive and heavy caisson surmounted by a lightweight superstructure. The center of buoyancy is above the center of gravity of the platform and the platform can be floated in upright position to a desired location and sunk by introducing ballast, such as sea water, into the caisson. The platform rests on the sea floor and is stable due to its own weight while the lightweight superstructure extends above the sea surface. A drilling platform is provided in fixed position on the superstructure above sea level.

**3,824,796**  
**MOBILE DOCK STRUCTURE**  
Charles L. Nasby, Jr., 4624 Bruce Ave. So., Minneapolis, Minn. 55424  
Filed Nov. 3, 1972, Ser. No. 303,606  
Int. Cl. E02b 3/20

U.S. Cl. 61—48

6 Claims



A pair of longitudinally extended bar joists connected together in a generally parallel relationship have a wheel-equipped frame mounted spaced from one end thereof for adjustment of the wheels toward and away from the bar joists. A plurality of deck members are secured to the bar joists by nut-equipped bolts which pass through the deck members and selected ones of a plurality of longitudinally extended slots formed in each of the bar joists at spaced intervals longitudinally of the bar joists.

**3,824,797**  
**EVACUATED TUBE WATER HAMMER PILE DRIVING**  
Serge S. Wisotsky, Sharon, Mass., assignor to Orb, Inc., Marion, Ohio  
Continuation-in-part of Ser. No. 163,422, July 16, 1971, abandoned. This application June 30, 1972, Ser. No. 267,753  
Int. Cl. E02d 7/10; G01v 1/38

U.S. Cl. 61—53.5

34 Claims



Driving long piles into submerged lands with a liquid ram or spear generated in an evacuated tube. Various drivers are enclosed. In one embodiment, the pile itself is used as at least a portion of the working chamber for generating water hammer.



3,824,798

## SUBMARINE CABLE-BURYING DEVICES

Katsuke Shiroyama, Yokohama, and Takeo Yokoyama, Kamakura, both of Japan, assignors to The Furukawa Company Limited, Tokyo, Japan

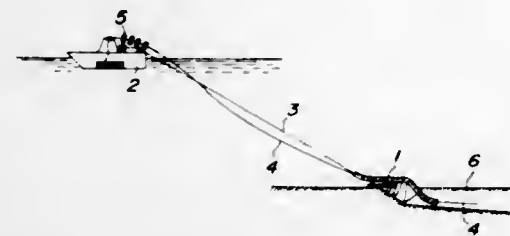
Filed June 7, 1972, Ser. No. 260,430

Claims priority, application Japan, Nov. 15, 1971, 46-90661; Nov. 15, 1971, 46-90662; May 8, 1972, 47-53340

Int. Cl. E02f 5/02; F16l 1/00

U.S. Cl. 61-72.4

8 Claims



A plow-type cable-burying device for use in placing communication and power transmission cables under ground under a body of water has a protective blade, cultivating blades and a plow-type digging blade arranged in succession in the order as mentioned along a tubular body for guiding a cable to be buried in the ground under water. The tubular body is stabilized by sledges and the cable is further guided by a plurality of cable guide cylinders.

3,824,799

## WASH OF ICE CRYSTALS

Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Patent Corporation

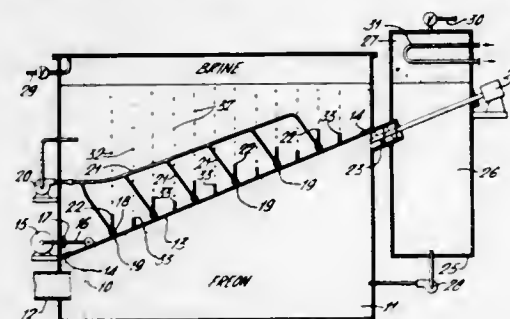
Filed Apr. 30, 1973, Ser. No. 355,688

Claims priority, application Great Britain, May 1, 1972, 020156/72

Int. Cl. B01d 9/04

U.S. Cl. 62-123

10 Claims



Ice crystals formed in a solution, such as in the ice crystallization conversion of sea water to fresh water, are washed in organic liquid, such as Freon, at a temperature below 32° F. The ice crystals float upward in the Freon to be restrained by an upward sloping screen. The ice crystals are agitated in the liquid Freon by vibration of the screen and/or by jets of liquid Freon directed downward through the screen. Brine, which is thus mechanically washed from the crystals, floats upward through the screen to be collected above it. Washed ice crystals move up the screen to be collected, melted, and have the Freon separated from the fresh melt water.

3,824,800

## AIR CONDITIONING UNIT AND CONTROL

Richard A. Church, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 7, 1973, Ser. No. 395,081

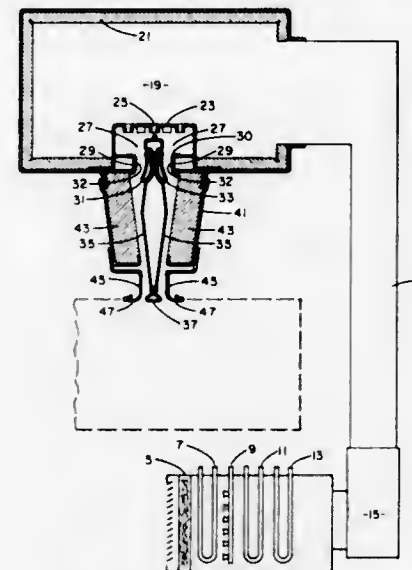
Int. Cl. F25d 17/04

U.S. Cl. 62-186

10 Claims

An air conditioning unit for supplying conditioned air from a central station into a space to be conditioned to cool the

space. The unit includes a device to regulate the quantity of air discharged therefrom. A pressure responsive valve is connected to the device and to the supply duct to provide a control signal to the device, the magnitude of the control signal varying with changes in pressure of the conditioned air in the supply duct to the unit. The unit further includes a thermostat for further varying the control signal supplied to the device, the magnitude of the control signal being varied in accordance with changes of the temperature in the area being conditioned. A suitable control has a normally open port through



which conditioned air passes from the supply duct to the pressure responsive valve, and a normally closed port communicating with the thermostat. The normally closed port is opened when the temperature of the conditioned air supplied from the central station exceeds a predetermined value to pass the relatively warm air through the port to the thermostat, the magnitude of the control signal thereafter passing from the pressure responsive valve to the air regulating device being determined solely by the pressure of the conditioned air in the supply duct.

3,824,801

## WATER COOLER

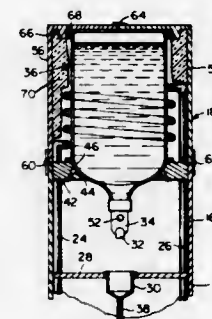
Gaetano J. Laudato, Jr., 2 Lamartine Pl., Jamaica Plain, Mass. 02130

Filed Feb. 12, 1973, Ser. No. 331,961

Int. Cl. F25d 17/02

U.S. Cl. 62-201

4 Claims



A water cooler is provided for use with bottled drinking water. Each bottle is provided with an inverted valve cap so that the water is released directly from the bottle to a cup or other container. The unit includes a housing having an upper chamber adapted to receive the bottle and support it in an inverted position. Cooling coils are mounted within the upper chamber for direct engagement with the bottle placed therein. A pressure-sensitive switch is located to engage the bottle and is kept closed by the weight of the filled bottle. When the bottle empties the switch opens to shut off the refrigeration system.

3,824,802

## CONTROL MEANS FOR ACCUMULATOR THROTTLING DEVICE

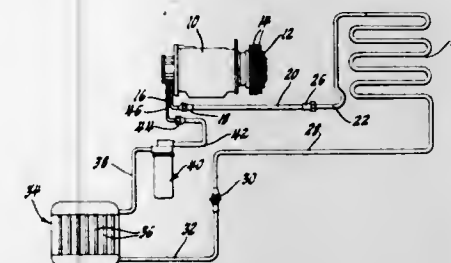
Carl A. Scherer, Clarence Center, and Gary E. Richards, Lockport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed July 11, 1973, Ser. No. 378,229

Int. Cl. F25b 41/04

U.S. Cl. 62-217

4 Claims



An improved evaporator temperature controller for use in an air conditioning system having a refrigerant compressor and an evaporator in series flow relationship to one another and including a liquid accumulator housing therebetween enclosing an interior space and having an inlet connected to the evaporator and an outlet connected to the compressor. A valve seat member is supported within the interior space with a valve passage therethrough separating the outlet portion of the housing from the interior space. A water filled freeze actuator is located in said interior space in good heat transfer relation to refrigerant therein and is operably connected to a throttling valve member to control refrigerant flow therefrom in accord with the 32° F freeze — expansion characteristics of the actuator. An oil pick-up tube which is in bypass relation to the throttling valve supplies the compressor with lubricating oil when the throttling valve is in a closed position and is placed in good heat transfer with the actuator to transfer heat from the actuator whenever the throttling valve is in a closed position whereby improved control of the evaporator temperature is achieved.

3,824,803

## APPARATUS FOR REFRIGERATION SYSTEMS

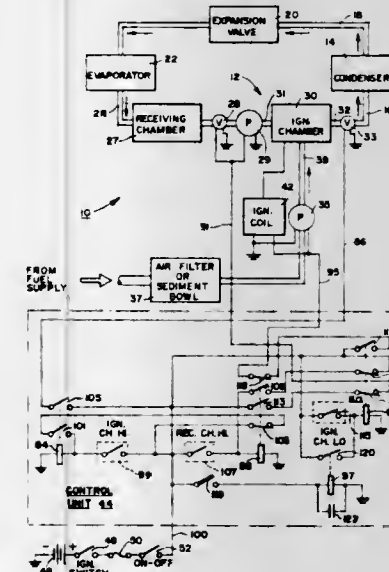
Thomas C. Wright, 8476 W. 103rd Ter., Chicago, Ill. 60620, and Bernard L. Kleinke, 934 Willson Dr., Des Plaines, Ill. 60016

Filed July 3, 1972, Ser. No. 268,822

Int. Cl. F25b 1/00

U.S. Cl. 62-226

11 Claims



The refrigeration systems include a heating and pumping apparatus connected in a closed-loop configuration with a

condenser, an expansion valve or capillary tube, and an evaporator. The heating and pumping apparatus includes a heating chamber in which a portion of the refrigerant in the closed-loop system is heated and pressurized, a valve for permitting the heated refrigerant to be conveyed from the heating chamber through the condenser and then through the other components in the closed loop, a receiving chamber for confining the refrigerant flowing from the evaporator, and transfer devices which cause refrigerant to be conveyed from the receiving chamber to the heating chamber to complete the cycle of operation.

3,824,804

## REFRIGERATING MACHINES

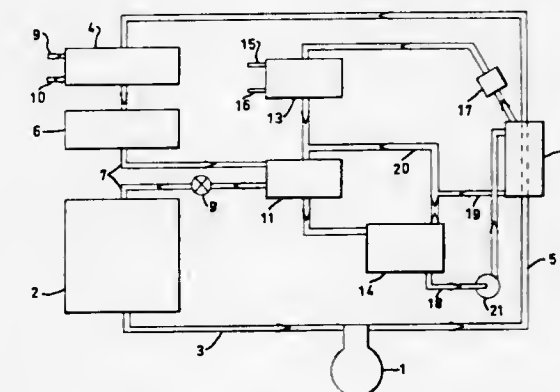
Carl Ake Sandmark, Osbyholm 28, 24200 Horby, Sweden

Filed Aug. 22, 1973, Ser. No. 390,511

Int. Cl. F25b 25/02

U.S. Cl. 62-238

1 Claim



A refrigerating machine which is a combination of a compression type refrigerating apparatus and an absorption type refrigerating apparatus. The compression type refrigerating apparatus comprises a compressor, a condenser, a throttle valve and an evaporator connected in series so as to form a first closed loop. The absorption type refrigerating apparatus comprises a generator, a condenser, an evaporator and an absorber connected in series so as to form a second closed loop. The generator of the absorption apparatus is arranged as a heat exchanger for continuous transfer of heat from the cooling agent of the first loop, on the pressure side of the compressor, to the mixture of cooling agent and absorbent in the generator of the second loop. The evaporator of the absorption apparatus is connected as a heat exchanger for continuous cooling of the cooling agent of the first loop after the condenser of the compression apparatus on the input side of the throttle valve. By combining the generator and the compressor into a unit a decrease in temperature can be obtained in the outlet valve of the compressor.

3,824,805

## COMBINATION ICE CUBE AND CRUSHED ICE DISPENSER SELECTOR MEANS

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 9, 1973, Ser. No. 348,940

Int. Cl. F25c 5/02

U.S. Cl. 62-320

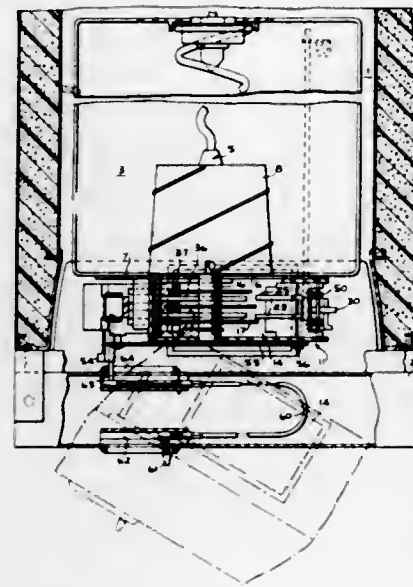
3 Claims

An ice dispenser particularly for a household refrigerator includes an ice cube storage receptacle, integral dispensing



and crushing means for dispensing batches of either ice cubes or crushed ice of two different grades, and control means for

peripheral wall defining a series of circularly spaced elongated ribs of uniform internal diameter for engaging the pilot shaft.



Circularly between these ribs, the wall of the pilot recess has surface areas which progressively taper as they advance more deeply into the recess.

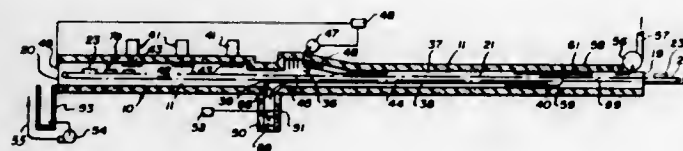
selectively operating the crushing means for delivery of the cube or crushed ice.

3,824,806

**APPARATUS FOR REFRIGERATING ARTICLES**  
Richard C. Wagner, Clarendon Hills, Ill., assignor to Integral Process Systems, Inc., Park Forest, Ill.  
Filed June 19, 1972, Ser. No. 264,133  
Int. Cl. F25d 17/02

U.S. Cl. 62—374

10 Claims



An apparatus for refrigerating, either freezing or chilling, articles and particularly food items including an insulated chamber having an entrance and an exit through which the articles are passed, apparatus for introducing a fluid cryogen in the form of vaporizable solid particles and gaseous fluid, the cryogen being for example carbon dioxide, and apparatus in the chamber for vaporizing any of the cryogen solid particles that might remain on the articles prior to the articles leaving the chamber. The disclosure also includes gas collecting and gas disposing device for disposing of cryogen gas externally of the apparatus in order to prevent excessive build-up of the gas in the ambient atmosphere surrounding the apparatus, the maximum amount of gas being thereby limited to about 5,000 parts of gas per million parts of ambient atmosphere, by weight.

3,824,807

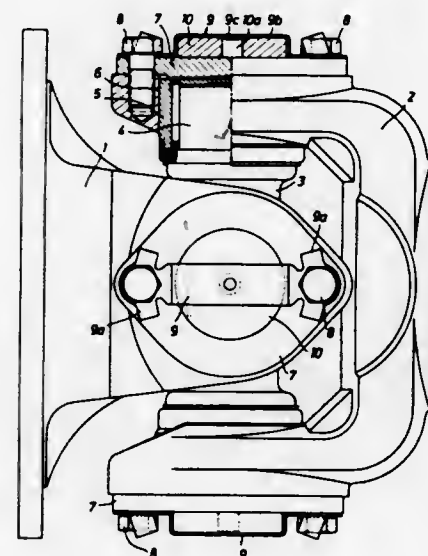
**ENGINE COOLING FAN SPACER STRUCTURE**  
Jay R. Hecht, 17847 Cathedral Pl., Encino, Calif. 91365  
Filed Nov. 9, 1972, Ser. No. 304,917  
Int. Cl. F16d 3/00

U.S. Cl. 64—6

14 Claims

A spacer for mounting an engine cooling fan to a drive structure in spaced relation thereto, with the spacer having a forward centering portion engageable with the fan in centering relation, and having a rear pilot recess for receiving a pilot shaft of the drive structure, and with the pilot recess having a

A counterbalancing device for correcting disequilibrium in shafts connected by universal joints having a yoke fixed to the driving shaft and a yoke fixed to the driven shaft, the yokes are connected by cross piece with journals at the ends of its arms rotatably mounted in bearings in the yokes. A stirruplike strap is secured by means of bolts which secure the associated plate. The strap receives interchangeable calibrated counterweights which are removably held therein by a resilient locking arrangement including an inwardly projecting portion received in a corresponding hole in the counterweight. The strap also acts as a lockwasher member for the bolts. By replacing the counterweights the shafts of the power transmission coupling may be balanced.



3,824,808

**COUNTERBALANCING DEVICE FOR COUPLING SHAFTS FOR UNIVERSAL JOINTS**  
Jacques Mangiavacchi, Chatou, France, assignor to Societe Anonyme: Glaesner Spicer, Poincy, France  
Filed Feb. 28, 1973, Ser. No. 336,878  
Claims priority, application France, May 5, 1972, 72.16144  
Int. Cl. F16d 3/26

U.S. Cl. 64—17 A

5 Claims

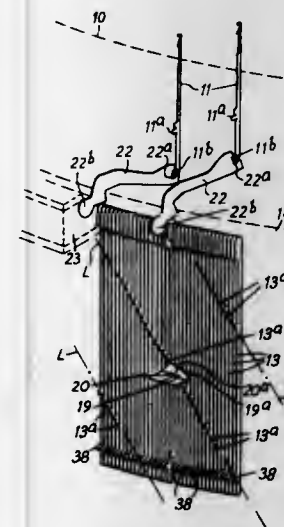
3,824,809

**PATTERNING MECHANISM FOR MULTI-FEED CIRCULAR KNITTING MACHINES**  
Norman Victor Canderton, Oadby, and Walter Goodby, Evington, both of England, assignors to Camber International (England) Limited, Leicester, England  
Filed Mar. 5, 1973, Ser. No. 338,063  
Claims priority, application Great Britain, Mar. 11, 1972, 11496/72

U.S. Cl. 66—50 R

Int. Cl. D04b 15/68

15 Claims



Pattern jacks in a multi-feed circular knitting machine are accommodated in a cylinder co-axial with but of a larger diameter than the needle cylinder. Jack butts are set out in diagonal lines. At each feed there is a slotted block housing a vertical bank of superimposed pairs of jack selector tuck and knit slides having cam faces upwardly sloping to two different extents heightwise. Springs urge selector slides into operative positions, slides being selectively held withdrawn clear of jack butts against the biasing influence. Movements of jacks imparted by slides are less than sufficient to raise corresponding needles to heights required. Thus movement transmitting and amplifying levers are provided between the jacks and the needles.

In each slotted block is a removable toothed programme comb having some teeth reduced in length and others broken away, according to pattern. Teeth act on projections on slides to hold them back. Jacks are either not raised or are raised to one of two heights to cause needles to miss, tuck or knit depending on the layout of teeth, half teeth and gaps on and in the programme comb.

3,824,810

**KNITTING METHOD**  
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England  
Filed Jan. 31, 1973, Ser. No. 328,319  
Claims priority, application Great Britain, Feb. 2, 1972, 4807/72

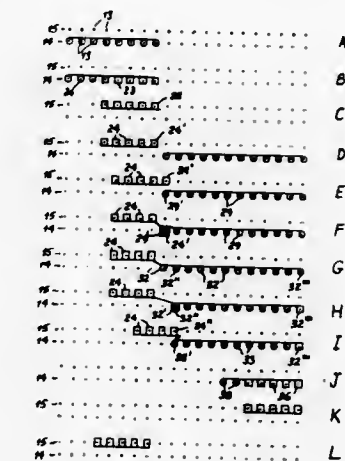
U.S. Cl. 66—76

Int. Cl. D04b 7/10

4 Claims

A method of making a blank for a knitted garment having a shoulder region, or part of such a garment, includes the steps of knitting a portion of the garment in the direction towards the shoulder region, on needles of a knitting machine having two opposed needle beds movable relative to one another, shaping this portion at its shoulder end by progressively taking needles out of action whilst holding loops on those needles, arranging these held loops on needles of one of the opposed needle beds, knitting another portion of the garment in the direction towards the shoulder region and arranging a course

of loops of this other portion on needles of the other of the opposed needle beds, and joining the two portions by arranging one of the said held loops and a loop of the said course of loops on the same needle, knitting another course of the other portion in which a single loop is drawn through the said held loop and the said loop of the said course on the same needle, casting off this single loop, effecting relative movement of the needle beds to bring another of the said held loops and a loop



of the newly formed course of the other portion to positions for arrangement on the same needle, knitting another course of the other portion in which a single loop is drawn through the said loops on the same needle, effecting relative movement of the needle beds once more and so on until the other portion is completed.

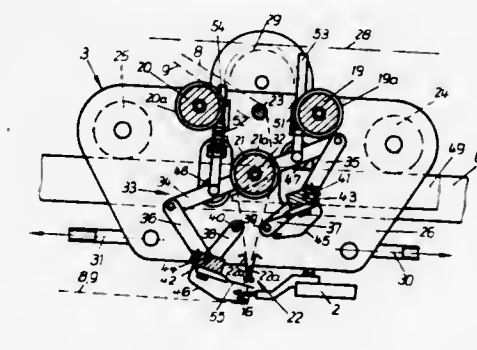
Further portions of the garment may be joined to the blank in the same way until the blank comprises all the portions required for the body and sleeves of a garment.

3,824,811

**WARP KNITTING MACHINE**  
Fery Heimann, Limbach-Oberfrohna, and Peter Edel, Karl-Marx-Stadt, both of Germany, assignors to Institut für Textilmaschinen, Karl-Marx-Stadt, Germany  
Filed June 29, 1973, Ser. No. 375,309  
Int. Cl. D04b 23/06

U.S. Cl. 66—84

10 Claims



A warp knitting machine, particularly a stitching machine, having a reciprocating weft laying device is provided with devices for handling webs as the weft materials. More particularly, to assure that the webs do not twist when they are pushed onto needles of transport chains at the motion reversal points of the weft laying device, for operation in conjunction with the devices for pushing the webs onto the needles are provided devices for retaining the webs in untwisted configurations as they are pushed onto the needles.



3,824,812

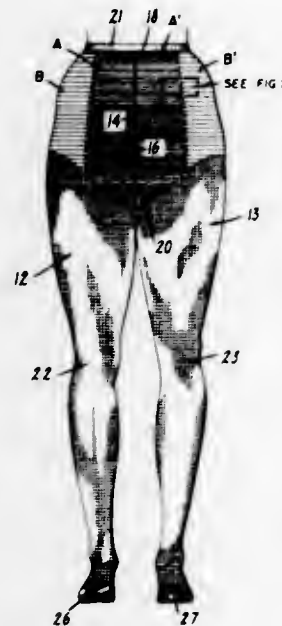
**PANTY GARMENT WITH HIGH RISES AT THE LATERAL PORTIONS OF THE PANTY**

Robert M. Matthews, Pittsboro, and Albert W. Petty, Siler City, both of N.C., assignors to Kellwood Company, St. Louis, Mo.

Filed Mar. 1, 1972, Ser. No. 230,562  
Int. Cl. A41b 9/04

U.S. Cl. 66—177

5 Claims



A panty, panty hose, panty shirt, or the like where the panty is knitted with less courses at its lateral portions than at its front and rear portions will cause the lateral portions to be drawn together wale-wise so that the lower ends of the lateral portions will be above the crotch of the garment.

3,824,813

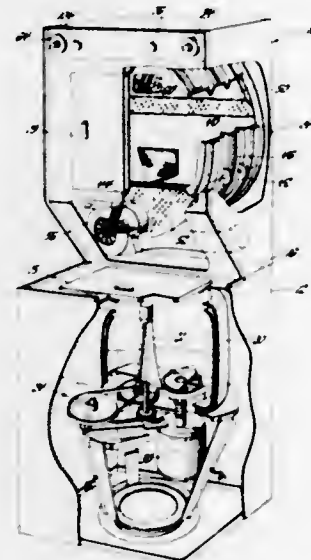
**POWER SUPPLY CONTROL CIRCUIT FOR 120 VOLT COMBINATION WASHER AND DRYER**

Ted C. Davis, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1973, Ser. No. 335,581  
Int. Cl. D06f 25/00, 29/00, 33/02

U.S. Cl. 68—12 R

1 Claim



This invention relates to a control circuit for a combination clothes washer and dryer adapted to operate on a 120 volt, 15 ampere, electrical supply. The control circuit includes a heat lockout relay energizable to disconnect the dryer heater and

dryer timer motor when the washer motor is in operation, thereby to limit the electrical current required by washer and/or dryer to the 15 ampere supply available. The circuit permits clothes tumbling to continue with unheated room air during washer motor operation.

3,824,814

**DEVICE FOR THE TREATMENT OF LENGTHS OF TEXTILE MATERIAL**

Heinz Fleissner, Frankfurt am Main, Germany, assignor to VEPA AG, Basel, Schweiz, Switzerland

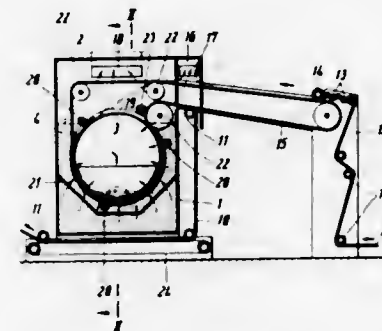
Continuation of Ser. No. 883,469, Dec. 9, 1969, abandoned.

This application June 5, 1972, Ser. No. 259,629

Int. Cl. B05c 3/132; D06c 3/00

U.S. Cl. 68—18 R

15 Claims



The present disclosure is directed to an apparatus for the treatment of lengths of textile material which comprises a treatment chamber adapted to contain a treatment liquor, at least one sieve drum means provided with a drive means rotatably disposed in said treatment chamber and at least partially disposed in the treatment liquor, the liquor level on the outside of the sieve drum means being higher than the liquor level inside the sieve drum means, thereby providing a fluid flow from the outside to the inside thereof, an outflow chamber disposed at one face of the sieve drum means for returning the treatment liquor from the inside to the outside thereof, tensioning means extending into the treatment chamber, around the sieve drum means, and removed from said treatment chamber, inlet means for introducing the material to be treated to said tensioning means and outlet means for removing the textile material from the treatment chamber.

3,824,815

**LABYRINTH LOCKING APPARATUS**

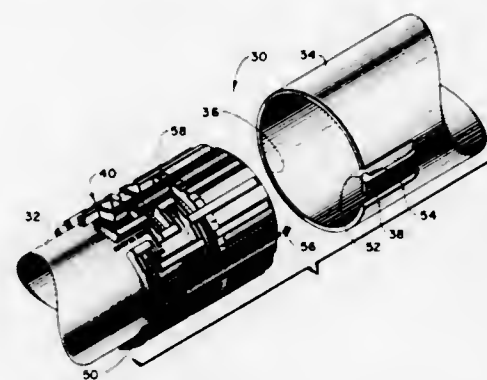
William A. Darling, 18554 Lanark St., Reseda, Calif. 91335

Filed Oct. 16, 1972, Ser. No. 297,609

Int. Cl. E05b 37/20

U.S. Cl. 70—18

21 Claims



A locking apparatus to prevent unauthorized unlocking movement between a first member and a second member, a labyrinth employed between the members, the labyrinth requiring a known combination by an authorized person to produce the desired unlocking movement.

3,824,816

**COMBINATION PADLOCK**

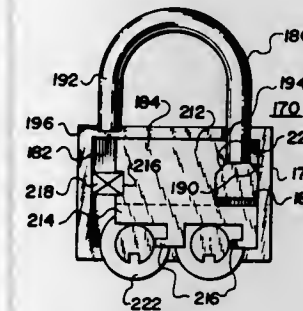
Lew Dobrjanskyj, Flushing, and Ruediger Einhorn, Katonah, both of N.Y., assignors to Coats &amp; Clark, Inc., New York, N.Y.

Filed May 25, 1972, Ser. No. 256,648

Int. Cl. E05b 37/14

U.S. Cl. 70—25

14 Claims



Combination padlock having a slidable internal bolt mounted between mating shells forming the body of the padlock. Combination number wheels are provided with internal slots that are engagable by projections formed on the bolt when slid to the unlocked position allowing the hasp to be released. Another embodiment utilizes combination cylinders having slots that receive corresponding projections on the bolt for the unlocked position. When the combination wheels or cylinders are rotated so that the projections cannot slide into the slots, the padlock remains in locked position.

3,824,817

**REMOVABLE CYLINDER LOCK**

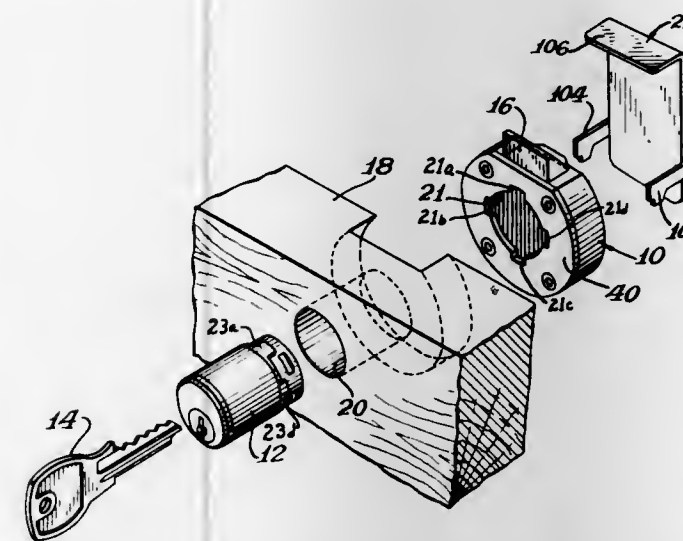
John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Mar. 8, 1973, Ser. No. 339,187

Int. Cl. E05b 65/44, 9/06

U.S. Cl. 70—81

9 Claims



A lock device includes a housing and a removable cylinder. The cylinder is retained in the housing by a retainer spring attached to the housing and engageable with channels defined in the cylinder. A tool may be inserted through slots in the housing to engage and displace the retainer spring for removal of the cylinder. The cylinder may thus be removed from the housing and altered, repaired or replaced.

3,824,818

**CYLINDER-LOCK**

Charles O. Neale, Basel, Switzerland, assignor to Firma Josef Voss KG, Bruhl Bez. Köln, Germany

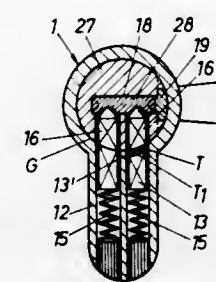
Filed Dec. 1, 1969, Ser. No. 881,144

Claims priority, application Germany, Nov. 30, 1969, 1812052; Nov. 30, 1969, 1812053; Nov. 30, 1969, 1812051

Int. Cl. E05b 27/06, 17/04

U.S. Cl. 70—358

17 Claims



A cylinder lock which comprises a core having a key slot. A key is to be inserted in the key slot and includes wide faces for receiving recesses therein. Tumblers are provided in the core adjusted by the key with the recesses. A housing receives the core and includes a flange extending radially to the core and has bores. The key slot is disposed in symmetric cross position to the flange. At least two rows of the tumblers are arranged in the flange. The tumblers have a non-round cross-section and sit non-rotatably in the bores of the flange.

3,824,819

**LOCK INDICATOR**

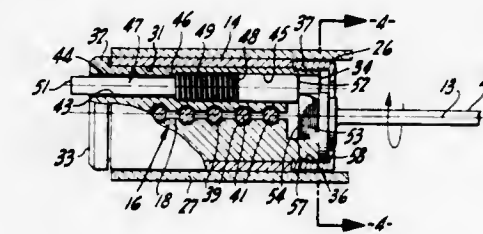
Ralph E. Neary, San Francisco, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Apr. 16, 1973, Ser. No. 351,512

Int. Cl. E05b 41/00

U.S. Cl. 70—432

9 Claims



A lock indicator has a lock body with a lock plug rotatable in the body about an axis. The lock plug has an inner end face and an outer end face as well as a bore extending through the plug between the end faces. A rod is slidable in the bore and has a follower end in abutment with a cam on the end of a driver bar rotatable about the axis and adapted to slide the rod against spring pressure to project the rod from the outer face of the body when the driver bar is rotated relative to the plug. The driver bar is usually rotated by a hand control on the interior side of the lock.

3,824,820

**RING ROLLING MILL**

Josef Jeuken, Holzwickede; Gustav Vieregge, Dortmund-Wambel, and Konrad Meyer, Dortmund-Wickede, all of Germany, assignors to Rhein Stahl AG, Essen, Germany

Filed May 7, 1973, Ser. No. 357,779

Claims priority, application Germany, May 9, 1972, 2222606

Int. Cl. B21h 1/06

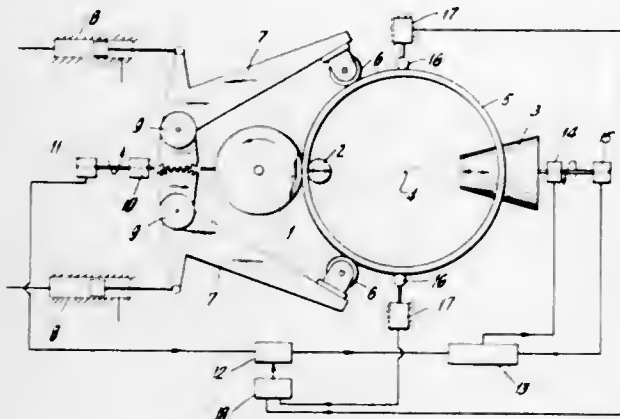
U.S. Cl. 72—10

17 Claims

A ring rolling mill has a pair of radial rolls acting on a work-piece ring by engaging radially opposite peripheries thereof,



and a pair of axial rolls, which are preferably truncated conical rolls, acting axially on the ring by engaging axially opposite end surfaces thereof. The two rolls of each pair are adjustable toward each other and at least one roll of each pair is driven by associated adjustable speed driving means. One driving means is adjustable to a preselected nominal peripheral speed of the roll driven thereby, and a control adjusts the other driv-



ing means to set the peripheral speed of the roll driven thereby in accordance with the peripheral speed of the roll driven by the one driving means. Sensors engageable with the ring detect power transmission, through the ring, between the two driving means, and a second control is operable, responsive to detection of such power transmission by the sensors, to restore the peripheral speeds of the driven rolls into accordance with each other.

3,824,821

#### OVERLOAD SAFETY DEVICE FOR THE DRIVE ELEMENTS OF PRESSES

Ewald Bergmann; Franz Schneider, both of Goeppingen; Rudi Brandstetter, Faurndau, and Rolf Kellenbenz, Goeppingen, all of Germany, assignors to L. Shuler GmbH, Goeppingen, Germany

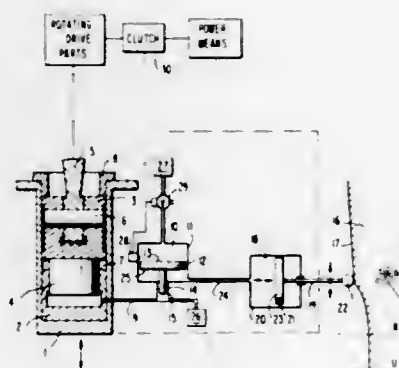
Filed June 12, 1972, Ser. No. 261,669

Claims priority, application Germany, June 11, 1971, 2128867

Int. Cl. B21b 37/08

U.S. Cl. 72-20

9 Claims



An overload safety device for the drive elements of presses which includes an arrangement for varying the permissible pressure force on the ram of the press in dependence of the position of the ram within its operating stroke. A characteristic curve representing the permissible maximum safe pressure force for each position of the ram throughout its entire operating stroke is depicted with a mechanical or electrical control arrangement operably connected to an overload system in dependence on the ram position. In one embodi-

ment a cam surface on a fixed part of the press is arranged generally parallel to the direction of travel of the ram. A control linkage, including a cam part riding on the cam surface, is arranged for movement with the ram. The control linkage includes a piston and cylinder arrangement having a compressed air supply pressure which is varied by movement of the cam part over the cam surface. A second piston and cylinder arrangement is provided which directly communicates with an oil tank arranged in the force train of the ram. This second arrangement includes a switch for relieving the oil pressure in the tank upon a certain predetermined movement of the second piston caused by the oil pressure. The variable compressed air supply is engaged with this second piston to effectively vary the oil pressure, and consequently the ram pressure, which will move the second piston to relieve the oil pressure. Other embodiments, including electrical embodiments may also be utilized.

3,824,822

#### PROGRAMING SYSTEM FOR PRESS BRAKES OR THE LIKE

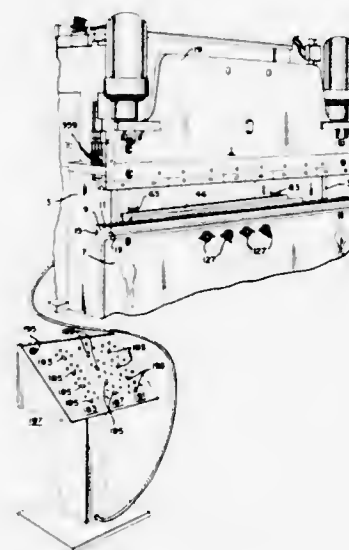
Rolland A. Richardson, Alameda, Calif., assignor to Canron, Inc., Oakland, Calif.

Filed Aug. 25, 1972, Ser. No. 283,857

Int. Cl. B21c 51/00

U.S. Cl. 72-36

13 Claims



A programing system for press brakes or the like wherein a plurality of backgauge positioning means are pre-set in non-functioning condition and then activated to functioning condition in accordance with a predetermined sequence program. A plurality of adjustable depthgauges are provided and these are also selected in accordance with a predetermined sequence program. Changes from one setting to another are made responsive to actuation of a depth limit switch on the machine.

3,824,823

#### FUEL FILTER TESTING APPARATUS

Anthony P. Pontello, Springfield, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,564

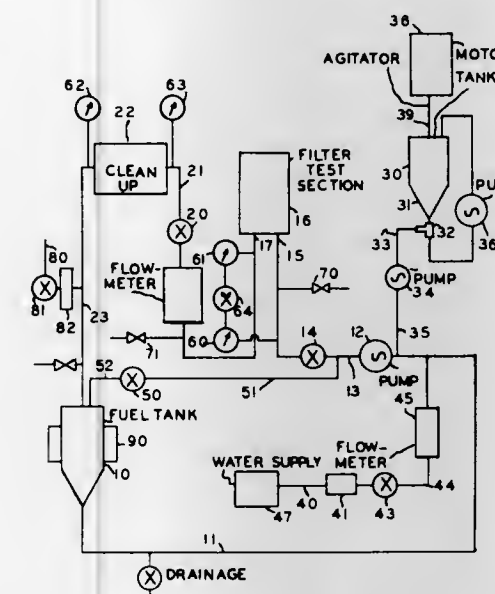
Int. Cl. G01m 15/00

U.S. Cl. 73-432 R

5 Claims

The invention disclosed herein provides an improved apparatus and system for testing the efficiency of fluid filters by

providing an automatic, continuously operating, test apparatus to accurately measure the water and solid contami-



nants flowing into the fluid or fuel filter and to measure water and contaminants passed therethru.

3,824,824

#### METHOD AND APPARATUS FOR DEFORMING METAL

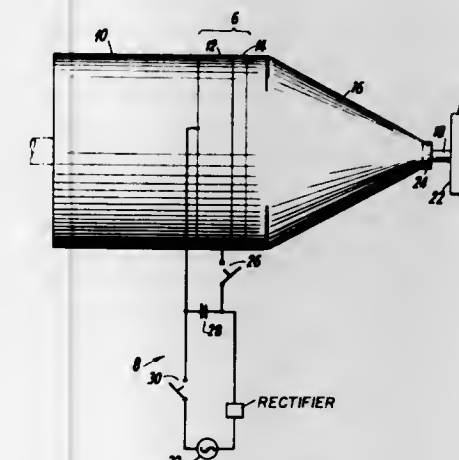
Basil P. Leftheris, Northport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 863,045, Oct. 2, 1969. This application Apr. 17, 1972, Ser. No. 244,402

Int. Cl. B21d 26/14

U.S. Cl. 72-56

11 Claims



Method and apparatus for forming or deforming a metal workpiece by passing a stress wave through the metal workpiece sufficient to render it momentarily plastic. The apparatus is basically comprised of a stress wave focusing device or amplifier. In operation, a workpiece is placed in a die or shaping means. The stress wave amplifier is then arranged to direct or focus the stress wave to the metal workpiece. Next, a stress wave is generated and passed through the stress wave focusing device, imparting a momentary state of plasticity to the metal workpiece.

3,824,825

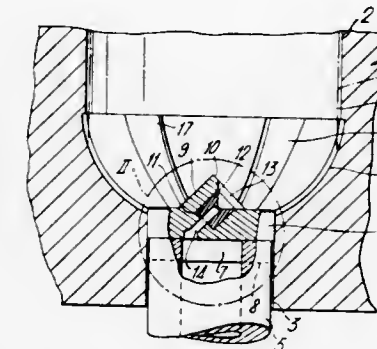
#### FORMING OF MATERIALS

Derek Green, Lytham St. Annes, England, assignor to United Kingdom Atomic Energy Authority, London, England  
Continuation-in-part of Ser. No. 880,127, Nov. 26, 1969, abandoned. This application May 7, 1973, Ser. No. 357,559  
Claims priority, application Great Britain, Mar. 16, 1973, 12847/73

Int. Cl. B21c 23/08

U.S. Cl. 72-60

14 Claims



A process for producing an extrusion of small cross section from a workpiece in which the workpiece is subjected to a bulk compressive stress in a container so that the end of the workpiece is forced into a reducing die at the end of the container. The material of the workpiece in the reducing die is subjected to an additional localised compressive stress by a tool member having a working face which is applied to the material of the workpiece in the reducing die. Under the combined compressive stresses the material of the workpiece is formed through a die orifice. In one arrangement a rotary tool member is employed which is moved in a circular path through the workpiece material in the reducing die. In another arrangement the tool member is fixed against rotation and the workpiece is rotated.

3,824,826

#### METHOD AND APPARATUS FOR FORMING FLEXIBLE CORRUGATED MEMBERS

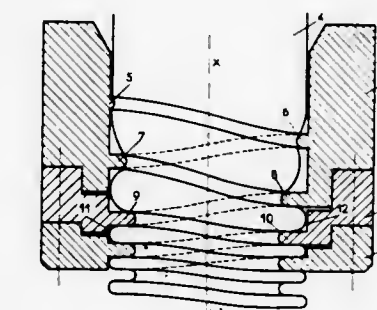
Joseph Charvet, Dessancourt, France

Division of Ser. No. 129,357, March 30, 1971, which is a continuation-in-part of Ser. No. 738,215, June 19, 1968, abandoned. This application Apr. 30, 1973, Ser. No. 355,521

Int. Cl. B21d 15/04

U.S. Cl. 72-77

11 Claims



A method and apparatus for converting smooth walled tubular members into corrugated flexible members. The invention contemplates stamping grooves of progressively increasing depth into the outer walls of the smooth tube and thereafter compressing the thus corrugated member while preventing deformation and expansion in the radial direction to thereby define a flexible tube characterized by a helically corrugated wall.



3,824,827

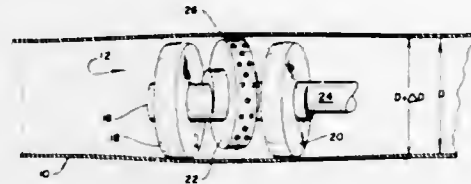
# APPARATUS FOR FORMING AN INTERFERENCE PATTERN OF MULTIPLE INDENTATIONS IN THE INTERIOR WALL OF CONVEYING TUBES

Bruce W. Stockbridge, Kingsport, and Albert E. Spaller, Jr., Johnson City, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 5, 1973, Ser. No. 367,300  
Int. Cl. B21d 51/16

U.S. Cl. 72-123

6 Claims



Apparatus, upon connection to a motive source, being self-advancing in an auger-like manner for forming an interference pattern of multiple indentations in the interior wall of cylindrical conveying tubes, the pattern of indentations serving to eliminate streamer problems in tubes used to pneumatically convey plastic particulate material. The apparatus has an effective diameter greater than the inside diameter of the tube so as to spring and distort temporarily the tube from a cylindrical cross-section toward an elliptical cross-section, thereby using the inherent spring effect of the tube to provide force sufficient to form the indentations. The apparatus includes a pair of guide rolls and an indenting roll mounted on a support, the indenting roll having multiple teeth projecting from its periphery. The guide rolls are eccentrically displaced to one side of and at an oblique angle to the axis of the support, and the indenting roll is eccentrically displaced to the opposite side of the axis of the support and at an oblique angle opposite to that of the guide rolls. The effective diameter of the indenting roll including the projecting teeth is at least one half the inside diameter of a tube to be indented and is preferably of such diameter as to encompass the axis of the support.

3,824,828

# PREPARATION OF LITHOGRAPHIC PLATES

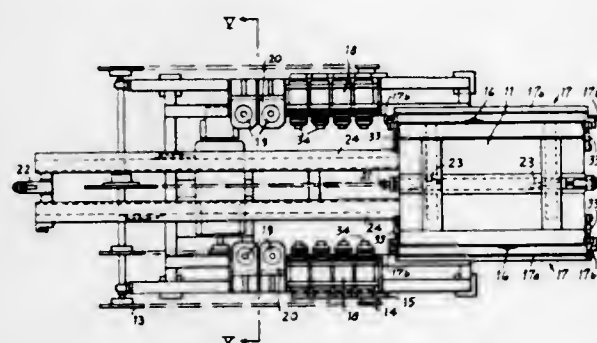
Leonard Kay Billows, Hemel Hempstead, and Raymond John Gosling, Cranleigh, both of England, assignors to Protocol Engineering Limited, St. Albans, Hertfordshire, England Division of Ser. No. 86,259, Nov. 2, 1970, abandoned. This application Nov. 14, 1972, Ser. No. 306,416

Claims priority, application Great Britain, Nov. 3, 1969, 53863/69

Int. Cl. B21d 5/08

U.S. Cl. 72-181

2 Claims



This invention relates to the preparation of lithographic plates for printing purposes, one of its objects being to provide a flow system to speed up the plate preparation, ready for the press. From one aspect, the invention provides a system for preparing the plates which comprises a light box for printing

down plates fed thereto from prepared masters, such as camera films, after which the exposed lithographic plate is conveyed by a transfer system to a processing station for development, fixing and washing, and then the plate is fed to an edge-forming station to prepare and edge-form the plates for transfer to a printing drum. The specification also describes a machine for edge-forming the plates comprising a fixed former plate to which the lithographic plate is fed and a set of rollers is provided, together with means for relative movement of the former with the plate on it and the said rollers, so that projecting edges of the plate are formed over the adjacent edges of the former. A travelling pin system is also provided to engage in register holes in edge areas of the plate to enable a plurality of plates to be fed sequentially to the former. The former is also provided with means for reducing its width, after edge-formation of the lithographic plates, which means are automatically operated at the end of the said relative movement operation.

3,824,829

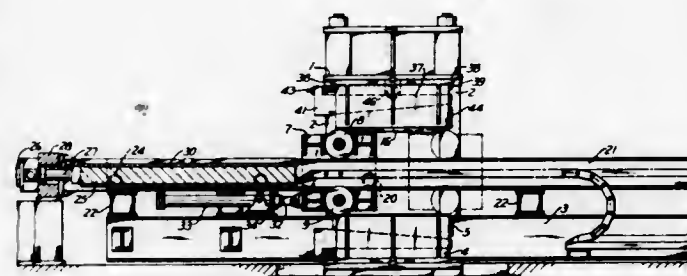
# ROLLING MILL WITH SHIFTING CAMS FOR SHAPING BARS

John S. Miller, Poland, Ohio, assignor to Richard P. Krause, New Castle, Pa.

Filed June 4, 1973, Ser. No. 366,423  
Int. Cl. B21b 1/42

U.S. Cl. 72-214

9 Claims



A roll carriage provided with a vertically movable roll is normally located at one end of a rolling mill housing but is movable back and forth through a passage in the housing. An anvil for supporting a heated bar is movable back and forth through the same passage beneath the roll. Mounted in the housing above the roll is a first cam bar that has a lower surface of a predetermined shape. Beside this cam a similar cam bar is mounted. When a portion of the anvil has moved forward beneath the roll, the carriage also is moved forward until the roll engages both the overlying first cam and the central portion of a heated bar on the anvil, whereupon the roll shapes the trailing end of the bar. Then the cam bars are moved sideways to position the second cam above the roll so that when the carriage and anvil are returned through the housing passage the roll will shape the previously unrolled end of the heated bar.

3,824,830

# TWO-HIGH ROLLING STAND

Tom Joachim Bennet; Knut Lennart Nordstroem, and Karl Olof Polhaell, all of Smedjebacken, Sweden, assignors to Morgardshammer Aktiebolag, Smedjebacken, Sweden Filed Nov. 17, 1972, Ser. No. 307,353

Claims priority, application Sweden, Nov. 17, 1971, 14690/71

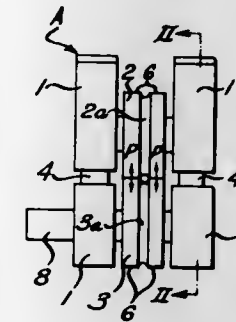
Int. Cl. B21b 35/00

U.S. Cl. 72-249

9 Claims

A rolling stand for hot or cold rolling of bar steel or wire rod stock comprises first and second rolls which define a nip

therebetween. The first and second rolls have surface portions which engage the stock and reduce its cross section as the stock advances therebetween. The first and second rolls also have drive-transmitting surface portions which engage each



other and which are spaced axially from the stock-engaging surface portions. A means is provided for establishing a drive-transmitting relationship between the drive-transmitting surface portions of the rolls so that the second roll is driven from the first roll by the drive-transmitting surface portions.

3,824,831

# GUIDE ROLLER IN ROLLER GUIDES

Nils Erik Bock, Smedjebacken, Sweden, assignor to Morgardshammer Aktiebolag, Smedjebacken, Sweden

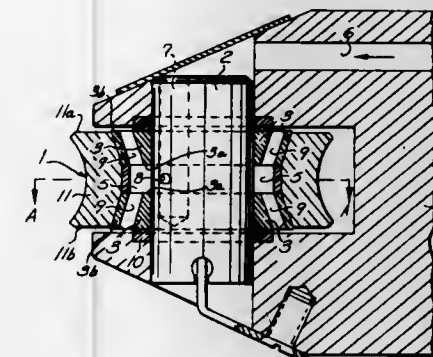
Filed June 6, 1973, Ser. No. 367,525

Claims priority, application Sweden, June 7, 1973, 737463

Int. Cl. B21b 39/14

U.S. Cl. 72-251

4 Claims



An improved guide roller assembly is utilized in a roller guide to guide or direct high-speed rolled stock. The guide roller assembly includes a fixed axle on which a rotatable guide wheel or roller is mounted. A drive ring or turbine wheel is provided within the guide roller. When the guide roller is to be accelerated to the speed of the rolled stock, fluid under pressure is conducted through one or more passages formed in the axle and directed against reaction surfaces formed on the drive ring. Exhaust passages conduct the fluid away from the reaction surfaces. These exhaust passages have central axes which extend transversely to the path along which the drive fluid moves into engagement with the reaction surfaces.

3,824,832

# METHOD OF PRODUCING PIPES WITH INTERNAL HELICAL FINNS

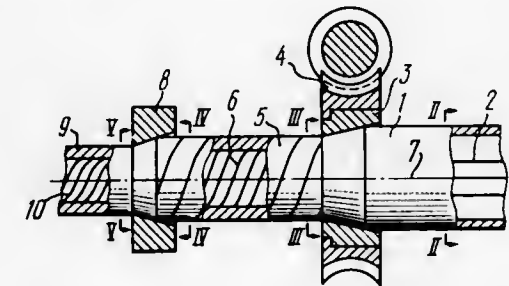
Jury Stepanovich Starostin, ulitsa Krashyn Kommunarov, 6, kv. 36; Viktor Ivanovich Plokhov, ulitsa Strolitel, 20, kv. 75; Veniamin Kuzmich Erokhov, ulitsa Svobody, 230, kv. 62; Vladimir Prokoplevich Ivanov, prospekt Metallurgov, 60, kv. 55, all of Kuibyshev; Vladimir Nikolaevich Krotkov, ulitsa Chkalova, 24/32, kv. 132, Moscow; Albert Viktorovich Anisimov, Novo-Mytischinsky prospekt, 23/7, kv. 102, Mytishi Moskovskol oblasti; Rustem Nurievich Ajupov, ulitsa Gvardeiskaya, 26, kv. 10, and Mikhail Fedotovitch Golovinov, ulitsa Pugachevskaya, 59, kv. 16, both of Kuibyshev, all of U.S.S.R.

Filed Jan. 15, 1973, Ser. No. 323,404

Int. Cl. B21c 3/12

U.S. Cl. 72-285

1 Claim



A pipe blank with internal longitudinal fins is subjected to drawing and concurrent rotation so as to alter the shape of its cross-section in the course of rotation to prevent the pipe blank from slipping in relation to the drawhole. The operations result in producing the pipe with internal fins in the form of a helix. Next, the pipe produced thereof is drawn additionally to give it the requisite shape. The herein-described method is suitable for the production of pipes with internal helical fins having practically any height required.

3,824,833

# FORGING PRESS

Horst Bachmann, Rodental, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany

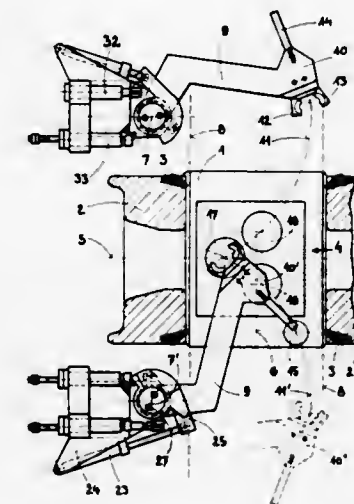
Filed Feb. 7, 1973, Ser. No. 330,194

Claims priority, application Germany, Feb. 7, 1972, 2205607; Feb. 7, 1972, 2205608

Int. Cl. B21d 45/00

U.S. Cl. 72-361

4 Claims



A forging press in which there is provided a press frame, a table plate, a ram above the table plate, a working space defined between the table plate and the ram, at least one die situated on the table plate, and pincers and grippers for hold-



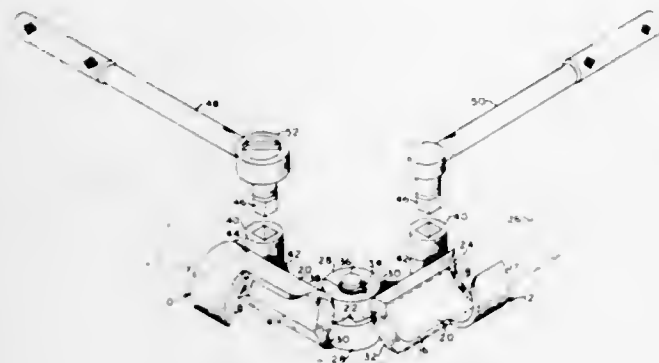
ing a workpiece, with the pincers or grippers being carried by an extremity of a handling arm or lever and being movable over and away from the or each die.

### 3,824,834 CABLE BENDER

Henry B. Durham, 405 Chestnut St., Birmingham, Ala. 35206  
Filed Mar. 5, 1973, Ser. No. 337,833  
Int. Cl. B21d 7/024

U.S. Cl. 72—387

9 Claims



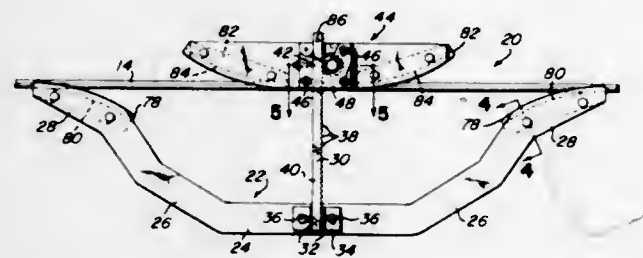
A cable bender comprising a pair of cable holding cradles pivotally connected together at adjacently positioned inner ends and wherein no restraint is applied to the cable in the region of the cable where it is bent. Wrench members are adapted to be connected to the cradles at opposite ends of the bender and bending is achieved by applying a torque and counter torque, respectively, to the cradles by the wrench members.

### 3,824,835 CABLE BENDER

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corporation, Brookville, Ohio  
Filed Dec. 4, 1972, Ser. No. 311,470  
Int. Cl. B21d 7/06

U.S. Cl. 72—389

11 Claims



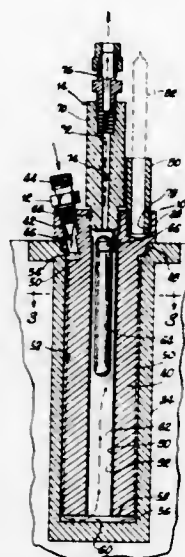
A lightweight, manually operable cable bender particularly adapted for forming expansion loops in relatively stiff cable, such as coaxial cable, during aerial cable stringing operations. The bender includes a lightweight plate member forming the main frame which carries a pair of bending shoes on its outer ends and an auxiliary frame carrying intermediate bending shoes, with the main and auxiliary frames interconnected by a rack and pinion to draw the shoes carried by the frames towards each other and form a loop in a straight piece of cable engaged by the shoes. The cable bender can be constructed to handle a single cable at a time or two or more cables simultaneously. In either case the bender permits the formation of loops at any point along the cable, eliminating the necessity of having access to a cable end in order to form a loop therein.

### 3,824,836 GAS PERMEATOR

Norman A. Lyshkow, Chicago, Ill., assignor to Combustion Equipment Associates, Inc., New York, N.Y.  
Filed Nov. 21, 1972, Ser. No. 308,540  
Int. Cl. G01n 31/00

U.S. Cl. 73—1 R

19 Claims



A method and apparatus for supplying a source of a pollutant gas admixed with an inert gas, wherein the inert gas is passed through a passage defined by a permeator body of a distance sufficient to permit the inert gas to reach thermal equilibrium with the permeator body, and the inert gas is subsequently passed through a centrally disposed opening in the permeator body for admixture with a pollutant gas which has diffused through a gas-permeable container positioned in the opening.

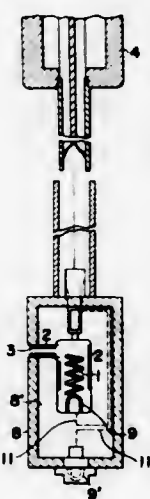
### 3,824,837 METHOD OF RAPIDLY DETERMINING THE SOLIDUS LINE OF MOLTEN STEEL

Noriyoshi Nagaoka, and Genichi Usui, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 880,338, Nov. 26, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,883  
Claims priority, application Japan, Nov. 30, 1968, 43-87309  
Int. Cl. G01n 25/04

U.S. Cl. 73—17 R

6 Claims



A method for the rapid determination of the solidus line of molten steel, from which the carbon content of the steel can be determined. First there is placed in a chamber of a measur-

ing unit a predetermined quantity of metallic bodies which have the property of melting in molten steel so as to cool the latter without causing any heat-producing reaction so that the bodies act only to cool the molten steel by being absorbed into the latter causing the temperature of the molten steel to fall. The quantity of bodies placed in the chamber is determined in accordance with the temperature of a bath from which molten steel is subsequently taken and in accordance with the amount of these metal bodies required to bring about complete melting of the melting bodies in the molten steel when the latter has nearly reached the solidification temperature, and the amount of cooling agent formed by these bodies being sufficient to bring about a rapid cooling of the molten steel. With these bodies thus situated in the chamber molten steel is then delivered thereto so as to be rapidly cooled by the cooling agent formed by the bodies down to a temperature which is nearly the solidification temperature of the molten steel, and then the latter is permitted to cool naturally to the solidification temperature. During the cooling of the molten steel in the chamber of the measuring unit, the temperature of the molten steel is constantly measured and recorded to provide a curve where the point of solidification is sharply and clearly apparent.

### 3,824,838

PROCESS GAS CHROMATOGRAPHIC APPARATUS  
Takao Ohtsu, Yokohama; Yukinobu Nakamura, Tokyo, and Fujihiko Sekido, Yokohama, all of Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan

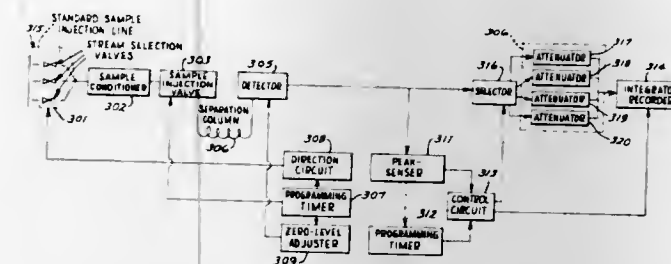
Continuation-in-part of Ser. No. 75,279, Sept. 24, 1970, abandoned, which is a continuation of Ser. No. 733,046, May 29, 1968, abandoned. This application Apr. 7, 1972, Ser. No. 242,126

Claims priority, application Japan, May 31, 1967, 42-34124

U.S. Cl. 73—23.1

Int. Cl. G01n 31/08

11 Claims



A control system in a process gas chromatographic apparatus for analyzing a stream sample from a chemical process plant, comprises a peak sensor means for sensing a detector signal, a programming timer means providing a signal corresponding to the retention time of only the component to be determined in the sample to the control system, and a control circuit actuating an integrator-recorder and sensitivity-variable means, whereby the concentration of said component in the sample is automatically and continuously obtained in digital value as a proportion to the total amount of the whole of the components contained in the sample.

### 3,824,839

LEAK DETECTING SYSTEM AND METHOD FOR PASSING A MEASURED SAMPLE OF GAS TO A LEAK DETECTOR

Walton Ellis Briggs, Lynnfield, Mass., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 183,495, Sept. 24, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,622

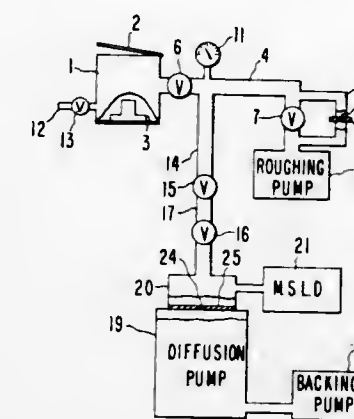
U.S. Cl. 73—40.7

Int. Cl. G01m 3/04

21 Claims

A leak detecting system has two valves in line between the test piece and the leak detector to provide a fixed volume of gas between the valves. The valve nearest the sample is

opened while the valve nearest the leak detector is closed. If the test piece has a leak, a measured quantity of the test gas leaking through the test piece will be collected in said fixed volume. Then the valve nearest the test piece is closed and the valve nearest the leak detector is opened to conduct the mea-



sured volume of gas to the detector. Additional valve means are employed to provide a plurality of different size fixed volumes. In which case, the valves are operated to conduct the fixed volumes of gas to the leak detector in sequence starting with the smallest volume and proceeding to the next larger volume until a leak is signaled by the leak detector.

### 3,824,840

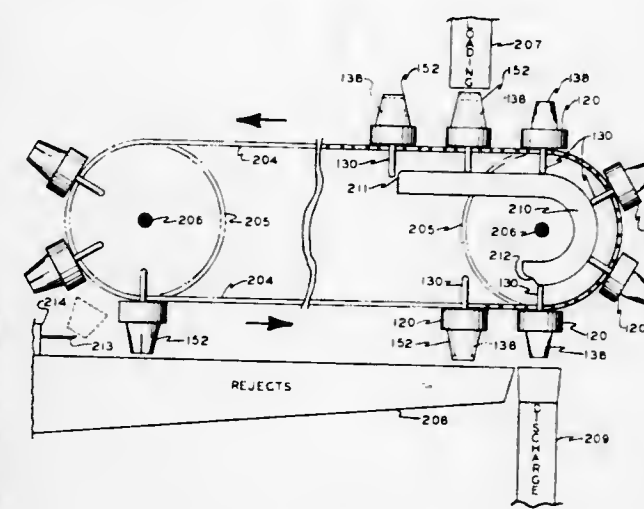
APPARATUS FOR TESTING AND SORTING CUPS  
Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 140,545, May 5, 1971, abandoned. This application Mar. 16, 1973, Ser. No. 342,179

U.S. Cl. 73—45.3

Int. Cl. G01m 3/04

22 Claims



A device for sorting relatively fragile cups manufactured from coated paper, thin plastic, foamed plastic material and the like. A nonporous, resilient, thin membrane is provided which has an annular contact area for receiving the rim area of the cup and establishing continuous contact with a cup surface extending around the cup adjacent the rim area in a closed loop. The membrane is fixedly supported only outside of and around at least one edge of the annular contact area, leaving the membrane movable throughout the contact area. Air impervious means spans the area defined by an inner edge of the annular contact area of the membrane. The air pressure on the cup-adjacent side of the air impervious element is reduced below the ambient air pressure to cause relative sealing movement of the annular contact area of the membrane and the closed loop surface of the cup received on the membrane. The



pressure on the cup-adjacent side of the air impervious element is monitored to detect the presence or absence of a sealing contact between the membrane and the closed loop surface of the cup to sort good cups from defective cups.

3,824,841

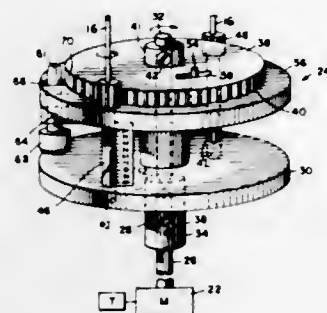
## METHOD FOR SEDIMENTATION STUDY

Brian S. Bull, Loma Linda, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 113,166, Feb. 8, 1971, abandoned. This application Oct. 22, 1971, Ser. No. 191,886  
Int. Cl. G01n 15/04, 33/16

U.S. Cl. 73—61.4

25 Claims



Method for the study of the sedimentation characteristics of whole blood comprising the steps of cyclically applying greater than gravity force laterally to a thin, substantially vertically oriented column of whole blood, and rotating the column about 180 degrees about its own axis between each cycle. The sample columns are placed in tubes arranged with their long axes oriented substantially parallel to the axis of rotation of a centrifuge and the tubes are rotated about their own long axes between each cycle and only when at or substantially at rest. A preferred test operation using four cycles of 45 second duration is described with the rotation of the columns being effected by reversal of the direction of rotation of the centrifuge head at the end of each cycle. Other cycle durations are described for providing results correlatable with standardized sedimentation test procedures.

3,824,842

## APPARATUS AND METHOD FOR THE MEASUREMENT OF ACOUSTIC ABSORPTION AND IMPEDANCE

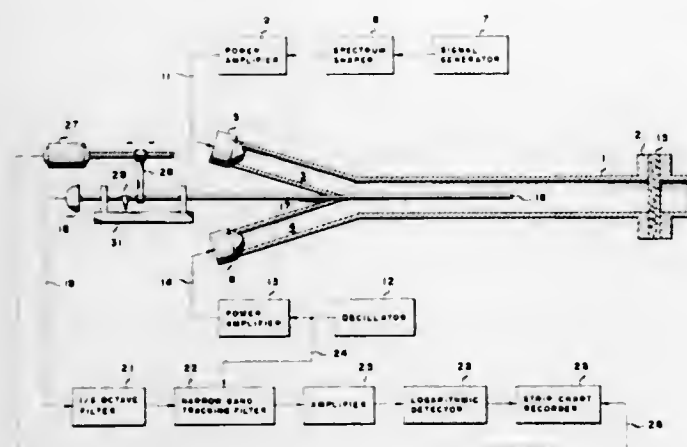
Leslie Spencer Wirt, Newhall, and Duane Lloyd Morrow, Sausalito, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 20, 1972, Ser. No. 245,776

Int. Cl. G01n 29/00

U.S. Cl. 73—69

21 Claims



Apparatus and method for measuring the acoustical impedance and/or the absorption coefficient of materials of the

class which exhibit nonlinear behavior at high sound intensities. A high-intensity biasing noise having a broadband spectrum and a low intensity pure sinusoidal tracer tone are introduced in combination into a standard impedance tube or standing-wave apparatus. The standing-wave pattern in the tube is measured by a pressure microphone probe movable along the axis of the tube. The tracer tone is retrieved by highly selective filtering and used to provide a measurement signal which corresponds to the response of the material. By sampling the standing wave pattern in the tube, the entire spectrum of the broadband noise response may be obtained.

3,824,843

## DEVICE FOR HOLDING TEST HEAD

Johann Gebeshuber, and Wilhelm Meusel, both of Nurnberg, Germany, assignors to Maschinfabrik Augsburg-Nurnberg, Aktiengesellschaft Werk Nurnberg, Nurnberg, Germany

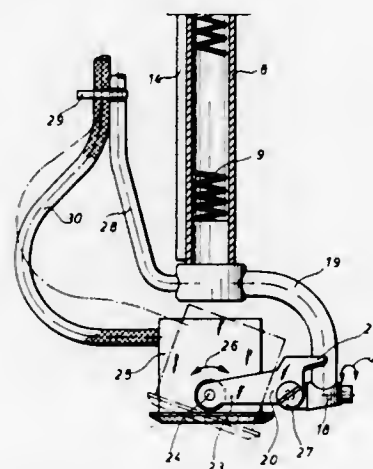
Filed Oct. 25, 1972, Ser. No. 300,721

Claims priority, application Germany, Oct. 27, 1971, 2153397

Int. Cl. G01n 29/04

U.S. Cl. 73—71.5 US

6 Claims



A device for holding a test head, especially a head for ultrasonic testing in which a resiliently extensible but nonrotatable beam structure has one part connected to a support, while at the free end of the beam there is a yoke to which a cardanic holding member is pivotally connected on a first axis which is perpendicular to the longitudinal axis of the beam and with the holding member adapted for supporting the test head on an axis perpendicular to the axis of the beam and also perpendicular to the axis on which the holding member is pivoted to the yoke.

3,824,844

## SOIL MOISTURE MONITOR

Robert E. Strickland, Los Angeles, Calif., assignor to Water Rite Inc., Los Angeles, Calif.

Filed May 11, 1973, Ser. No. 359,617

Int. Cl. G01n 19/10, 33/24

U.S. Cl. 73—73

9 Claims



An inexpensive device is provided for sensing the moisture content of soil, particularly around house plants. The device

has a dark colored background with a thin, permeable hydrophilic film in front of it. The film is protected by a transparent plastic layer in front and the assembly is heat sealed together. A hole is pierced through the protective layer for giving the permeable film access to soil moisture. The permeable film is preferably a sheet of light colored, single ply facial or toilet tissue which has high reflectivity and low transmission of light when dry but which becomes quite translucent when wet. The extent of dark colored background exposed by the wet film indicates soil moisture content.

3,824,845

## METHOD OF TRANSFERRING ELECTRICAL DATA SIGNALS FROM MOVING BODIES

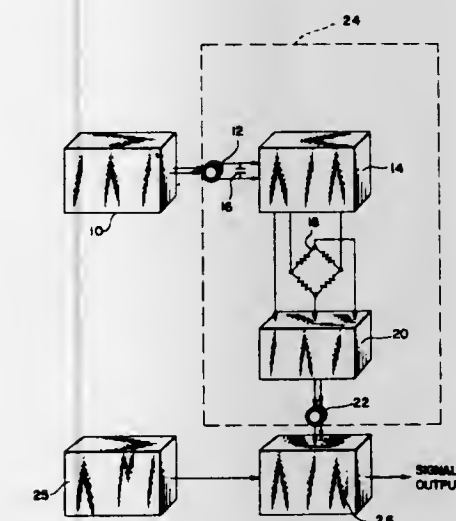
H. Douglas Huebner, Newport News, Va., assignor to Newport News Shipbuilding & Dry Dock Company, Newport News, Va.

Filed Dec. 22, 1972, Ser. No. 317,865

Int. Cl. G01l 3/10; G01n 3/00

U.S. Cl. 73—88.5 R

6 Claims



Method of transferring electrical data signals from moving bodies, particularly low frequency, low level signals such as generated by strain gages. The method is distinguished in its use of an input holding capacitor to transmit low impedance signals while eliminating high impedance signals, such that a continued output signal is provided, notwithstanding discontinuous contact between sliding contact devices attached to the moving body and brushes attached to the receiving signal circuit.

3,824,846

## HOLDER FOR FORCE TRANSDUCER

John-Erik Andersson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Apr. 14, 1971, Ser. No. 133,888

Claims priority, application Sweden, Apr. 14, 1970, 5094/70

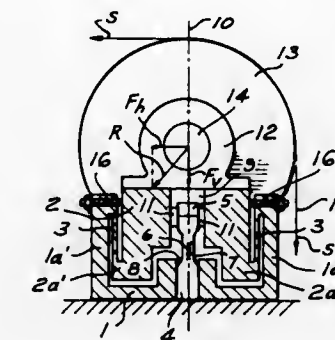
Int. Cl. G01n 3/20

U.S. Cl. 73—100

8 Claims

There is disclosed a holder device for mounting a force-responsive transducer of the type sensing transverse or bending stresses. The holder device comprises a stationary member and a movable member for applying a force in a selected measuring direction to the movable member. Connecting members join the movable member to the stationary member and are positioned to act as a mild restraining force in the selected measuring direction. The stationary member and the movable member each include a recess for receiving therein an actuating part and a mounting part respectively of the transducer to be mounted on the holder device. The recesses are so located

that a neutral axis of the transducer supported in the recesses is substantially parallel to lengthwise and transverse directions of the connecting members. The measuring direction is sub-



stantially normal to the neutral axis whereby a load applied to the movable member causes tensioning of each of the connecting members.

3,824,847

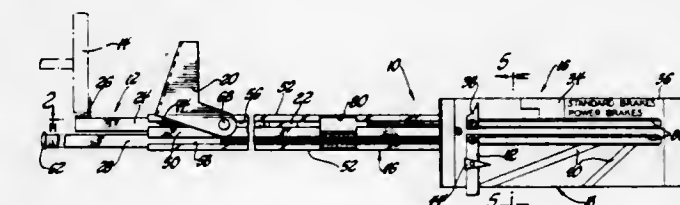
## AUTOMOTIVE BRAKE TESTER ASSEMBLY

Marshall R. Chambers, 2271 Golfview, Troy, Mich. 48084  
Filed Aug. 3, 1972, Ser. No. 277,725

Int. Cl. G01l 5/22

U.S. Cl. 73—132

20 Claims



An automotive brake tester assembly including a housing with a force applying pedal attached thereto. A brake pedal contact member is slidably disposed in and extends from the housing. A floor board contact member is slidably disposed in and extends from the housing. Scales are disposed on a plate attached to the housing with the first scale indicating the amount of brake pedal travel and the second scale indicating the ratio of the distance between the pedal and floor board when the pedal is fully depressed and the distance between the brake pedal and the floor board when the brake pedal is in the non-depressed position. A first indicator means is connected to the pedal contact member and is movable along the first scale and a second indicator means is connected to the floor board contact member and is movable along the second scale. There is also included a flag connected to the pedal contact member and movable out through an opening in the housing when a predetermined force is being applied to a brake pedal, the predetermined force resulting from depression of a spring which reacts between the pedal contact member and the housing to urge the pedal contact member out of the housing.

3,824,848

## TWO SENSOR TORQUE MEASURING APPARATUS WITH COMPENSATION FOR SHAFT MISALIGNMENT

James R. Parkinson, R.D. No. 5, Vergennes, Vt. 05491  
Filed June 27, 1972, Ser. No. 266,628

Int. Cl. G01l 3/10

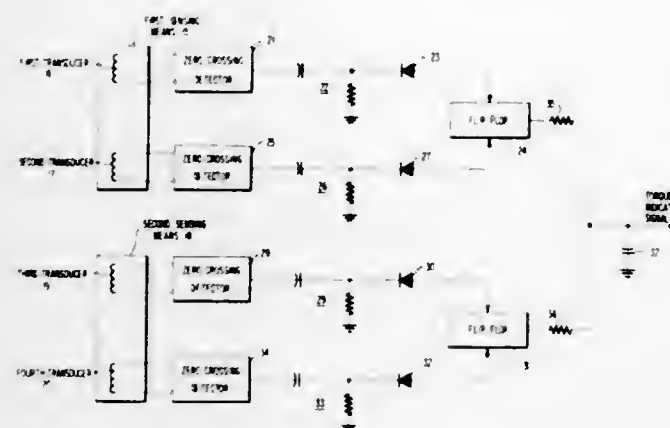
U.S. Cl. 73—136 A

11 Claims

A phase displacement torque measuring apparatus which compensates for any phase shift introduced in the output of a



first sensing means by the misalignment of the shaft with respect to the first sensing means by utilizing a phase shifted



signal from a second sensing means to compensate for the erroneous phase shift.

3,824,849

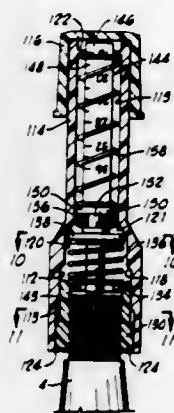
## INFLATION DEVICE

Ollie C. Foxhall, Bethany, Okla., assignor to Joco, Incorporated, Oklahoma City, Okla.  
Continuation-in-part of Ser. No. 99,631, Dec. 18, 1970. This application June 5, 1972, Ser. No. 259,932 the portion of the term of this patent subsequent to Mar. 13, 1991, has been disclaimed.

Int. Cl. B60c 23/04

U.S. Cl. 73—146.8

3 Claims

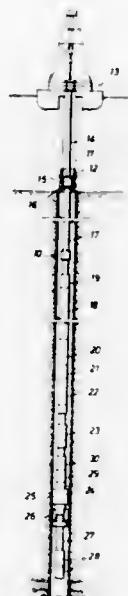


A tire pressure indicator and inflation device which includes an outer housing having a bore and counterbore formed therein, and an internal housing or sleeve assembly positioned in the bore of the outer housing. The internal housing or sleeve assembly has a threaded hollow interior for connecting the internal housing assembly to the valve stem of a pneumatic tire. The internal housing assembly has an end plate which extends across and closes one end thereof and which carries a valve core depressor element. An elongated pressure indicator element carrying a piston at one end thereof is slidably mounted within the counterbore of the outer housing so that the piston seals against the internal wall of the outer housing in the counterbore. The piston and associated pressure indicator element are biased by a spring positioned between the piston and an internal shoulder on the outer housing to a position adjacent the internal housing.

3,824,850  
PRESSURE CONTROLLED TEST VALVE SYSTEM FOR OFFSHORE WELLS  
Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.  
Filed Nov. 17, 1971, Ser. No. 199,554  
Int. Cl. E21b 47/00

U.S. Cl. 73—151

32 Claims



Methods and apparatus for performing a drill stem test of an offshore well utilizing a pressure controlled test valve. The test valve includes a valve element having a transverse pressure area with the high pressure side exposed to the pressure of fluids in the well annulus and the low pressure side subject to the pressure of a compressible fluid medium contained within a chamber in the test valve. The pressure in the chamber is equalized with the hydrostatic head of the well fluids so that at test depth the same pressure is acting on both sides of the transverse pressure area, whereupon this pressure is confined within the chamber. Then a fluid pressure in excess of the hydrostatic head is applied to the well fluids externally of the test valve to develop a pressure difference across the valve element which causes it to shift from closed to open position.

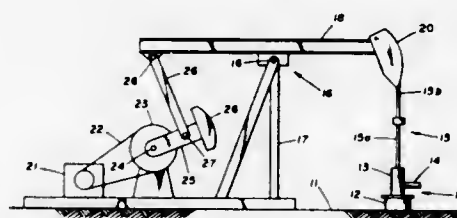
3,824,851  
AUTOMATIC DATA RETRIEVAL SYSTEM FOR PUMPING WELLS

James L. Hagar, Oklahoma City, and Harold E. Schwartz, Jr., Norman, both of Okla., assignors to Mobil Oil Corporation, New York City, N.Y.

Filed June 1, 1972, Ser. No. 258,756  
Int. Cl. E21b 47/00

U.S. Cl. 73—151

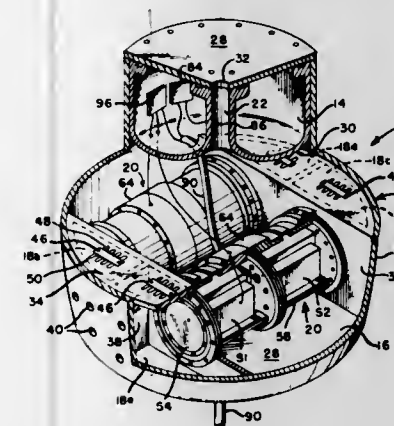
11 Claims



Measurements of the load conditions on a plurality of pumping wells are made by strain gauges mounted on the pumping wells. A field-located remote terminal unit is connected to each of the plurality of pumping wells. Upon command from a centrally located computer, the remote terminal unit stores the load condition measurements from a pumping well selected by the computer. At some later time the computer retrieves the load condition measurements stored in the remote terminal unit.

3,824,852  
ELECTRICALLY POWERED SUBMERGED PUMP,  
POWER CIRCUIT THEREFOR, AND OCEANOGRAPHIC  
MONITORING APPARATUS AND METHOD EMPLOYING  
SAME  
Carl L. Otto, Lummi Island, Wash. 98262  
Filed Feb. 17, 1972, Ser. No. 227,075  
Int. Cl. G01d 21/00; B63b 59/00; F04b 17/04  
U.S. Cl. 73—170 A

43 Claims



A submerged unit adapted to monitor water conditions several miles from shore, with a housing having a float chamber, a water monitoring section and plurality of reciprocating pumps to move ambient water through the monitoring section. Solenoid type units drive the pumps to move sample water past sensors in the monitoring section and provide inertial masses to vibrate the entire unit both laterally and rotationally to minimize attachment of marine organisms thereto. The power units also provide a constant flushing of screened inlet openings through which the sample water passes so as to prevent clogging thereof by marine organisms or debris.

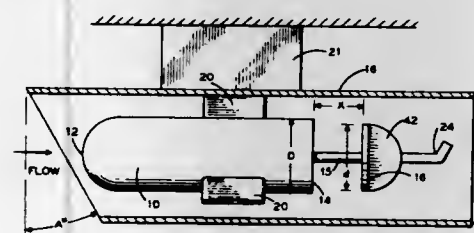
The two power units oscillate 90° out of phase through two sets of two solenoids, one set for each power unit. This is accomplished by circuitry distributing successive half waves of an alternating current supply to the solenoids in sequence. Each solenoid is energized through an electronic valve receiving gated power through another solenoid, the gating being through a capacitor and diode whereby the capacitor is initially rapidly charged and then discharged slowly enough to prevent or block regating until occurrence of a subsequent half wave, the blocking action being reinforced by the voltage drop occurring across the other solenoid, which in the meanwhile has been preferentially gated.

3,824,853  
AIRCRAFT INSTRUMENT SHROUD  
Roger Mabon, New Brunswick, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,514  
Int. Cl. G01p 5/00; G01f 1/00

U.S. Cl. 73—181

2 Claims



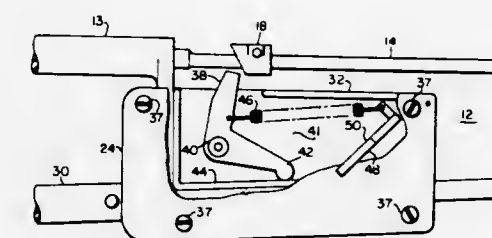
The angle of attack effects on the primary sensing element of an aircraft altitude/airspeed measuring instrument are minimized and controlled by means of a shroud device having a particular inlet shape which surrounds and isolates such

sensing element. The primary element includes an upstream cylindrical member and a downstream disc-like member spaced from the cylindrical member by a predetermined distance. Fluid parameter fluctuations are produced in the airstream behind the cylinder-disc structure which are directly related to true airspeed. The measured fluctuation frequency, however, is also influenced by the angle of attack of the aircraft. This latter effect constitutes a source of instrument error which the shroud device minimizes and controls.

3,824,854  
SOUND TRIM APPARATUS FOR BOAT SPEEDOMETER  
Albert Weinstein, Alexandria, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Mar. 23, 1973, Ser. No. 344,324  
Int. Cl. G01c 21/10

U.S. Cl. 73—185

8 Claims



The sound generating device is mounted on a boat responsive to a shaft rotating at a speed proportional to the speed of the boat. Fixed to the shaft is a cam. Upon each rotation of the shaft, the cam engages a trip hammer which is mounted on support means. The trip hammer is biased by a spring which tends to hold the hammer stationary against the support means. Upon each rotation of the shaft, the cam engages the trip hammer causing it to rotate against a strike plate, thereby creating a clicking sound. The frequency of the clicks and consequently the pitch of the sound varies directly with the speed of the boat, thereby giving an indication of the speed and the change in speed without requiring the operator to divert his attention to look at a speedometer dial.

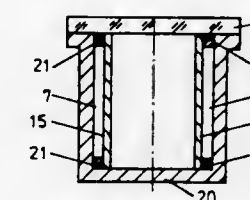
3,824,855  
METHOD AND APPARATUS FOR MEASURING THE  
FLOW RATE OF FLUIDS SUCH AS GASES OR LIQUIDS  
Manfred Heckle, Max-Wolf Str. 16, D-69 Heidelberg, Germany

Filed Jan. 14, 1972, Ser. No. 217,754  
Claims priority, application Germany, Jan. 25, 1971, 2103248; Mar. 11, 1971, 2111627; July 15, 1971, 2135310

Int. Cl. G01f 1/00; G01p 5/10

U.S. Cl. 73—194 B

29 Claims



This invention relates to a method and apparatus for measuring the flow rates of liquids or gases. The method essentially comprises the steps of directing the fluid past an element which can oscillate transversely of the fluid flow, said element being normally biased into the fluid flow, and measuring the oscillation frequency of said element to give the flow rate of the fluid. One form of apparatus for use in carrying out the method of the invention comprises a chamber through which the fluid can flow, a duct leading into said chamber for in-



roducing the fluid into the chamber, an oscillatory element having at least a portion disposed in said chamber and being movable by the fluid flow transversely thereof about an axis offset with respect to the fluid flow. The fluid flow can be split into two or more separate flow paths. If this is done the apparatus comprises a collecting chamber through which the fluid can flow, a fluid inflow chamber to divide the fluid flow into at least two separate flow paths, conduits leading from said inflow chamber to said collecting chamber, each of said conduits having an outlet aperture in said collecting chamber, an oscillatory element mounted in said collecting chamber for movement transversely with respect to the fluid flow paths, and said element having portions which are acted on by the flow paths to cause the element to oscillate.

3,824,856

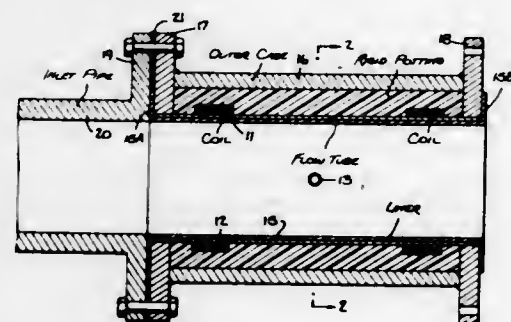
**HIGH-PRESSURE ELECTROMAGNETIC FLOWMETER**  
John S. Yard, Warminster, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 22, 1973, Ser. No. 325,633

Int. Cl. G01f 1/00

U.S. Cl. 73-194 EM

6 Claims



An electromagnetic flowmeter having a thin-wall, non-magnetic flow tube surrounded by coils to establish an electromagnetic field in the flow passage. A heavy-wall case is supported concentrically with respect to the flow tube to define an annular region occupied, in part, by the coils and filled with a rigid potting compound, whereby the thin-wall flow tube which minimizes eddy current losses and satisfies the requirement for electromagnetic efficiency, is physically reinforced by the case and is rendered capable of withstanding heavy fluid pressures.

3,824,857

**TEMPERATURE MEASURING SYSTEM FOR ROTATING MACHINES**

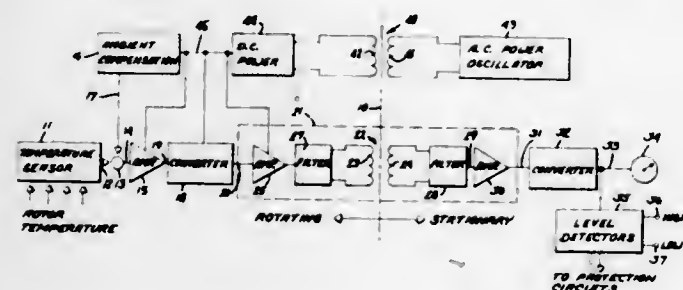
Forest D. Smith, Saint Louis Park, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Aug. 7, 1972, Ser. No. 278,578

Int. Cl. G01d 5/12

U.S. Cl. 73-351

8 Claims



A temperature measuring system for measuring the rotor temperature of an electric motor or generator. A temperature signal from a thermocouple mounted on the rotor is amplified and used to run a voltage to frequency converter which generates a signal having a frequency proportional to the temperature. This signal is coupled from the rotating portion to the stationary portion of the machine where it is converted to

an analog voltage proportional to the rotor temperature. In one embodiment a rotary transformer is used to couple the signal from the rotating portion to the stationary portion of the machine, while in another embodiment an FM transmitter and receiver is used for the signal coupling.

3,824,858

**FLUID SAMPLING APPARATUS**

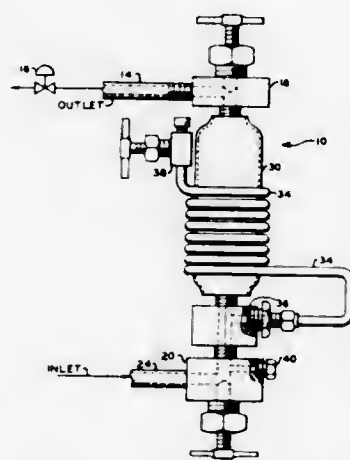
J. Gordon Erdman, Bartlesville, Okla., assignor to Phillips Petroleum, Bartlesville, Okla.

Filed Dec. 13, 1972, Ser. No. 314,567

Int. Cl. G01b 1/10

U.S. Cl. 73-421 R

8 Claims



A representative sample of a liquid under elevated pressure and containing at least one component which would be a gas at a lower pressure is obtained by the introduction of a sample thereof at about said elevated pressure into a major cavity section of a sample container. A contaminant-free minor cavity section of said container is separated from said major cavity section by means of a partition which is rupturable at a pressure above said elevated pressure but below the rupture pressure for the remainder of the container.

3,824,859

**AUTOMATIC FLUID INJECTOR**

Rano J. Harris, Sr., 1945 Carolyn Sue Dr., and Rano J. Harris, Jr., 9880 S. Riveroaks Dr., both of Baton Rouge, La.

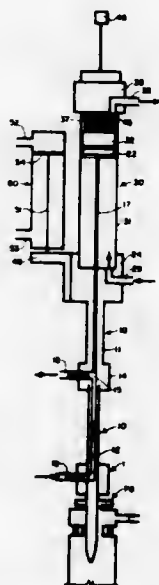
Continuation-in-part of Ser. No. 223,663, Feb. 4, 1972, Pat. No. 3,754,443. This application Feb. 16, 1973, Ser. No.

333,120

Int. Cl. G01n 1/14

U.S. Cl. 73-422 GC

9 Claims



An apparatus for accurately measuring and injecting quantities of fluid specimens, or samples, as received from a flowing

sampled stream, into various media, e.g., a receptacle or inlet of a modern analytical instrument. The automatic fluid injector, or continuous flow analyzer, is comprised generally of (a) a support means, (b) a tubular mounting member, generally mounted on said support means, said member providing an axial opening which can be aligned upon said inlet, and including a transverse opening entering therein through which fluid can be transferred from a flowing stream, (c) a needle syringe, including a barrel and a plunger reciprocable within the barrel and bore of a needle, mounted on the forward end of the syringe, for insertion into the axial opening and for alignment of a side opening provided in the needle for alignment with the transverse opening of the tubular mounting member for receipt of a fluid specimen into the needle bore on withdrawal of the plunger, and (d) an associated cylinder piston unit, the needle syringe of which is mounted on the forward end of the piston. Both the plunger of the syringe and piston of the cylinder piston unit are reciprocable, on actuation in response to automatic control means to accurately measure, trap and then inject fluid specimens from the flowing stream, as desired.

3,824,860

**TIME SCHEDULE CONTROLLER AND PARTS AND HOUSING THEREFOR**

George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

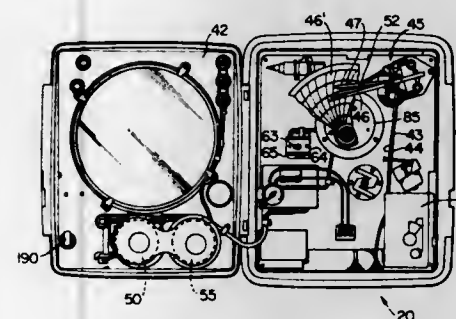
Division of Ser. No. 187,641, Oct. 8, 1971, Pat. No. 3,730,427.

This application Feb. 20, 1973, Ser. No. 333,531

Int. Cl. G01p 1/06

U.S. Cl. 73-431

5 Claims



A time schedule controller wherein the high limit index and the set point index respectively have members movable therewith and alignable in relation to each other only when the set point index reaches the setting of the high limit index. An actuator for terminating the operation of the set point index in the rate of rise thereof is only actuated when the alignable members of the high limit index and the set point index that are operatively associated therewith are in their aligned relation thereof.

3,824,861

**APPARATUS FOR DETECTING AND MEASURING IMBALANCE OF A MOTOR VEHICLE WHEEL ON A MOTOR VEHICLE**

Eickhart Goebel, Pfungstadt, Germany, assignor to Gebr. Hofmann, KG., Darmstadt, Germany

Filed Aug. 2, 1973, Ser. No. 384,898

Claims priority, application Germany, Sept. 19, 1972, 7234410

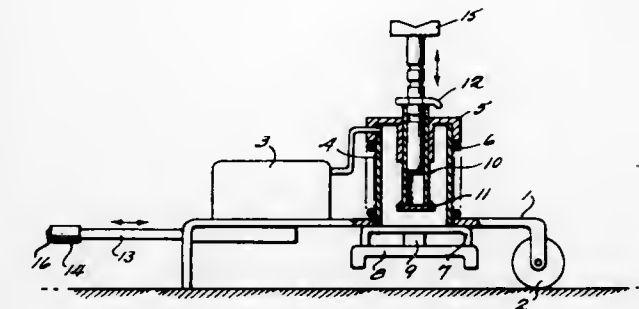
Int. Cl. G01m 1/28

U.S. Cl. 73-457

3 Claims

Apparatus for measuring imbalance of a motor vehicle wheel with a frame, a first cylinder mounted on the frame for movement with respect to the frame and having a stop portion for engaging the ground in one position and the frame in a second position, a spring about the first cylinder urging it up-

wards, a second cylinder mounted for movement within the first cylinder and engaging the wheel when forced upward by



fluid pressure to also force the first cylinder downward against the urging of the spring until the stop portion engages the ground.

3,824,862

**WHEEL BALANCING APPARATUS**

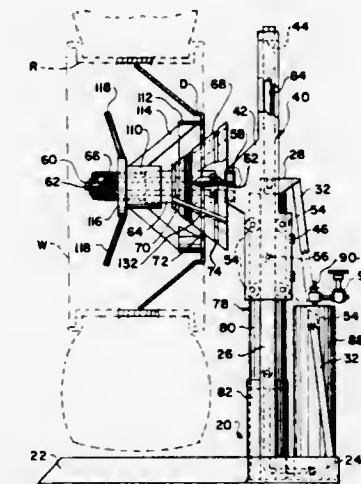
Charles Earl Branck, 1601 S. 9th St., Fargo, N. Dak. 58102

Filed Dec. 21, 1972, Ser. No. 317,402

Int. Cl. G01m 1/02

U.S. Cl. 73-480

18 Claims



Wheel balancing apparatus especially useful for static balancing of truck tires of various standard sizes including a carrier mounted for vertical movement upon a stationary base frame and a spindle freely rotatably mounted on the carriage about a horizontal axis for carrying a mounting cone having a plurality of circumferential grooves of diameters corresponding to those of the central openings of standard sized disc type truck wheels. A clamping ring assembly slidably mounted on the spindle is urged by a clamping nut axially of the spindle into engagement with a wheel disc to seat and retain the wheel in position on the appropriate groove in the cone. The carriage is movable vertically by a fluid motor for firstly enabling relatively heavy truck wheels to be mounted upon the spindle while the wheel is resting on the floor and thereafter for elevating the wheel clear of the floor for the balancing operation. An adapter assembly may be provided for balancing rim mounted wheels.



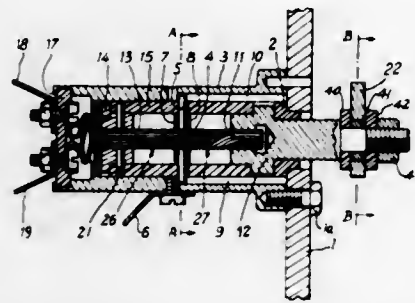
3,824,863

**ELECTRICAL TRANSDUCER**

Louis Monpetit, L'Etang-Ville, France, assignor to Societe Des  
Procees Modernes D'Injection Soproml  
Filed Feb. 16, 1973, Ser. No. 333,034  
Claims priority, application France, Feb. 23, 1972,  
72.06043

Int. Cl. G01p 15/12; F02d 35/00  
U.S. Cl. 73—517 A

12 Claims



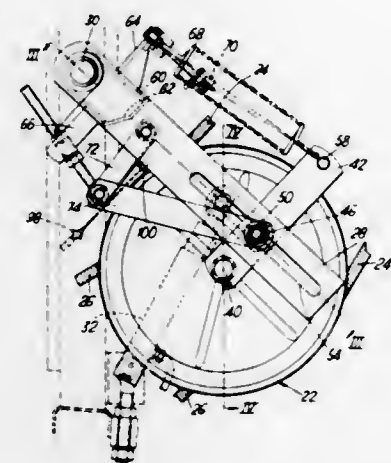
An electrical transducer which is responsive to sudden movements to produce an electrical signal, the transducer including an element whose electrical resistance is changed upon the application of a force, such as torsion, with the change in resistance used to operate an electronic circuit.

3,824,864  
**BELT DRIVES**

Jean Calude Muller, Palaiseau, France, assignor to Massey-  
Ferguson Services N.V., Curacao, Netherlands Antilles  
Filed May 24, 1973, Ser. No. 363,678  
Claims priority, application Great Britain, June 14, 1972,  
27751/72

Int. Cl. F16h 7/10, 55/22  
U.S. Cl. 74—242.15 R

10 Claims



Belt tension control apparatus having a pulley mounted at one end of a lever arm. The arm is connected at its other end to a coiled tension spring and pivotally mounted between its ends on a support. The position of the pivot along the support may be adjusted. Decrease in belt tension resulting from belt stretch is indicated visually by angular movement of the arm from a reference position at right angles to the support. After position adjustment of the pivot to restore the arm to its reference position following belt stretch, the degree of extension of the spring is greater than before the stretch occurred.

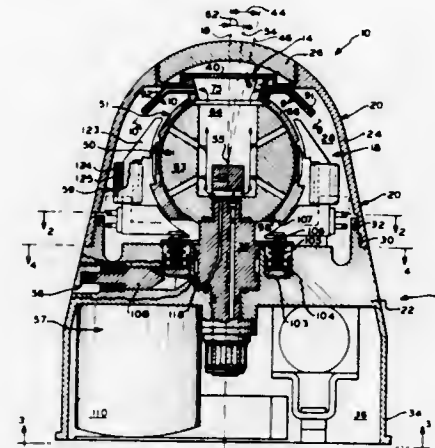
3,824,865

**PROJECTILE HAVING A GYROSCOPE**

John L. Evans, Oakland; C. John DeCotils, Cranford, and Victor P. Johnson, Fair Lawn, all of N.J., assignors to The Singer Company, Little Falls, N.J.  
Filed Sept. 21, 1972, Ser. No. 290,856

U.S. Cl. 74—5.6 D

7 Claims



A projectile including, a housing, an optical tracker, and a gyroscope disposed within the housing, the housing having a nose section and a base section forming a chamber enclosing the tracker and the gyroscope, the nose section having a window, the optical tracker having an optical lens unit and an image detector unit mounted on the gyroscope, the optical unit being arranged to receive an image through the window and to transmit the image to the image detector unit, the gyroscope comprising, a stator mounted on the base section within the chamber, the stator having a stator axis, a hollow rotor mounted on the stator, the rotor having a rotor axis intersecting the stator axis at a pivot point, anti-friction means disposed between the stator and the rotor, drive means adapted to rotate the rotor relative to the stator about the rotor axis, wherein the stator has a peripheral wall enclosing a recess, the recess being arranged to receive the image detector unit, the stator peripheral wall having a spherical outer surface, the spherical outer surface having a spherical center substantially coinciding with the pivot point.

3,824,866

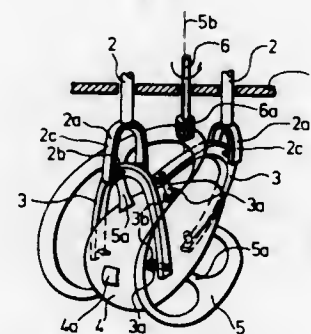
**APPARATUS FOR GENERATING A WOBBLE MOTION**

Paul Schatz, Raengartenweg 11, 4143 Dornach/So., Switzerland  
Filed Apr. 16, 1973, Ser. No. 351,337  
Claims priority, application Switzerland, Apr. 19, 1972,  
5818/72

Int. Cl. F16h 33/00

U.S. Cl. 74—61

8 Claims



An apparatus for generating a wobble motion with a wobble body is disclosed. An endless band is secured to the wobble body for transmitting motion thereto. The endless band is formed of a flat circular ring band which is bent about axes

parallel to two perpendicular diameters. In position, the endless band includes a symmetry plane which extends through one of the body suspension means. A drive mechanism secured to a frame imparts motion to the wobble body via the endless band. The wobble body is rotatably secured to a frame by suspension means.

3,824,867

**MULTI-STAGE CONTROL FOR TORQUE CONVERTERS IN ENGINE DRIVEN VEHICLES**

John Hawley Brooks, Encino, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Dec. 7, 1972, Ser. No. 312,912

Int. Cl. F16h 55/52

U.S. Cl. 74—230.17 E

22 Claims



A method and apparatus wherein a variable sheave V-belt torque converter, particularly suitable for use with engine driven vehicles such as snowmobiles or the like, is controlled so that a wider spread is obtained between the engine speed at the time of belt engagement and the engine speed at the time of completion of the shift. Belt engagement occurs at an engine speed relatively close to idle speed, and shifting operations are delayed until about a speed corresponding to that of maximum engine torque. Completion of shifting occurs at about a speed corresponding to the speed of maximum engine power. This belt engagement and shifting control, which improved acceleration and climbing ability of an engine driven vehicle such as a snowmobile, is provided through multi-stage resilient control of the operation of centrifugal clutch shoes engageable with the movable pulley section of the torque converter. Such control may be accomplished through the use of a plurality of garter springs, or a plurality of compression springs.

3,824,868

**HIGH TEMPERATURE BELT LINK CONSTRUCTION**

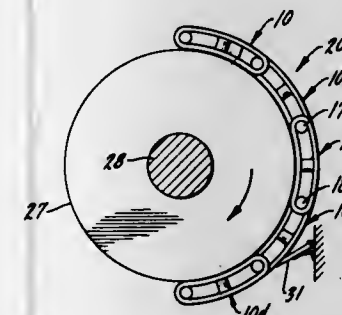
Francis M. Fahrenwald, Chicago, Ill., assignor to The Fahrenwald Company, Harvey, Ill.

Filed May 7, 1973, Ser. No. 357,546

Int. Cl. F16g 12/40

U.S. Cl. 74—235

14 Claims



A high temperature conveyor belt, and a belt link for use therein, of the type used in heat treat furnaces in which excessive deformation of the link, with consequent interference in flexing action, and premature failure due to shrinkage defects is substantially eliminated by use of a protuberance within the link which limits link deformation and ensures internally sound metal.

3,824,869

**CHAIN DRIVE HAVING PIVOTED DRIVE TEETH**

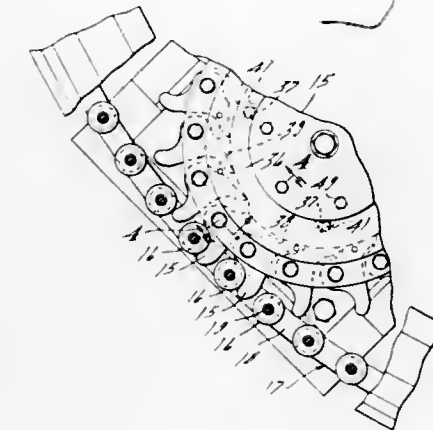
Prescott V. Murphy, Kearny, N.J., assignor to Standard Tool & Manufacturing Co., Lyndhurst, N.J.

Filed Sept. 25, 1972, Ser. No. 291,977

Int. Cl. F16h 55/30

U.S. Cl. 74—243 R

8 Claims



A sprocket wheel is employed to drive a chain having cylindrical rollers separated by overlapping links secured to the roller pivots. The radius of the wheel is small when compared to the radius of the chain or a straight section thereof where the teeth contacts the chain rollers to produce the driving thereof. Individual teeth are equally spaced when pivoted around the edge of a wheel having a central drive shaft. The teeth project between two chain rollers with the engaging tooth face having an arcuate form to mate with the advanced roller. The wheel is mounted adjacent to a fixed cam that has a section of uniform radius to maintain the teeth in driving relation and a section of less radius forming a drop-off portion where the teeth leave the chain which progressively extends outwardly to blend in with the section of uniform radius where the teeth are moved outwardly in position to again engage a roller on the chain.

3,824,870

**COMPUTER TAPE SPROCKET DRIVE WITH 40 PERCENT PIN AND 60 PERCENT FRICTIONAL TRANSMISSION**

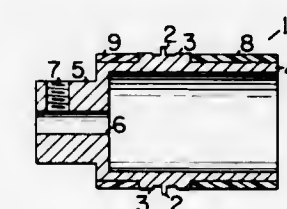
Robert E. Yablonski, Orange; George S. Hager, Anaheim, and William G. Campbell, Jr., Orange, all of Calif., assignors to Electronic Engineering Co. of Calif., Santa Ana, Calif.

Filed Jan. 15, 1973, Ser. No. 323,567

Int. Cl. F16h 55/40

U.S. Cl. 74—243 R

10 Claims



A sprocket for translating perforated tape by means of a ring of pins and at least one cylindrical elastomer sleeve adjacent to the pins. Translational forces are exerted upon the perforations of the tape by the pins and upon one surface of the tape by contact with the elastomer. This structure gives a very much longer accurate tape life by reducing sprocket hole damage, particularly where frequent starts and stops are involved.



3,824,871

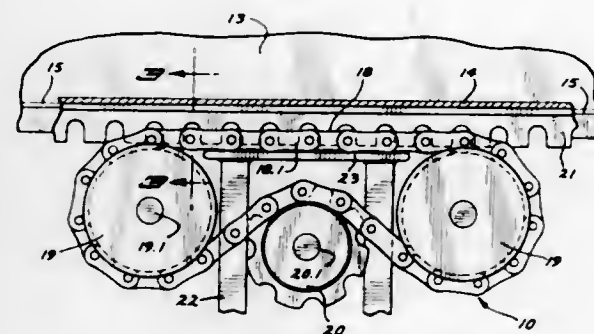
## DRIVE FOR BUNK FEEDER

Leo J. Loesch, and Claude E. Loesch, both of Kimball, Minn. 55353

Filed Feb. 22, 1973, Ser. No. 334,587  
Int. Cl. F16h 19/06, 1/04

U.S. Cl. 74-422

7 Claims U.S. Cl. 74-462



A drive producing the lineal motion of a slide and particularly a sliding pan of a bunk feeder, the drive includes an endless roller chain, a rack affixed to the sliding part and meshed with and driven by the roller chain, the roller chain having a drive run extending linearly between spaced guide rolls and meshed with the rack, the roller to roller pitch length of the chain slightly exceeding the tooth to tooth pitch length of the rack.

3,824,872

## EPICYCLIC GEAR

Jan Stolt, and Christer Gerward, both of Vasteras, Sweden, assignors to Stal-Laval Turbin AB, Vasteras, Sweden

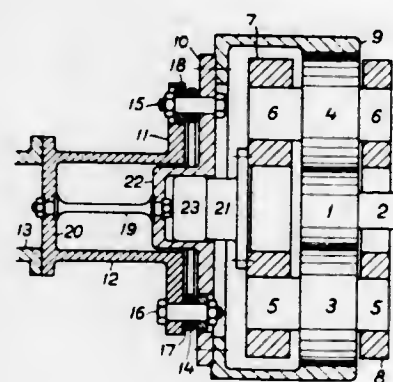
Filed Oct. 16, 1972, Ser. No. 297,649

Claims priority, application Sweden, Oct. 18, 1971, 13140/71

Int. Cl. F16h 57/00

U.S. Cl. 74-411

3 Claims



An epicyclic gear train, comprising a sun-wheel and an outer internally toothed gear ring both in engagement with star wheels which are mounted on a carrier; the outer gear ring and its shaft being connected through a cardan joint for the purpose of preventing external angular motion from disturbing the axial alignment of the shafts of the sun-wheel and the outer gear ring. The cardan joint comprises a laminated ring coupling fastened between a flange on the outer gear ring and a flange on its shaft.

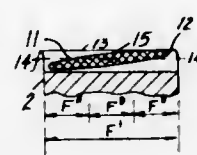
3,824,873

## ROLLING CONTACT GEARING

William S. Rouverol, Bolte Postale No. 8, 20-Saint Florent, Corse, France

Filed Dec. 18, 1970, Ser. No. 99,587  
Int. Cl. F16h 55/06

55 Claims



A form of gearing with teeth having circular arc profiles and a particular pressure angle which together produce engagement and disengagement in pure rolling. The shearing action tangential to the tooth profiles associated with compressive deformation of the tooth faces is made to exactly offset the shearing action in the opposite direction imposed by the meshing of the teeth.

3,824,874

## DRIVING DEVICE FOR A TUBULAR AXLE

Claude Georges, Gray, France, assignor to Societe Industrielle Du Metal Usine, Arc-les-Gray, Haute Saone, Japan

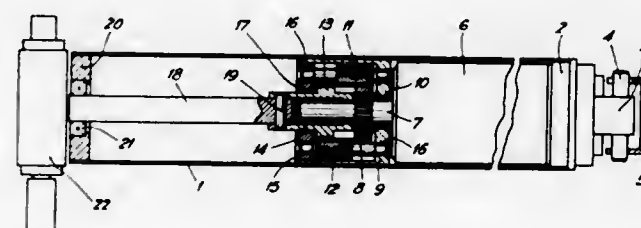
Filed May 4, 1973, Ser. No. 357,379

Claims priority, application France, May 18, 1972, 72.17833

Int. Cl. F16h 36/00

U.S. Cl. 74-626

3 Claims



A driving device for a tubular axle containing an electric motor and provided with a hand drive gear wherein the electric motor and the hand drive gear engage respectively two elements of a differential gear, the cage of which is fixed to the tubular axle.

3,824,875

## DRIVE FOR TWIN SCREW EXTRUDER

William H. Willert, North Plainfield, and Jai G. Ro, Flemington, both of N.J., assignors to Egan Machinery Company, Somerville, N.J.

Filed May 21, 1973, Ser. No. 362,178

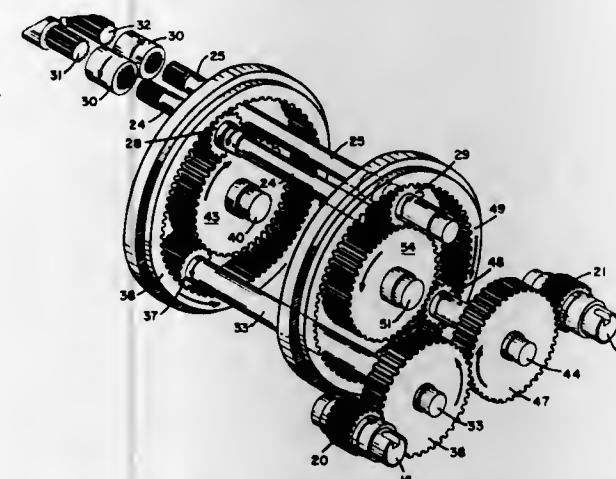
Int. Cl. F16k 37/06

U.S. Cl. 74-665 GA

12 Claims

Drive apparatus for imparting rotation in opposite directions to a pair of output shafts which are rotatable about longitudinal axes that are parallel and in close proximity to each other. The drive apparatus is comprised of a first train of pinions and gears, including an input pinion rotatable with an input shaft, a first intermediate gear that meshes with the input pinion and is mounted on a shaft which is provided with a drive pinion that meshes with a planetary ring gear and with a sun gear within the confines of the ring gear, and an output pinion that meshes with the sun gear and with the ring gear and is rotatable with one of the output shafts. The drive apparatus is also comprised of a second train of pinions and

gears which is similar to the first train and includes a second intermediate gear that meshes with the first intermediate gear and an output pinion that is rotatable with the other output



shaft. The pinion and gear trains are actuated simultaneously and in unison by a single prime mover connected to the input shaft of one of the trains or by a pair of prime movers, each of which is connected to the input shaft of a corresponding train.

3,824,876

## GEAR TRAIN WITH THREE PLANETARY GEAR SETS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

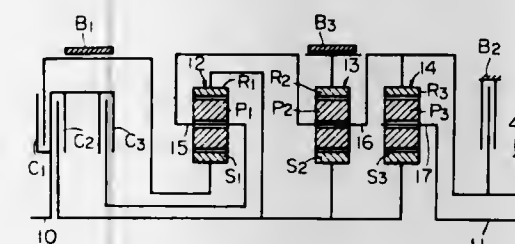
Division of Ser. No. 30,496, April 21, 1970, Pat. No.

3,701,293. This application Sept. 13, 1972, Ser. No. 288,549

Int. Cl. F16h 57/10

U.S. Cl. 74-759

4 Claims



Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,824,877

## INDEXING WORKPIECE SUPPORTING APPARATUS

Jack Mazue, Saone-et-Loire, Mersurey, France

Filed Sept. 4, 1973, Ser. No. 394,099

Claims priority, application France, Sept. 7, 1972, 72.32334

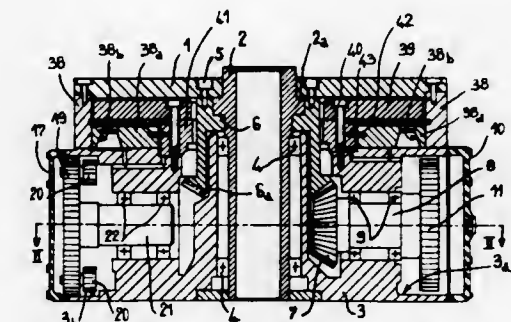
Int. Cl. B23b 29/32

U.S. Cl. 74-814

10 Claims

The rotatable table of the indexing workpiece supporting apparatus is carried by a vertical shaft which is rotatably mounted within a lower casing. This shaft is connected by bevel gears with a first inner shaft radially disposed within the

casing with respect to the vertical shaft, this first inner shaft being in turn connected by interchangeable spur gears with a second inner shaft laterally situated with respect to the vertical shaft. A Geneva cross gearing connects this second inner shaft with a third one disposed in line with respect to the first inner shaft, but on the other side of the vertical shaft. This third shaft is in turn connected with a fourth shaft parallel to the second inner shaft, but situated on the other side of the



vertical shaft, and this fourth shaft is driven by means of a vertical worm, the lower end of which projects below the casing to form an inlet shaft, and of a corresponding worm mounted loose on the said fourth shaft, but angularly retained thereon by a torque limiting coupling. The interchangeable gears and the Geneva cross gearing are disposed in opposed lateral recesses of the casing and are easily accessible through removable covers.

3,824,878

## DEVICE FOR AUTOMATICALLY CONTROLLING A GEARBOX

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

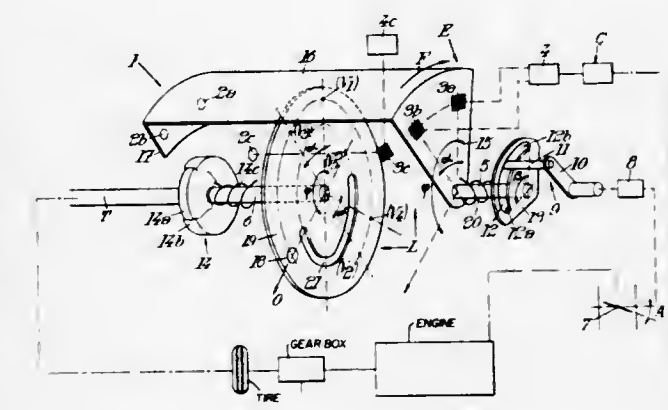
Filed Mar. 27, 1972, Ser. No. 238,109

Claims priority, application France, Apr. 5, 1971, 71.11921

Int. Cl. B60k 19/00; G01d 5/34

U.S. Cl. 74-866

10 Claims



A device comprising means capable of emitting an electrical signal and means responsive to said signal and adapted to command a change of gear. The means capable of emitting the signal include a light source which can be caused to communicate with a receiver element capable of triggering the electrical signal, and two rotatable shafts, the angular amplitudes of whose rotations depend respectively on engine operating parameters. The two shafts cooperate with means for causing the light emitter and receiver to communicate. Application to the control of an automobile gearbox.



3,824,879

**ACTUATOR FOR MULTIPLE ACTION REMOTE CONTROL OF A SHIPS DRIVE SYSTEM**

Klaus Hansgen; Gerhard Ridder, both of Witten, and Bernd Schuhmann, Dortmund, all of Germany, assignors to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

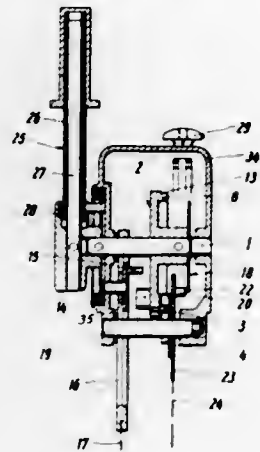
Filed Apr. 16, 1973, Ser. No. 351,643

Claims priority, application Germany, Apr. 18, 1972, 2219486

Int. Cl. B60k 23/00

U.S. Cl. 74—878

5 Claims



An actuator for speed and directional control of a ship's drive and gearing system wherein a single handle-lever turns a control shaft with a control disk coupled to a follower disk and when in one axial position only, for the directional control of the gear, while in either axial position the control disk is coupled to the speed control but only after a limited turning range has been traversed by the handle, which turning range is the one within which the direction control is carried out. The control disk and the follower control disk are coupled for limited range engagement by a single cam pin on the control disk means and a pair of teeth engaging that pin until rotation causes the latter to escape.

3,824,880

**DEVICE FOR LIMITING A FORCE TO BE CONVEYED BY A LEVER EFFECT**

Hermann Jochen Zerver, Reinsbager Str. 2, 5630 Remscheid, Germany

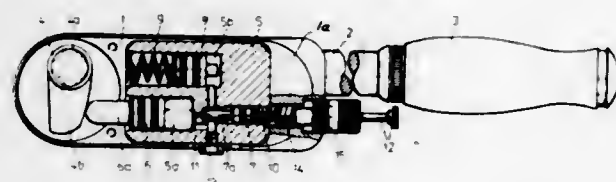
Filed July 3, 1973, Ser. No. 376,129

Claims priority, application Germany, July 5, 1972, 2232872

Int. Cl. B25b

U.S. Cl. 81—52.4 R

10 Claims



A device for limiting a force to be conveyed by a lever effect, especially torque wrench, with a handle having one end thereof provided with a support for the tool to be actuated, which support is rotatably or pivotally mounted, while a coupling connects the tool support to the handle until an adjustable force has been realized, whereupon after the set force has been exceeded a turning or pivoting of the tool support will occur. The coupling includes a hydraulic piston arrangement which comprises a main piston operable by the tool support or tool carrier, a control piston which against the thrust of

a variable control spring is operable by pressure fluid displaced by the main piston, and a compensating piston which after a control bore is freed is displaced by the main piston against the thrust of a return spring.

3,824,881

**INSULATED SOCKET TOOL HANDLE ASSEMBLY WITH REVERSIBLE RATCHET**

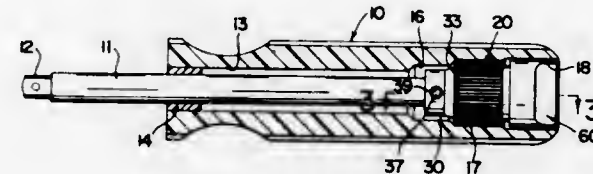
Richard B. Wright, Akron, Ohio, assignor to Wright Tool and Forge Company, Barberton, Ohio

Filed Sept. 19, 1973, Ser. No. 398,653

Int. Cl. B25b 13/46

U.S. Cl. 81—63

1 Claim



An electrically insulated spin-drive handle assembly with a reversing ratchet drive, adapted for use with various socket heads. Within the handle are internal ratchet teeth engagable by a double pawl element carried by a rotatably mounted pawl carrier. A socket stem is connected by a transverse pin to the pawl carrier and extended through and beyond the handle to receive various socket heads. The double pawl element is selectively urged to either forward-drive or reverse-drive engagement with the ratchet teeth using a selector cap recessed in the rearward end of the handle. The selector cap is formed of dielectric material so that a forward or reverse selection can be made for the ratchet mechanism manually without danger of electrical shock.

3,824,882

**ADJUSTABLE SCREW-LOCK PLIERS**

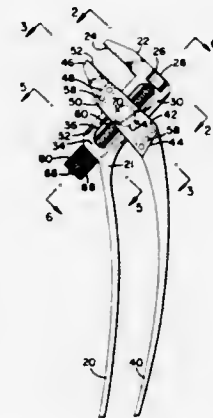
Charles J. Burhardt, 1800 Elizabeth Ave., Metairie, La. 70003

Filed May 4, 1972, Ser. No. 250,091

Int. Cl. B25b 7/10

U.S. Cl. 81—401

1 Claim



A relatively stationary handle having a jaw structure normal to a longitudinally slotted structure that fits between the sides of a second slotted structure in a relatively movable handle having a second jaw structure parallel to said first jaw structure, said respective slots being adapted to normal intersection when said jaw structures are parallel. A cylindrical pivot block, diametrically tapped and passing transversely through the respective slotted structures, pivots the handles together and engages in said tap a threaded screw structure journaled in said first slotted structure of the relatively stationary handle, said screw structure extending through the handle end of said slot to engage a knurled thumb nut, the turning of which

3,824,883

**CUTTING HEAD ASSEMBLY**

Joseph T. Wloszek, Seven Hills, Ohio, assignor to Custom Machines, Inc., Cleveland, Ohio

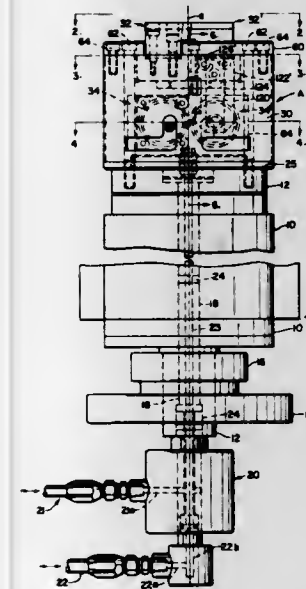
Continuation of Ser. No. 102,360, Dec. 29, 1970, abandoned.

This application Feb. 8, 1973, Ser. No. 330,487

Int. Cl. B23b 3/26

U.S. Cl. 82—1.2

9 Claims



A cutting head assembly especially suited for use on lathes or boring mills for performing facing operations. The cutting head assembly includes a tool carrier in the form of a generally cylindrical body adapted to be mounted on the end face of a conventional spindle with its axis aligned with the axis of rotation of the spindle. A pair of cutters are mounted on slide members carried in a slideway formed transversely in the outer end face of the body. The slides are arranged for movement along parallel chordal lines equally spaced from the axis of the body and are interconnected through rack gears and a pinion gear so that they move simultaneously an equal amount in opposite directions. Hydraulic piston units are carried in the body and are connected with the slides to drive them transversely of the body to move the cutters across the outer end face to perform the required cutting during rotation of the body about its axis.

3,824,884

**MECHANISM FOR POSITIONING A ROTATABLE SPINDLE AT A PREDETERMINED ANGULAR SETTING**

Harold James Gilbert, and Malcolm Robert Holt, both of Coventry, England, assignors to Hickman Machine Tool Sales Limited, Coventry, England

Filed Mar. 22, 1973, Ser. No. 343,676

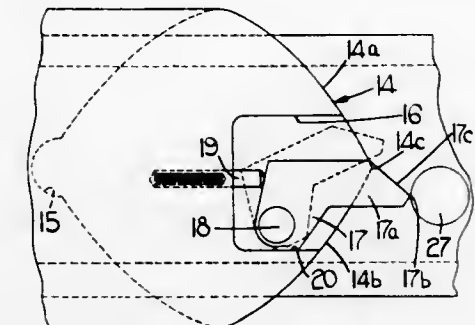
Int. Cl. B23b 19/02

U.S. Cl. 82—30

1 Claim

Mechanism for positioning a spindle such for example as the work spindle of a lathe at a predetermined angular setting. The mechanism is of the kind comprising an annular cam on the spindle having two helically extending surfaces meeting in the high and low points of the cam, and a cam actuator movable longitudinally relative to the spindle onto one or other of the surfaces. Thereafter continued movement of the actuator is adapted to move the cam and spindle angularly until the actuator engages a recess in the cam at its lowest point to locate the spindle against further angular movement. The mechanism is characterized by a lever pivotally mounted within a recess in

the cam and urged angularly by resilient means into contact with a stop. The lever has a nose extending from the cam and terminating in a tip which is offset with respect to both the high point of the cam and the pivot axis of the lever. The arrangement is such that should the actuator first contact one side of the lever the lever will act as an extension of the cam to



enable the actuator to move down this side of the lever whilst moving the cam angularly until the actuator reaches one of the aforesaid surfaces of the cam. However, in the event of the actuator first contacting the tip or other side of the lever the lever will move angularly against the resilient means to enable the actuator to contact the other surface of the cam.

3,824,885

**METHOD AND APPARATUS FOR PRODUCING WEIGHT CONTROLLED GROUPS OF SLICED FOOD PRODUCT**

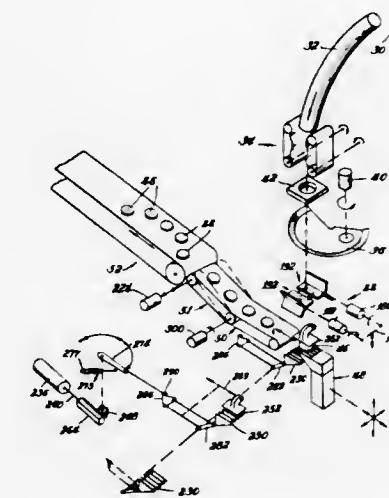
Robert Howard Marshall, Hinsdale, and Gary Leonard Wallace, Oak Lawn, both of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Filed Sept. 28, 1972, Ser. No. 293,045

Int. Cl. B26d 7/08, 4/22

U.S. Cl. 83—19

14 Claims



A method and apparatus for producing weight controlled stacks of counted slices cut from an elongated mass of food product includes means for feeding the mass longitudinally along a downward feed path into a cutting path normal thereto, a rotary knife movable around the cutting path to cut slices from the mass, means below the cutting path for accumulating a selected number of the slices into a group, means positioned below the accumulating means for weighing a group of slices and producing a signal in response to the weight thereof, means for removing the group from the weighing means after the signal is produced, means for varying the rotary speed of the knife around the cutting path according to the weight signal, and means for accepting or rejecting weighed groups in response to the weight signal.



3,824,886

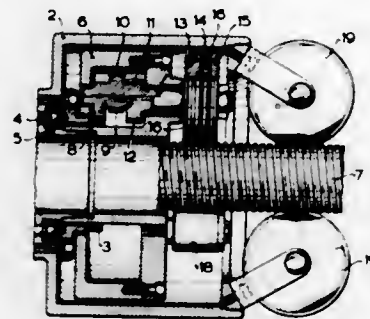
**APPARATUS FOR CUTTING APERTURES IN TUBES**  
 Wilhelm Hegler, Goethestr. 2, 873 Bad Kissingen, Germany  
 Filed Nov. 3, 1972, Ser. No. 303,449

Claims priority, application Germany, June 23, 1972, 2230767

Int. Cl. B26d 5/08

U.S. Cl. 83—329

11 Claims



An improved pipe having an incised aperture wherein the length and/or width of the aperture increases from the interior surface of the pipe to the exterior thereof; a process and apparatus for cutting an aperture in the surface of a pipe in which means for revolving a cutter about the pipe to be cut are provided and means for moving the cutting surface in an epitrochoid path as it passes through the exterior surface of said pipe.

3,824,887

**STAMPING KNIFE**

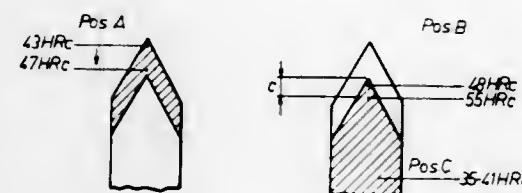
Gustav Marchard, Waldhofen/Ybbs, Austria, assignor to Gebr. Boehler Co. AG, Kapfenberg, Austria  
 Filed Sept. 15, 1972, Ser. No. 289,752

Claims priority, application Austria, Nov. 26, 1971, 10187/71; Germany, Oct. 22, 1971, 2152622

Int. Cl. B26f 1/44

U.S. Cl. 83—679

4 Claims



A cutting edge is carried by a knife body and formed with a series of teeth, each of which has a root merging into said knife body and a tip spaced from said knife body. Adjacent ones of said tips are spaced 0.5-5 millimeters apart. Each of said teeth has a depth of up to 5 millimeters, measured from its tip to its root. Each of said teeth increases in hardness from its tip to its root. Each of said teeth has at its root at least the same hardness as the adjacent portion of said tooth body.

3,824,888

**SELF-TAPPING REPLACEMENT STUD WITH CHIP COLLECTION AND STORAGE CHAMBER**

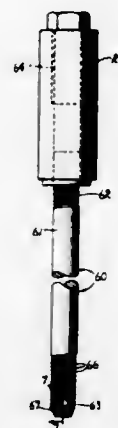
Daryl G. Brooks, 5240 N. Van Ness, Fresno, Calif. 93705  
 Continuation-in-part of Ser. No. 156,319, June 24, 1971, abandoned. This application July 17, 1972, Ser. No. 272,376  
 Int. Cl. F16b 25/00

U.S. Cl. 85—47

6 Claims

A self-tapping replacement stud, for use in assembled engine blocks and similar workpieces in which the original threads of a stud bore have been inadvertently stripped, including an elongated shank having opposite ends and providing screw threads circumscribing one end, a collecting bore

extended through the threads transversely of the shank bounded by a cutting edge adapted to form female threads in the stud bore when rotated therein, a stud driver adapted to be releasably attached to the end of the shank opposite to the threaded end engageable with the workpiece for controlling



the depth of penetration of the threaded end into the stud bore, the collecting bore constituting a chamber for receiving and retaining the cuttings from the forming of new threads within the stud bore to avoid their being dropped into the workpiece, such as the crankcase of an engine.

3,824,889

**TIME FUZE ADJUSTMENT**

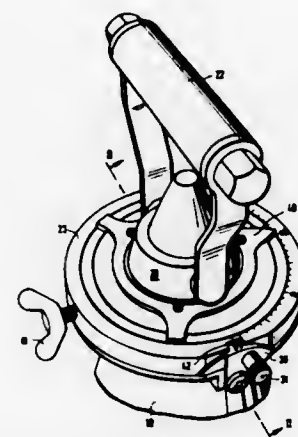
Paul Kaiser, Schramberg; Hans Kaiser, Konigsfeld, and Josef Muller, Schramberg-Sulgen, all of Germany, assignors to Firma Junghans G.m.b.H., Schramberg, Germany  
 Filed Jan. 2, 1973, Ser. No. 320,174

Claims priority, application Germany, Jan. 7, 1972, 2200540

Int. Cl. F42c 17/00

U.S. Cl. 89—6

8 Claims



A time fuze is provided with adjustable means for setting the time delay and time range thereof. These adjustments may be made by an adjusting device in a single operation wherein the time delay is set in response to rotation of the adjusting device on the fuze, and the time range is set in response to axial movement of the adjusting device on the fuze.

3,824,890

**CHIP GUARD FOR MACHINE TOOLS**

William D. Zettler, and Earl E. Johnson, both of c/o Giddings & Lewis, Inc., Fond Du Lac, Wis. 54935

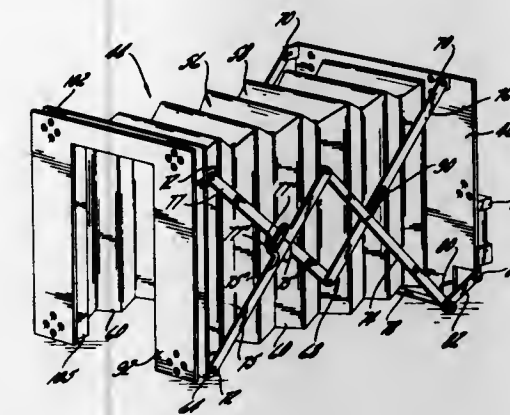
Continuation-in-part of Ser. No. 108,917, Jan. 22, 1971, abandoned. This application June 15, 1972, Ser. No. 263,322  
 Int. Cl. B23b 47/00; B23c 9/00; B23q 11/08

U.S. Cl. 90—11 R

15 Claims

An automatically operated chip guard arrangement is disclosed in the environment of a multi-purpose horizontal spin-

dle machine tool and is adapted to be mounted on the headstock surrounding the top and sides of the tool operator. The



chip guard automatically extends into contact with a workpiece at the operating station and readjusts itself to changes in relative distance between the workpiece and the headstock.

3,824,891

**MACHINE TOOL**

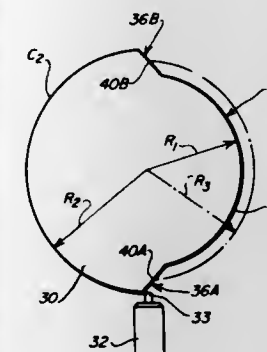
Richard R. Carroll, Chagrin Falls, Ohio, assignor to Litton Industrial Products, Inc., Cleveland, Ohio

Filed May 11, 1973, Ser. No. 359,527

Int. Cl. B23b 47/06

U.S. Cl. 90—11 A

8 Claims



A machine tool comprising a rotatable spindle including first and second continuous track surfaces, means for reducing the speed of rotation of the spindle to at least a predetermined maximum speed, a linear variable differential transformer including, probe means advanceable from a retracted position to an advanced position where the probe means selectively engages the first and second track surfaces, means for biasing the probe means against the first and second track surfaces when the probe means is at the advanced position, and means for generating an output signal having one phase when the probe means engages one of the track surfaces and having a second phase when the probe means engages the other one of the track surfaces, reversible motor means for driving the spindle, signal conditioner means for receiving the output signal from the linear variable differential transformer and for directing a signal to the reversible motor to drive the reversible motor in a first direction when the output signal from the linear variable differential transformer has one phase and for directing a signal to the reversible motor to drive the reversible motor in a second direction when the output signal from the linear variable differential transformer has the second phase.

3,824,892

**MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MEANS**

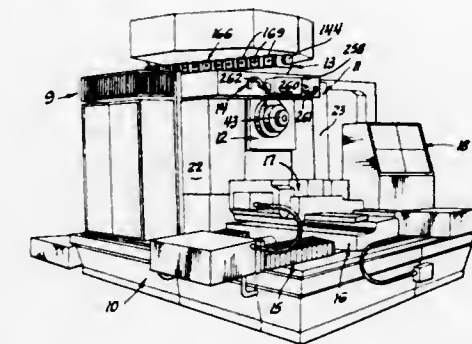
Dale J. Bondle, Fowlerville; Robert S. Sutton, Franklin, and James D. Lewelling, Birmingham, all of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.

Division of Ser. No. 166,886, July 28, 1971. This application Apr. 11, 1973, Ser. No. 350,292

Int. Cl. B23q 1/16

U.S. Cl. 90—58 B

3 Claims



A machine tool having an automatic tool changing means and which is constructed and arranged to carry out a variety of machining operations, such as milling, drilling, boring, tapping and the like. The machine includes a rotary, four-position index work table which is carried on two movable, perpendicularly disposed slide members to provide movement of the work table along X and Z axes. A tool spindle assembly is slidably mounted on a Y axis between two column members with a tool spindle, spindle drive motor, gear box, tachometer and resolver mounted in axial alignment with each other for movement as a unit along said Y axis. A tool storage conveyor is disposed horizontally on said column members above the tool spindle assembly and for moving tools into a tool changing position above the tool spindle. A tool changer means is mounted between the column members and between the tool spindle assembly and the tool storage conveyor for automatically transferring tools directly between the tool storage conveyor and the tool spindle.

3,824,893

**TRIDIMENSIONAL UNIVERSAL TRACER, SLIDABLE ON AIR BEARINGS, FOR CONTINUOUS, HIGH-SPEED COPYING OF PROFILES OF MODELS**

Franco Sartorio, Moncalieri, Italy, assignor to D.E.A. Digital Electronic Automation S.p.A., Moncalieri (Turin), Italy

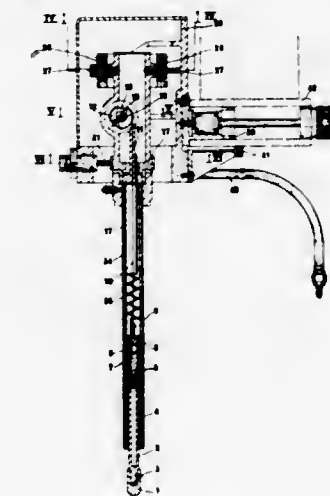
Filed July 6, 1972, Ser. No. 269,353

Claims priority, application Italy, July 7, 1971, 69284/71

Int. Cl. B23q 35/34

U.S. Cl. 90—62 A

8 Claims



A universal tridimensional tracer adapted to be connected with a measuring head of a measuring machine or a machine



tool is described. The main feature of the point of this tracer is that of having rather wide excursions which are added to the movements along the three axes *x*, *y* and *z* of the machine on which said tracer point is installed. Owing to the negligible inertia of this tracer point, its movement can take place at high speed, allowing drastic reduction of the copying time of the model. The axial and transverse displacements of the rod to which the tracer point is secured are independent of one another, said displacements being measured by different transducers.

3,824,894

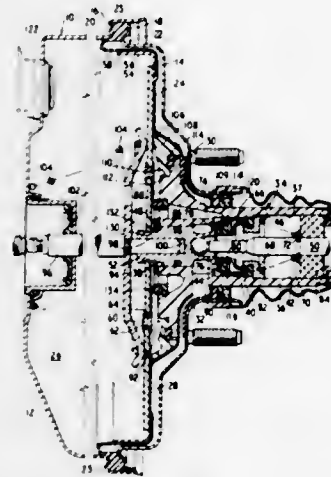
**SERVO-BOOSTERS FOR VEHICLE BRAKE SYSTEMS**  
Stephen John Nicholas, Minster Close, Warwick, England  
Filed Jan. 3, 1973, Ser. No. 320,759

Claims priority, application Great Britain, Jan. 7, 1972, 733/72

Int. Cl. F15b 9/10

U.S. Cl. 91—369 B

13 Claims



The invention concerns differential pressure operated servo boosters of the type utilizing a deflecting plate adapted to conically distort for transmitting a reaction force to the booster operator, wherein a resilient means is arranged between the deflecting plate and the booster valve to initially transfer the reaction force to the valve body rather than to the valve actuating member to increase initially the degree of opening of the valve and hence to bring about a sharp initial rise in the output characteristic of the booster.

3,824,895

**FLUID RAM PROVIDED WITH MEANS FOR BRAKING THE RAM PISTON AT THE END OF ITS STROKE**

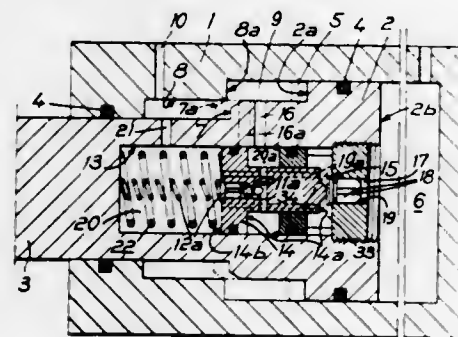
Louis Martin, Senlis, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville (Oise), France  
Filed Apr. 23, 1973, Ser. No. 353,676

Claims priority, application France, May 3, 1972, 72.15721

Int. Cl. F15b 15/22

U.S. Cl. 91—401

5 Claims



A fluid ram, for example a hydraulic ram, is provided with means for braking the ram piston at the end of its stroke. Ac-

cording to the invention the piston is braked by the action of the ram working fluid, and means are provided for preventing the pressure of the working fluid becoming excessively high. In one embodiment the entire braking means is located inside the ram in order to simplify connection to the working fluid supply circuit. The invention is applicable to both single and double action rams.

3,824,896

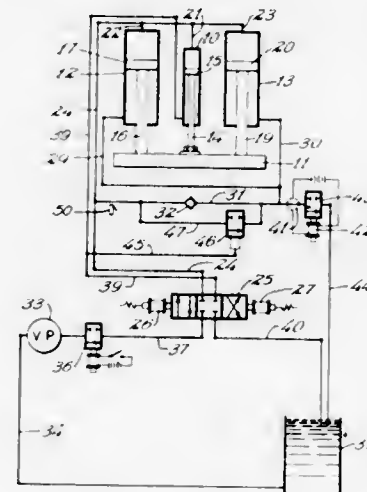
**HYDRAULIC COMPRESSION CIRCUITS**  
Herbert G. Tull, III, Charlottesville, Va., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Nov. 24, 1971, Ser. No. 201,915

Int. Cl. F15b 11/16, 13/06

U.S. Cl. 91—404

1 Claim



The cycle of operation of a compression platen or the like reciprocated by a main cylinder by adding one or more additional cylinders having piston rods engaging the platen. Fluid pressure is directed against the pistons in the main cylinder and additional cylinders in a direction to move the platen in a compression direction. The other ends of the additional cylinders are connected to the fluid pressure supply line through a check valve to circulate the fluid being forced from the additional cylinders back to the cylinders without flowing through the reservoir pump, moving the platen at relatively high speed and relatively low force. When resistance to movement of the platen exceeds a predetermined amount, the circulating line is closed and fluid from the additional cylinders is bypassed to the reservoir.

3,824,897

**MULTISPEED HYDRAULIC OR PNEUMATIC DEVICE**

Anders Ivar Bryntse, Mjölby, and Karl Erik Berkestad, Linköping, both of Sweden, assignors to AB Bygg-och Transportekonomi (BI), Mjölby, Sweden

Filed Mar. 16, 1973, Ser. No. 342,217

Claims priority, application Sweden, Mar. 24, 1972, 3859/72

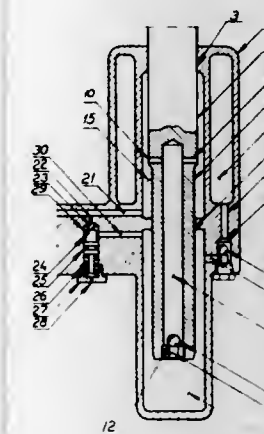
Int. Cl. F15b 11/16

U.S. Cl. 91—411 A

7 Claims

A hydraulic or pneumatic device with a cylinder and piston system provides a rapid stroke and a power stroke. The piston part of the system consists of two lengthwise integrally con-

ected piston-rod like plunger pistons, with different diameters. The cylinder is also provided with two working chambers,



one for each piston, each working chamber at least partly surrounding its own piston. In each of the pistons there is a passage connecting the two working chambers.

3,824,898

**ENERGY CONSERVING DIRECTIONAL VALVE-CYLINDER COMBINATION**

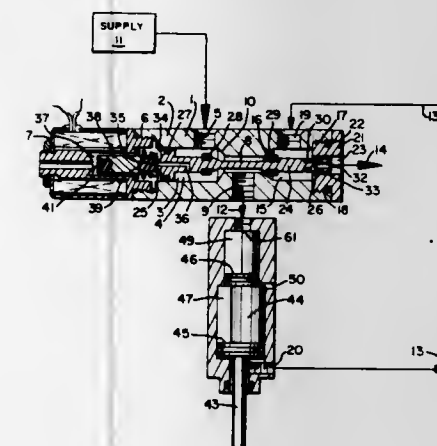
Richard S. Paullukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Apr. 12, 1972, Ser. No. 243,171

Int. Cl. F15b 15/17, 13/044

U.S. Cl. 91—416

6 Claims



This invention relates to directional control valves designed to conserve fluid energy when serving power cylinders, and more particularly to an energy conserving TANDEM DIRECTIONAL VALVE-CYLINDER COMBINATION utilizing a solenoid valve of simple SPRINGLESS three component design to operate a specially designed power cylinder of differential diameter piston allowing the pressurized fluid to energize the piston of smaller area to do work and to return this piston to the original position by the exhaust of the same working fluid when work is completed, acting over the larger piston area in tandem action with pressurized working fluid passing through the passages of the directional control valve allowing for energy conservation with resultant savings to the user of such unit in automation, instrumentation and miniaturization fields.

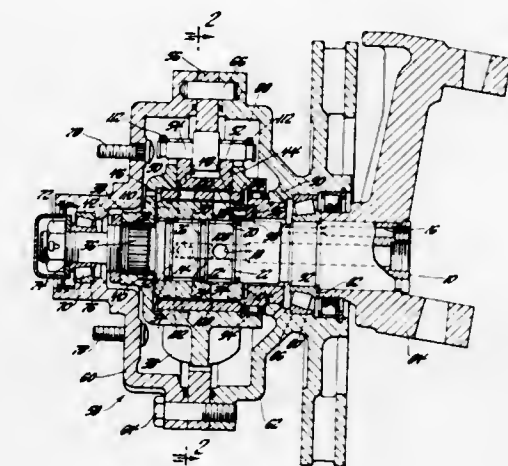
3,824,899  
**HYDRAULIC MOTOR HAVING A HYDRAULIC LOCK CONTROL DRIVE PIN**  
Donald L. Dzioba, Bridgeport, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1973, Ser. No. 390,386

Int. Cl. F01b 13/06

U.S. Cl. 91—491

2 Claims



A radial piston hydraulic motor in which a valve, rotatably driven by the motor output, through a drive pin, provides timed fluid flow to and from the motor cylinders relative to rotation of the motor output. If the valve should seize in the cylinder housing, the pin will shear, opening a passage therein, to provide a fluid flow connection between the high pressure side of the motor and the motor case to prevent a hydraulic lock from forming in the cylinders.

3,824,900

**MOVEMENT CONTROL APPARATUS**

John Douglas McLelland, 36 St. George Rd., Swanley, England

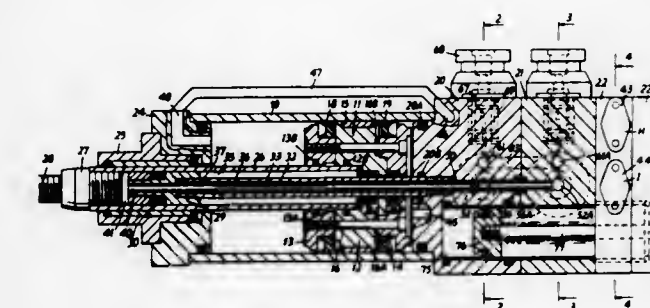
Filed Nov. 3, 1972, Ser. No. 303,367

Claims priority, application Great Britain, Nov. 11, 1971, 52514/71

Int. Cl. F15b 15/22

U.S. Cl. 92—8

7 Claims



The invention provides an apparatus for a tool slide at controlled speeds comprising a double-acting fluid operated piston and cylinder for advance and return, and fluid control means for controlling the speed of advance and return, said means including concentric tubes within the cylinder communicating with advance and return control valves located one behind the end of the cylinder remote from the tool slide.



3,824,901

**SPRING RETURN FOR PISTON OPERATOR**

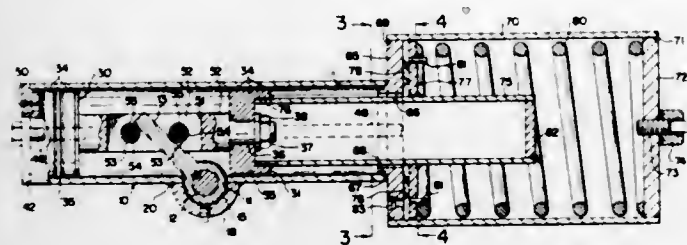
Jon L. Shafer, Mansfield, Ohio, assignor to Shafer Valve Company, Mansfield, Ohio

Filed Jan. 18, 1973, Ser. No. 324,900

Int. Cl. F01b 7/00, 31/00

U.S. Cl. 92—13.6

8 Claims



A spring return unit for actuating in one direction a linear piston operator which is actuated in the opposite direction by fluid pressure, said spring return being removably attachable to one end of the operator and comprising a fully enclosed pre-loaded compression spring compressible by an extension element on the end of the operator.

3,824,902

**DEVICE FOR PRODUCING GAS FLOWS**

Sven-Gunnar Sigvard Olsson, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

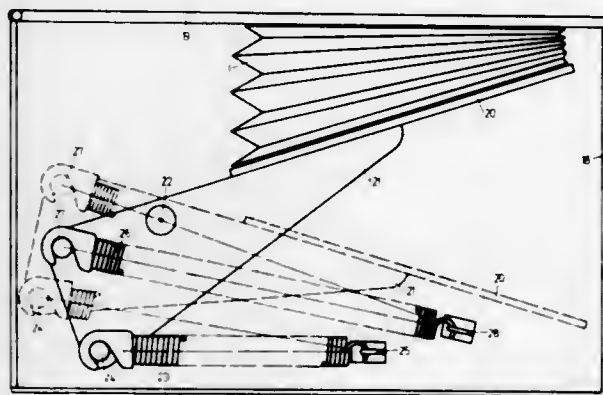
Filed Apr. 12, 1971, Ser. No. 132,996

Claims priority, application Sweden, Apr. 13, 1970, 5025/70

Int. Cl. F16j 3/00

U.S. Cl. 92—40

1 Claim



A device for producing gas flows, particularly for the operation of a respirator, is characterized by a container for the gas the volume of which is variable within predetermined limits and which is connected with an inflow line and an outflow line. The device includes means producing a constant gas pressure in the container which is independent from its volume.

3,824,903

**VACUUM CONTROL DRIVE**

Johann Hahn, Stuttgart, Germany, assignor to Suddeutsche Kuhlmaschinenfabrik Julius Fr. Behr, Stuttgart, Germany

Filed Nov. 21, 1972, Ser. No. 308,462

Claims priority, application Germany, Nov. 26, 1971, 2158786

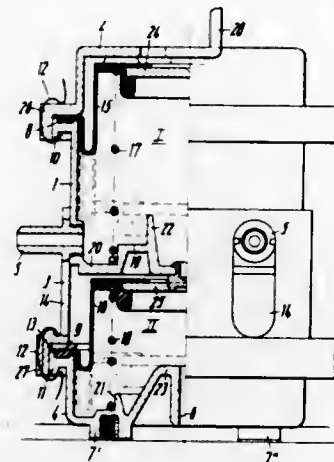
Int. Cl. F01b 19/00

U.S. Cl. 92—48

14 Claims

A two-stage vacuum control drive is disclosed in which a vacuum control drive, consisting of a roll membrane movably

mounted to counteract the action of a spring under the influence of a vacuum, is mounted displaceably in the housing of



a second similar vacuum control drive. The two drives are controlled independently and have a cumulative effect on the total travel of the device.

3,824,904

**LINEAR ACTUATOR**

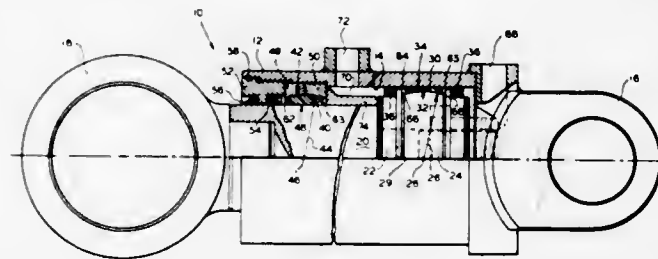
Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 23, 1971, Ser. No. 211,523

Int. Cl. F16j 15/18, 9/00

U.S. Cl. 92—128

6 Claims



A linear actuator of the piston and cylinder type having sleeves with spherical surfaces for the piston and the rod on which the piston is mounted for providing improved resistance to lateral forces.

3,824,905

**STEERING MECHANISM**

Erich Jablonsky, Schwabach Gmund, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Apr. 11, 1972, Ser. No. 242,920

Claims priority, application Germany, Apr. 19, 1971, 2118813

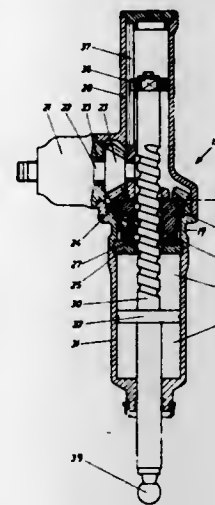
Int. Cl. F01b 9/00; F16h 29/02, 29/20

U.S. Cl. 92—136

5 Claims

A mechanism for actuating vehicle steering rods is provided having gearing intermediate the steering spindle and a nut operated rod actuator in order to increase mechanical advantage, particularly for heavy vehicles. Thus, in the event of pressure power failure used in booster steering, manual operation is readily usable without the usual extremely heavy physical force necessary with conventional mechanisms. Further, the invention used with or without power steering overcomes a drawback of prior art so-called rack steering arrangements. Thus, the gearing required for actuating steering rod mechanisms becomes increasingly larger where used for larger

vehicles due to the increased steering forces required. This results in a loss of mechanical advantage at the steering wheel



with conventional mechanisms, a condition precluded by the present invention which substitutes a rod actuator driven via bevel gears having a ratio affording a mechanical advantage.

3,824,906

**HEAT SEALING APPARATUS FOR FILTER RODS**

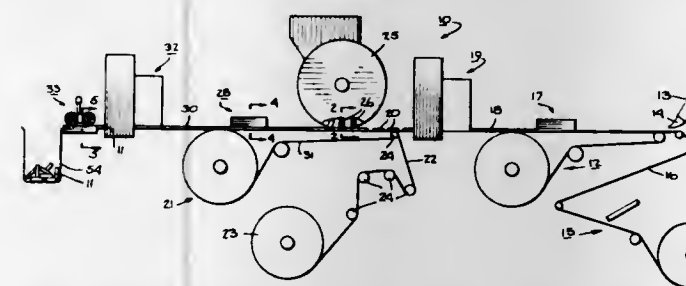
Floyd Vanhall, Durham, N.C., assignor to Liggett &amp; Myers Incorporated, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,816

Int. Cl. A24c 5/50

U.S. Cl. 93—1 C

18 Claims



The travelling filter plug rod is wrapped with a heat seal paper and a seam sealer secures the overlapping edges of the heat seal paper to itself to effect a seam seal. Thereafter, the wrapped filter plug rod is severed into individual filter assemblies and each filter assembly is pushed through a heat chamber which effects a heat sealing of the paper to the remaining periphery of the filter plug. The heat chamber cooperates with a pair of hold down wheels or spring biased plates which maintain the travelling filter rod within the passageway of the heat chamber. The plates also serve to control the ejection speed of the filter assemblies.

3,824,907

**SYNCHRONIZED PAPER WEB TRANSPORT AND CONNECTING STRAP CUTTING AND POSITIONING APPARATUS**

Karlheinz Gartner, Morsch, Germany, assignor to Automation für grafische Technik GmbH, Düsseldorf, Germany

Filed Feb. 6, 1973, Ser. No. 330,132

Claims priority, application Germany, Feb. 8, 1972, 2205714

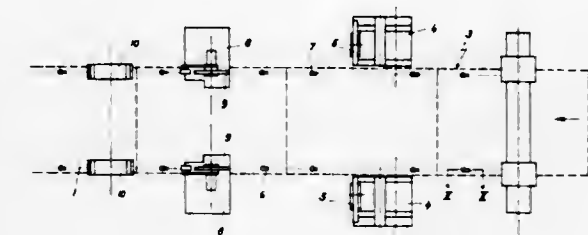
Int. Cl. B31b 1/10, 1/90

U.S. Cl. 93—1 R

12 Claims

Connecting straps or clips, cut from a ribbon of connecting material are positioned at the edge of perforated paper webs, through the perforations, to retain superimposed webs in aligned position, so that the webs, when passed through a fold-

ing machine, will retain their respective alignment. To provide for accurate simultaneous cutting of the clips from the ribbon, during transport of the web, a continuously driven feed roller transports the ribbon to a gap between opened upper and lower knives which, when the clip is to be cut, move towards each other. The knives themselves are retained in a frame which is movable in the direction of the path of the transport of the web, and reciprocates in synchronism with the cutting



operation and speed of the transport of the web, movement being counter the direction of feed of the ribbon after the cutting operation has severed a connecting clip from the ribbon to permit continuous feed of the ribbon through the then opening gap between the knives and projection of the ribbon through the gap between the knives to form the next succeeding connecting clip. The mechanism is cam-controlled with a single cam controlling both reciprocating and cutting operation to maintain accurate synchronism.

3,824,908

**APPARATUS FOR PRODUCING PACKAGING ARTICLES**

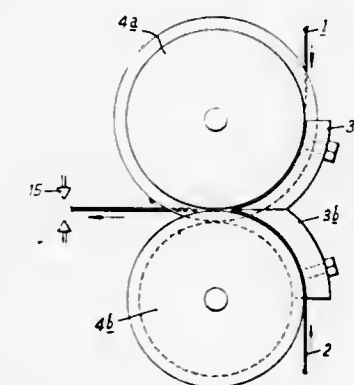
Frank John Rowell, 7 Manwood Ave., Canterbury, England

Filed Nov. 1, 1972, Ser. No. 302,856

Int. Cl. B31b 19/60, 1/64

U.S. Cl. 93—8 VB

1 Claim



The invention provides a method of producing material for use in packaging, and apparatus for carrying out that method, which includes the steps of providing first and second continuous webs of sheet material each having longitudinally on a face thereof a respective one of a pair of elongated male and female closure formations, moving said first and second webs along closing paths with the respective formations presented towards each other, applying pressure to the male and female formations across the plane of separation of the webs so as to cause them to become interengaged and thereby define one of a first pair of opposed boundaries of the receptacle, said webs being initially, simultaneously, or subsequently joined longitudinally at a position spaced from said formations so as to define the other of said first pair of opposed boundaries.



3,824,909

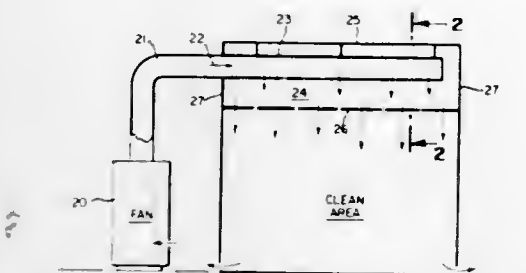
## DISTRIBUTION SYSTEM FOR CLEAN ROOMS

James P. Horneff, Cherry Hill, N.J., and Michael H. Pelosi, Jr., Broomall, Pa., assignors to CGT Corp., West Conshohocken, Pa.

Continuation-in-part of Ser. No. 26,584, April 8, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,267  
Int. Cl. F24f 13/08

U.S. Cl. 98—40 C

14 Claims



A system for providing a uniform mass air displacement, commonly called laminar flow, at high flow rates to occupied rooms is disclosed comprising a rigid plenum chamber located at the top of a room, having a rigid perforated bottom enclosing side of the plenum forming the ceiling of the rooms, and a plurality of distribution ducts into which air is introduced from an external fan and which provide a first stage of conversion from velocity pressure to static pressure. The distribution ducts may be singular ducts or a combination of one duct within another, the ducts being perforated in varying degrees.

3,824,910

## AIR FLOW CONTROLLING DEVICE FOR MOTOR VEHICLES

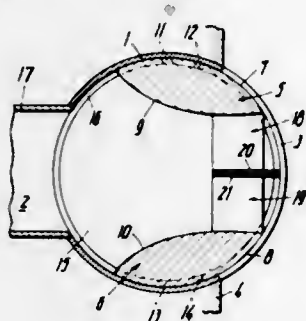
Josef Temming, Amselweg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany  
Filed May 22, 1973, Ser. No. 362,652

Claims priority, application Germany, June 21, 1972, 2230239

Int. Cl. F24f 13/06

U.S. Cl. 98—40 A

13 Claims



An air flow controlling nozzle having a cylindrical housing with an air input and an air output opening lying substantially diametrically opposite to each other, a pair of flow guides arranged in the housing slideably over an inner surface of the housing, each of the guides has an inner surface on a side thereof facing the inner space of the housing and an outer surface having a curvature corresponding to a curvature of the housing thereby to facilitate sliding of the guide over the inner wall of the housing, the flow guides are arranged with respect to each other and their inner surface is shaped so that the smallest distance between their inner surface remains constant at any position of the guides relative to each other, whereby the air flow through the nozzle apparatus remains constant at any relative position of the guides but the exit speed of the air can be varied by the relative positioning of the guides with respect to each other and the direction of the air flow can be also varied by the adjacent positioning of the guides at various angular positions in the housing.

3,824,911

## VENTILATION OF A TUNNEL, MINE ADIT OR THE LIKE

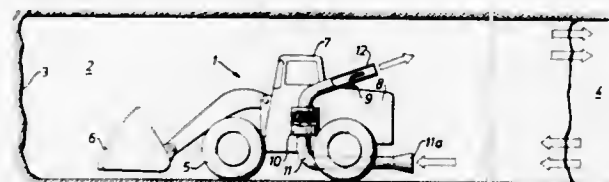
Ingvar Janelid, Forsetevagen 18, Djursholm, and Sven Gunnar Bergdahl, Jakobsberg, both of Sweden, assignors to Sald Janelid, by said Bergdahl

Filed Dec. 8, 1972, Ser. No. 313,520  
Claims priority, application Sweden, Dec. 16, 1971, 16176/71

U.S. Cl. 98—50

Int. Cl. E21f 1/00

17 Claims



The supply of fresh ventilation air to a tunnel is improved by blowing, by means of a fan or air mover, air along one wall of the tunnel, or along the ceiling of the tunnel, and by moving said fan or air mover forward and backward in the tunnel. The air in the tunnel is stratified, and therefore the ventilation is effective also in tunnels of a considerable length.

3,824,912

## POWDER SPRAY BOOTH

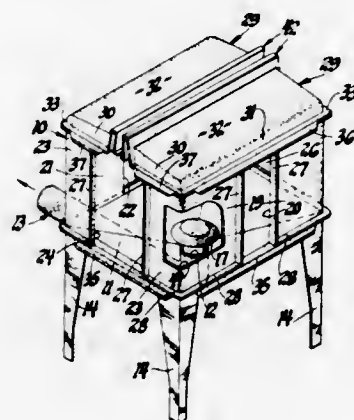
Frederick K. Jensen, Farmington, and Gordon W. Jewell, Genoa, both of Mich., assignors to Elektro-Ion, Inc., Farmington, Mich.

Filed Dec. 29, 1972, Ser. No. 319,474

Int. Cl. B05c 11/16, 5/00

U.S. Cl. 98—115 SB

11 Claims



A powder spray booth for use with an electrostatic powder spray gun for coating objects in an electrostatic field as said objects are passed through the booth. The booth includes a bottom panel on which is fixedly mounted a front panel, a rear panel and a pair of side panels. A top panel is operatively mounted on top of the last-named panels. All of the aforementioned panels are made from molded fireproof fiber glass material. Each of the side panels is integrally connected to the adjacent front and rear panels by rounded corner portions. The top and bottom panels are each provided with rounded corners. Each of the side walls is provided with an opening for the passage therethrough of a workpiece to be sprayed with powder. The front panel has an opening for admitting a powder spray gun for spraying the workpiece. At least one powder outlet opening is provided in one of the panels. The top panel has a longitudinal opening for the passage therethrough of a supporting means for the workpiece, and a metallic powder collecting means, at ground electrical potential, is disposed around each side of said longitudinal opening in the top panel.

3,824,913

## APPARATUS FOR CLEANING BREW HEAD SCREEN

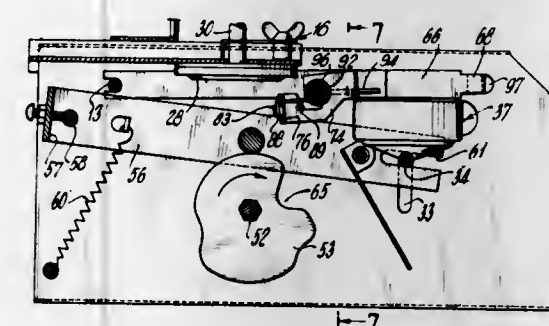
David Herman, Livingston, N.J., and Sidney J. Friedman, New York, N.Y., assignors to Coffee-Mat Corporation, Kenilworth, N.J.

Filed Apr. 16, 1973, Ser. No. 351,238

Int. Cl. A47j 31/00

U.S. Cl. 99—298

13 Claims



A single-cup coffee brewing assembly includes a brew cup which is moved from an inverted depressed position to a raised upright position, and is connected to a metered source of hot water. A cover member advances longitudinally into registry with the brew cup which engages the advanced cover upon the brew cup reaching its raised position. The cover has a bottom metal screen which is cleaned with the cover advancing and retracting movement by passing over a transversely extending helically wound brush. The brush is upwardly spring-biased and is replaceable in a support bracket which is releasably mounted in the assembly frame. The cover has a chamber above the screen which is connected to the brew discharge.

3,824,914

## EXPRESSO COFFEE MACHINE

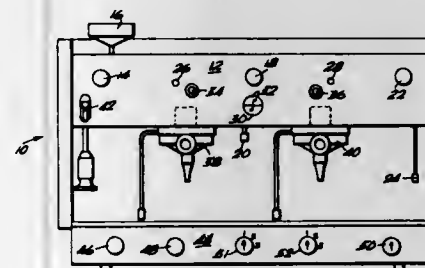
Sergio M. Casiano, 416 S.W. 8th St., Miami, Fla. 33130

Filed May 16, 1973, Ser. No. 360,797

Int. Cl. A47j 31/34

U.S. Cl. 99—302 R

7 Claims



An espresso coffee machine which utilizes a water proportioning device referred to as a "Doser" which is electrically actuated to consistently, automatically measure the exact amount of water required for each coffee brewing demand. The water doser operates in conjunction with a high pressure water pump for forced percolation. A selector switch is provided on the front of the coffee maker which enables the operator to select the exact desired volume of water.

3,824,915

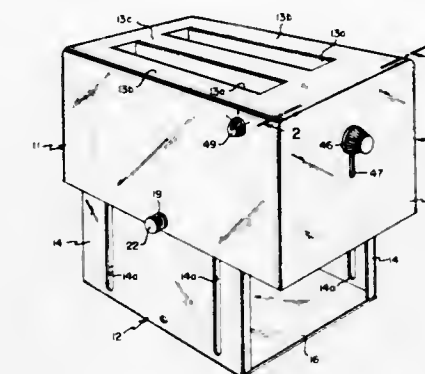
## DROP-OUT TOASTER

Eugene G. Capucio, P.O. Box 1087, Caracas, Venezuela  
Filed Aug. 18, 1972, Ser. No. 281,924

Int. Cl. A47j 37/08

U.S. Cl. 99—329 RT

3 Claims



There is disclosed a toaster of unique design having an upper toaster section and a lower toast receiving section telescopically receivable within the toaster section, the toaster section having means for retaining toast and for releasing toast to drop out into the toast receiving section.

3,824,916

## BACON COOKER

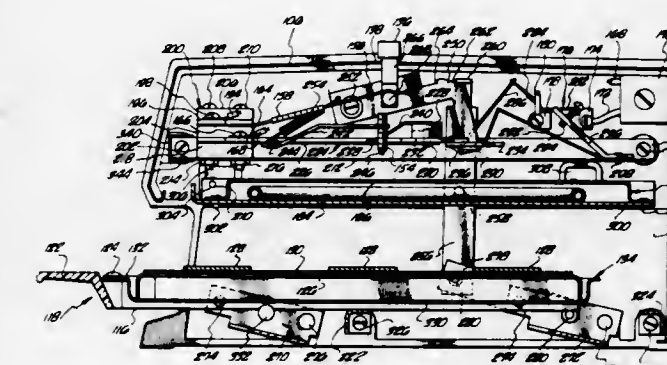
B. Sherman Green, Pacific Palisades; Charles K. Green, Malibu, both of Calif.; Jack L. Glancy; Floyd J. Myrick, both of Jackson, Miss.; Carl William Norlander, Canton, Miss., and Rodney E. Smith, Philadelphia, Miss., assignors to Udico Electric Company, Canton, Miss.

Filed Dec. 30, 1971, Ser. No. 214,046

Int. Cl. A47j 27/62, 37/04

U.S. Cl. 99—334

9 Claims



Cooking apparatus, designed particularly for the cooking of bacon and the like, with an electrical resistance heating element. The electrical resistance heating element and associated cooking surface are contained within the apparatus so as to float vertically, resting upon the material being cooked. A cooking tray, upon which the material to be cooked is placed, and which has surface so as to permit the passage of grease there through, is supported beneath the cooking surface. The period of cooking is controlled automatically as a function of temperature and manually to select degree of doneness. Cooking is initiated and terminated by relative movement between the tray and the cooking surface.



3,824,917

**STERILIZATION AND/OR COOKING APPARATUS**  
Takeji Kawahara, Osaka, and Masahiro Terumoto, Tokyo,  
both of Japan, assignors to Itami Keiran Kako Kabushiki  
Kaisha, Osaka, Japan

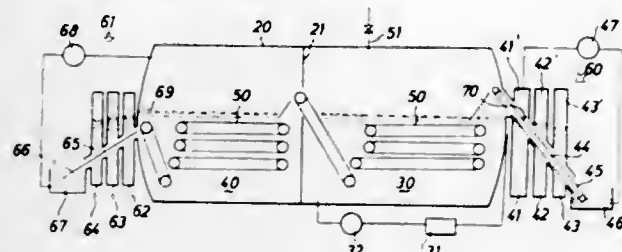
Filed Nov. 7, 1972, Ser. No. 304,310

Claims priority, application Japan, Nov. 26, 1971, 46-  
94464; Jan. 17, 1972, 47-07099

Int. Cl. A23I 3/04

U.S. Cl. 99—404

9 Claims



A sterilization and/or cooking apparatus for the heat treatment of hermetically sealed containers such as cans, bottles, jars and the like, comprising a main chamber containing therein a high-temperature sterilizing and/or cooking medium under high pressure, an intermediate chamber containing therein a sealing liquid and communicated with said main chamber, and at least one auxiliary chamber containing therein a sealing liquid and communicated with the intermediate chamber in series at a level below the level occupied by the liquid in the auxiliary chamber. This chamber system may result in that the hydrostatic pressure applied or loaded on the outermost or final stage auxiliary chamber is reduced remarkably with respect to the pressure in the main chamber so that the leakage liquid from this auxiliary chamber can be suppressed in volume. The containers to be subjected to the heat treatment are introduced into the main chamber and withdrawn therefrom through the auxiliary chambers and intermediate chamber which are communicated in series to the main chamber through said communication system.

3,824,918

**PROCESSING A CURD-WHEY MIXTURE**  
Armand Francois Bronkhorst, Doorn, Netherlands, assignor to  
Holvrieka International B.V., Utrecht, Netherlands

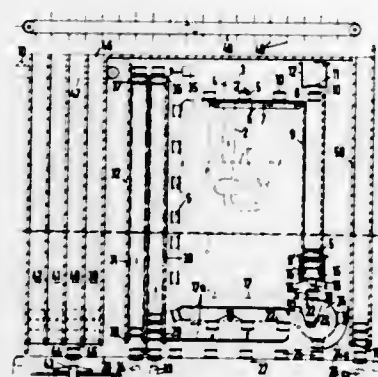
Filed Dec. 20, 1972, Ser. No. 317,089

Claims priority, application Netherlands, Dec. 21, 1971,  
7117579

Int. Cl. A23c 19/02

U.S. Cl. 99—452

7 Claims



A method of processing a curd-whey mixture in a cycle process into cheese, as well as an apparatus for applying this method. In this apparatus single or assemblies of vertical tubes are applied for the different processing phases. In the first tube the curd coming from a prior art apparatus for separating curd mass from whey is lowered in cheese moulds, as a result of which the cheese is pressed by the stacking in the tube. Via a

conveyor with emptying mechanism the cheeses are lowered in containers and the empty moulds are again passed to the whey-curd separator. The containers, having a sieve for discharging excess whey, on which the cheeses come to rest are lifted in a second tube at a speed sufficient to reduce the bacterial activity. Then the cheeses move to a curing and brining section comprising a plurality of vertical tubes in order to be brined. The cheeses remain in said section for so long a time as is necessary for sufficient curing. After removal of the ready cheeses the containers are introduced in another vertical tube functioning as a container storage tube. Containers withdrawn from the lower end come again in the place where the cheeses are lowered from the moulds into the containers.

3,824,919

**METHOD OF AND APPARATUS FOR FABRICATING  
WOOD STRUCTURES**

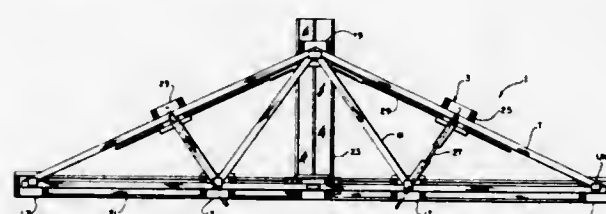
Walter G. Moehlenpach, 9906 Old Watson Rd., Ladue, Mo.  
63124

Filed Nov. 10, 1972, Ser. No. 305,518

Int. Cl. B30b 13/00

U.S. Cl. 100—35

29 Claims



A method and apparatus for fabricating wood structures utilizing a C-shaped press having an upper platen and a lower platen which are relatively movable toward and away from one another for driving nailing plates into two or more wood members from above and below, in which the wood members are held in position for being nailed together on a plurality of stands arranged on lines bounding the structure. Each such stand includes means for supporting the wood members and has a holder plate adapted to hold a nailing plate for being driven upwardly into the wood member from below by the lower platen of the press. The supporting means and the holder plate are so mounted on the stands as to enable lateral entry of the lower platen of the press from either side of the stand to an operating position below the holder plate. The press is mounted for generally lateral movement with respect to the press substantially sideways into and away from an operating position at each such stand. Means are provided for preventing operation of the press unless it is in an operating position at a stand.

3,824,920

**COMPACTOR CABINET SHIELD**

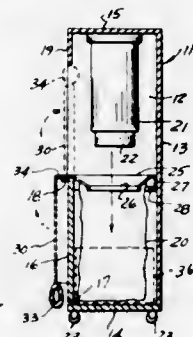
Floyd R. Gladwin, P.O. Box 1113, Southgate, Mich. 48192

Filed Jan. 2, 1973, Ser. No. 320,238

Int. Cl. B30b 15/30

U.S. Cl. 100—53

4 Claims



A box-like trash compactor cabinet for containing a trash bag in its lower portion and a compressor ram in its upper por-

tion for compressing trash in the bag. A door covers the lower half of the front of the cabinet, with the upper half of the front of the cabinet, above the door, being open for receiving trash. A horizontal tray-like hopper is arranged above and opens into the bag and is removably supported between the walls of the cabinet just above the upper edge of said door. A rigid closure plate, overlapping the door, has an upper edge portion hingedly connected to the front edge of the hopper and a lower edge provided with a thick, wide, resilient, edge band, with the plate being swingable upwardly to completely close the opening above the door and frictionally locking in said closed position by the compressive frictional engagement of the band with the cabinet portion defining the upper edge of the opening.

3,824,921

**SERIAL NUMBER EMBOSING APPARATUS**

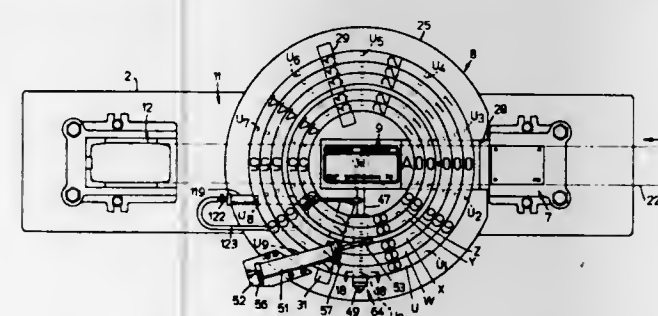
Donald Ray Alexander, Treasure Hills Addition, R.R. 3, Box  
291, Conway, Ark.

Filed Oct. 11, 1972, Ser. No. 296,602

Int. Cl. B44b 5/00; B41I 47/50

U.S. Cl. 101—19

8 Claims



A power press is equipped with a progressive die for continuously working strip stock into perforated plates having embossed inscriptions and serial numbers, such as automobile license plates. The die includes a flat concentric assembly of relatively rotatable rings each of which has a circular series of consecutive digit embossing elements at the obverse side of the assembly. At the converse side of the ring assembly a back and forth swingable indexing arm cooperates with notches in the rings so as to rotate the rings stepwise in predetermined order and present the digit embossing elements thereof in successive serial number configurations.

3,824,922

**VARIABLE INPUT DATA RECORDER**

John J. Van Acker, Chesterland, Ohio, assignor to Addresso-  
graph-Multigraph Corporation, Cleveland, Ohio

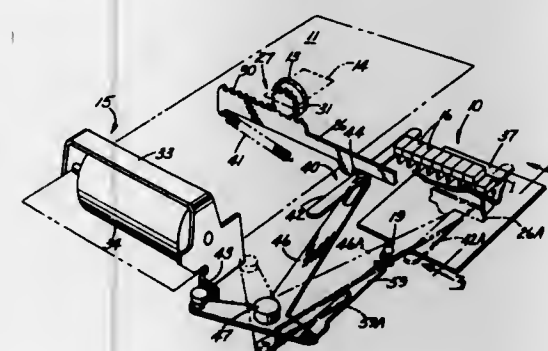
Continuation of Ser. No. 191,674, Oct. 22, 1971, abandoned.

This application July 9, 1973, Ser. No. 377,348

Int. Cl. B41J 7/08

U.S. Cl. 101—45

3 Claims



A variable input data recorder is disclosed comprising a data input means and a data recorder means. The data input

means can be programmed by actuating keys or levers while the data input means is located within or at a remote location from the data recorder means. When the data input means is inserted into the data recorder means, the action of a printing head effects movement of printing characters in accordance with the preactuated keys or levers to transfer the programmed information into the recorder to be recorded on a document. The invention is compatible for use with pushbutton keys or conventional slide levers operating at a local or remote location from the recorder.

3,824,923

**ELECTROSTATIC PRINTING APPARATUS HAVING  
IMPROVED COUNTER-ELECTRODE**

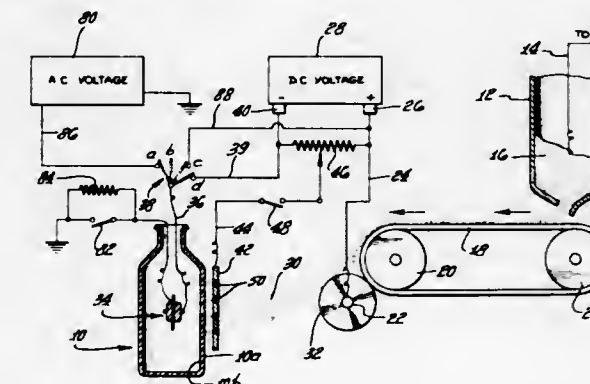
William T. Fisher, Los Alamitos; Charles B. Patterson,  
Lakewood, and Stanley M. Dahl, Whittier, all of Calif., as-  
signors to Purex Corporation, Ltd., Lakewood, Calif.

Filed Aug. 11, 1970, Ser. No. 62,983

Int. Cl. B41I 15/00

U.S. Cl. 101—114

9 Claims



Electrostatic printing apparatus for printing on bottles in which the means forming a counter-electrode within the bottle includes means forming circular upper and lower corona discharge gaps centered on the bottle axis comprising axially spaced electrode terminals and a circular electrode coaxial with the bottle axis and between the terminals.

3,824,924

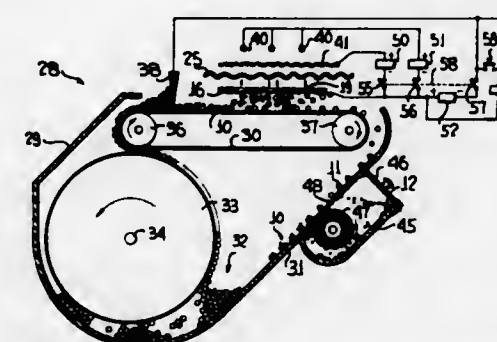
**ELECTROSTATIC SCREEN PRINTING AND CLEANING**  
Kenneth W. Rarey, South Holland, and John B. Kennedy, Jr.,  
Chicago, both of Ill., assignors to Continental Can Company,  
Inc., New York, N.Y.

Continuation of Ser. No. 599,822, Dec. 7, 1966, abandoned,  
which is a division of Ser. No. 396,060, Sept. 14, 1964, Pat. No.  
3,306,193. This application Feb. 17, 1969, Ser. No. 802,747

Int. Cl. B41I 15/00; B05b 5/02

U.S. Cl. 101—114

16 Claims



An electrostatic screen printing device having means for depositing toner on a substrate and having means for neutralizing the electric field associated with the toner-image. Additional means are provided for cleaning toner from the screen and/or printing device subsequent to a printing operation.



3,824,925

**PRINTING MECHANISM WITH OVERDRIVE FOR THE PRINTING CYLINDER AND INKING ROLLERS**

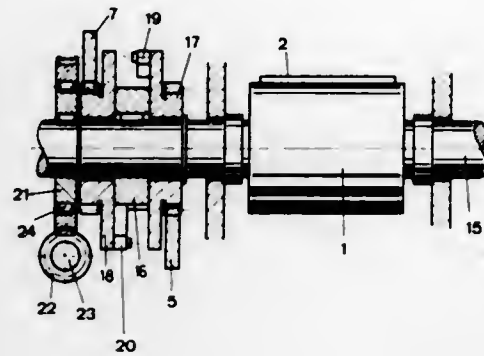
Markus Ebner, St. Gallen, Switzerland, assignor to Firma Ferd. Ruesch Maschinenfabrik, St. Gallen, Switzerland  
Filed July 14, 1972, Ser. No. 271,871

Claims priority, application Germany, Apr. 21, 1972, 2219534

Int. Cl. B41f 3/02, 5/00

U.S. Cl. 101—212

2 Claims



A printing mechanism for a printing and punching machine of the type having stepwise advance of a web of paper to be printed or for sheet printing presses includes a printing cylinder which is adapted to be constantly rotated in the same rotary direction as it is transversely reciprocated back and forth across an impression plate. The drive for the printing cylinder comprises a motor driven eccentric crank shaft drive means, and mounted on the shaft of the printing cylinder is an overdrive mechanism for rotating the printing cylinder at a reduced speed as the cylinder reaches the end positions of its reciprocating stroke in order to ensure the constant rotation of the printing cylinder and its associated inking mechanism in order to obtain the uniform transfer of ink from the inking rollers to the printing plate.

3,824,926

**PRINTING MAGNETIC SADDLE**

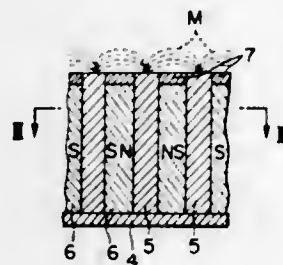
Yasuo Fukuyama, Osaka, Japan, assignor to Yamauchi Rubber Industry Co., Inc., Osaka, Japan

Filed Aug. 18, 1972, Ser. No. 281,642

Int. Cl. B41f 27/02

U.S. Cl. 101—378

8 Claims



A magnetic saddle for use in printing comprising the base plate for saddle consisting of a non-magnetic material and superposed on the printing cylinder, a plurality of yokes arranged at regular intervals on the surface of said base plate lengthwise, and the permanent magnet consisting of a plurality of small blocks of ferromagnetic material, said blocks being arranged between said yokes and conjoined by virtue of the binder consisting of a thermosetting resin and filling the gaps, wherein the base plate, the yoke and the permanent magnet are integrated.

3,824,927

**LAMINATED MAGNETIC PRINTING ROLL ASSEMBLY**

K. O. Pugh, Atlanta; Howard Ivey, Austell, and C. A. Cobb, Decatur, all of Ga., assignors to Ruralist Press, Inc., Atlanta, Ga.

Filed Jan. 29, 1971, Ser. No. 110,874

Int. Cl. B41f 27/02

U.S. Cl. 101—378

14 Claims



A cylindrical printing roll is provided with a radial shoulder having a flexible magnetic material secured to its outer surface for maintaining a thin magnetically attractable printing plate on the outer surface of the magnetic material with a positioning pin extending from the shoulder into an aperture in the printing plate for maintaining the printing plate in desired aligned position on the roll.

3,824,928

**FLEXIBLE PRINTING PLATE LOCKING DEVICE FOR ROTARY PRINTING PRESS**

Karl Langer, Heusenstamm, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach/Main, Germany

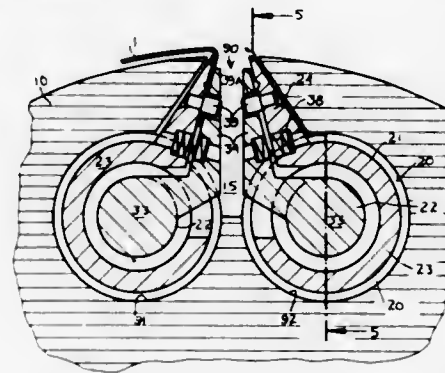
Filed Apr. 27, 1973, Ser. No. 354,960

Claims priority, application Germany, April 27, 1972, 2220652

Int. Cl. B41f 27/12

U.S. Cl. 101—415.1

14 Claims



A plate lock-up mechanism including first and second jaw members in the form of a sleeve and shaft telescoped together, each having longitudinally and radially extending jaws and with the sleeve being provided with a longitudinal clearance slot. A clamping screw is provided at the end of the sleeve for imparting relative rocking motion to the shaft so as to grip the end of a plate inserted between the jaws. The sleeve, moreover, has a jack screw at its end for rocking the entire jaw assembly for tensioning and peripherally positioning the plate. In the preferred embodiment the sleeve has an extension in the form of a collar for mounting the clamping screw and jack screw. To adjust the axial position of the jaws and plate, the

sleeve and collar are mounted for axial sliding movement in the cylinder, and an axially oriented adjusting screw is interposed between the collar and the cylinder for endwise crowding of the collar in one direction or the other. To establish a nominal position of peripheral register, the collar is provided with an eccentrically located stop screw and the cylinder is provided with a stop member in the path of rocking movement of the stop screw. The stop member is rotatable and has stop surfaces in the form of facets of different radial dimension which are selectively interposeable. Auxiliary jaw members are mounted coaxially with respect to the main jaw members and have respective axially facing keyed connections therewith which may be engaged to extend the effective width of the jaw thereby to accommodate plates of different width.

3,824,929

**STORED ENERGY INITIATOR TYPE OF FUZE**

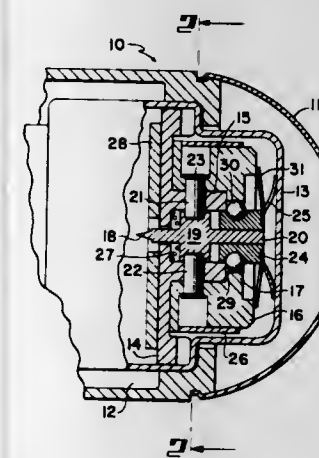
George Webb, 420 S. 22nd St., Richmond, Ind. 47374

Filed Dec. 15, 1965, Ser. No. 514,148

Int. Cl. F42c 1/00

U.S. Cl. 102—74

5 Claims



This is a nose fuze construction. A firing pin projects forwardly through an actuator in position to be directly actuated by high impact forces. The actuator is associated with a prestressed firing spring to store mechanical energy and is associated with an inertia member which senses soft or indirect impact and shifts position, releasing the actuator and firing spring, so that the firing pin is driven to perform the firing operation. Both the firing pin and the inertia member are locked in position by centrifugal-force-responsive weights which move radially outwardly to unlock the firing pin and inertia member. A second spring causes the forward nose portion of the firing pin to assume an exposed position when these weights are in their unlocking position.

3,824,930

**TOW LINE TRUCK AND BRAKE SYSTEM**

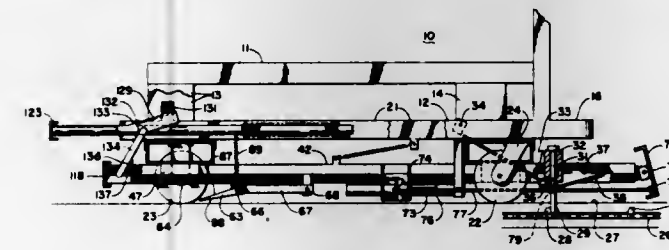
Richard M. Blessener, Faribault, Minn., assignor to Nutting Truck and Caster Company, Faribault, Minn.

Filed July 13, 1973, Ser. No. 378,910

Int. Cl. B65g 17/42

U.S. Cl. 104—172 BT

10 Claims



An improved truck for tow line use is provided with a brake system designed to stop the truck in response to engagement

of a front bumper against an obstacle, while minimizing the force applied by the truck and bumper to the obstacle. The truck includes a brake member having a bottom floor-engagement surface and an upper wheel-engagement surface. A longitudinally movable brake support member on the truck supports the brake member in front of at least one wheel for relative movement between a retracted position ahead of the wheel and a braking position in which the brake member is engaged beneath the wheel. The brake support member is mounted on the truck by low-friction ball or roller bearings, to further insure operation of the brake system with minimal application of force against an obstacle. The front bumper is movably mounted on the brake support member for movement from a rest position to an active control position by engagement with the obstacle. Movement of the front bumper to active position controls an anti-back-up device, in the form of a one-way clutch and brake interconnecting the truck body and brake support member, which permits forward movement of the truck body and wheel onto the brake member with a resulting cessation of forward motion due to the action of the brake member and weight of the truck, rather than the resistance of the obstacle. The anti-back-up device also prevents premature rearward movement of the wheel and truck body from the brake support member. The anti-back-up device is released forcibly by return movement of the front bumper to its rest position. Improved tow pin lifting and rear bumper features are also shown, including a specially latched, resiliently held bumper.

3,824,931

**NAAILABLE DOOR POST**

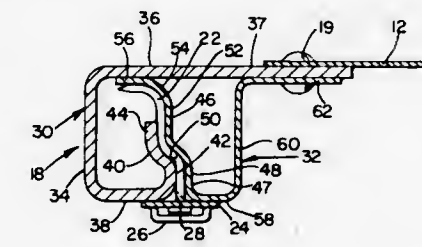
John W. Hutchinson, Crown Point, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 5, 1973, Ser. No. 329,801

Int. Cl. B60p 7/08; B61d 45/00

U.S. Cl. 105—369 B

4 Claims



In a freight car, a vertically extending nailable metal door post including a first outer doorway member of generally C-shaped configuration and a second longitudinally spaced inner reinforcement member; said first member having flat outer transversely extending doorway wall, a pair of inner and outer laterally spaced longitudinal sections connecting with the doorway wall, and a nail groove forming transverse flange section spaced longitudinally inwardly of the doorway and laterally outward of the inner longitudinal section and having a convex bulbous portion extending from the inner longitudinal section towards the outer longitudinal section and a transverse flat end portion connected outwardly to the bulbous portion, said outer longitudinal section having a longitudinally extending elongated attachment portion connecting with the vehicle side wall; said second member being spaced longitudinally inward of the outer doorway member and being of generally U-shaped configuration and having a transverse flange including a first flange section having vertically spaced alternating recessed and protruding flange portions to define the bulbous portion the entranceway of a nail groove, a second intermediate transverse portion to define with the transverse end portion of the doorway member the rest of the groove, and a third nail bending and curved post-reinforcing portion connecting with the intermediate transverse portion and having a flat longitudinal end part against the inside of the



longitudinal section of the doorway member, said second member further having an inner longitudinal wall connecting with the transverse flange, an inner transverse wall extending toward the side wall of the car and connecting with the inner longitudinal wall of the second member, and an inner longitudinal side wall attachment flange portion connecting with the inner transverse wall of the second member and with the attachment portion of the doorway member connecting with the side wall of the freight car. A modified nailable door post uses welded-inplace elements between the two pieces of the post to define nail receiving grooves.

3,824,932

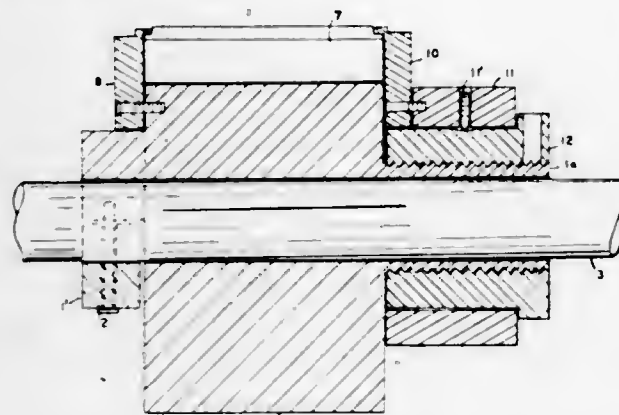
**TYPE SLUGS CLAMP IN A PRINTING PLATE CYLINDER**  
Theodore F. Aronson, Fort Lauderdale, Fla., assignor to Ira B. Kristel, Hewlett Harbor, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,399

Int. Cl. B41f 27/06

U.S. Cl. 101—377

1 Claim



In a printing cylinder having a slot adapted to receive type slugs, first clamp means are fixedly mounted on one side of said cylinder to grip one end of the slugs. Second clamp means are rotatably mounted on the other side of said cylinder with a screw type connection and includes a gripping cam jaw. The cam jaw is formed to bear downwardly on the other end of said slugs as said jaw is rotated, and inwardly as the second clamp means is rotatably tightened.

## ERRATA

For Classes 102—74, 104—172 and 105—369 see:  
Patents Nos. 3,824,929 thru 3,824,931

3,824,933

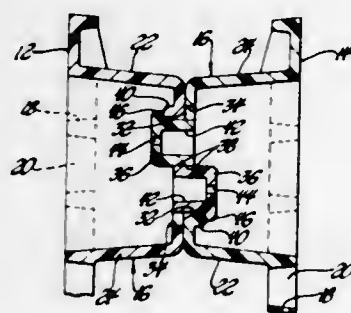
**LOAD BEARING PALLET AND INTERLOCK**  
Willard E. Lind, Rochester, Mich., assignor to Jaw-Bar Plastics Corporation, Birmingham, Mich.

Filed Sept. 14, 1972, Ser. No. 288,913

Int. Cl. B65d 19/18

U.S. Cl. 108—51

4 Claims



A load bearing pallet including two identical mold formed halves each having a load bearing surface and a plurality of

relatively spaced supporting pads with an interlocking feature provided thereon and comprising a projection on the supporting pad extending thereacross and with an overhanging lip formed on one side thereof immediately over a draft opening, and with an opening immediately behind the projection formed for interference snap-lock and press fitted engagement therethrough of a like projection on a pallet half disposed in complimentary relation thereover.

3,824,934

**LOCK CHAMBER FOR PROTECTIVE ENCLOSURES**  
Launo Laakkonen, Helsinki, Finland, assignor to Temet Oy, Helsinki, Finland

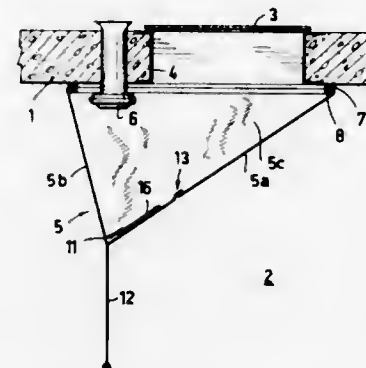
Filed Dec. 11, 1972, Ser. No. 314,238

Claims priority, application Finland, Dec. 13, 1971, 3545/71

Int. Cl. E05g 1/00; E06b 5/18

U.S. Cl. 109—1 R

7 Claims



A lock chamber for protective enclosures closable by means of a protecting door. The lock chamber is formed by a collapsible shelter made of a flexible gas tight material. The lock chamber is at one side provided with an entrance opening corresponding in size to the opening of said protecting doors and at the opposite side with a vertical closable slit opening. The shelter is intended to be gas tightly fixed around the frame of said protecting door.

3,824,935

**DRYING AND INCINERATING FURNACES**  
Yukio Yamato; Koki Terada, and Bungo Nakamura, all of Tokyo, Japan, assignors to Yamato Sanko Mfg. Co., Ltd., Tokyo, Japan

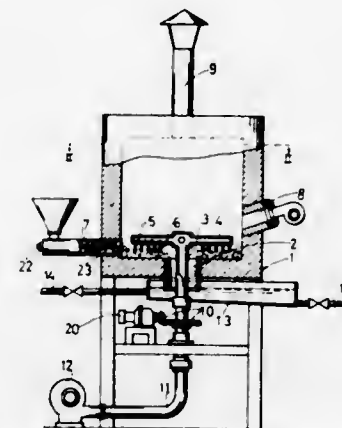
Filed May 10, 1973, Ser. No. 359,000

Claims priority, application Japan, May 10, 1972, 47-46114

Int. Cl. F23g 5/00

U.S. Cl. 110—13

11 Claims



A drying and incinerating furnace containing means for effecting desiccation and incineration, in a single process, of a muddy material such as an activated sludge wherein said method is treated from the inlet side or the peripheral portion

on the hearth to the outlet side or the central part of the hearth. Air-blowing nozzles and raking paddles are provided on rotary pipes for vortically blowing and transporting the material in the furnace.

3,824,936

**BASIC SUSPENDED ROOF CONSTRUCTION FOR INDUSTRIAL FURNACES**

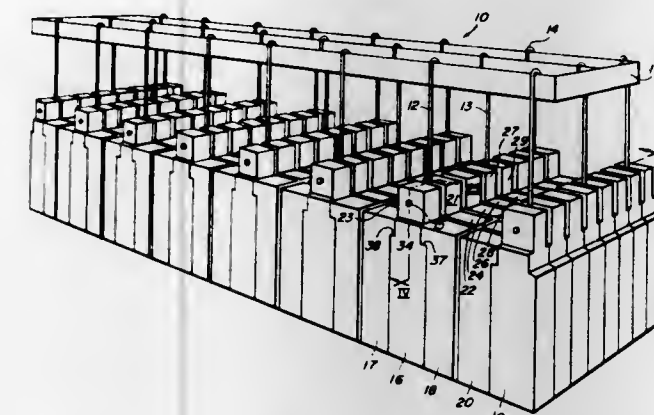
Frank P. Merkle, Jr., R.R. 2 Farmington, Long Grove, Ill. 60047

Filed Feb. 28, 1973, Ser. No. 336,630

Int. Cl. F23m 5/02

U.S. Cl. 110—99 R

4 Claims



A high-temperature industrial furnace roof construction comprises a plurality of basic refractory brick assembly units depending downwardly from an elongated rod member which is suspended from a suitable frame. Each basic refractory brick assembly unit comprises a basic carrier brick of a generally rectangular configuration with flat, planar faces and having a reduced head portion and body portion. The reduced head portion is provided with a transverse aperture for receiving the elongated rod member and with a substantially planar recess normal to the axis of the aperture, and the body portion is provided with a shoulder means adjacent to the juncture of the body portion and the head portion on opposing faces of the body portion substantially parallel to the axis of the aperture. A basic filler brick of a generally rectangular configuration with flat, planar faces is suspended from the carrier brick by means of a supporting lug on one face of the filler brick which engages the shoulder means on the carrier brick.

3,824,937

**ENERGY GENERATION SYSTEM ADAPTABLE FOR BURNING DUST-TYPE FUELS**

Leslie C. Turner, and Harry Cockreham, both of Lake Oswego, Oreg., assignors to Tureo Engineering, Inc., Lake Oswego, Oreg.

Filed May 4, 1973, Ser. No. 357,503

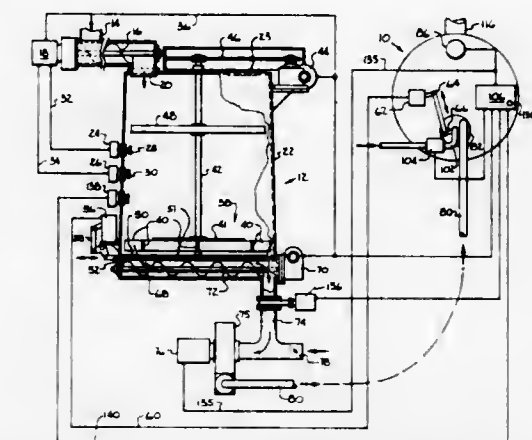
Int. Cl. F23k 3/00

U.S. Cl. 110—102

21 Claims

An energy generation system, especially applicable to firetube boilers but also applicable to other combustion-type energy generators, for burning dust-type fuels such as wood sander-dust. The system comprises fuel metering apparatus, responsive to system demands, for accurately controlling the fuel-air ratio and modulating the mass flow rate of the dust-type fuel into the combustion chamber. Dust fuel, normally of variable density, is fed from a large storage hopper into a metering bin sized to hold only a small volume of the fuel. A rotary agitator within the bin equalizes the density of the dust fuel and divides it into equal volumetric portions which are passed in succession over an opening in the bottom of the bin. The size of the opening is variably modulated by a reciprocating metering gate whose position is determined by a controller responsive to system energy demands. Small predetermined

quantities of the fuel, dependent upon the size of the opening, drop through the opening periodically and are transformed into a continuous homogeneous stream of dust fuel by a screw conveyor located below the opening. The conveyor feeds the stream of dust into a blower which transports the dust suspended in an air stream to a dust fuel burner. In the em-



bodiment of the invention adaptable to firetube boilers, the burner comprises a modified boiler diffuser having one or more dust inlet tubes and a continuous supporting pilot to insure continuity of burning. The boiler embodiment also includes a boiler extension section having a trap for retaining any large particles of the fuel within the boiler to insure their complete combustion.

3,824,938

**SEWING MACHINE CONSTRUCTION**

Gunter Tolle, Wendelinusstr. 15, Bruchsal, Germany

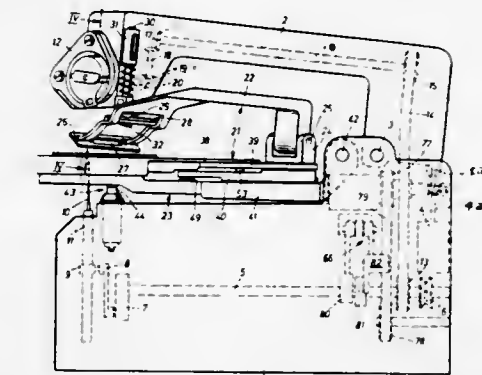
Filed July 19, 1973, Ser. No. 380,837

Claims priority, application Germany, Jan. 16, 1973, 2301936

Int. Cl. D05b 3/04

U.S. Cl. 112—70

11 Claims



A sewing machine comprises a fixed base containing a main drive shaft connected to a needle bar to reciprocate the needle bar substantially vertically in the base. A looper mounting arm is pivoted at one end of the base and includes an opposite end with a revolving looper thereon which overlies a clamping assembly for engaging the material between the looper and the needle bar. The clamping assembly includes a lower part which is pivoted at its inner end adjacent the pivotal end of the looper arm to the base of the machine and rests at its opposite end on an upwardly extending support pin which is biased upwardly by a supporting spring. The clamp includes a top arm portion which is pivoted about a substantially horizontal pivot at its inner end on a bracket carried on the lower part of the clamping mechanism and its outer end extends below the looper arm adjacent the looper. The looper is revolved by a connection extending through the looper arm and through belting to the main drive shaft of the base. The looper arm is pivoted by an electromagnetic mechanism between a raised



position in which it may be at rest and a lowered position in which it bears downwardly against the upper arm of the clamping part to urge a clamping frame thereon into engagement with the material which rests on a cover plate of the lower clamping part. In the sewing position, a roller of the looper arm engages against the pressure rail of the upper clamping part to urge the clamping frame over the material. The roller is carried on a bar which is biased downwardly in a direction toward engagement with the pressure rail and it may be compressed when the looper arm moves downwardly to engage the top clamping arm part. A pin on the rod member is confined in a slot to limit the amount of relative movement between the looper arm and the upper part of the clamp. The lower clamping part also includes a mechanism for controlling a sewing material support plate relative to a base plate and an intermediate plate for the purpose of shifting the material to be sewn during special sewing operations.

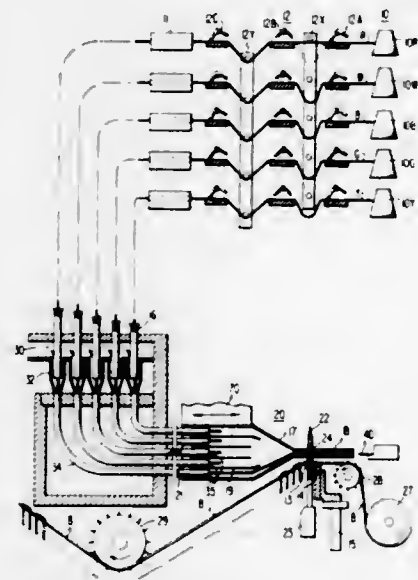
3,824,939

# METHOD AND MEANS OF THREADING AND IMPLANTING TUFTING YARN

Abram N. Spanel, 344 Stockton Street, Princeton 08540, and David R. Jacobs, 23 Parkside Drive, East Hanover 07936, both of N.J., assignors to said Spanel, by said Jacobs  
Filed Mar. 31, 1972, Ser. No. 240,119  
Int. Cl. D05c 15/20

U.S. Cl. 112—79 FF

18 Claims



A tufting method and apparatus having a multicolor selection capability whereby the yarn color may be changed during each tufting cycle and in which needle means are supplied with yarn by reciprocable threader tubes in which each tube threads the eye of each needle and retracts leaving a length of yarn deposited therein. For the yarn so deposited, one of its ends is implanted in the backing from the preceding tufting cycle with the other end extending to the yarn source from which it has been transported to the threader tube. From this position the yarn loop extending through the needle may be either cut to produce cut pile or to enable a change in color to be made; or the yarn loop may be tufted to produce a loop pile product.

3,824,940

APPARATUS AND METHOD FOR USE IN COIL TYING  
Richard J. Habegger, Grabill, Ind., and Frank R. Dombrowski, Kingston, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 7, 1973, Ser. No. 386,371

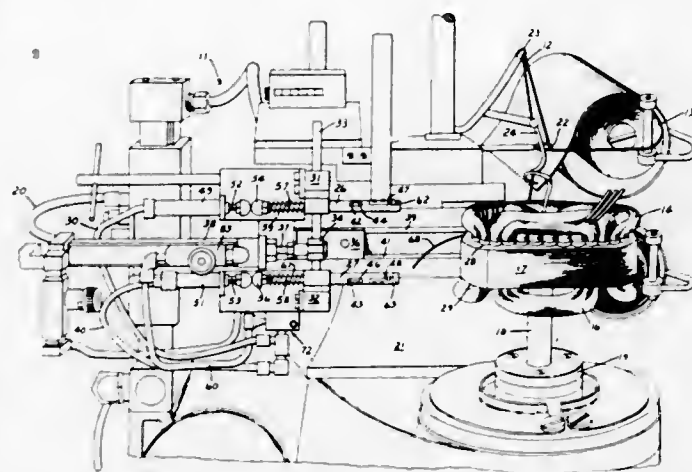
Int. Cl. D05b 23/00

U.S. Cl. 112—121.2

10 Claims

Apparatus and methods involving lacing or tying cord about end turn portions of coils that project beyond faces of

dynamoelectric machine magnetic cores. Method involves pulling and holding final cord segments; and subsequently releasing such segments. In apparatus, stator core having coils therein is placed at tying station and supported while the core and tying units are periodically relatively indexed. Loops of cord are placed about winding portions, for example in the formation of stitches. As the last loop (e.g., stitch) in a tying cycle is commenced, cord pulling member and core are moved relative to each other so that the cord pulling member is located to receive a final cord segment. Alternatively, cord pulling member moves after full development of final cord segment. A portion of final cord segment is grasped in a cord receiving region of cord pulling member. Cord clamping



member engages and tightly holds the cord; cord pulling member retracts; and final cord segment is pulled taut and severed. The leading or advancing end of the cord pulling member may be of a blunt or pointed configuration. When a core is to be laced or tied, an end of cord is held in the cord puller and at least part of one or more loops (e.g., stitches) are made on the wound stator assembly. At a predetermined time or after a predetermined number of stitches (or portions thereof) have been made, the end of cord is released. Such release is effected before excessive tension is applied to the core so as to reduce, if not eliminate, cord fraying and cord debris build-up in and around the cord puller. This also prevents malfunctions that might occur as a result of excessive tension on a cord end during indexing of a core being laced.

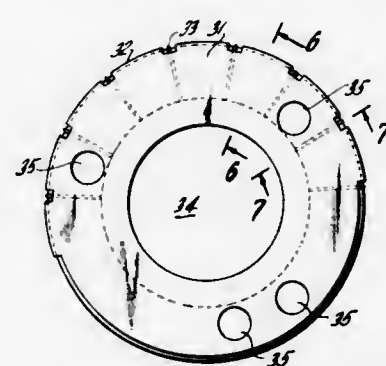
3,824,941

# APPARATUS FOR FORMING TREADED CLOSURES

Charles N. Hannon, 27 Sargent Rd., Scarsdale, N.Y. 10583  
Continuation-in-part of Ser. Nos. 117,512, Feb. 22, 1971, abandoned, and Ser. No. 233,599, March 10, 1972, abandoned. This application Aug. 23, 1972, Ser. No. 283,098  
Int. Cl. B21d 51/50

U.S. Cl. 113—1 D

11 Claims



Ductile metal blanks closed at one end and having cylindrical skirts are rotated in contact with forming tools under sufficient pressure to shape, lance and score the cylindrical skirt.

The tools may be spread along a path to deform different parts of the skirt at different path locations. The tools form an outwardly extending circumferential bulge in each skirt and simultaneously score a series of slots around the skirt in the bulge and score the external surface of the skirt between the lanced portions and the open end of the skirt. The scores are aligned in specific angular orientation relative to the orientations of the lanced slots.

3,824,942

# OFFSHORE UNDERWATER STORAGE TANK

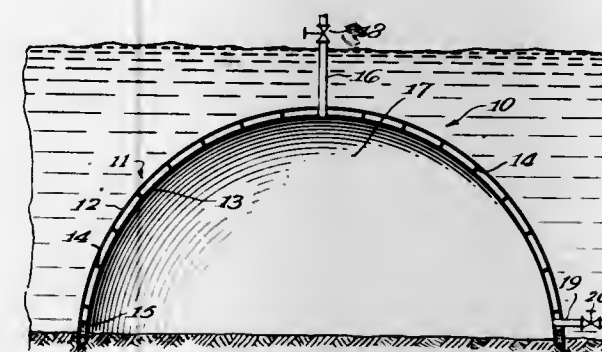
Donald Claude Stafford, Hinsdale; Gerald Edward Burns, Villa Park, and Kerry Charles McKenna, Oak Brook, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 17, 1972, Ser. No. 218,357

Int. Cl. B63b 35/44

U.S. Cl. 114—0.5 T

1 Claim U.S. Cl. 114—69



An offshore storage tank, to be placed on a sea floor, having a dome-shaped rigid continuous enclosure, open at the bottom, a buoyant chamber in the enclosure extending over a large part of the area of the enclosure and positioned and sized to provide buoyancy balance or equilibrium to the tank when the tank is floating on water with or without any amount of air in the large volume defined by the enclosure, a conduit to remove air from beneath the enclosure to lower it in water.

The enclosure can constitute two spaced apart rigid domed shells with rigid connecting members joined to each shell to hold them in fixed position relative to each other, with a concrete ring closing the bottom of the enclosure between the shell ends thus defining a hollow enclosed space between the shells.

3,824,943

# DRILLING PLATFORM

Olav Mo, Grønsundveien 94, Nesbru, Norway

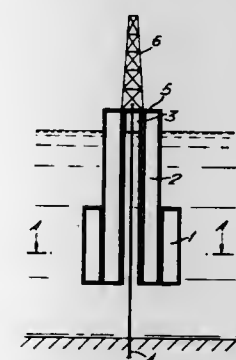
Filed Mar. 13, 1972, Ser. No. 233,879

Claims priority, application Norway, Mar. 16, 1971, 1008/71

Int. Cl. B63b 35/44; B63g 35/00

U.S. Cl. 114—.5 D

7 Claims



A floating platform for drilling after natural deposits beneath the floor of the sea. The platform has a reduced cross

section at the sea surface, a service deck above the sea surface, and a substructure extending downwardly below the sea surface. The platform is monolithic and comprises a plurality of vertical cells of concrete. A bottom deck closes the bottom of the vertical cells and is adapted to be positioned deep below the sea surface and above the floor of the sea. The vertical cells are arranged such that at least one but not all of the cells extend from the bottom deck to the top deck and the center of gravity of the platform is below its center of buoyancy.

3,824,944

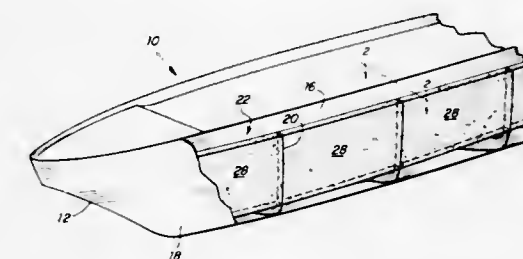
# REINFORCED STRUCTURAL MEDIUM

Alfred A. H. Keil, Belmont, Mass., and Michael F. Vetter, Alexandria, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 4, 1971, Ser. No. 195,548

Int. Cl. B63b 43/10

10 Claims



A structural medium, useful, e.g., for constructing ships, such as icebreaker-tankers, for cold climates, having a cross-section parallel to an expected direction of impact comprising a layer of ice confined between spaced-apart, ice-impermeable structural members (such as an inner cargo-containing hull and an outer hull shell).

3,824,945

# STEERABLE AQUA-SLED

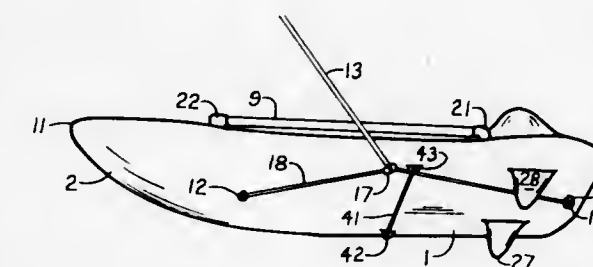
Frederick M. Casciano, 811 Olomehan St., Honolulu, Hawaii 96813

Filed Mar. 24, 1972, Ser. No. 237,788

Int. Cl. A63c 5/00

U.S. Cl. 114—235 WS

14 Claims



A water sled which when towed behind a moving boat is steerable from side to side by a rider in a simple but effective manner. This positive maneuverability is accomplished by moving the effective point of attachment of the towline to the sled from a point on the bow to a point on the side of the sled causing the sled to become aligned at some appreciable angle to the towline direction. The relative water flow striking the sled at an angle and the two bottom skegs cause the sled to dart to the outside of the towboat wake. The rider changes the effective towline attachment point and executes these maneuvers by pulling on or releasing a single control rope which attaches to the towline. The towline, in turn, is fastened to the stern of the sled.



3,824,946

## WATER JET PROPULSION UNIT

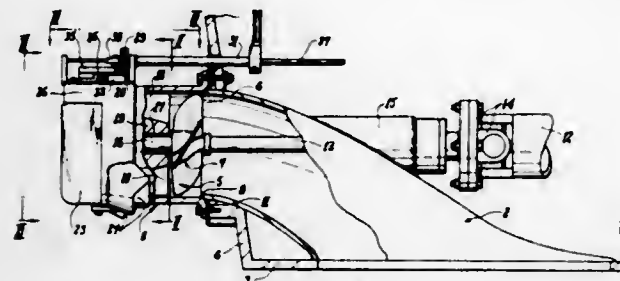
Douglas Macardy, and Ian William Kelly, both of 75 Beverly St. East Doncaster, Victoria, Australia

Filed Aug. 30, 1972, Ser. No. 284,913

Int. Cl. B63h 11/10

U.S. Cl. 115-12 R

8 Claims



A water jet propulsion unit including two deflector blades which are located in the pressurized water stream emanating from a rotatable impeller and being movable about respective pivots by steering means so as to deflect the water stream to give directional control to an associated craft. The blades are moved in the same direction of rotation by the steering means so as to emanate a parallel relationship. Actuating means are also connected to the blades and are operative to move the blades in opposite directions about their pivots so as to locate them in a position such as to direct the stream of water forwardly of the craft and thereby create rearward propulsion. The impeller is mounted in the housing which also carries the deflector blades and is arranged for attachment to the outside of the rear wall of the craft, and water is fed into that housing through a tunnel member secured within the craft and extending between the rear and bottom walls thereof.

3,824,947

## COMPASS DEVICE FOR SAILING

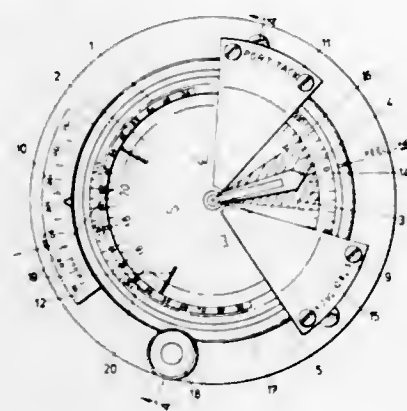
Reijo Honkaranta, Espoo; Kauko Jarvenpaa, Helsinki, both of Finland, and Kevin Shephard, Wollstonecraft, Australia, assignors to Suunto Oy, Vanhakartano, Finland

Filed July 17, 1972, Ser. No. 272,527

Int. Cl. G01d 21/00

U.S. Cl. 116-114 R

6 Claims



A compass device for use in sailing, which has a compass frame mountable in the sailcraft and comprising a compass card box provided with a main steering index and, outside this box external indexes which are called tack indexes. The invention is particularly characterized by the features that the compass card carries a tacking index and that said tack indexes are turnable about the center of the card box to make the central angle enclosed by them to be consistent with the vessel's angle of ascent, and that said tack indexes may be set so that the tacking index on the card becomes centered in the angle

between them. Further, optional, characteristic features concern the provision on the card box of further, so-called scud indexes and their location, certain preferable arrangements for securing the positions of various indexes, and the coloring and other details of design of the indexes.

3,824,948

## CONTROL LEVER ASSEMBLY

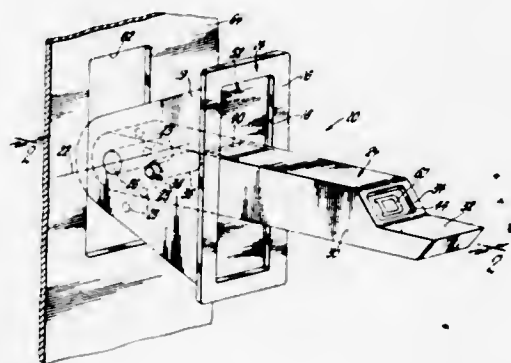
William L. Faloon, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 7, 1973, Ser. No. 367,758

Int. Cl. G09f 9/00

U.S. Cl. 116-124 R

3 Claims



A position indicating lever assembly for controlling the operating range of a mechanical apparatus having a plurality of operating ranges, the assembly including an operating lever having a viewing portion thereon and adapted for pivotal movement relative to a fixed base through an included angle of less than 180°, a ribbon element attached at each end to the base and trained over a ribbon support within the lever, and a plurality of indicator symbols on the ribbon element, the ribbon element being shiftable relative to the lever in response to pivotal movement of the latter so that the indicator symbols sequentially index in the viewing portion to signal the position of the lever in terms of the operating range of the controlled mechanical apparatus.

3,824,949

## WHISTLE DEVICE

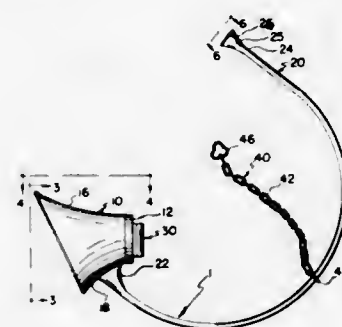
Christopher J. Aquila, 38340 Parkway Dr., Willoughby, Ohio 44094

Filed Nov. 24, 1972, Ser. No. 309,169

Int. Cl. G10k 5/00

U.S. Cl. 116-137 R

12 Claims



The disclosed whistle device comprises a whistle mounted within a sound-directing megaphone which is actuated through a flexible conduit and supported by a clip so that the whistle can be actuated at a distance from the operator's ear and the resulting sound directed in the general direction he is facing.

3,824,950

## CONFECTION DECORATING MACHINE AND DRIVE TRANSFER

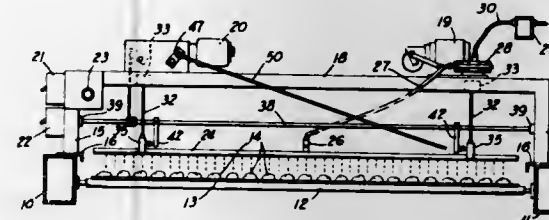
George D. Woody, 615 S. Pine St., York, Pa. 17405

Filed Mar. 20, 1972, Ser. No. 236,327

Int. Cl. B05c 5/00, 11/14; A23g 3/25

U.S. Cl. 118-14

13 Claims



A decorator for imparting designs on the surfaces of candies, confections and cookies, including a continuously moving conveyor for carrying the item to be decorated and a dispensing tube having plural discharge openings which is supported above and extends across the conveyor. The dispensing tube is suspended by cables and is connected to a support bar through bell crank and links. A drive mechanism incorporates two eccentric drives, one connected to oscillate or reciprocate the dispensing tube back and forth in a direction across the path of the conveyor and the other being connected to the bell crank to oscillate or reciprocate the dispensing tube back and forth in the direction of conveyor travel. The drive features a change speed arrangement so that the relative rotational speeds of the two eccentrics may be altered. In one speed relation, the eccentrics are driven in unison and in the other speed relation, the dispensing tube is driven at twice the speed back and forth in the direction of conveyor travel than it is in the transverse direction.

3,824,951

## FINGERPRINTING MACHINE

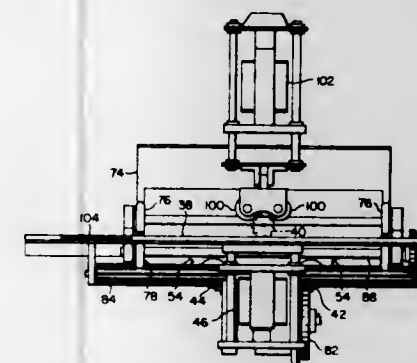
Allan D. Le Vantine, 18225 Rancho St., Tarzana, Calif. 91356, and Daniel L. Curtis, 1956 Ardmore Ave., Manhattan Beach, Calif. 90266

Filed Dec. 17, 1973, Ser. No. 425,287

Int. Cl. A61b 5/10

U.S. Cl. 118-31.5

10 Claims



Apparatus for taking fingerprint impressions onto a fingerprint card is disclosed which includes a platen and means for retaining a fingerprint card on the platen. Drive means are provided for engaging the platen with the surface of a finger whose fingerprint is to be impressed upon the fingerprint card and for moving the platen in a path such that the platen contacts all portions of the surface of the finger which are to be impressed upon the fingerprint card and there is no slippage between the surface of the finger and the platen.

3,824,952

## FINISH DIP PAINTING DEVICE OF METAL WORKS ON MASS PRODUCTION BASIS

Toshihiro Nagano, Shizuoka; Masuo Suzuki, Yaizu; Yoshio Sano, Shizuoka; Yasuo Aoshima, Shizuoka, and Shozo Suzuki, Shizuoka, all of Japan, assignors to Riken Light Metal Industries Co., Ltd., Shizuoka, Japan

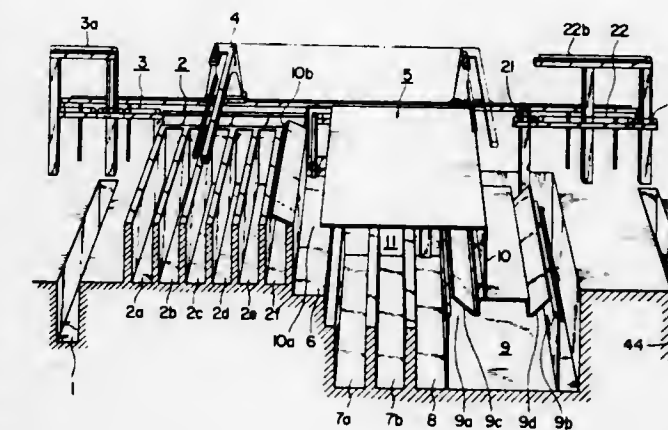
Filed Jan. 4, 1973, Ser. No. 320,937

Claims priority, application Japan, Oct. 5, 1972, 47-100069; Oct. 5, 1972, 47-100070; Nov. 17, 1972, 47-114746

Int. Cl. B05c 11/12

U.S. Cl. 118-56

4 Claims



A device for finish dip painting metal works on mass production basis, consisting of an enclosed chamber wherein paint vessels, a setting space, a drying furnace, and chain conveyors are furnished so as to move racks carrying the metal works horizontally and vertically by the chain conveyors for dip painting, setting, and drying. The enclosed chamber communicates with the drying furnace for selectively receiving heat energy therefrom.

3,824,953

## SUPPLEMENTAL SHEET-DISPENSING DEVICE FOR A TOILET-TISSUE DISPENSER

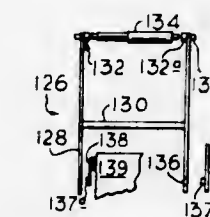
Philip Boone, 15 Fenwick Rd., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 238,578, March 27, 1972, Pat. No. 3,744,448, which is a continuation-in-part of Ser. Nos. 678,600, Oct. 27, 1967, abandoned, and Ser. No. 715,768, March 25, 1968, Pat. No. 3,652,174, and a continuation-in-part of Ser. No. 257,745, May 30, 1972, abandoned, and Ser. No. 334,309, Feb. 21, 1973, and a continuation-in-part of Ser. No. 48,916, June 6, 1970, Pat. No. 3,707,945. This application May 1, 1973, Ser. No. 356,143

Int. Cl. B05c 11/02

U.S. Cl. 118-75

26 Claims



A compact auxiliary device providing wetted or self-wetting sheets for releasable proximate mounting in conjunction with a conventional toilet-tissue dispenser of dry sheets; comprises an inexpensive container or magazine component pre-loaded with the supplemental sheets. The magazine can be snapped into functional position rapidly. It serves an improved health care and cleanliness function.

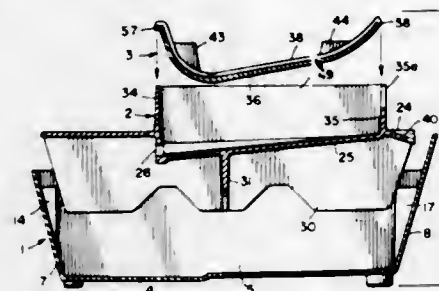


3,824,954

**DEVELOPER TANK AND TROUGH ASSEMBLY**  
 Alfred M. Hyosaka, Morton Grove, and Rudolph C. Mueller,  
 Schiller Park, both of Ill., assignors to Speed-O-Print Business  
 Machines Corporation, Chicago, Ill.  
 Filed Mar. 24, 1972, Ser. No. 237,975  
 Int. Cl. G03g 13/00

U.S. Cl. 118—429

2 Claims



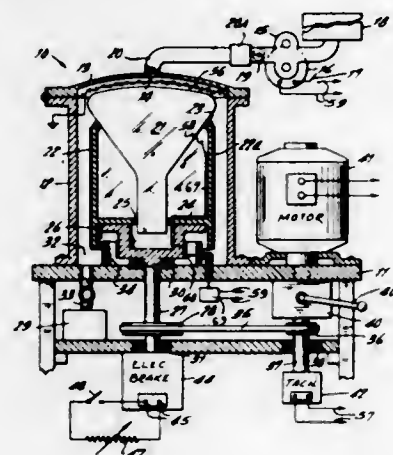
A three piece developer tank and trough assembly, for use in connection with an electrostatic photocopy machine, has a two piece trough member nested within a tank having a developer fluid therein. The trough member includes, as one of its members, paper guide means removably mounted therein, and such subassembly is removably mounted in the tank. Pump means delivers developer fluid from the tank to the trough and paper guide means during operation of the machine. The three pieces are held together in assembled relation preferably by quickly removable fastening means, such as spring clips.

3,824,955

**APPARATUS FOR COATING TELEVISION VIEWING TUBES**  
 Alvin M. Marks, and Mortimer M. Marks, both of 153-16 10th  
 Ave., Whitestone, N.Y. 11357  
 Filed May 15, 1972, Ser. No. 253,495  
 Int. Cl. B05c 11/14

U.S. Cl. 118—500

10 Claims



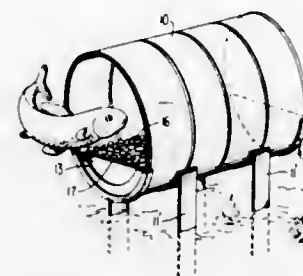
A structure for applying a non-reflective coating to television viewing tubes is described. The structure includes a closed container in which a tube support may be positioned for receiving and rotating the tube and means for applying the coating as a solution on the viewing face. The viscosity of the coating solution and the speed of rotation are adjusted so that the coating is spread evenly over the tube face. The coating optionally contains a plurality of needle-shaped crystals which are normally oriented by the application of an electric field to the coating. A metal screen in the container acts as one terminal for the field while the aluminized layer on the phosphorescent coating within the tube acts as the other terminal. Various devices control the timing, speed of rotation, and the application of the solution.

3,824,956

**FISH BROODER OR REFUGE**  
 Robert W. Presley, R.F.D. No. 1, Makanda, Ill. 62958  
 Filed June 22, 1973, Ser. No. 372,619  
 Int. Cl. A01k 61/00

U.S. Cl. 119—3

6 Claims



An open-ended cylinder body has partial end closures to allow the formation of a gravel bed up to a predetermined level with the cylinder body resting on its side. Anchoring legs for the cylinder body may be provided as permanently attached strap elements or separately formed attachable spring legs. The brooder may be constructed in various lengths from a basic unit.

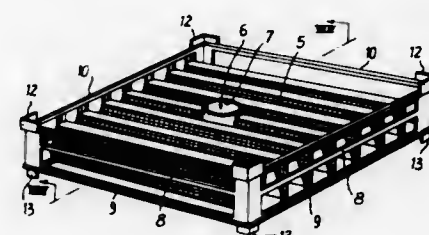
3,824,957

**SPAT COLLECTOR**  
 Lazare Nathan Halaunbrenner, 17, Boulevard Edgar Quinet,  
 92-Colombes, France  
 Filed Jan. 19, 1973, Ser. No. 325,157  
 Claims priority, application France, Jan. 25, 1972,  
 72.12473

Int. Cl. A01k 61/00

U.S. Cl. 119—4

10 Claims



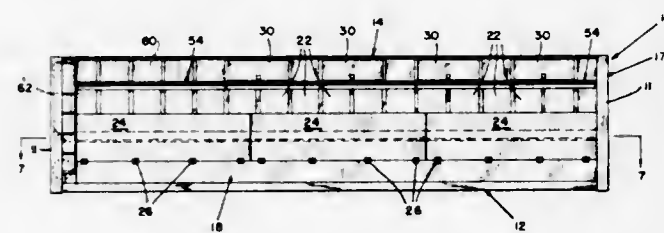
Spat collector which comprises a plurality of stackable plates made of a semi-rigid material, each of which plates comprises a series of strips disposed in the form of a louver and is provided with a central orifice, and a central member adapted to pass through said orifices to locate said plates in a stack.

3,824,958

**LIVESTOCK CONTAINER**  
 Victor G. Parady, Jr., Trenton, N.J., assignor to Sea-Land Service, Inc., Elizabeth, N.J.  
 Filed Sept. 18, 1972, Ser. No. 290,232  
 Int. Cl. G61d 03/00; A01k 01/00

U.S. Cl. 119—10

6 Claims



A container for transporting livestock adapted for over-the-road travel as well as for stacking interchangeably with other

cargo containers aboard a ship includes partitions for dividing the container into a plurality of stalls, self-contained feed and water storage means, removable grating floor means, and means to trap the liquid waste.

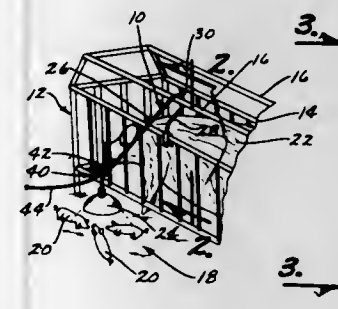
two downward-directed projections engaging the corresponding recesses in the underfloor, an arched top portion integral

3,824,959

**SUPPORT BRACKET**  
 Charley B. Naig, Cylinder, Iowa 50528  
 Filed Sept. 5, 1972, Ser. No. 286,190  
 Int. Cl. A01k 1/00

U.S. Cl. 119—20

5 Claims



A circular rod includes an upstanding finger which extends through the loop of an electrical cord or hydraulic hose after the loop has been extended through the opening in the circular member. When a hydraulic hose is being supported, a lip is provided on the upstanding finger and extends over the bight portion of the hose and the hydraulic hose is supported above the tongue of a farm implement. The bracket may also be mounted on a farrowing crate to suspend a heating unit over pig areas. An elongated rod bent upon itself and having a U-shaped clamp at the opposite end may engage a horizontally disposed member of the farrowing crate while the bight of the rod engages a horizontally spaced apart second rod of the farrowing crate. Alternatively, a straight elongated rod may have a u-shaped clamp at its end opposite the circular portion for and engaging a structural member of a farrowing crate. The U-shape clamp may extend either parallel or perpendicular to the elongated rod and may have a pin with ring or safety pin as a fastener to close the open end of the clamp. A further embodiment of a support for a heating unit includes an elongated rod having a U-shape clamp at its inner end for engaging a horizontal rod of a pig crate and an inverted V-shape leg structure engages a rod intermediate its ends with the lower ends of the legs of the leg structure engaging a second horizontally disposed crate member and a portion of the elongated rod extends away from the crate and includes spaced apart portions for supporting heating units over side-by-side separated pig areas.

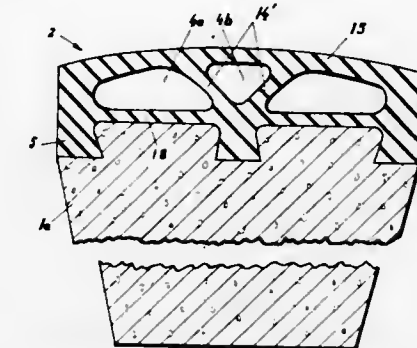
3,824,960

**FLOOR STRUCTURE**  
 Karl Kaltenbock, Gallneukirchen, Austria, assignor to Semperit Aktiengesellschaft, Vienna, Austria  
 Filed Apr. 2, 1973, Ser. No. 347,183  
 Int. Cl. E04f 15/10

U.S. Cl. 119—28

15 Claims

A concrete underfloor has an arched upper surface provided with recesses. A plurality of floor lining strips of rubber or plastics are arranged side by side on the underfloor. Each strip has a bottom part in contact with the concrete, at least



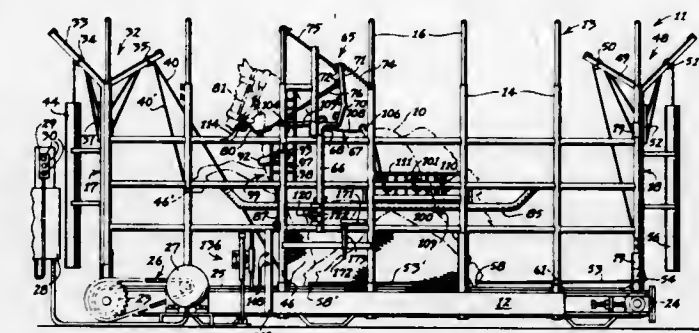
with the bottom portion in the region of the projections and defining with the intermediate part of the bottom portion an elongated cavity.

3,824,961

**HORSE TRAINING APPARATUS**  
 Joe A. Webb, E. Lincoln St., Searcy, Ark. 72143  
 Filed May 29, 1973, Ser. No. 364,632  
 Int. Cl. A01k 15/00

U.S. Cl. 119—29

22 Claims



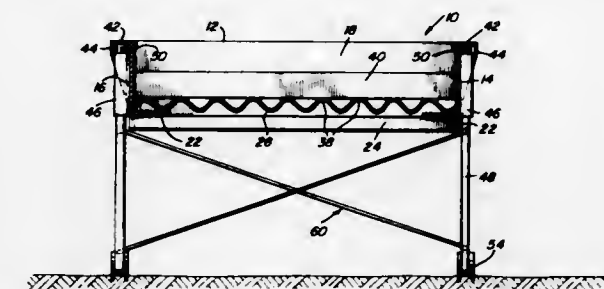
A horse training apparatus including an enclosure frame for receiving a horse and a positively driven, longitudinally movable tread member, and attachment means connected to the frame, and to various portions of the horse's body, particularly the hooves, for training a horse to perform various gaits.

3,824,962

**FEED TROUGH WITH REPLACEABLE BOTTOM**  
 Arnold J. Topham, P.O. Box 355, Booneville, Ark. 72927  
 Filed May 8, 1973, Ser. No. 358,270  
 Int. Cl. A01k 05/00

U.S. Cl. 119—61

6 Claims



An elongated trough, including opposite end and sidewalls, and longitudinally spaced transversely extending brace members secured between the trough sidewalls. One end wall of the trough terminates downwardly above a horizontal plane containing the upper surfaces of the brace members and an elongated bottom wall is lengthwise receivable beneath the



one end wall for positioning on and support from the transverse brace members. The one sidewall includes upwardly retractable abutment means disposed in registry with the adjacent end of the bottom wall to releasably prevent endwise retraction of the bottom wall beneath the one end wall of the trough and the trough includes longitudinally spaced legs supported from opposite sides thereof and the lower ends of the legs on each side of the trough are interconnected by means of horizontal runner members. Further, the opposite ends of the trough include towing eyes whereby a plurality of troughs may be towed in train fashion and the legs and the runners supported therefrom are releasably supported from the trough.

3,824,963

**ROTARY TYPE INTERNAL COMBUSTION ENGINE**  
Takeichi Eda, 989 Kamihinata, Kanuma, Japan

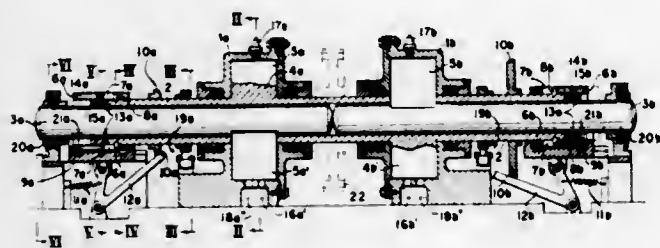
Filed Jan. 4, 1973, Ser. No. 320,938

Claims priority, application Japan, Aug. 14, 1972, 47-80726

Int. Cl. F02b 53/00

U.S. Cl. 123—8.47

4 Claims



A rotary-type internal combustion engine having two cylinders interconnected by a hollow shaft within which are located two coaxial shafts in end-to-end relationship; the hollow shaft and the coaxial shafts each having pairs of vanes in alternate relationship within the cylinders; and camming means for the shafts so as to vary the particular operative relationships of the vanes and of the cylinders.

3,824,964

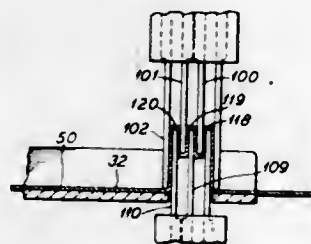
**AUTOMATED PLEATER FOR DRAPERIES**  
Richard Burns Ryan, Northbrook, Ill., assignor to Edward J. Ryan and Patricia K. Ryan, both of Glenview, Ill.

Filed Mar. 29, 1973, Ser. No. 346,126

Int. Cl. A41h 43/00

U.S. Cl. 223—30

23 Claims



A pleating apparatus for automatically producing successive pleats along a length of drapery or curtain material at regular predetermined spacings, including a pleat forming device positioned at a first station for folding a plurality of juxtaposed pleats in the material with a minimum stressing thereof, and a pleat securing device such as a sewing machine positioned at a second station to secure the formed pleats together into a permanent pinch pleat, and including an advancing mechanism to automatically move the formed pleats from the first station or forming area a predetermined distance to the second station or sewing area and thereby regularly space successively formed pinch pleats along the material. The pleat forming device gathers the material ahead of the device to form the pleat so that the material in and beyond the

device is not stressed and the spacing between pleats can be adjusted by varying the space between the first and second stations.

3,824,965

**FUEL SYSTEM**

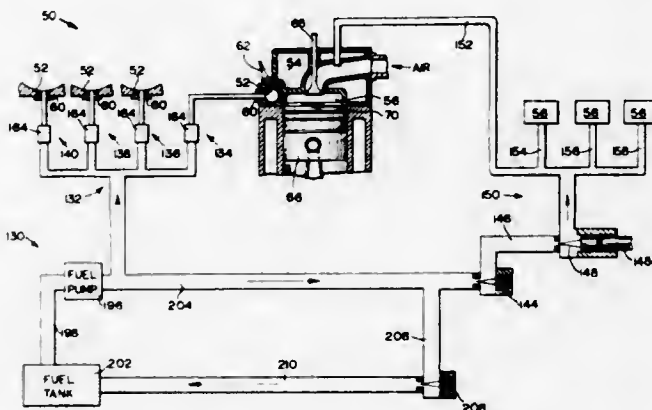
Lawrence G. Clawson, Dover, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 219,385, Jan. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 32,289, April 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 776,285, May 23, 1968, Pat. No. 3,508,530. This application May 30, 1972, Ser. No. 257,710

Int. Cl. F02b 17/00

U.S. Cl. 123—32 R

10 Claims



A low pressure direct injection fuel system for preignition engines in which the main fraction of the compressed charge of the engine is ignited by exposure to a hot gas exiting from a smaller volume spark ignition prechamber forces fuel into each chamber and/or prechamber of the engine during all or a segment of the low pressure scavenging periods of the engine cycle via passages containing valves to prevent backflow of fuel and gases during the high pressure period of the engine cycle. The engine runs unthrottled solely on the prechamber fuel charge and the amount of fuel fed to the prechamber is decreased with increased engine load so that a uniform combustible charge is present in the prechamber during all engine load and speed regimes.

3,824,966

**AIR-FUEL SUPPLY MIXTURE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES**

Rolf Schneider, Winnenden, and Hans-Martin Muller, Asperg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

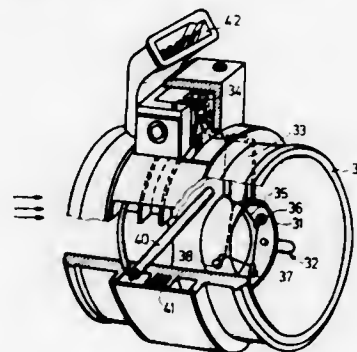
Filed Oct. 11, 1972, Ser. No. 296,601

Claims priority, application Germany, Oct. 18, 1971, 2151774

Int. Cl. F02b 3/00

U.S. Cl. 123—32 AE

10 Claims



To provide an accurate determination of air flow in the inlet manifold of an internal combustion engine and, more particu-

larly, for a fuel injection system, a guide ring is located in the intake air duct to the engine, spaced from the walls of the engine, and within the guide ring, a temperature sensitive resistor is arranged in the form of a loop, the resistor being heated, the heating current to maintain the temperature sensitive resistor at a predetermined temperature being a measure of air flow independently of turbulence occurring within the inlet tube.

3,824,967

**ELECTRONIC FUEL INJECTION SYSTEM**

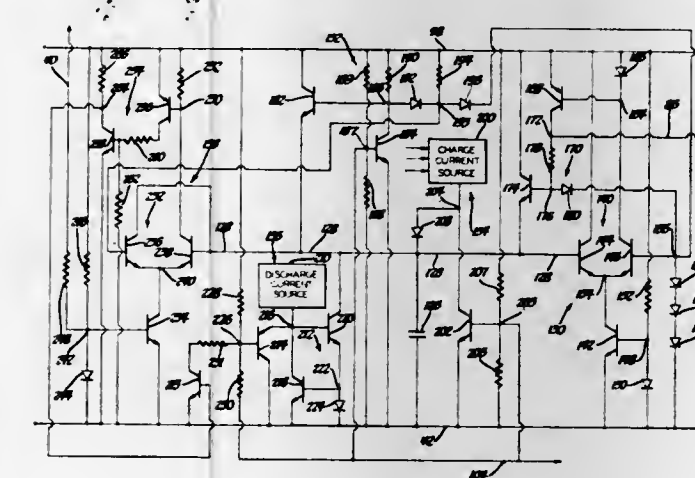
Colin C. Gordon, Cincinnati, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,034

Int. Cl. F02d 5/00

U.S. Cl. 123—32 EA

3 Claims



A control voltage is developed across a capacitor. In synchronization with the operation of an internal combustion engine, the capacitor is charged with a charge current to increase the control voltage from an intermediate level to a peak level. In response to the arrival of the control voltage at the peak level, the capacitor is discharged with a first discharge current to decrease the control voltage from the peak level back to the intermediate level. In response to the arrival of the control voltage back at the intermediate level, the capacitor is further discharged with a second discharge current to decrease the control voltage from the intermediate level to a base level. The peak level of the control voltage is determined as a preselected function of a primary engine operating parameter such as intake air pressure. At least one of the charge current and the first discharge current of the capacitor is determined as a preselected function of a secondary engine operating parameter, such as engine temperature, which is multiplicatively related to the primary engine operating parameter. At least one of the second discharge current of the capacitor and the intermediate level and the base level of the control voltage is determined as a preselected function of a secondary engine operating parameter, such as battery supply voltage, which is additively related to the primary engine operating parameter.

3,824,968

**ROTARY INTERNAL COMBUSTION ENGINE**

Ivan S. Brumagim, North Warren, Pa., assignor to Secondary Processing Systems, Inc., Warren, Pa.

Filed Sept. 7, 1972, Ser. No. 286,972

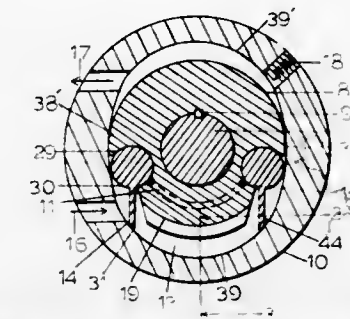
Int. Cl. F02b 55/14

U.S. Cl. 123—8.45

13 Claims

A rotary internal combustion engine consisting of a rotor housed within a stator forming one or more dual purpose compression and combustion chambers, the inner periphery of said chamber being a sector of said rotor, its ends being hinged to said rotor in such manner that both the compression and firing of the fuel forces said ends into pressure tight contact with

the inner surface of said stator, its outer periphery being formed by said inner surface, the contour of said inner surface being adapted to twice maximize and twice minimize the volume of each said chamber at each revolution of the rotor, thereby providing within each chamber a succession of induc-



tion, compression, combustion, expansion and exhaust of fuel at each revolution of the rotor, said rotor being adapted by means of a groove along its surface to transfer the gases thus inducted and compressed in the compression chamber to a point of ignition provided at the beginning of the expansion chamber.

3,824,969

**ELECTRONIC FUEL INJECTION SYSTEM**

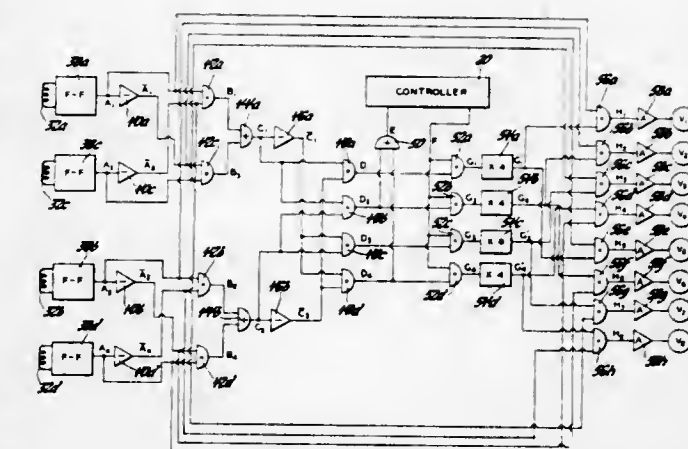
Lamonte R. Edison, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,259

Int. Cl. F02m 51/00

U.S. Cl. 123—32 EA

1 Claim



An internal combustion engine includes a group of eight fuel injectors for applying fuel to the engine. A set of four first order timing signals are developed in synchronization with engine operation. The set of first order timing signals collectively contain eight magnitude permutations per engine cycle each defining the start of injection for a corresponding one of the fuel injectors. The set of four first order timing signals is mixed to form a first set of four second order timing signals, which is mixed to form a second set of two second order timing signals, which is mixed to form a third set of four second order timing signals, which is mixed to form a single third order timing signal containing all eight magnitude permutations per engine cycle. A single third order pulse train is developed in synchronization with the single third order timing signal. The single third order pulse train contains eight control pulses per engine cycle each initiated in response to one of the eight magnitude permutations per engine cycle in the single third order timing signal. The length of each control pulse defines the period of injection for a corresponding one of the fuel injectors in time compressed nonoverlapping relationship. The



single third order pulse train is separated in response to the third set of second order timing signals to form a set of four second order pulse trains collectively containing all eight control pulses per engine cycle. The length of each control pulse in the set of second order pulse trains is extended to define the period of injection for a corresponding one of the fuel injectors in time expanded overlapping relationship. The set of second order pulse trains is separated in response to the set of first order timing signals to form a series of eight first order pulse trains each containing control pulses which are applied to energize a corresponding one of the group of eight fuel injectors.

3,824,970

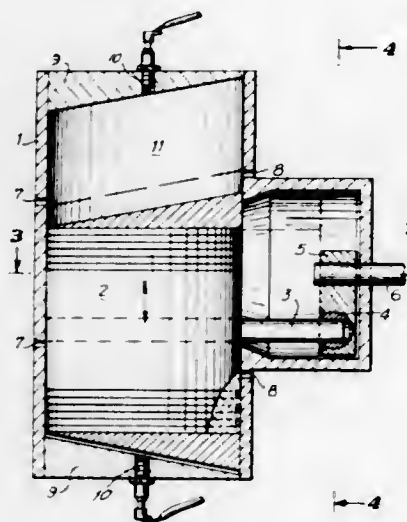
## INTERNAL COMBUSTION ENGINE

Ernest Amery, Hotel Woodstock, 127 W. 43rd St., New York, N.Y. 10036

Filed Oct. 24, 1972, Ser. No. 300,230

Int. Cl. F02b 53/00, 75/16

U.S. Cl. 123—45 R



An internal combustion engine adapted for use in automobiles and other devices capable of operation under high compression while effecting more complete combustion of its fuel. The engine is of the piston type with the piston mechanically arranged for both oscillatory and related vertical reciprocity motion. The cylinder is double-headed the heads being oriented in such a manner with respect to the piston faces that maximum compression is effected on the firing stroke of the engine. The double head cylinder permits more complete combustion of the gasoline mixture.

3,824,971

## INTERNAL COMBUSTION ENGINE WITH TWO INTAKE AND TWO EXHAUST VALVES

Othmar Skatsche; Gerhard Thien, and Karl Kirchweyer, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Aug. 2, 1972, Ser. No. 277,289

Claims priority, application Austria, Aug. 3, 1971, 6787/71

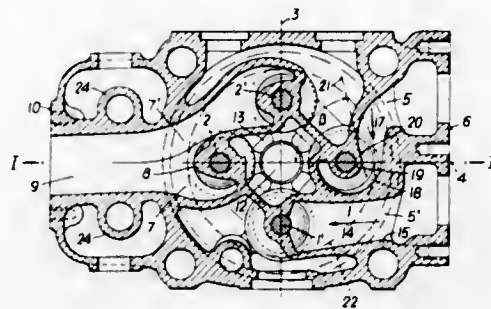
Int. Cl. F02m 35/10; F02b 31/02

U.S. Cl. 123—75 B

1 Claim

An internal combustion engine with two suspended intake valves for each cylinder, of which the first intake valve is connected to a tangential duct extending approximately in transverse relation to the engine, and the second intake valve is connected to an inlet port emerging from the same cylinder-head sidewall as the first-mentioned inlet port and extending approximately in the longitudinal direction of the engine and

terminating as a spiral, wherein the axis of the first intake valve is located approximately in the longitudinal median



plane of the engine and the axis of the second intake valve is situated in a transverse plane of the engine including the axis of the associated cylinder.

3,824,972

## IGNITION SPARK VACUUM ADVANCE SYSTEM

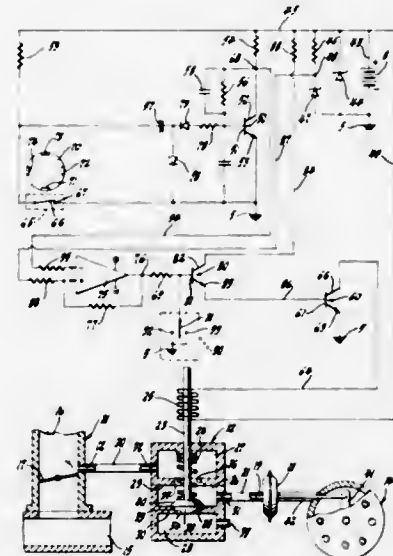
Walter J. Sattler, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1972, Ser. No. 279,844

Int. Cl. F02p 5/04

U.S. Cl. 123—117 R

6 Claims



An ignition spark vacuum advance system for use with motor vehicle internal combustion engines. An operational amplifier responsive to a vehicle speed signal and a reference signal produces a control signal during acceleration to a speed of a selected magnitude and during deceleration at a speed less than the selected magnitude. The control signal triggers a switching transistor conductive to complete an energizing circuit for the operating coil of a two-way valve which normally establishes a vacuum connection between the carburetor vacuum spark advance port and the associated spark advance vacuum unit vacuum port and, upon the energization of the operating coil, vents the spark advance vacuum unit vacuum port to atmosphere. A temperature sensitive switch is operated to the circuit closed condition with engine temperatures less and greater than a selected engine temperature range to inhibit the switching transistor.

3,824,973

## CYLINDER HEAD OIL DRAIN SYSTEM

Volker W. Harhaus, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1973, Ser. No. 366,002

Int. Cl. F02f 9/02

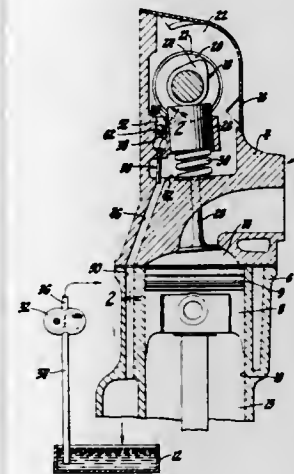
U.S. Cl. 123—119 B

2 Claims

An oil drain system for an overhead camshaft internal combustion engine includes a jet pump nozzle having an intake

end in communication with the main oil gallery of the cylinder head and a nozzle end operative to direct a stream of oil under

cludes mechanically-operating means for sensing variations in the engine speed and for adjusting the pump delivery in dependence on the speed.



pressure into a cylinder head drain passage, whereby the drain flow of oil from the cylinder head to the engine crank case is improved.

3,824,974

## FUEL SUPPLY SYSTEM WITH PRESSURE REGULATOR

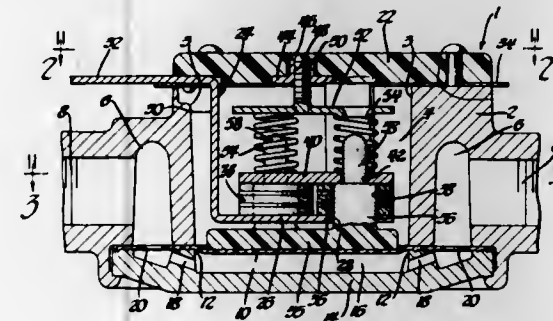
Frank E. La Flame, Dayton, and William L. Sones, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1972, Ser. No. 303,483

Int. Cl. F02m 51/00

U.S. Cl. 123—136

1 Claim



A fluid pressure regulator to control the pressure of fuel pumped by an electric motor fuel pump. Carbon piles are sandwiched between two conducting plates in series with the fuel pump motor; springs cause the conducting plates to compress the carbon piles between them; and a chamber in the fuel line down-stream from the pump has a flexible diaphragm linked to one of the conducting plates to vary the pressure on the carbon piles inversely with the pressure in the fuel line.

3,824,975

## FUEL METERING DEVICE

Donald Bastow, Nullions Woodlands End, Mells, near Frome, Somerset, England

Filed Sept. 5, 1972, Ser. No. 286,259

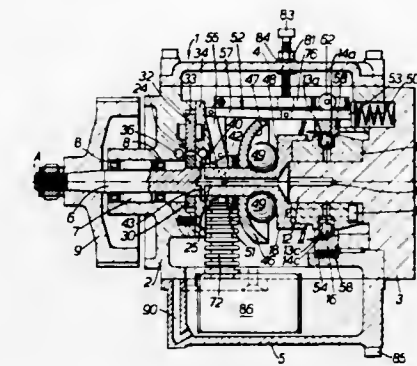
Int. Cl. F02m 39/00

U.S. Cl. 123—139 AC

12 Claims

A device, for supplying fuel in the correct and desired quantity to an internal combustion engine employing spark ignition, compensates for the variation in volumetric efficiency of the engine with engine speed.

The device comprises a fuel injection pump of variable delivery and with independent outlets equal in number to the cylinders of the engine to be supplied. The pump is driven from the engine through drive means of the device which in-



The pump outlets may supply injectors which inject into either the inlet passages or ports of the individual engine cylinders, or directly into the cylinder combustion spaces.

3,824,976

## CAPACITOR CHARGE-DISCHARGE TYPE IGNITION SYSTEM FOR USE IN A TWO-CYCLE INTERNAL COMBUSTION ENGINE

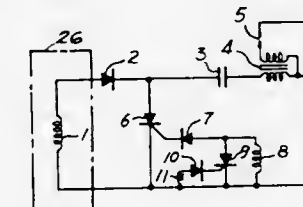
Mitsuo Katsumata; Mitsunori Miyamoto, and Kiyoshi Shirai, all of Numazu, Japan, assignors to Kokusan Denki Co. Ltd., Numazu, Japan

Filed Aug. 30, 1972, Ser. No. 285,069

Int. Cl. F02p 1/00

U.S. Cl. 123—148 E

13 Claims



A capacitor charge - discharge type ignition system for use in a two-cycle internal combustion engine comprising a capacitor to be charged by a suitable power source; ignition coil means through the primary coil of which discharge current from said capacitor flows; a signal source for developing a signal output at the time of ignition; and a gate controlled rectifier for determining said time of ignition under the control of said signal output, said ignition system including means for preventing said engine from rotating in the reverse direction and said means being adapted to short-circuit the charging power source thereby to prevent the charging current from the source from flowing through the capacitor or the signal source thereby to prevent the igniting current from the signal source from flowing through the gate controlled rectifier when the engine rotates in the reverse direction.

3,824,977

## INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Robert E. Campbell; Lewis R. Hetzler, and Gerald O. Huntzinger, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,248

Int. Cl. F02p 3/02

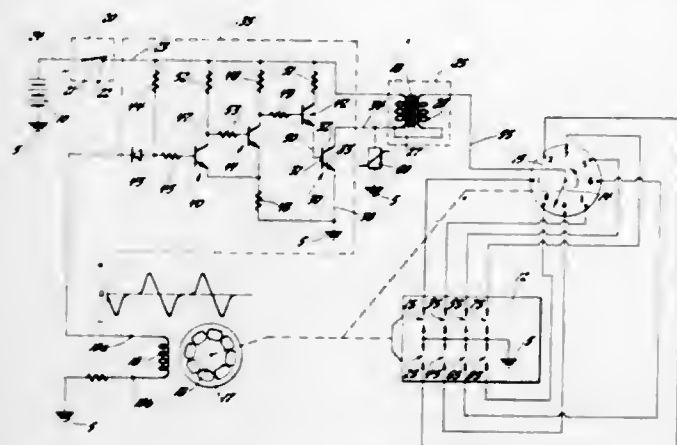
U.S. Cl. 123—148 E

5 Claims

An internal combustion engine ignition system of the inductive type which provides a rapid rise time ignition spark potential and a long duration arc. The primary winding of the ignition coil has an inductance valve which, with a specific ener-



gizing current, will provide sufficient stored energy to maintain an ignition arc for a predetermined duration, of the order of 800 microseconds, for example. The ignition coil secondary to primary turns ratio is selected to be of the order of 60:1 to provide a predetermined rise time of the ignition spark poten-



tial, of the order of 40 microseconds, for example. To prevent the destruction of the ignition coil primary winding energizing circuit switching device in the event of an open secondary winding output circuit, a metal oxide varistor is connected in shunt across the current carrying elements thereof.

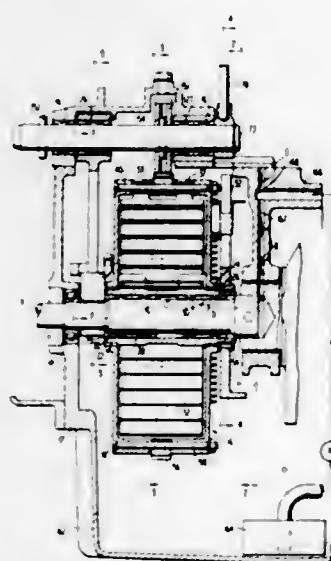
3,824,978

**METHOD AND APPARATUS FOR STARTING AN INTERNAL COMBUSTION ENGINE**  
Merle Winfield Paquette, deceased, late of Los Angeles, Calif. (by Richard N. Paquette, petitioner), assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Apr. 24, 1973, Ser. No. 354,087  
Int. Cl. F02n 5/02

U.S. Cl. 123—179 S

23 Claims



A method and apparatus for starting an internal combustion engine. The apparatus includes a convolute spring disposed about an arbor which in turn is coaxially mounted upon a crankshaft of the engine. The spring serves to drive the crankshaft through a one-way clutch operably connected between the arbor and the crankshaft. The spring is fastened at the other end to a spring casing which is mounted for unidirectional rotation about the crankshaft. A spring rewind drive train drivingly connects the crankshaft with the spring casing and is operable to rotate the spring casing to rewind the starter spring upon starting of the internal combustion engine. A hydraulic system is provided for automatically resetting a starter spring release to rewind the starter spring upon starting of the engine. A hydraulic lock-out means automatically ter-

minates the rewinding operation upon winding the spring to a predetermined extend. The lock-out precludes overwinding and excessive wear during operation of the engine.

The method includes the steps of releasing a spring biased arbor connected through a one-way clutch to the engine crankshaft, transmitting torque energy from a wound spring to the engine crankshaft for rotating the crankshaft and starting the internal combustion engine. Further, the method includes hydraulically resetting the arbor arm to stop rotation thereof automatically upon starting of the internal combustion engine, rewinding the starter spring for subsequent use, and hydraulically terminating the rewinding process upon the starter spring achieving a rewound condition.

3,824,979

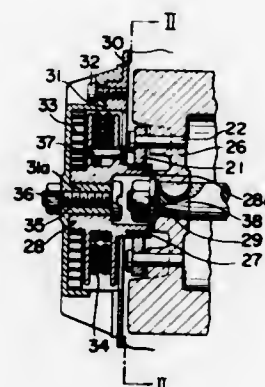
**RECOIL STARTER FOR AN INTERNAL COMBUSTION ENGINE**

Kazuya Tajika, Ono, and Hidenori Shimizu, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo-ken, Japan

Filed Sept. 5, 1972, Ser. No. 286,040  
Int. Cl. F02n 3/02

U.S. Cl. 123—185 A

6 Claims



A recoil starter for an internal combustion engine having a rotatable reel disposed on an engine body and adapted to be rotated in one direction by pulling a length of rope, said reel being provided with a boss protruding therefrom toward a flywheel of the engine. A cylindrical friction member is disposed around the outer periphery of the boss. A pair of cams are provided on the flywheel at two positions opposing to the friction member, each of the cams being brought into engagement with said friction member as the reel is rotated in said one direction and released from the engagement with the friction member under the influence of a centrifugal force produced by increased speed of the engine.

3,824,980

**VEHICLE INTERNAL COMBUSTION ENGINE LUBRICATING OIL COOLING AND FILTERING CIRCULATION SYSTEM**

Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021

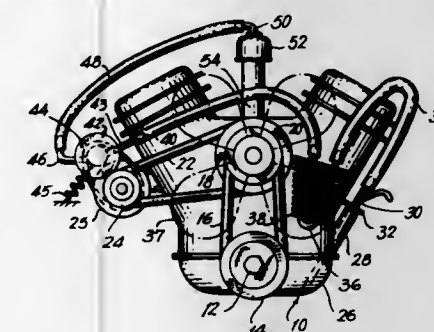
Filed Nov. 13, 1972, Ser. No. 305,739  
Int. Cl. F01m 5/00; F16n 39/06

U.S. Cl. 123—196 AB

2 Claims

A system including a calibrated oil measuring tube which partially extends into the oil crank case. An oil cooling heat exchanger is provided and means connects the calibrating

tube to the heat exchanger. A pump circulates oil from the crank case via the calibrating tube through the heat exchanger



3,824,981

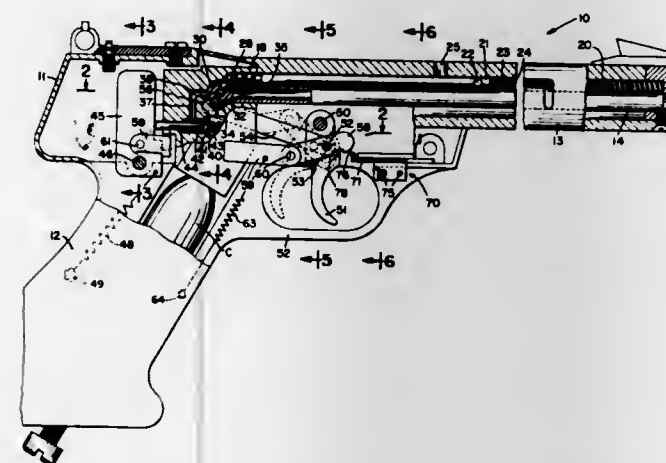
**SEMI-AUTOMATIC B-B PISTOL WITH TRIGGER-CONNECTED LINKAGES**

James W. Crane, Fairport, and David R. Hand, Newark, both of N.Y., assignors to Crosman Arms Company, Inc., Fairport, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,761  
Int. Cl. F41b 11/06

U.S. Cl. 124—11 R

10 Claims



In this pistol an operating pin on the trigger is connected by a linkage to the hammer, and by a lever to a cylindrical loader that pivots at the inner end of the barrel between loading and firing positions respectively. The trigger is spring-loaded to its released position. In this position the loader is in loading position in which a duct therethrough will receive a BB projectile from the magazine. When the trigger is pulled, the loader is pivoted to swing the duct therethrough and the BB therein into registry both with a gas inlet port and the bore of the barrel and the hammer is tripped to open the valve which supplies the propellant gas to the duct and the ball is propelled from the barrel.

3,824,982

**MACHINE FOR CUTTING BRITTLE MATERIALS**

John L. Bowman, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 209,804, Dec. 20, 1971, abandoned.

This application July 2, 1973, Ser. No. 376,045

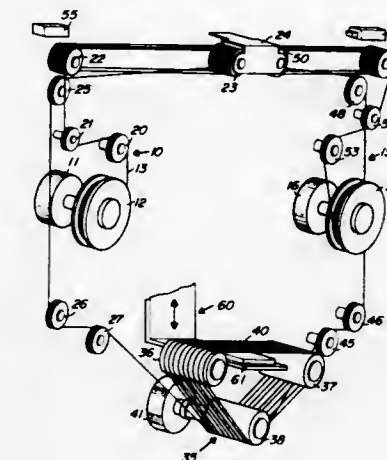
Int. Cl. B28d 1/08

U.S. Cl. 125—16

7 Claims

A carriage having a pair of pulleys mounted thereon and mounted for reciprocating movements between a pair of fixedly positioned pulleys with switches positioned at each end of the path so as to be activated by the carriage as it reaches

either end of the path. A plurality of pulleys mounted in spaced apart relationship to define a cutting area, one of said pulleys being driven by a reversible motor connected to the two switches to reverse each time the carriage reaches an end



of the path. A continuous strand of wire extending from a wire supply to a take-up means and engaged around the pulleys of the carriage, the pulleys associated with the carriage and the pulleys defining the web to follow a continuous path from the supply to the take-up.

3,824,983

**ACCELERATION ENRICHMENT**

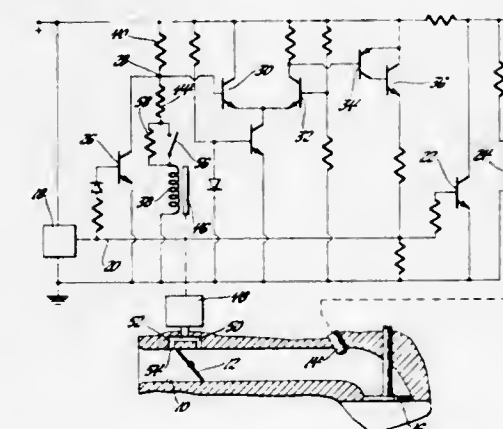
Francis A. Sciallica, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1972, Ser. No. 240,184

Int. Cl. F02d 5/02

U.S. Cl. 123—32 EA

1 Claim



In a speed-density fuel injection system, a pressure transducer receives pressure signals from the air induction passage below the throttle and from a port located closely above and traversed by the throttle. The atmospheric pressure sensed by the port during closed throttle operation increases the induction passage pressure signal otherwise delivered to the transducer. As the throttle is opened, increased fuel flow is provided for acceleration enrichment until the increased pressure signal reduces to induction passage pressure.

3,824,984

**CHARCOAL GRILL CONVERSION APPARATUS**

Marvin C. Swanson, 714 Highwood, Greencastle, Ind. 46135, and Harold R. Swanson, 4232 N. Octavia Ave., Norridge, Ill. 60634

Filed Feb. 10, 1972, Ser. No. 225,105

Int. Cl. A47J 37/07; F24b 3/06

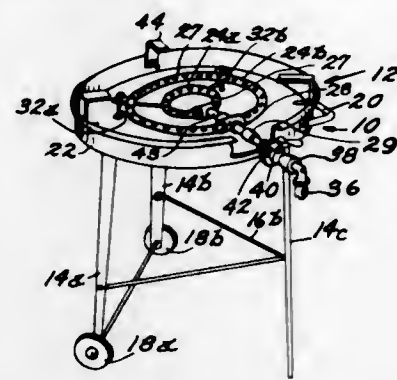
U.S. Cl. 126—25 R

2 Claims

A device is disclosed for converting a standard charcoal grill to a gas fired cooking apparatus. The burner comprises a series of rings which have upwardly facing apertures which are



disposed concentrically about a central axis of a typical bowl shaped charcoal grill. Rigid members depend from the rings and rest upon the bottom of the grill (to support the burner generally parallel to the open top portion thereof). The rings



are connected to a source of gas either through the side or over the side of the grill. In addition, a special grate fabricated from sheet metal for supplying a greater proportion of conductive heat to the food being cooked may be suspended above the grill.

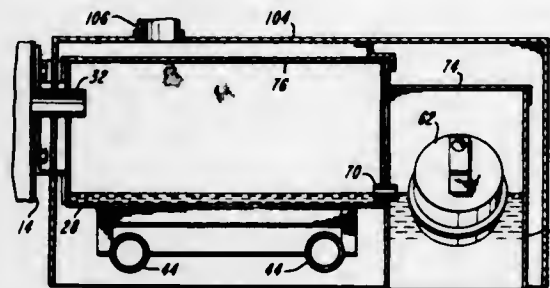
### 3,824,985 HUMIDIFIER

Sidney W. Hetherington, 5540 Madison Rd., Cincinnati, Ohio 45227

Filed May 1, 1972, Ser. No. 248,981  
Int. Cl. F24f 3/14

U.S. Cl. 126-113

15 Claims



A humidifier is described for use in combination with a hot air furnace. The humidifier comprises a reservoir which is automatically filled with water from a pressurized water line or supply. Water flows from the reservoir into a boiler and a relatively shallow depth of water is maintained therein. A burner beneath the vaporizer pan comprises a pilot flame which preheats the water, and burner elements which, on demand of a humidistat signal, are fired to generate steam in the boiler. This steam is then introduced into the cold air plenum of the furnace and circulated through the duct system thereof by the furnace blower which is also actuated when there is a demand for increased humidity.

### 3,824,986

#### SUBMERSIBLE POOL HEATER

Robert M. Ramey, North Hollywood, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

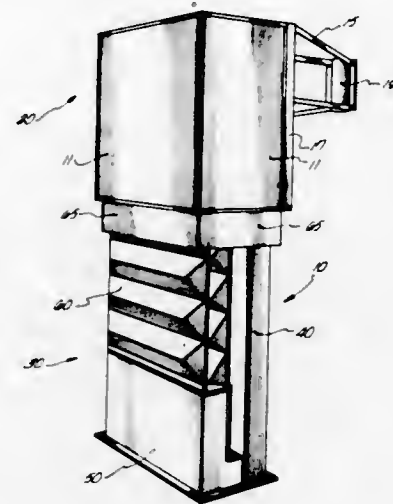
Filed Jan. 17, 1972, Ser. No. 218,421  
Int. Cl. F24h 1/20

U.S. Cl. 126-360

14 Claims

A pool heater is disclosed that is adapted to be partially submersible in the water contained in the pool. The pool heater comprises a vent assembly, which is adapted to be supported above the pool water level, and a duct assembly, which is adapted to be submersed below the pool water level. The vent assembly comprises a vented outer housing having an exhaust stack located therein. The top cover plate of the outer housing

includes an aperture formed therein. The exhaust stack terminates slightly below the aperture to enable cool inlet air to be drawn therethrough cooling the outer housing surrounding the stack. The duct assembly forms a U-shaped configuration having an inlet duct forming one of the legs. A combustion chamber is formed at the bottom of the U-shaped configuration, while the other leg of the U-shaped configuration forms



heat exchange conduits. Radiant plates are located within the combustion chamber which function to feed back radiant energy into the burning air fuel thereby expediting the combustion. The heat exchange conduits are formed in a zigzag configuration for providing a turbulent flow for the combustion exhaust. An aquastat is positioned adjacent the upper end of the heat exchange conduits for sensing the temperature of the water in the vicinity thereof.

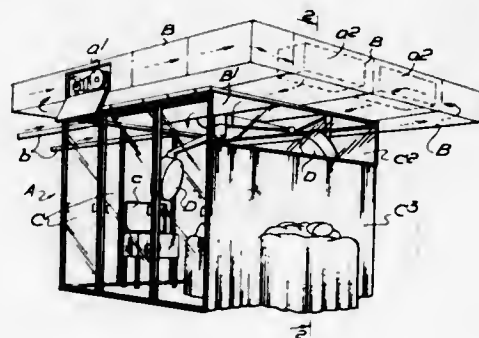
### 3,824,987

#### OPERATING THEATRES

Frederick Hugh Howorth, Chorley, England, assignor to Howorth Air Conditioning Limited, Bolton, England  
Continuation-in-part of Ser. No. 216,693, Jan. 10, 1972, abandoned. This application July 16, 1973, Ser. No. 379,858  
Int. Cl. A61b 19/00

U.S. Cl. 128-1 R

5 Claims



An operating theater comprising a chamber closed at the top by a ceiling surrounded by a plenum chamber provided with ducts through which sterile air is drawn from outside the chamber and discharged vertically downwards from tubes of porous textile material having along the bottom of each section inserts of a knitted fabric of greater air permeability than the remaining tube wall to give directional control of the air flow, a rail being mounted on the underside of the plenum chamber from which are suspended on three sides removable interchangeable panels extending from the rail to a floor and on the fourth side a curtain to give access for an operating table and patient, with means for extracting contaminated air from the patient.

### 3,824,988

#### ULTRASOUND DOPPLER APPLICATOR

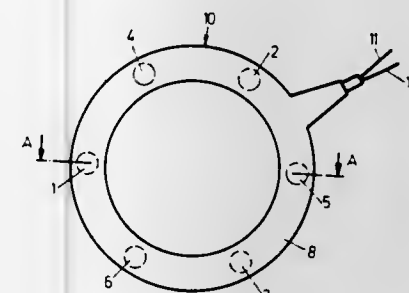
Richard Soldner, Erlangen, and Gerhard Naefe, Erlangen-bruck, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 30, 1973, Ser. No. 328,147  
Claims priority, application Germany, Jan. 31, 1972, 22004474

U.S. Cl. 128-2 V

Int. Cl. A61b 5/00

12 Claims



An ultrasound Doppler applicator is used for determining the movement of internal body parts the position of which is variable relatively to the applicator, particularly fetal heart movement. The invention is particularly characterized by the provision of a plurality of ultra sound sending oscillators and a plurality of ultra sound receiving oscillators carried by a ring and distributed over the entire ring.

### 3,824,989

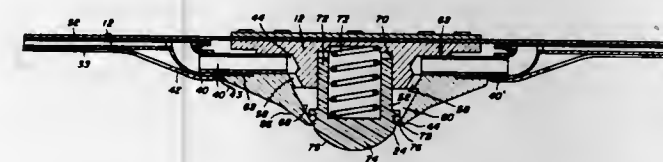
#### ANIMAL ESTRUS DETECTOR

Tommy Dean Horner, 1450 Kendall, Apartment 5G, Lakewood, Wls. 80214, and Charles Ewing, Jr., 6004 Johnson Way, Arvada, Colo. 80004

Filed May 31, 1973, Ser. No. 353,378  
Int. Cl. A01k 11/00; A61b 10/00

U.S. Cl. 128-2 H

8 Claims



A heat or estrus indicator for animals has been devised which is in the form of a harness or collar adapted to be releasably attached to the bull animal with an applicator unit for dispensing a marker material onto the back of the female animal during simulated or actual coition, the heat indicator being characterized by metering the supply of marker material through the applicator from one or more reservoirs which are incorporated into and form a part of the harness.

### 3,824,990

#### METHOD AND APPARATUS FOR PRODUCING SAMPLE ELECTROCARDIOGRAMS

Gerhard M. Baule, Camillus, N.Y., assignor to Instruments for Cardiac Research, Inc., Syracuse, N.Y.

Filed June 30, 1971, Ser. No. 158,481

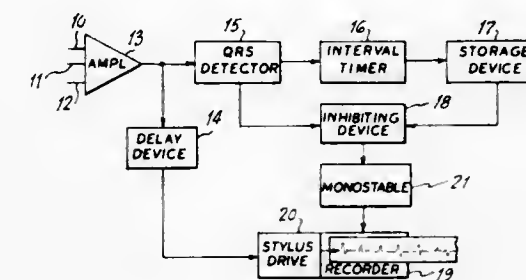
U.S. Cl. 128-2.06 G

Int. Cl. A61b 5/04

5 Claims

An electronic instrument for medical use measures the time intervals between QRS complex portions of the electrical signal wave representing heartbeats. The intervals are quantized in digital form. The occurrence of each subinterval is stored. Every incoming time interval is compared with the stored values. The instrument, upon receiving and comparing

a novel interval, for example, either too short or too long, will activate an electrocardiograph recorder. The instrument



produces a relatively small number of electrocardiographic (ECG) records, in the form of paper strips, but those strips are likely to contain a history of arrhythmic heart activity.

### 3,824,991

#### THERAPEUTIC CHAIR FOR EXERCISING BACK MUSCLES

William J. Whitaker, 3517 Imperial Hwy., Lynwood, Calif. 90262

Filed Sept. 5, 1972, Ser. No. 285,994  
Int. Cl. A61h 1/00

U.S. Cl. 128-24 R

7 Claims



A therapeutic chair to enable a person to exercise his back muscles. The chair includes a base that sets on the floor and includes a seat rockably mounted on the base to rock from side to side about a horizontal axis. To the base there is fixed a guide that extends over the person's head. The guide is adjustable to accommodate various size people so that the guide just contacts the head of the person sitting on the seat, to notify the person to keep his head steady. Mounted within the base is an electric motor with an eccentric crank that is coupled to the seat to rock it from side to side. A timer is provided in series with the electric motor, which cuts off current to the motor after a predetermined time.

### 3,824,992

#### PRESSURE GARMENT

James E. Nicholson, Quincy, and Charles S. Lipson, Newton, both of Mass., assignors to Clinical Technology Incorporated, Brighton, Mass.

Filed Mar. 16, 1973, Ser. No. 342,098  
Int. Cl. A61h 1/00

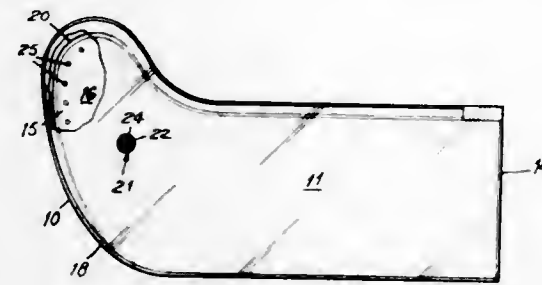
U.S. Cl. 128-24 R

6 Claims

A garment to provide pulsating pressure to a lower human extremity for aiding blood circulation in the extremity and having an outer nonelastic plastic envelope sealed to an internal relatively soft envelope providing an air space therebetween for the application of pulsating pressure uniformly to a limb inserted within the inner envelope. The inner envelope has a common seam along part of its length



with the outer envelope to prevent inflation pressure from displacing the two envelopes. A system of apertures in the inner



envelope provide for a limited gaseous passage of air from the pressurized space between the two envelopes to the surface of a limb encased within to provide breathing air for the skin.

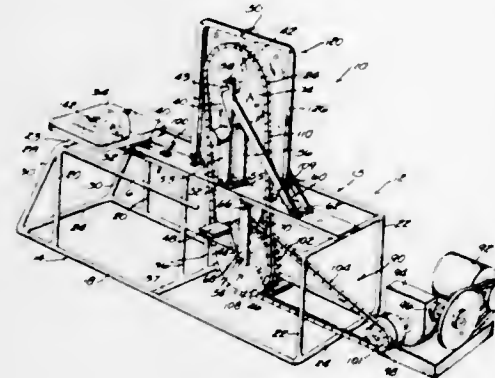
3,824,993

**PHYSIO-THERAPY METHOD AND APPARATUS**

James L. Grant, 602 S. University, Beaver Dam, Wis. 53916  
Continuation-in-part of Ser. No. 168,991, Aug. 4, 1971,  
abandoned. This application Jan. 2, 1973, Ser. No. 320,362  
Int. Cl. A61h 1/02

U.S. Cl. 128—25 R

6 Claims



Apparatus for teaching brain-damaged children or adults the homolateral gestalt and cross-pattern gestalt includes commonly driven foot cranks and hand cranks which are adjustable to afford use of the cranks in the proper angular phase for cross-pattern therapy or homolateral therapy. The apparatus includes a motor and a variable speed drive to rotate the cranks and manipulate the patient's limbs in the proper sequence to teach the desired gestalt. A clutch in the drive train enables free wheeling of the cranks by the muscle power of the patient as learning progresses with use of the apparatus in the driven mode.

3,824,994

**RECIPROCATING WALKER**

Raymond Henry Soderberg, Sr., Panorama City, Calif., assignor to R. S. Reciprocating Trainer Enterprises, Inc., North Hollywood, Calif.

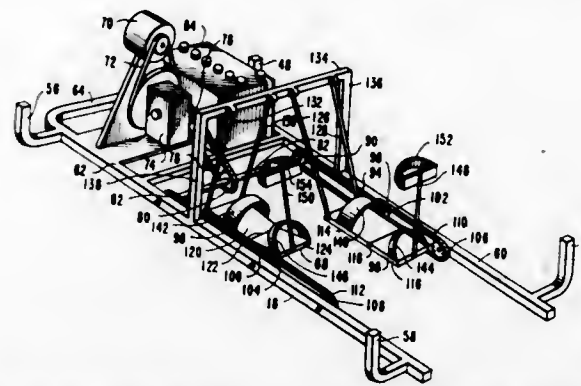
Filed Jan. 29, 1973, Ser. No. 327,795  
Int. Cl. A61h 1/02

U.S. Cl. 128—25 R

24 Claims

A walker in which an individual secured at the waist and having both feet attached to movable footboards is caused to undergo a complete reciprocating walking action in which the feet, angles, legs, hips and arms all move in normal walking fashion. Each footboard is centrally hinged to define a forward portion supporting the ball of the foot and a rearward portion supporting the heel of the foot and movable independent of the forward portion to create the up-down heel motion experienced in walking. The footboards which are coupled to

endless chains so as to be reciprocatingly driven through endless cyclic loops of motion also include brackets secured to the rearward portions for bending and straightening the knees



during the walking motion. The frame of the walker may be mounted on independently driven belts and control apparatus added to make the walker drivable by the individual across a surface at variable speeds and in variable directions.

3,824,995

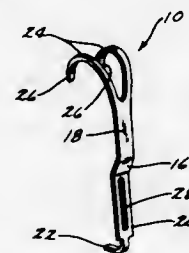
**TROCHANTERIC PLATE**

Phillip E. Getscher, and Henry G. Hesser, both of Lincoln, Nebr., assignors to Elizabeth A. Villiers, Lincoln, Nebr., a part interest

Filed July 24, 1972, Ser. No. 274,562  
Int. Cl. A61F 5/04

U.S. Cl. 128—92 B

5 Claims



An elongated plate element extends on the exterior of the femur shaft and the greater trochanter across the adjacent ends. One end of the plate includes a right angle anchor element embedded in the femur shaft and the opposite end includes a pair of outwardly diverging return bend hook elements anchored in the outer end of the trochanter. A bend is provided in the plate element which positions the opposite portions in spaced apart parallel planes. An elongated slot is provided in the plate element and a pin extends through the slot into the femur shaft.

3,824,996

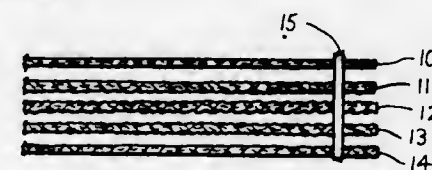
**HIGHLY ABSORBENT PRESSURE DRESSING FOR WOUNDS**

Richard S. Carlisle, Beachwood Ln., Box 307, Rye, N.Y. 10580

Continuation-in-part of Ser. No. 877,823, Nov. 18, 1969,  
abandoned. This application Nov. 17, 1971, Ser. No. 199,759  
Int. Cl. A61I 15/00

U.S. Cl. 128—156

18 Claims



A non-woven dressing is provided for human (or animal) body lesions which has a high rate of absorbency irrespective

of gravity for water and blood, is non-compressible relative to prior art dressings to the extent that pressure generated by strips of retaining material is effectively transmitted to the wound surface, is substantially non-elastic, so that said transmitted pressure is distributed evenly when the dressing is affixed to a surface which is curved, and the material is relatively dense, to the extent that the absorbed exudates become so thinly dispersed that their adhesive effect is reduced sufficiently within the dressing material to allow layers of said material to be readily separated one from another at any time.

3,824,997

**MANUFACTURE OF ALGINIC MATERIAL**

Kenneth John Franklin, Harrow, and Keith Bates, Pinner, both of England, assignors to Medical Alginates Limited, Perivale, Middlesex, England

Filed Nov. 29, 1971, Ser. No. 203,039

Claims priority, application Great Britain, Aug. 12, 1971,  
38010/71

Int. Cl. A61I 15/04

U.S. Cl. 128—156

3 Claims

Partially soluble alginic material in the form of gauze or wool, suitable for the preparation of surgical dressings, based on alginic acid and containing calcium, sodium and acid forms e.g. in the ratio 4 : 5 : 1 and characterised by a calcium content of 2 to 6 percent and a reaction pH of 4 to 7 and a method of manufacture by treatment of the insoluble calcium form of the material with a predetermined quantity of acid and, thereafter, alcoholic alkali.

3,824,998

**FIRST AID DRESSING FOR WOUNDS OR BURNS**

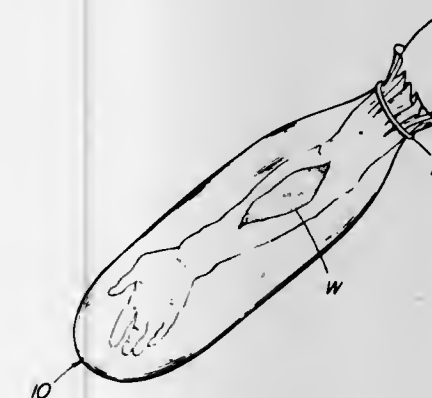
George W. Snyder, Hudson, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,317

Int. Cl. A61I 13/00

U.S. Cl. 128—157

11 Claims



A first aid dressing for wounds or burns to prevent gross infection of the burns or wounds from air or water-borne bacteria, dust, dirt, etc. which comprises a microporous breathable thermoplastic film of sufficient size to cover the burn or wound and preferably an uninjured perimeter around the burn or wound and means around the perimeter of the microporous film, such means being able to provide a closure of the microporous film dressing to the perimeter around the burn or wound, the closure being sufficiently secure to prevent gross entry of air between the dressing and the skin. In use, when so applied, the first aid dressing, which is usually non-adherent to the wound or burn, is inflated away from the wound or burn by means of positive pressure created by moisture vapor issuing from the burn or wound or the uninjured parts of the body which are covered by the first aid dressing or entrapped air heated by the skin. The first aid dressing is permeable to air and moisture vapor, but impermeable to liquid water and other liquids which do not wet the hydrophobic film and also to air-or water-borne bacteria, etc.

3,824,999

**TRACHEOTOMY MASK**

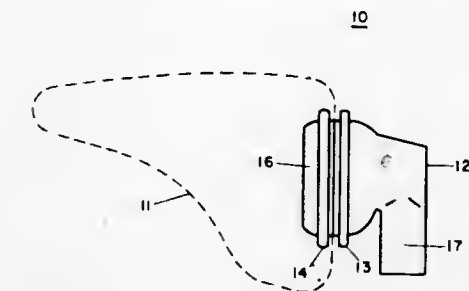
William R. King, Denver, Colo., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 289,823, Sept. 18, 1972,  
which is a continuation-in-part of Ser. No. 152,358, June 11,  
1971, abandoned. This application Apr. 11, 1973, Ser. No.  
349,978

Int. Cl. A61m 15/00

U.S. Cl. 128—185

27 Claims



A tracheotomy mask having a tubing adapter with a ball joint socket, for improved rotatability of the adapter with respect to the mask.

3,825,000

**DISPOSABLE HUMIDIFIER**

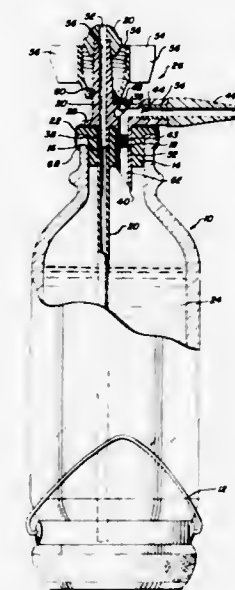
James A. Huggins, Libertyville, Ill., assignor to Baxter Laboratories, Inc., Libertyville, Ill.

Filed Nov. 8, 1972, Ser. No. 304,757

Int. Cl. A61m 15/00

U.S. Cl. 128—194

11 Claims



Oxygen to be administered to a patient is humidified by passing the oxygen through a standard water-containing intravenous solution bottle. A coupling assembly having an inlet tube and an outlet tube is inserted into the two openings defined by the stopper of the intravenous solution bottle, and is coupled to an oxygen supply. The connector assembly is capable of supporting the bottle, and carries a humidified oxygen outlet to which a nasal cannula is coupled.



3,825,001

## CATHETER PLACEMENT UNIT

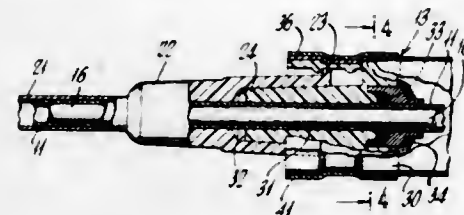
Stanford M. Bennet, Milltown; William Smith, Calton, and Joseph J. Thomas, Somerville, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Dec. 5, 1972, Ser. No. 312,426

Int. Cl. A61m 25/02

U.S. Cl. 128—214.4

5 Claims



A catheter placement unit primarily useful with equipment for monitoring central venous pressure comprises a length of flexible hollow tubing having a female fitting at one end for attachment to the equipment and a male fitting adjacent the other end for attachment to the hub of a flexible intravenous plastic catheter that has been introduced into the vein of a patient. The male fitting has an axial opening through which the tubing passes and across the opening is positioned an elastomeric diaphragm having a slit which tightly engages the outer periphery of the tubing to form a seal between the male fitting and the tubing and to yieldingly resist the movement of the tubing relative to the male fitting. A stylet is preferably provided within the lumen of the tubing and a flexible plastic sheath preferably covers the tubing to provide a sterile procedure for feeding the tubing through the male fitting and plastic catheter.

3,825,002

## CARTRIDGE SYRINGE AND CRIMPED NEEDLE ASSEMBLY

Anthony Thomas Paige, Cranleigh, England, assignor to The Amalgamated Dental Company Limited, London, England

Filed Feb. 7, 1972, Ser. No. 224,064

Int. Cl. A61m 5/24

U.S. Cl. 128—218 DA

5 Claims



The invention provides a double-ended hypodermic injection needle comprising a double-ended cannula having mounted along the length thereof holding means comprising a body part engaging therewith and dividing it into two parts, namely an injection part and a cartridge part, the body member being provided with a skirt extending around the cartridge-piercing part of the cannula and at least a part of the outer surface of the skirt being provided with suitably longitudinally extending ribs, for engaging an internal screw thread in the body of a syringe in screw-thread relationship. The rim of the skirt preferably extends beyond the end of the cartridge-piercing part of the cannula and the injection part of the cannula may be protected by an elongated cap.

3,825,003

## SEALED-HYPODERMIC SYRINGE

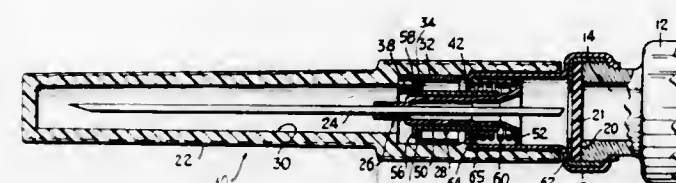
Ralph E. Kruck, Waterbury, Conn., assignor to VCA Metal Fabrications, Inc., Waterbury, Conn.

Filed Dec. 26, 1972, Ser. No. 318,576

Int. Cl. A61m 5/32

U.S. Cl. 128—218 NV

8 Claims



A sealed hypodermic syringe comprising a cylindrical syringe body having a discharge opening at one end with a sealing membrane extending across the opening. A ferrule is disposed on the syringe body adjacent the discharge opening, the ferrule carrying a double-pointed needle and hub assembly arranged for longitudinal movement between an advanced position wherein the inner end of the needle is spaced from the sealing membrane, and a retracted position wherein the inner end pierces the membrane and communicates with fluid contained within the syringe body. A spring biases the needle to its retracted position, and a cover having a hollow bore houses the protruding portion of the needle. Press-fitted into the bore of the cover is an insert ring having locking shoulders which cooperate with ears of the needle-hub assembly to retain the needle in its advanced position against the action of the spring prior to the first use of the syringe. To ready the syringe for use the cover is turned slightly. This releases the advanced needle whereupon the action of the spring instantly snaps it to the retracted position. The inner end of the needle thereby pierces the sealing membrane and communicates with the syringe chamber, enabling discharge therefrom to be effected. Once the cover has been removed and the needle has snapped to its retracted, operative position, the cover can no longer be replaced and retained to house the needle. Thus, prior use of the syringe will be indicated.

3,825,004

## DISPOSABLE ELECTROSURGICAL CAUTERY

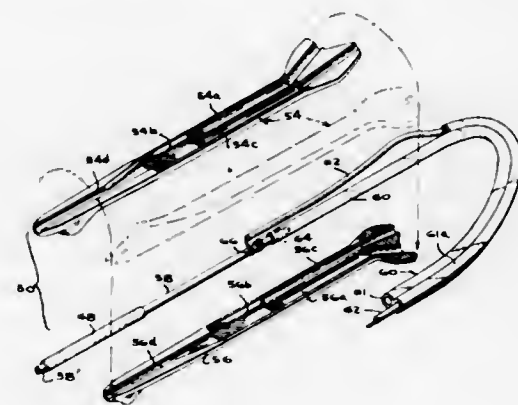
John G. Durden, III, Atlanta, Ga., assignor to Durden Enterprises, Ltd., Auburn, Ga.

Continuation-in-part of Ser. No. 288,543, Sept. 13, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 342,382

Int. Cl. A61b 17/36; A61m 1/00; A61n 3/06

U.S. Cl. 128—275.1

25 Claims



A disposable electrosurgical cautery which functions in a dual capacity as a hollow sucker tube as well as a cauterizer, and is intended to be prepackaged in sterilized containers to be used once and disposed of. The cautery consists of an elongated metal electrode tube having an electrical conductor wire permanently connected to a preterminal portion, and

together are encased in a plastic housing which serves as an insulating handle. The handle is of special sculptured or contoured configuration to provide for deft and positive use of the distally projecting probe or point of the cautery without chance of short circuits or burns through inadequate wire connections or poor insulation. In operation, blood from a surgical incision or other wound is drawn by vacuum through the barrel of the electrode tube, clear of the severed vessels, and a high frequency current is passed through the electrode to cauterize and prevent further bleeding of the vessels.

3,825,005

## RESEALABLE CLOSURE FOR ILEOSTOMY BAG

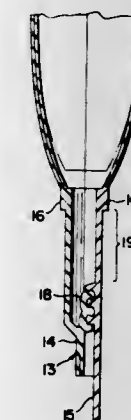
Leonard Fenton, Beachwood, Ohio, assignor to Marlen Manufacturing and Development Co., Bedford, Ohio

Filed Feb. 26, 1973, Ser. No. 335,949

Int. Cl. A61f 5/44

U.S. Cl. 128—283

12 Claims



A reusable, resealable, ileostomy or colostomy bag which may be emptied without removing the bag from the stoma of the user. Overlapping flexible panels of plastic material, which are sealingly connected at their sides, are sealed to the walls of the bag or pouch. Ribs integral with one panel are adapted to sealingly fit into channels formed by ribs on the other panel to provide a gas-impermeable and fluid-tight seal. The resilience of the panels permits them to be bent together along the line of sealing at the bottom of the bag. Finger pressure, oppositely directed along the closure, permits distension of the closure to its full opening, permitting fecal matter in the pouch to be dumped without contacting the same. To more securely seal the bottom of such a bag, a secondary sealing device is provided. Such a sealing device comprises mating sealing members on either side of a fold line at the bottom of the bag. The secondary seal is effected by folding the bottom of the bag one or more times and then fastening the mating sealing members.

3,825,006

## DIAPER GARMENT WITH INTERLEAVED LINER HAVING NON-WICKING PROTECTIVE PANELS

Harold J. Ralph, 1534 E. Edinger St., Santa Ana, Calif. 92705

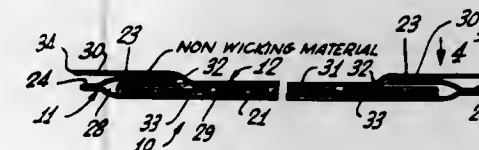
Continuation-in-part of Ser. No. 214,974, Jan. 8, 1972, Pat. No. 3,771,524, which is a continuation-in-part of Ser. No. 74,013, Sept. 21, 1970, Pat. No. 3,667,466. This application

Nov. 5, 1973, Ser. No. 412,692

Int. Cl. A41b 13/02

U.S. Cl. 128—287

9 Claims



A moisture-imperious snap-on retainer comprising a generally rectangular main body panel with side and end flaps

on one side defining a reservoir, and an absorbent liner comprising a rectangular pad underlying said flaps, and protective panels joined to the pad between said side flaps and overlying the side flaps, both to minimize contact with the wearer and to frictionally hold the liner against slipping relative to the retainer. The protective panels are composed of non-wicking or hydrophobic material which will not conduct liquid laterally across the side flaps from the pad, and thus remain dry, being protected from direct exposure to the pad by the impervious side flaps. In one embodiment, the protective panels are the opposite edge portions of a single sheet glued to the pad between the side flaps, and in another embodiment, they are separate strips similarly glued to the pad.

3,825,007

## PLEDGETS

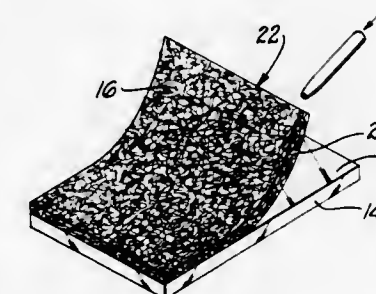
Robert W. Rand, 521 N. Bristol, Los Angeles, Calif. 90049

Filed Jan. 7, 1972, Ser. No. 216,077

Int. Cl. A61f 13/00

U.S. Cl. 128—296

2 Claims



A "pledget" is disclosed which comprises a piece of an absorbent, fibrous material having a surface covered by a covering of a flexible, resilient polymer material which extends over and around and into the interstices of the fibers at the surface of the piece of material. Such a structure can be created by contacting the surface with a layer of a latex of the polymer material for a sufficient period so that the liquid vehicle within the latex will be absorbed into the fibrous material, resulting in the formation of the covering on the fibers at the surface of the material, and then removing the liquid vehicle from the material and from the covering.

3,825,008

## APPARATUS FOR CONTROLLING FLOW OF BLOOD

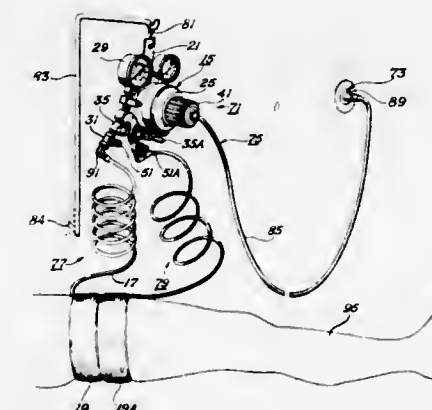
Russel W. Shook, 521 Brookside Ter., Oklahoma City, Okla. 73137

Continuation-in-part of Ser. No. 163,963, June 19, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,399

Int. Cl. A61b 17/12

U.S. Cl. 128—327

9 Claims



A combination, including pressure regulating apparatus, for controlling the flow of blood in a limb of a patient characterized by a container of a biologically inert gas such as carbon



dioxide at a pressure no more than 1,000 pounds per square inch gauge (psig), a pressure regulator means that provides a set downstream pressure without variation even under zero flow conditions and having a convenient means for altering the set downstream pressure, a gauge that reads in both psig and millimeters of mercury for medical use, a pressure relief means for relieving the downstream pressure back to atmospheric pressure, an inflatable tourniquet, and the requisite interconnections. Also disclosed are preferred embodiments, including a Beir block combination having a plurality of inflatable tourniquets for anesthetizing locally; and respective branches connecting with the pressure regulating apparatus, each branch incorporating a toggle valve means for allowing alternate and inverse tourniquet inflation and deflation with immediately responsive operation of the respective inflatable tourniquet in accordance with a doctor's orders without having to alter the setting on the pressure regulator means; as well as other specific structural and advantageous features.

3,825,009

# METHOD OF SURGICALLY REPAIRING DAMAGED EAR DRUMS

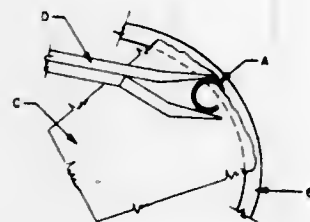
John David Williams, 372W Star Route A, Anchorage, Ala. 99507

Filed Mar. 19, 1973, Ser. No. 325,245

Int. Cl. A61b 17/04

U.S. Cl. 128—334 R

1 Claim



A method of fabrication and application of a small metallic clip which is utilized to attach tympanoplastic material securely into position during ear surgery is described.

3,825,010

# SURGICAL APPARATUS FOR CLOSING WOUNDS

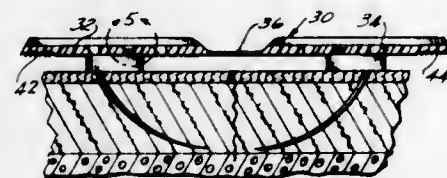
Bernard McDonald, 18212 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Apr. 23, 1973, Ser. No. 353,229

Int. Cl. A61b 17/08; A61m 5/32

U.S. Cl. 128—337

9 Claims



There is described apparatus for repairing lacerations or closing surgical incisions by means of a pair of carrier strips on which are mounted a plurality of curved stylets that can be inserted into the tissue on either side of the wound. A combined applicator, fastener, and bandage is used to grip a strip during insertion of the stylets into the tissue and then used as a strap connecting the two strips together to draw the carrier strips together on either side of the wound, so as to close the wound and at the same time act as a dressing for covering the wound.

3,825,011  
ARTERY CLAMP

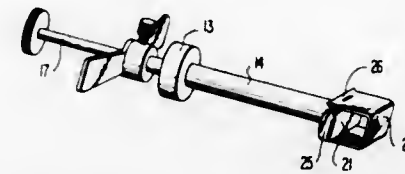
Werner Frewer, Rt. 1, Box No. 353-B, Earlysville, Va. 22936

Filed Jan. 26, 1973, Ser. No. 327,111

Int. Cl. A61b 17/12

U.S. Cl. 128—346

2 Claims



An artery clamp useful in the treatment of intracranial aneurysms and other vascular disorders of the type described in U.S. Pat. No. 3,631,859 and which includes a yoke member having limbs thereof in releasable engagement with a plate, a pressure plate mounted for reciprocation between and orthogonal to the limbs of the yoke member, with the improvement herein involving the flaring of the terminal portions of the limbs of the yoke to facilitate assembly thereof with the plate as well as the inclusion of flanges on the pressure plate to prevent rotation thereof relative to the yoke member.

3,825,012

# REUSABLE UMBILICAL CORD CLAMP FOR VETERINARY USE

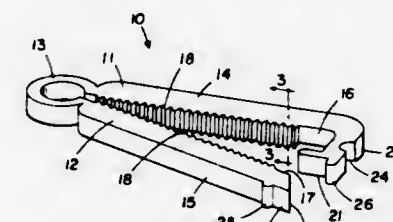
Howard C. Nicoll, 5th & Pine Sts., Riceville, Iowa 50466

Filed Apr. 13, 1973, Ser. No. 350,951

Int. Cl. A61b 17/30

U.S. Cl. 128—346

3 Claims



An integrally molded, plastic umbilical cord clamp for veterinary use is provided with a novel latch structure at the free ends of the jaws so that the clamp can be more readily applied and then later removed and reused.

3,825,013

# BALLOON CATHETER

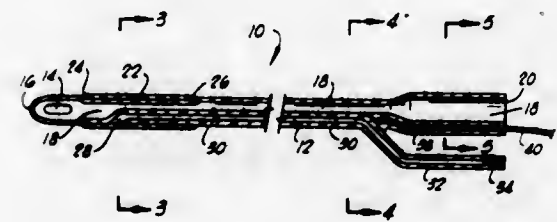
William J. Craven, El Reno, Okla., assignor to MCM Hospital Supplies, Inc., El Reno, Okla.

Filed Mar. 12, 1973, Ser. No. 340,041

Int. Cl. A61m 25/00

U.S. Cl. 128—349 B

5 Claims



This invention relates to an improved balloon catheter of the type including an elongated flexible tubular member hav-

ing a drainage lumen formed therein. An inflatable balloon member is attached to the tubular member at its distal end and a passage is formed in the tubular member for inflating and deflating the balloon member from the proximal end of the tubular member. A second passage is provided with a removable plug disposed therein communicating the interior of the balloon member with the proximal end of the tubular member so that deflation of the balloon member can be positively indicated and accomplished by way of the second passage.

3,825,014  
PACIFIER

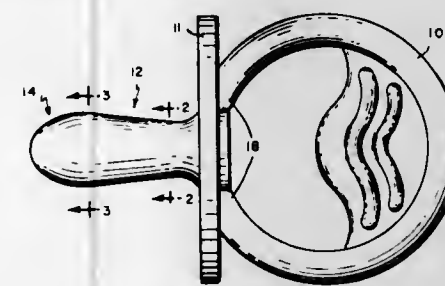
Charles David Wroten, Shelburne, Vt., assignor to The Reddy Company, Inc., Montpelier, Vt.

Filed Aug. 21, 1972, Ser. No. 282,542

Int. Cl. A61J 17/00

U.S. Cl. 128—360

5 Claims



A one piece, injection molded pacifier made of a flexible plastic material comprising a lip guard and a hollow imperforate nipple which is of reduced diameter in a locality towards the lip guard and gradually increases in diameter to a substantially semispherical portion which forms the end of the nipple, the interior wall of the nipple being formed with a plurality of inwardly directed elongate ribs which extend from a locality adjacent to the portion of the nipple which is of reduced diameter to a locality which is adjacent to the substantially semispherical end portion. In a preferred embodiment each of the ribs gradually increases in height from its end which is adjacent to the portion of the nipple which is of reduced diameter as it extends towards its other end, the inner end of each rib is substantially flat and pairs of the ribs are positioned opposite to each other.

3,825,015

# SINGLE CATHETER FOR ATRIAL AND VENTRICULAR STIMULATION

Barough V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 14, 1972, Ser. No. 315,252

Int. Cl. A61n 1/34

U.S. Cl. 128—404

3 Claims



A single catheter for atrial and ventricular stimulation. A single catheter is disclosed that provides separate electrical stimulation to the atrium and separate electrical stimulation to the ventricle on mutually insulated conductors. All conductors are encapsulated in the single catheter and electrical in-

terference between the atrial and ventricular conductors is eliminated through the use of electro-static shielding. The catheter provides two or more mutually insulated electrical conductors for stimulating the atrium. The best electrical contact made between the atrial conductors and the atrium may be measured and selected for use.

3,825,016

# IMPLANTABLE CARDIAC PACEMAKER WITH BATTERY VOLTAGE-RESPONSIVE RATE

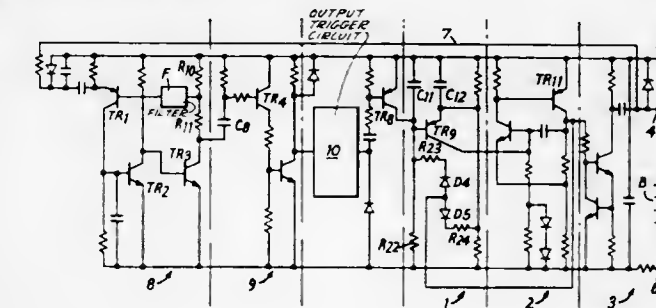
Peter Gilbert Lale, Harpenden, and Denis John Becker, St. Albans, both of England, assignors to Devices Limited, Welwyn Garden City, England

Filed Feb. 28, 1972, Ser. No. 229,687

Int. Cl. A61n 1/36

U.S. Cl. 128—419 P

4 Claims



An implantable cardiac pacer including a voltage level detector for responding when the voltage of the pacer power source falls below a predetermined level. Response of the voltage detector gives a warning to the wearer in the form of increased pulse output rate.

3,825,017

# FOOT CONFORMING INSOLE FOR A SHOE

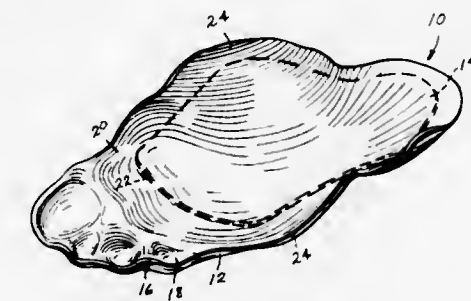
Joseph E. Scrime, 3595 Arlington, St. Joseph, Mich. 49085

Filed Jan. 31, 1973, Ser. No. 328,321

Int. Cl. A61f 5/14

U.S. Cl. 128—622

5 Claims



A foot conforming shoe insole which includes upper and lower layers of resilient foam material and an intermediate layer of solid material bonded between the upper and lower layers. Upturned tabs are formed by the layers on opposite sides of the insole for cradling the foot at the medial and lateral sides of the foot where the arch thereof is located.

3,825,018

# VINER

Dominic Ferraro, Walla Walla, Wash., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,675

Int. Cl. A01f 12/44

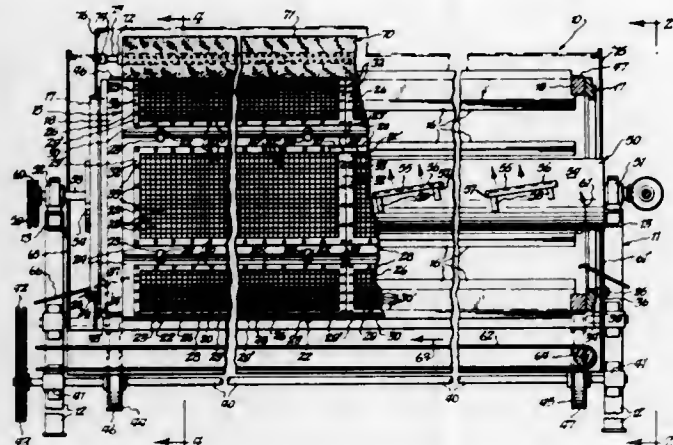
U.S. Cl. 130—30 H

12 Claims

A viner for separating a crop, such as peas, from the remainder of the plant including the vines and the pods com-



prising a frame, an elongated generally cylindrical hollow reel having a surface with apertures therein for permitting said crop to pass therethrough while retaining debris consisting of the remainder of said plant within said reel, means for mounting said reel for rotation about a generally horizontal axis, beater means within said reel for separating said crop from said remainder of said plant, and a reel cleaner for removing said debris from engagement with the inside of the surface of the reel, said reel cleaner including an elongated substantially



cylindrical brush having an axis substantially parallel to the axis of said reel and located outside of said reel, flexible bristles on said brush extending toward said surface of said reel and being of a length to penetrate said apertures an amount necessary to force debris away from obstructing relationship with said apertures, and bearings for journalling said brush for idle rotation which is effected by the ends of said bristles being in intermeshing contact with said apertures in the surface of said reel.

3,825,019

## PRESSURE TYPE DISH WASHER

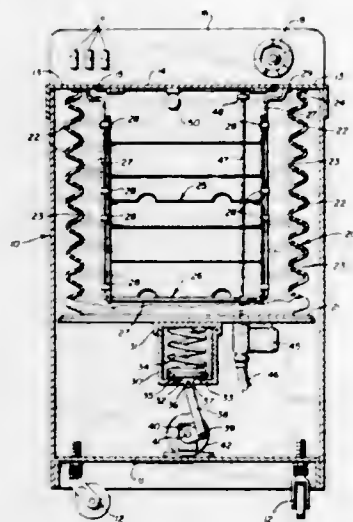
Russell J. Hall, 1530 Krameria St., Denver, Colo. 80220

Filed May 23, 1973, Ser. No. 363,086

Int. Cl. B08b 3/04

U.S. Cl. 134—117

4 Claims



A pressure type dish washer comprising a housing having a flexible side walled reservoir in the housing, said side walls being compressible and expandable and fastened to a rigid bottom and to the top of the housing. Dish racks are supported in a frame mounted on and depending from the housing top. The reservoir side walls are alternately compressed and expanded by means in the housing bearing on the bottom of the reservoir to intermittently pressurize the washing fluid in the reservoir. Air is permitted to enter or escape from the reservoir in response to alternate compression and expansion of the reservoir side walls.

3,825,020

## METHOD OF CUTTING HAIR

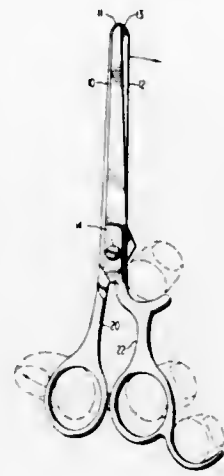
Thomas Elmar Myers, 7601 Silverado Trl., Napa, Calif. 94558

Filed Jan. 19, 1972, Ser. No. 218,998

Int. Cl. B26b 13/12

U.S. Cl. 132—7

1 Claim



Scissors or shears for cutting hair and especially for grooming dogs or other animals are provided with a comfortable yet positive grip which allows greater facility and control in manipulation and lessens fatigue upon prolonged use. The grip is adjusted to suit the fingers of the user.

3,825,021

## COSMETIC APPLICATOR

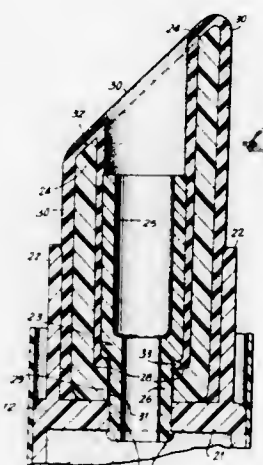
David Seidler, Forest Hills, N.Y., assignor to Applicator Brush Company, Inc., Inwood, N.Y.

Filed May 7, 1973, Ser. No. 357,734

Int. Cl. A45d 40/26

U.S. Cl. 132—88.7

9 Claims



A cosmetic applicator includes a tip assembly for dispensing and applying cosmetic material stored within the applicator. The applicator tip assembly is formed of a porous conduit member in fluid communication with a cosmetic reservoir and is adapted to evenly supply the cosmetic for application to a human surface.

3,825,022

## SELF-CLEANING TANK WASHER

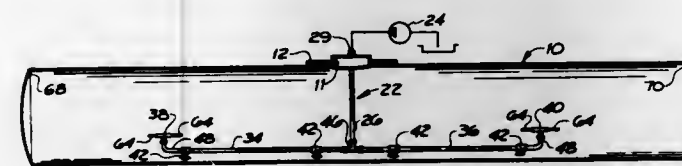
Noble C. Metz, 95 Juniper Hill Rd., N.E., Albuquerque, N. Mex. 87122

Filed Apr. 30, 1973, Ser. No. 355,910

Int. Cl. B08b 9/08

U.S. Cl. 134—104

14 Claims



Structure for cleaning the interior of a milk transport tank which is sufficiently self-cleaning to remain in place inside the tank when the latter is filled with milk, and yet which is configured for quick and easy removal from the tank interior.

## ERRATUM

For Class 134—117 see:  
Patent No. 3,825,019

3,825,023

## TRAILER AWNING STRAP

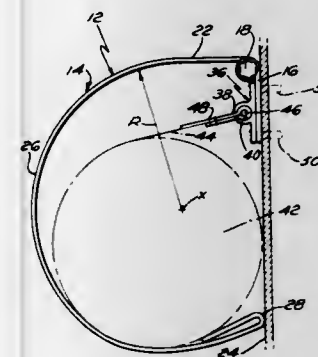
Joseph S. Bergeron, 28 Morris St., West Warwick, R.I. 02893

Filed May 30, 1972, Ser. No. 257,552

Int. Cl. E04f 10/00

U.S. Cl. 135—5 AT

8 Claims



A rolled trailer awning retaining device having a C-shaped aluminum strap which is substantially rigid. At the top end of the strap the metal has been looped back upon itself to form an integral hinge pin bore which mates with the cutaway section of an aluminum hinge plate which has a pair of spaced apart aligned hinge pin bores that align with the hinge pin bore of the C-shaped strap. A brass pin is inserted through the aligned bores to secure the members together in pivotal relationship. Adjacent the hinge pin bore on the C-shaped strap is a substantially flat portion. Between this flat surface portion and the lower tip of the strap the strap member is substantially circular in cross section with the area encompassed by this portion receiving the rolled awning which rests thereon. The tip of the strap has a curved surface which has been formed by folding the metal back upon itself.

3,825,024

## UMBRELLA OF MANUALLY COLLAPSIBLE CONSTRUCTION

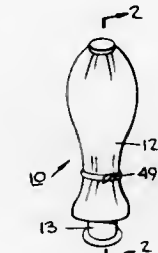
Paul J. Cohen, 1655 Flatbush, Apt. B908, Brooklyn, N.Y. 11201

Continuation-in-part of Ser. No. 132,784, April 9, 1972, Pat. No. 3,683,948. This application Aug. 14, 1972, Ser. No. 280,150

Int. Cl. A45b 19/00, 25/02

U.S. Cl. 135—20 R

12 Claims



The umbrella is constructed to be opened and closed manually and to collapse into a compact condition. Tapes are used to form both the shaft of the umbrella and the ribs for spreading out the cover. In the collapsed condition, the tapes are coiled up in the handle.

3,825,025

## TRANSDUCER DEVICES AND APPARATUS INCLUDING SUCH DEVICES

Duncan Roy Samuel, and Donald Fergus Moore, both of Cardiff, Wales, assignors to Radun Controls Limited, Pontypridd, Glamorgan, Wales

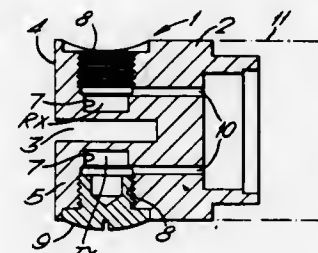
Filed July 6, 1972, Ser. No. 269,366

Claims priority, application Great Britain, July 9, 1971, 32422/71

Int. Cl. F16k 21/18; G01f 23/28

U.S. Cl. 137—392

6 Claims



The invention provides a liquid sensing transducer comprising two spaced apart piezo-electric elements. An oscillator imparts ultrasonic vibrations to one element. The second element responds to these vibrations in dependence on the amount of liquid between the elements. The invention includes level gauge including the transducer, means for lifting and lowering the transducer, and control means for said last mentioned means responsive to the signal from the transducer to effect movement of the transducer to bring said signal to a value indicative of the presence of a given amount of liquid in said gap. The transducer can also, according to the invention, be made to control the level of liquid in a container. A number of transducers can be arranged one above the other to give on-off liquid level indication.

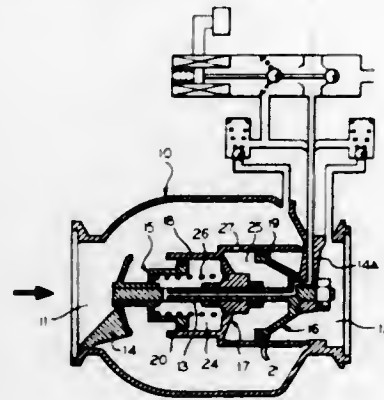


### 3,825,026 INLINE VALVE

Paul G. Salerno, Glenview; John Sikorcin, Elmhurst, and Richard Wm. Piecuch, Morton Grove, all of Ill., assignors to Vapor Corporation, Chicago, Ill.  
Filed June 1, 1973, Ser. No. 366,259  
Int. Cl. F16k 31/42

U.S. Cl. 137-219

2 Claims



A valve for inline duct work including a pilot valve for controlling operation of the valve, together with pilot circuitry which enables the valve to be closed on command in the event of a duct pressure reversal.

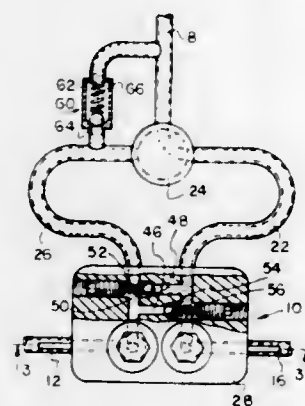
### 3,825,027

**AUTOMATIC MULTIPLE FUEL TANK CONTROL VALVE**  
Jack A. Henderson, 16208 Laurel Ridge Dr., Laurel, Md. 20810

Filed June 11, 1973, Ser. No. 368,832  
Int. Cl. F16k 31/22, 15/18

U.S. Cl. 137-265

11 Claims



A float controlled fuel tank control valve assembly is provided for automatically supplying fuel to an engine from one of several fuel tanks connected to the engine through a tank selector valve when the fuel in the selected tank is exhausted. The float controlled valve has a separate chamber containing a ball type float valve for each fuel tank in the fuel supply system. Fuel outlet passages communicating with a fuel pump open into the bottom of each chamber, with the fuel inlet passage from each fuel tank communicating with its corresponding chamber at a level above the outlet opening. A valve seat is provided in each chamber between the inlet and outlet openings for the float valve, so that the float valve will act to block the outlet passage when the fuel in the corresponding tank and chamber is exhausted. Spring biased one-way valves interconnecting the outlet passages are provided to permit the fuel from the tank containing fuel to be supplied to the tank selector valve or by-passed around the tank selector valve and supplied directly to the fuel pump.

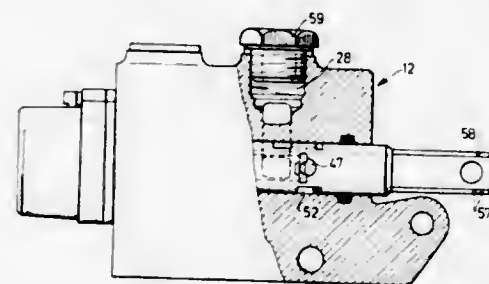
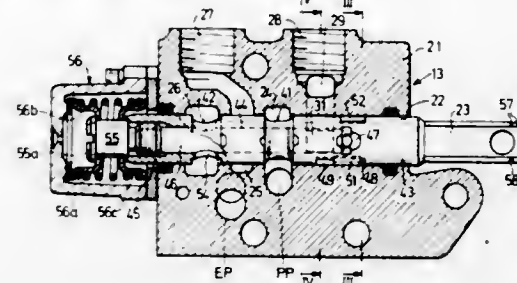
### 3,825,028 CONVERTIBLE DIRECTIONAL CONTROL VALVE

Walter Herrmann, Vaihingen/Enz, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany  
Filed Oct. 18, 1973, Ser. No. 409,272  
Claims priority, application Germany, Oct. 20, 1972, 2251478

U.S. Cl. 137-270

Int. Cl. F16k 11/00

14 Claims



A sliding-spool directional control valve which can be converted from a four-way into a two-way valve by rotating the spool through 180° and by sealing one of two consumer ports in the body of the valve. The body has two channels which communicate with an axial bore for the spool and form part of a control line which can connect the pressure line with the return line in one operative position of the spool when the valve is used as a two-way valve and in the neutral position of the spool irrespective of whether the valve is used as a two-way or as a four-way valve. To this end, the spool has two grooves which are located diametrically opposite each other and respectively connect the channels in the first and second angular positions of the spool. The cross-sectional areas of those portions of the channels which communicate with the axial bore of the body are much smaller than the cross-sectional area of the axial bore.

### 3,825,029

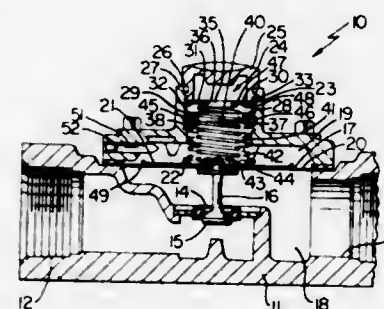
**PLURAL RANGE PRESSURE REGULATOR CONSTRUCTION OR THE LIKE AND THE METHOD OF MAKING THE SAME OR THE LIKE**

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 2, 1973, Ser. No. 320,520  
Int. Cl. F16k 31/12

U.S. Cl. 137-271

5 Claims



A plural range pressure regulator construction having a housing provided with an inlet and an outlet separated by a

valve seat that is controlled by a valve member that is interconnected to a flexible wall carried by the housing. Biasing means are carried by the housing for acting on one side of the wall to tend to move the wall in one direction relative to the housing, the biasing means comprising a plurality of separate spring means each acting on the wall to provide one pressure range for the pressure regulator construction. The housing has a storage space for storing one of the spring means so that the same will not act on the wall whereby the remaining spring means acting on the wall will provide another pressure range for the pressure regulator construction.

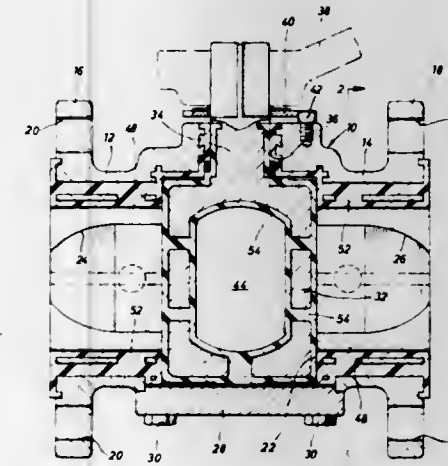
### 3,825,030 LINED VALVES

Manmohan S. Kalsi, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 20, 1973, Ser. No. 343,090  
Int. Cl. F16k 27/123, 5/02

U.S. Cl. 137-375

4 Claims



A plastic lined valve structure particularly for handling corrosive ladings to protect all interior metal parts. The lining securely anchored to the valve body by a plurality of integral interlocking portions which are formed within recesses about the inner periphery of the valve body and axially extending bores communicating with the recesses. The method includes casting a plurality of radially spaced recesses along the inner circumference of inlet and outlet end sections, then drilling bores from the faces of the end sections through the cast recesses to the valve chamber, and next injecting a plastic material through the recesses and bores to provide the interlocking portions of the liner.

### 3,825,031

**LINE VACUUM CONTROLLED MANIFOLD VACUUM SPOILER**

James J. Dolfi, Sr., P.O. Box 434, Torrance, Calif. 90508

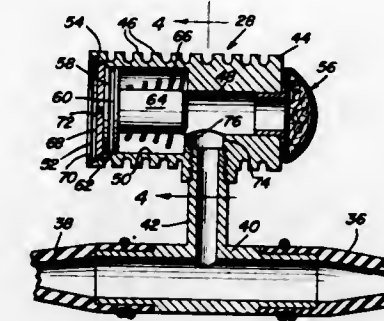
Continuation-in-part of Ser. No. 284,271, Aug. 8, 1972. This application Jan. 7, 1974, Ser. No. 431,484  
Int. Cl. F16k 17/04

U.S. Cl. 137-480

9 Claims

A valve body having an L-shaped airflow passage formed therethrough including first and second angulated end portions. One free end of one of the end portions is provided with air filtering structure and the free end of the other angulated end portion is communicated with a positive crankcase ventilation line intermediate its opposite ends. The adjacent communicating ends of the angulated end portions of the passages are disposed for free passage of air through the passage into the associated positive crankcase ventilation line. However, the valve body includes a large diameter bore formed therein including inner and outer ends with the inner end generally concentric with and opening into the smaller diameter inner

end portion of the air filter equipped end portion of the passage. The outer end of the bore includes limited communication with the ambient atmosphere and a piston is slidable in the bore and includes an integral shank portion reciprocal in the air filter structure equipped angulated end portion of the passage, the piston being spring-biased toward the outer end



of the bore. Upon the passage through the valve body being subject to high manifold vacuum through the associated positive crankcase ventilation line the piston is shifted inwardly of the bore and the shank portion of the piston is shifted further into the air filter structure equipped end portion of the passage for variably throttling the juncture between the inner ends of the angulated end portions of the passage.

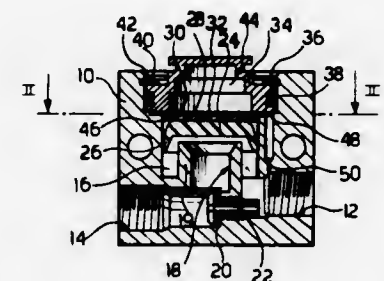
### 3,825,032

**AUTOMATIC UNIDIRECTIONAL THROTTLE**  
Marco Peruglia, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed July 28, 1972, Ser. No. 275,994  
Claims priority, application Italy, Sept. 2, 1971, 69918/71  
Int. Cl. F16k 15/14

U.S. Cl. 137-496

1 Claim



A restrictor throttle valve having two modes of operation depending on the balance of pressures therewithin. The valve has only input and output ports and allows initial free flow therebetween while the pressure in a control chamber builds up via a restrictor throttle opening which connects the control chamber with the inlet port. After the pressure in the control chamber has reached a maximum, which takes a short time after the initial application of pressure to the inlet port, any subsequent change in pressure leading to a pressure drop at the outlet port causes a valve shutter to be closed by the pressure in the control chamber. When the valve shutter is closed the inlet and outlet ports can only communicate via a restrictor throttle so that any subsequent changes in pressure must take place gradually. This is particularly useful for anti-skid braking systems where, after the initial, unobstructed, application of the brakes, any subsequent changes, during a braking operation, are due to the anti-skid device and are required to take place gradually, both for passenger comfort and for vehicle stability.



### 3,825,033 EXTENDED RANGE VALVE SYSTEM

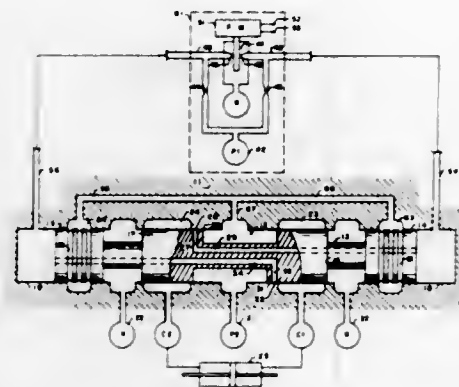
Paul F. Hayner, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 12, 1973, Ser. No. 331,913

Int. Cl. F16k 11/07

U.S. Cl. 137—625.66

7 Claims



A valve system is described including a spool valve in which one face of an outboard land is in engagement with a control fluid which urges the spool in one direction in opposition to a biasing force. The other face of the land is in engagement with a fluid at a pressure much less than the pressure of the control fluid. In order to prevent the leakage of control fluid across the land to the return, the land is formed with several grooves around its cylindrical surface at least one of which is always in communication with a recess formed in the valve housing; this recess is connected to a source of fluid at a pressure substantially equal to that of the control fluid, thereby eliminating the tendency of the control fluid to leak across the land.

### 3,825,034 ACCUMULATORS

Leslie Cyril Chouings, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

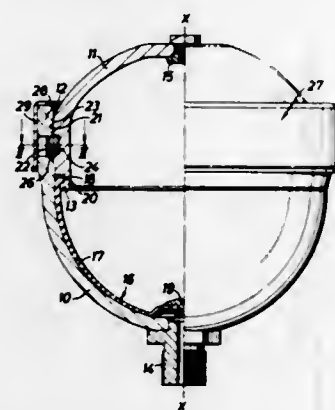
Filed Oct. 13, 1971, Ser. No. 188,852

Claims priority, application Great Britain, Oct. 16, 1970, 49290/70

Int. Cl. F16l 55/04

U.S. Cl. 138—30

3 Claims



An accumulator for a liquid pressure system has a hollow casing comprising two hollow casing parts having mating cylindrical surfaces. There is an annular groove in each cylindrical surface, the two grooves being aligned to define an annular cavity in which is/are housed one or more inserts. The insert(s) act to hold the two hollow casing parts together. The hollow casing is assembled by inserting one of the mating cylindrical surfaces within the other to define the annular cavity, and inserting the one or more inserts through a hole in the wall portion of the outer mating casing part into the annu-

lar cavity. An annular cover maybe placed over the wall portion of the outer mating casing part when the two casing parts are assembled together, so as to cover the radially outer end of the hole.

### 3,825,035 SEALED-END JACKED PIPE ASSEMBLY AND METHOD OF MAKING SAME

Hellmut Butterweck, Lotharstr. 156, 4100 Duisburg, Germany

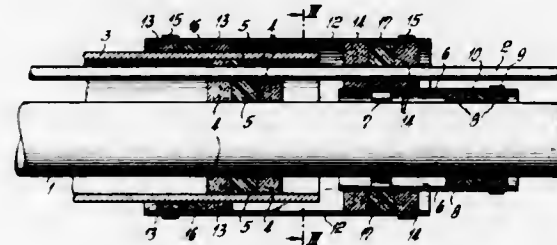
Filed June 21, 1972, Ser. No. 264,794

Claims priority, application Germany, Dec. 19, 1973, 2164037

Int. Cl. G01l 9/00

U.S. Cl. 138—109

6 Claims



An inner tube extending from the end of a protective casing is sealed by first providing two walls between the tube and the casing and filling the space between these walls with a hardenable synthetic resin. Two further walls are provided around the tube outside the casing and a thin body of synthetic-resin material, e.g., a sheet is wrapped around them and again a synthetic-resin mass is introduced into the space between these second walls. Two third walls are provided on the casing and two fourth walls on the tube, with another sheet wrapped around these third and fourth walls. Thereafter synthetic-resin material is again introduced into the space between the third walls and into the space between the fourth walls. Finally synthetic resin is poured into the chamber formed on one side by the second and fourth walls and on the other side by the first and third walls to completely seal the casing end.

### 3,825,036 REINFORCED PLASTICS TUBES

Vernon Denis Stent, Woking, England, assignor to Creators Limited, Surrey, England

Filed May 15, 1972, Ser. No. 253,107

Claims priority, application Great Britain, May 19, 1971, 15894/71

Int. Cl. F16l 11/08

U.S. Cl. 138—174

11 Claims



The invention is concerned with reinforced flexible plastics tubes and methods of making same. A tube of this invention has an extruded wall constituted by two different plastics materials of which one is more rigid and/or has a higher mechanical strength than the other and defines a plurality of circumferentially disposed axially extending reinforcements separated by the other plastics material and fused thereto. Tubes of this invention provide improved resistance to elongation and bursting when used for conveying fluids under pressure.

### 3,825,037 JACKING PIPE

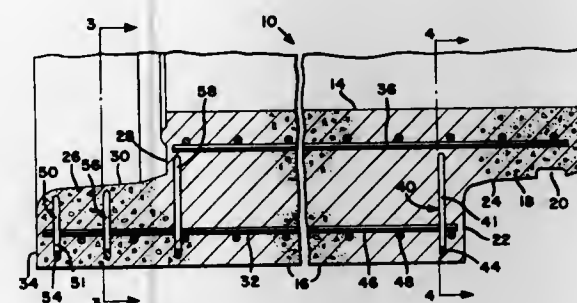
Lewis R. Keyser, Dayton, Ohio, assignor to Price Brothers Company, Dayton, Ohio

Filed Apr. 5, 1972, Ser. No. 241,149

Int. Cl. F16l 9/08

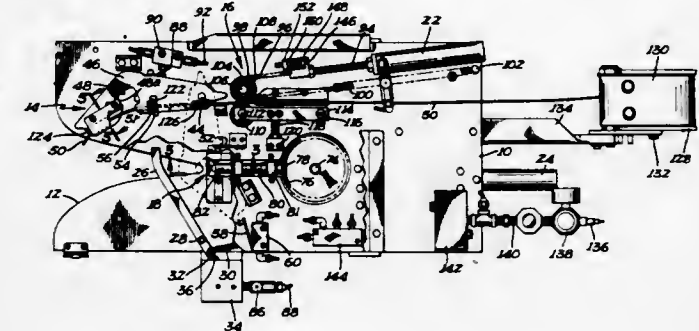
U.S. Cl. 138—175

11 Claims



Reinforced concrete pipe especially adapted for jacking operations. To resist the shear forces generated in the bell and spigot sections of the pipe during jacking operations, radial reinforcing strands are embedded in the pipe about its entire circumference at both the bell of the pipe and the opposite end of the pipe adjacent the spigot shoulder.

functions of feeding a length of tying tape into position, cutting off the desired length of tape, driving a forming arm to



form the tape about the neck of the bag, and activating the rotating hooked twister for twisting the ends of the tying tape together.

### 3,825,040 TANK GAUGING SYSTEM

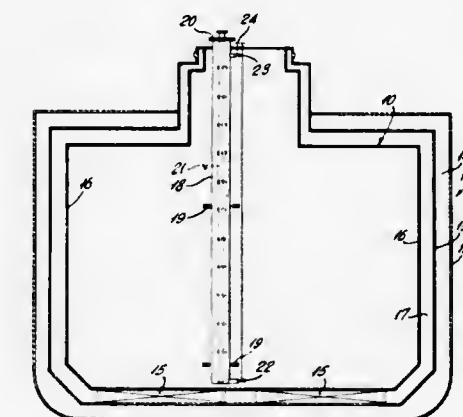
Richard A. Halsch, Clark, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed May 10, 1972, Ser. No. 251,928

Int. Cl. B65b 3/04

U.S. Cl. 141—1

5 Claims



A tank gauging system which is capable of being repaired without having to remove the tank in which the system is contained from service. The system includes a tank gauging tube housing or stillwell which is mounted between the top and bottom of a cargo-carrying tank and which is intended primarily to house a conventional liquid level gauge or other such device. The housing serves the dual purpose of mounting the level gauge and in the event of loss of the normal cargo pumps, the gauge itself may be removed from the tube and a pump temporarily installed for pumping out the tank.

### 3,825,041 PIPE COUPLING

Robert Cornog, 4262 Wilshire Blvd., Suite 320, Redondo Beach, Calif. 90010

Filed May 22, 1972, Ser. No. 255,210

Int. Cl. B65b 3/04; B65d 53/06; F16l 19/02

U.S. Cl. 141—1

35 Claims

In a coupling for connecting first and second tubes a first sealing member is attached to the first tube, a second sealing member is attached to the second tube, and a first elastomeric means is axially compressed between the first and second sealing members. A third sealing member can be associated with the first sealing member to extend inwardly of and provide a seat for the first elastomeric means.

### 3,825,038 WEFT SELECTING APPARATUS

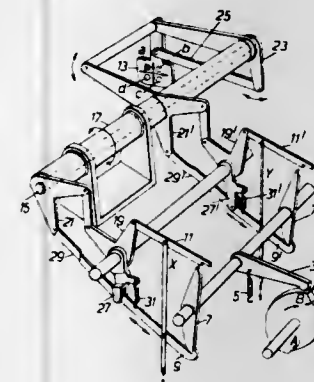
Phillip Austin Ormerod, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 19, 1972, Ser. No. 264,401

Int. Cl. D03d 47/38

U.S. Cl. 139—122 W

6 Claims



Weft yarn selecting apparatus for use in combination with shuttle-less looms, having a number of weft yarn positions in fixed relation to each other in which means are provided for bringing the positions to a common yarn firing point.

### 3,825,039 TWIST-TIE BAG CLOSING MACHINE

Jasper R. Crabb, Yakima, Wash., assignor to Domain Industries, Inc., New Richmond, Wis.

Filed June 5, 1972, Ser. No. 259,834

Int. Cl. B21f 7/00, 15/00

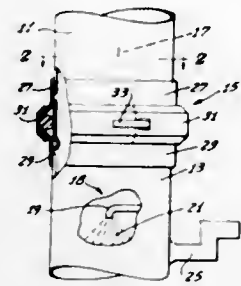
U.S. Cl. 140—93 A

5 Claims

A machine for closing the open, gathered ends of flexible bags, such as bags of paper or plastic, incorporates a plurality of air operated cylinders which serve to carry out the various



A recess is defined by portions of the second and third sealing members to inhibit the passage of fluids between the second and third sealing members into contact with the first means. Second elastomeric means may be radially compressed within this recess.



A cavity may be formed between the first elastomeric means and a particular one of the first and third sealing members. The invention includes means for detecting virtual leaks which may occur between the cavity and the interior regions of the tubes.

3,825,042

### AUXILIARY RESERVOIR FOR FLUID IN A HYDRAULIC BRAKE SYSTEM

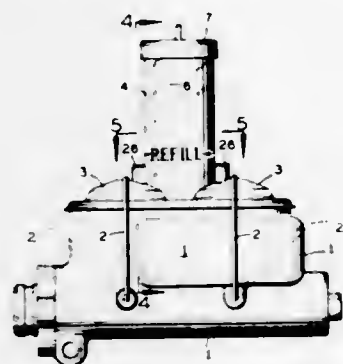
Hershey Glantz, Miami, Fla.

Filed Jan. 15, 1973, Ser. No. 323,758

Int. Cl. B65b 3/04

U.S. Cl. 141—95

4 Claims



This invention automatically provides auxiliary fluid for vehicle brake systems by the provision of a reservoir for retaining one or more chambers for feeding corresponding hydraulic circuits and thus preventing accidental loss of braking power and the resulting accidents. The fluid from the reservoir is automatically fed to the brake actuating assembly by a float means and the reservoir made of transparent material to provide visual inspection for indicating refill.

3,825,043

### FILLING MACHINE FOR CONTAINERS

Paul R. Fechheimer, Worcester, Mass., assignor to A-T-O Inc., Willoughby, Ohio

Division of Ser. No. 85,442, Oct. 30, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,660

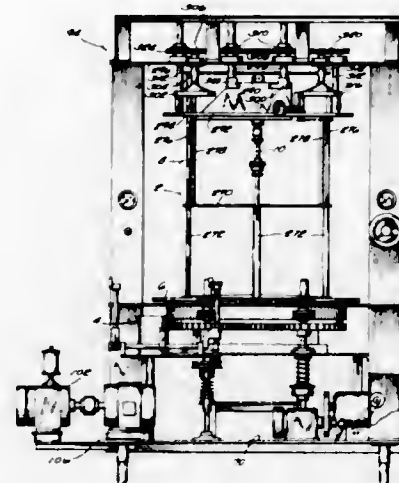
Int. Cl. B65b 43/42; B67c 3/04

U.S. Cl. 141—147

3 Claims

A rotary acting filler machine for containers such as bottles includes a series of vertically reciprocable filling nozzles adapted to be moved under the control of cam means between raised, inoperative positions to a container with the lower end or tip of the nozzle above the upper end thereof and lowered, operative positions thereto with the tip of the nozzle projecting axially within the container. The upper limit of movement of the nozzles in the filler is controlled by a main plate-type

cam which is vertically adjustable in the filler whereby to permit containers of varying overall heights to be accommodated for filling action in the filler without obstruction from the nozzles at the same time while permitting the nozzles to be brought rapidly into filling positions to the containers to attain maximum production output in the filler for any particular type of container.



3,825,044

### DRIVE APPARATUS FOR METERING APPARATUS

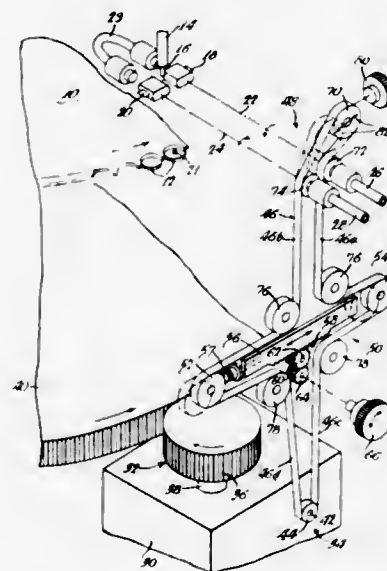
Lyle M. Lidlak, and Sheldon L. Wilde, both of Crawfordsville, Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Filed May 30, 1972, Ser. No. 257,862

Int. Cl. B65b 43/50

U.S. Cl. 141—187

16 Claims



The disclosure relates to an apparatus for driving a metering type charge depositing apparatus that includes a conveyor advancing a plurality of open-topped receiving devices in predetermined relation along a receiving path with means

above the path for supplying a constant supply of plastic material along a vertical path toward the receiving path and cutting means for removing a predetermined amount of the constant supply for deposit into a receiving device. The apparatus for driving includes first drive means for driving the conveyor at a predetermined rate and second drive means for driving the cutter means, which includes first and second rotating cutters, at a constant rate synchronous to said predetermined rate. First adjustable means cooperates with the second drive means for coordinating the cutter means relative to the conveyor to insure that the severed amounts of plastic material are deposited in the centers of the open-topped receiving devices. The drive means also includes second adjustable means for varying the engaging relationship of the first and second cutters relative to the constant supply of plastic material to control the orientation of the plastic material when it is received into the open-topped receiving devices.

3,825,045

### FLUID DELIVERY AND VAPOR RECOVERY APPARATUS

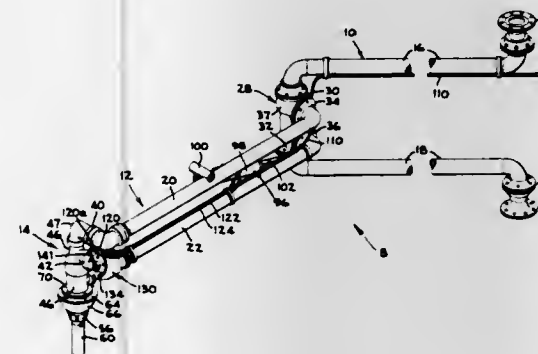
George W. Bloomquist, Long Beach, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 22, 1972, Ser. No. 282,809

Int. Cl. B67c 3/00

U.S. Cl. 141—198

39 Claims



A fluid delivery and vapor recovery arm especially for dispensing gasoline or other volatile liquids and collecting their evolved vapors, having a combined fluid delivery-vapor recovery head assembly mounted on the distal end of the arm's outer boom section. The outer boom section includes vertically spaced and generally parallel conduits, one for fluid delivery and one for vapor return, interconnecting the head assembly and the arm's inner boom section through swivel joints in such manner that vertical orientation of the head assembly is ensured for any attitude of the outer boom section. The head assembly includes an annular dome seat that engages a collar to close off the lower end of a vapor return conduit until the head is seated in a container hatch. The arm will deliver fluid to a container only when the head is properly seated in the hatch, and only when the fluid in the container is below a certain level. The arm further includes a control valve assembly having a diaphragm valve that controls a fluid delivery valve operated by air pressure. A venturi-type mechanism, also considered to be an aspirator device, functions to actuate the diaphragm valve when the liquid in the container rises to a predetermined level, causing this valve to shut off air pressure to the fluid delivery valve, which delivery valve then automatically closes. A contact valve in the control valve assembly directs air pressure to the fluid delivery valve only when the dome seat is properly positioned in the hatch thus causing the delivery valve to open, and the diaphragm and contact valves cooperate in a unique manner to prevent the delivery valve from opening accidentally.

3,825,046

### APPARATUS AND METHOD FOR REDUCING THE OCCURRENCE OF BOWING IN WOODEN WINDOW RAILS

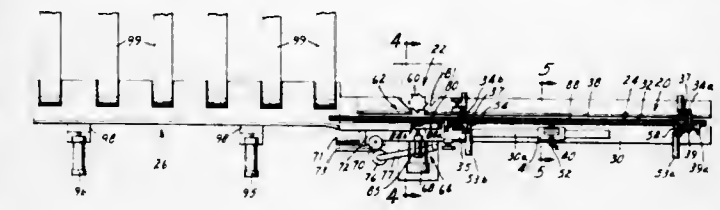
Kenneth L. Peterson, Bayport, Minn., assignor to Anderson Corporation, Bayport, Minn.

Filed Oct. 26, 1972, Ser. No. 301,130

Int. Cl. B27c 5/04

U.S. Cl. 144—142

5 Claims



Apparatus and a method for reducing the bowing of window rail members constructed from wood by machining a curvature in the member which counteracts the naturally occurring bow. A number of rail members (e.g., a plurality of check rails) are initially stored in a hopper in a horizontally extending, vertically over-laying position. The bottom rail in the hopper is continuously discharged by a drive chain which conveys the rail to a cam-driven cutting tool for cutting a concave bow in the rail opposite the side receiving the window pane. Curvature sensing means are associated with the hopper to determine the natural curvature, if any, of each rail, thus, allowing the curvature of the rails to be aligned and the removal of any rail having too large a natural bow to be counteracted by the machined curvature.

3,825,047

### HAND SAW HAVING DEMOUNTABLE BLADE

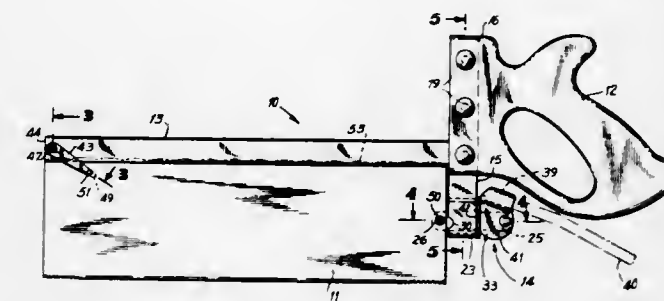
Walter K. McManus, Westfield, N.J.; Joseph T. Bouffard, Brooklyn, N.Y., and Lennard D. Harris, Scarborough, Ontario, Canada, assignors to Atlantic Service Co., Inc., Brooklyn, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,036

Int. Cl. B27b 21/00

U.S. Cl. 145—31 R

6 Claims



A saw frame of the so-called back saw type is disclosed, including a readily replaceable saw blade, the assembly being characterized by novel and improved coupling means for securely attaching the blade to the frame, while at the same time rigidifying the blade against flexure in the plane of the blade.

3,825,048

### INTERLOCKING SCREW AND DRIVER

Matej K. Triska, 2265 N. Elizabeth St., Indianapolis, Ind. 46219

Filed Jan. 2, 1973, Ser. No. 320,673

Int. Cl. B25b 15/00

U.S. Cl. 145—50 E

1 Claim

A screw head and driving tool therefor are releasably coupled by means of a pair of radially shiftable anchors held in al-



ternate engaged and disengaged relation to a complementary screw slot by a driver blade shiftable longitudinally therebetween. The engaged anchors and complementary slot



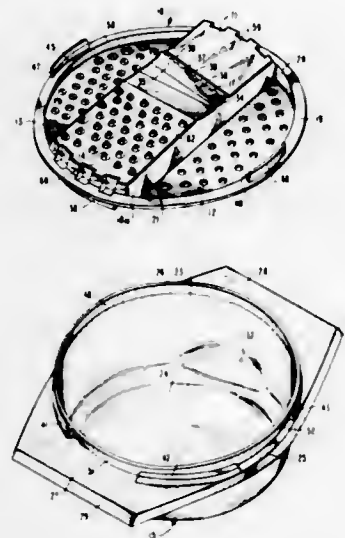
are of undercut or dovetailed cross section which prevents displacement of the driving tool from the screw head, and released when the anchors are set in the disengaged condition.

### 3,825,049 FOOD GRATER

James B. Swett, and Harold P. Ashton, both of Providence, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.  
Division of Ser. No. 102,623, Dec. 30, 1970, Pat. No. 3,698,460. This application July 13, 1972, Ser. No. 271,449  
Int. Cl. B65d 37/00

U.S. Cl. 150—.5

3 Claims



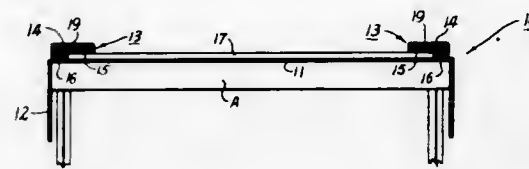
A Food Grater including a unique bowl having at least one handle and at least one flattened planar portion at the side of the bowl. The outermost extent of the handle is in the same plane as the flattened planar portion so the bowl can be held in a tilted position and rested on the outermost extent of the handle and the planar portion without rolling. The bowl is also provided with spaces to accept projections on a mating grater element so that the grater element will not rotate on the bowl when the grater is being used.

The grater element is divided into separate grating surfaces, some of which are in separate parallel planes. The separation helps prevent the fingers from being scraped on a nearby unused surface. The grater blades on some of the surfaces face in opposite directions from the grater blades on other surfaces so that a portion of the blades can be used when the grater element is in one position and the remainder can be used when the element is inverted. A unique plastic slicer is provided which has a substantially sinusoidal edge which permits the plastic slicer to be used where metal slicers were formerly required.

3,825,050  
TABLE COVER  
Lenora Wood Glover, 44 W. 63rd St., New York, N.Y.  
Filed Nov. 8, 1972, Ser. No. 304,982  
Int. Cl. A47b 97/00

U.S. Cl. 150—52 R

2 Claims

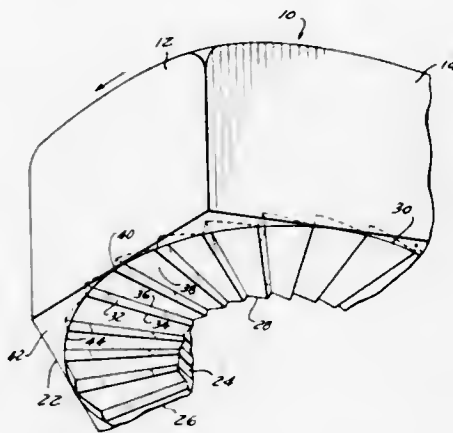


The invention embodies a table cover consisting of a sheet of non-absorbent material adapted to overlie a table and depend at its edges about the table and which is formed with a plurality of separate flaps extending peripherally about a central portion of the sheet and adapted to overlie the edge portions of the table. The flaps are disposed in close separated relation at their adjacent ends whereby the flaps may be independently raised for convenience in inserting the edge portions of an auxiliary centerpiece in covering relation with the central portion of the sheet and for cleaning out the recesses formed by the flaps and the cover.

3,825,051  
SELF-LOCKING BOLT  
Jerry A. Sigmund, Willow Grove, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.  
Filed May 24, 1972, Ser. No. 256,468  
Int. Cl. F16b 39/28

U.S. Cl. 151—37

9 Claims



A self-locking fastener having a serrated segment within the bearing surface of the fastener arranged to penetrate a workpiece so that a resistance to loosening of the fastener from the workpiece is created. The fastener includes a polygon shaped bearing surface, such as a hex-head or 12-point bolt head or nut where the serrated segment is formed within an annular segment so that circumferentially discontinuous smooth-faced outer bearing surfaces are formed across adjacent flats of the polygon configuration.

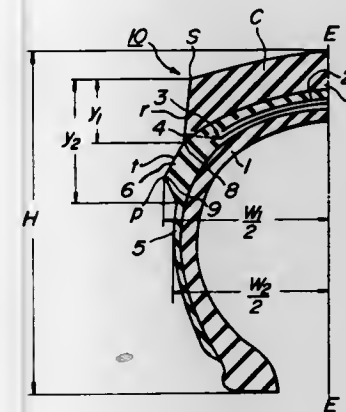
3,825,052  
PNEUMATIC RUBBER TIRE FOR OFF-ROAD VEHICLES  
Takashi Matsuyama; Tetsuji Tanaka, and Toshiro Tezuka, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan  
Filed May 15, 1973, Ser. No. 360,593  
Claims priority, application Japan, Aug. 5, 1972, 47-78024  
Int. Cl. B60c 13/00, 11/00

U.S. Cl. 152—353

8 Claims

A pneumatic rubber tire for off-road construction vehicles, having two annular projection means which are integrally

formed with opposing sidewalls of the tire so as to extend away from tire equatorial plane. The two projection means provide protective surfaces for preventing stones and rocks from

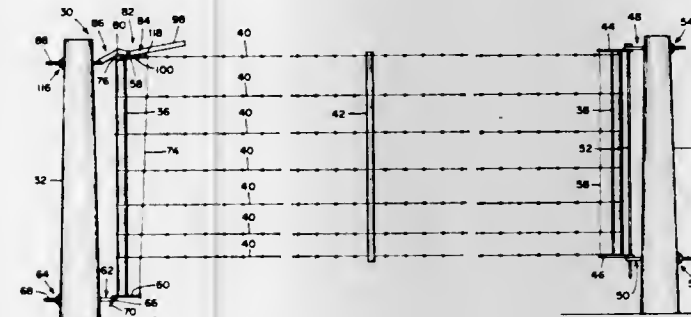


damaging the tire sidewall. The projection means are so dimensioned as to cause substantially no temperature rise in the tire by the presence thereof.

3,825,053  
TRACTION GATE  
Felix B. Romberg, P.O. Box 218, Holland, Tex. 75001  
Filed July 10, 1972, Ser. No. 270,308  
Int. Cl. E06b 3/80

U.S. Cl. 160—328

12 Claims



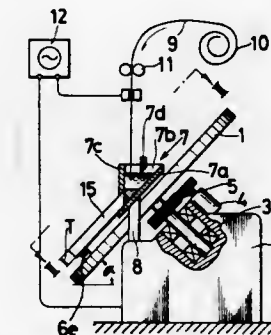
In a traction gate, a wire barrier extends between a pair of end standards. One of the end standards is pivotally supported on a first gate post, and the lower end of the other end standard is adapted for engagement with and support by structure projecting from a second gate post. A traction mechanism is mounted on the upper end of the second gate post for engagement with pivot means on the upper end of the adjacent end standard. When not in use, the traction mechanism rests on top of the gate post and is therefore readily accessible from either side of the gate.

The gate is closed by engaging the traction mechanism with the pivot means and then pivoting the traction mechanism over center, whereby the gate is secured in traction by toggle action. Structure is provided for retaining the traction mechanism in the actuated position, and thereby both securing the gate in traction and locking the gate. Two embodiments of the invention are disclosed, one comprising a wire traction gate and the other comprising a laterally swinging traction gate. In the laterally swinging traction gate and end standards are secured to a longitudinal frame member which interconnects the lower ends of the end standards.

3,825,054  
METHOD FOR THE MANUFACTURE OF CIRCULAR PRODUCTS  
Akira Ujile, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan  
Division of Ser. No. 140,326, May 5, 1971, Pat. No. 3,785,429.  
This application Aug. 20, 1973, Ser. No. 389,814  
Claims priority, application Japan, May 18, 1970, 45-42235  
Int. Cl. B22d 27/02

U.S. Cl. 164—52

1 Claim

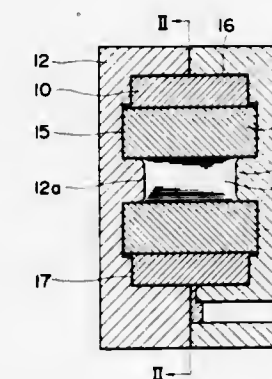


A method and an apparatus for the manufacture of circular products in which deposited metal melted by electroslag remelting process is successively drawn out of a retainer for keeping a molten slag which melts the filler metal provided at a predetermined location while being solidified and the tip thereof is fixed to a rotary table, provided in an inclined arrangement, at a position out of the center thereof and is returned into said retainer by rotating said rotary table so as to make one complete turn, thus closing a circle to form a circular product.

3,825,055  
METHOD OF REMOVING CORE FROM DIECASTING  
Hiroshi Mino, Hiroshima, and Satoshi Yano, Hiroshima-ken, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan  
Filed Oct. 2, 1972, Ser. No. 294,299  
Int. Cl. B22d 29/00

U.S. Cl. 164—132

3 Claims



A die casting method for producing aluminum die castings each having a longitudinally extending bore which is effective to prevent the aluminum die castings from shrinking to an extent that the desired dimensions of each casting will not be achieved. To this end, an annealing process is introduced to force the casting together with a core member, which defines the bore and which is a part of the casting dies, but which is separate therefrom, to be annealed at a predetermined temperature for a predetermined time so that internal stresses previously set up in the casting can be relieved. This annealing process is carried out immediately upon solidification of the molten metal during the casting.



3,825,056

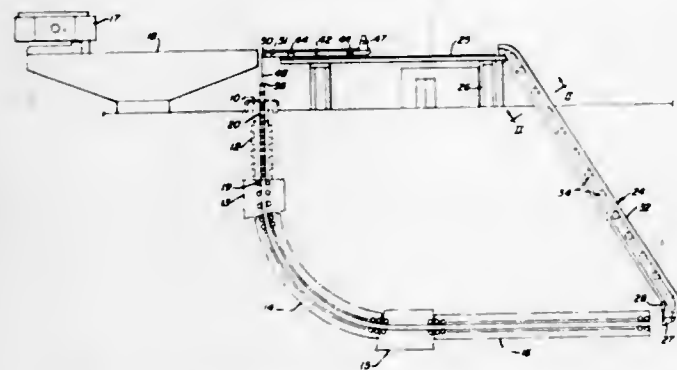
**APPARATUS FOR HANDLING AND TOP-CHARGING A STARTER BAR**

John A. Grosko, West Mifflin Borough, Allegheny County; Melvin G. Short, Pittsburgh, and James T. Stull, Jackson Township, Butler County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1972, Ser. No. 277,425  
Int. Cl. B22d 11/08

U.S. Cl. 164-274

6 Claims



A method and apparatus for handling and top-charging a starter bar to the mold of a continuous-casting machine. The apparatus includes a recovery bridge which extends upwardly from the location where the bar is disconnected from the casting. The recovery bridge has means for propelling the bar upwardly and delivering it to a charging car, which runs on tracks above the top of the mold. The charging car has a cog wheel for propelling the bar along its length, and a reel and cable mechanism for lowering the bar into the mold.

3,825,057

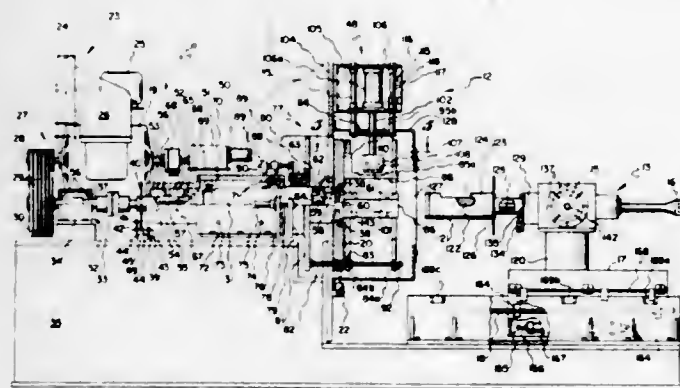
**HORIZONTAL CENTRIFUGAL CASTING MACHINE**

Frederick William Baumann, Scotia; Bernard Cesar Kaczowski, Schenectady, and George Mowry Rosenberry, Jr., Elnora, William R. Smith, Ballston, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 4, 1972, Ser. No. 277,920  
Int. Cl. B22d 13/10

U.S. Cl. 164-292

20 Claims



A horizontal centrifugal casting machine is described wherein a sectionalized mold for casting a cylindrical structure, e.g., a finned motor frame, is assembled, the structure cast and the mold sections stripped from the cast structure in an entirely automated process. The casting machine includes a plurality of arcuately shaped mold sections mounted upon jaws capable of being secured to pistons of pulling cylinders. With the pistons extended, the mold sections form a substantially cylindrical structure and dual annular rings having a tapered radially inner face are traversed axially along a tapered outer portion of the jaws to fixedly secure the mold sections in position. After disengagement of the pistons, the

mold is rotated by a high speed drive motor whereafter a ladle containing molten metal is inserted axially within the mold and the ladle is tilted to pour the molten metal into the mold. The ladle then is withdrawn and a mandrel assembly supporting the ladle, an expandable arbor and a mold coating device is rotated to register the expandable arbor with the mold. The high speed drive motor then is de-energized and the mold stopped at a predetermined angular position using a low speed drive motor. After the expandable arbor is inserted axially within the mold and the arbor expanded to engage the interior of the cast cylindrical structure, the pistons of the pulling cylinders are driven radially inward to engage the outer surface of the jaws and the annular rings are released to permit the pistons to strip the mold from the cast structure. The cast then is removed from the interior of the stripped sections and the open jaws are coated with casting lubricant permitting the casting cycle to be repeated. To obtain optimum quality in casting finned aluminum motor frames, the rate of rotation of the ladle during the pour should vary to effect a more rapid rate of angular displacement at the initiation and termination of pouring metal from the ladle than at the middle of the pour to produce a constant flow of metal from the ladle.

3,825,058

**MOLD PREPARED BY VACUUM SEALED MOLDING PROCESS**

Takashi Miura; Tadashi Sugiyama, both of Toyokawa, and Yoshizi Iyoda, Toyohashi, all of Japan, assignors to Sintokogio, Ltd., Nagoya, Japan

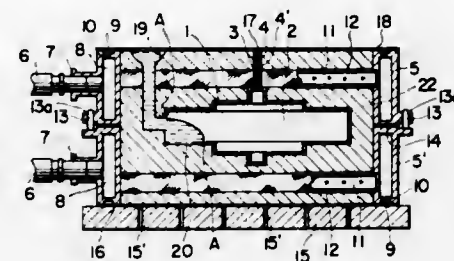
Filed Apr. 9, 1973, Ser. No. 349,471

Claims priority, application Japan, Apr. 15, 1972, 47-38068; Dec. 25, 1972, 47-2687[U]

Int. Cl. B22d 27/16

U.S. Cl. 164-253

4 Claims



A mold prepared by a vacuum sealed molding process in which, in order to prevent breakdown of the mold during pouring of a molten metal, a tubular member forming a passage serving as a communication means between the mold cavity and the atmosphere is connected to the uppermost portion of a shield member defining the cavity so that the atmospheric pressure can be imparted to the cavity even when the molten metal is being poured into the cavity.

3,825,059

**METHOD FOR CHARGING A HEAT STORAGE VESSEL**

Nikolaus Laing, 7141 Aldingen B., Stuttgart, Germany  
Division of Ser. No. 54,553, July 13, 1970, Pat. No. 3,689,738.

This application June 16, 1972, Ser. No. 263,661

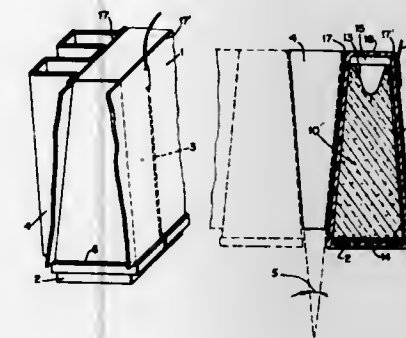
Int. Cl. H05b 3/00; F24d 11/00; F24h 7/00

U.S. Cl. 165-1

1 Claim

A method of charging a heat storage vessel containing a meltable normally solid heat storage mass having a greater density in its solid state than in its liquid state includes (1) applying heat to the bottom end wall of the vessel to melt the mass and (2) concurrently applying heat to a vertical side wall of the vessel to form a thin convection passage extending

along a side of the solid storage mass from top to bottom thereof whereby there may be a flow of melted storage mass



from the region adjacent the bottom end wall through said convection passage to an expansion space in said vessel above the storage mass.

3,825,060

**SYSTEM FOR FILLING AND EMPTYING OF HEAT EXCHANGERS**

Laszlo Heller; Laszlo Forgo, and Mihaly Horvath, all of Budapest, Hungary, assignors to TRANSELEKTRO Magyar Villamosagi Kulkereskedelmi Vallalat, Budapest, Hungary

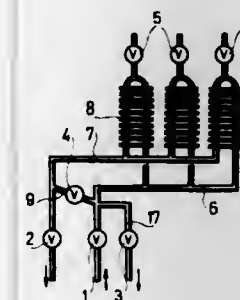
Filed Nov. 2, 1972, Ser. No. 303,166

Claims priority, application Hungary, Nov. 5, 1971, EE 1969

Int. Cl. F16f 1/34

U.S. Cl. 165-11

5 Claims



With outdoor erected surface heat exchangers care has to be taken of filling up and emptying in cold weather since the cooler liquid may freeze in the heat exchanger tubes and destroy them. Thus, quick filling up and emptying is necessary.

This is obtained by employing a communication line with a regulating flap between a supply conduit connected to the inlets of the heat exchangers, and a reflux conduit connected to the outlet thereof. The communication conduit has an oblique position inclined towards the supply conduit so that the regulating flap in it will be closed only in normal operation of the system where the flap of the device is pressed down on its seat by the overpressure prevailing in the supply conduit with respect to the reflux conduit.

The advantage of the arrangement consists in that the heat exchangers can be filled up in the reverse direction and emptied through a drain conduit quickly and with simultaneous deaerating and air introduction, respectively. Moreover, a relatively lesser number of component parts is required.

3,825,061

**LEAK PROTECTED HEAT EXCHANGER**

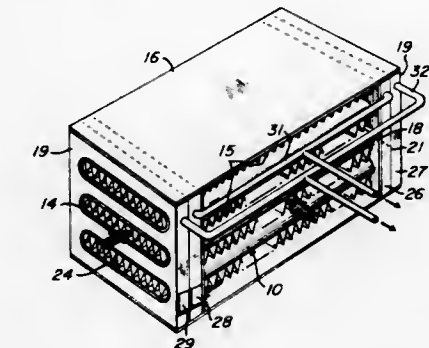
Pritam S. Bathia, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed May 13, 1971, Ser. No. 143,027

Int. Cl. F28f 17/00, 3/00

U.S. Cl. 165-70

5 Claims



A fluid to fluid heat exchanger in which facial surfaces of the heat exchanger are defined by headers forming drained leak chambers in such separating relation to different flowing fluids as to obviate mixing of a leaked fluid with another fluid in the event of joint failure or the like.

3,825,062

**BREATHERS FOR LIQUID OPERATED HEAT EXCHANGERS**

Laszlo Heller; Laszlo Forgo, and Janos Bodas, all of Budapest, Hungary, assignors to Transelektro Magyar Villamosagi Kulkereskedelmi Vallalat, Budapest, Hungary

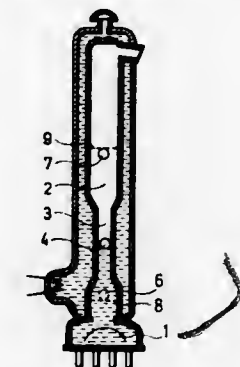
Filed Oct. 2, 1972, Ser. No. 294,128

Claims priority, application Hungary, Oct. 5, 1971, EE 1963

Int. Cl. F28b 1/06

U.S. Cl. 165-111

6 Claims



Heat exchangers for recooling the cooler liquid such as cooling water of steam operated power plants have to be provided with means by which insoluble gases such as air in the cooling water may reliably be removed therefrom. Moreover, with cooling systems of power plants where the recooling of the cooling water is obtained by means of air ("air condensation"), care has to be taken that, in addition to removing insoluble gases from the cooler liquid, air may quickly enter into the heat exchangers when the latter are emptied for operational reasons whatever such as danger of frost.

This is obtained by employing a breather having an upright vent pipe which is high enough to accommodate a column of cooling water which, even in case of highest hydrostatic pressure, stays below the upper orifice of the vent pipe.

Freezing in of the water column is prevented by a jacket surrounding the vent pipe and filled with an anti-freeze liquid.

In operation, insoluble gases may freely pass the vent pipe the cross-sectional area of which is large enough to permit suitable amounts of air to enter the heat exchanger when the latter is being emptied.

A further advantage consists in that a plurality of heat exchangers may be serviced by a single vent pipe or breather.



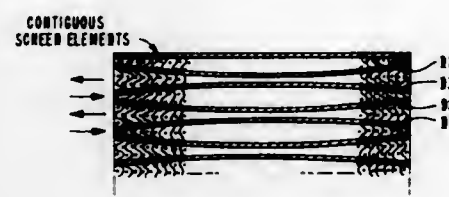
3,825,063

## HEAT EXCHANGER AND METHOD FOR MAKING THE SAME

Kenneth W. Cowans, 3118 Patricia Ave., Los Angeles, Calif. Division of Ser. No. 3,395, Jan. 16, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,129  
Int. Cl. F28f 13/06

U.S. Cl. 165—146

3 Claims



A high effectiveness compact heat exchanger having internal passageways containing substantially transverse foraminous elements of high heat conductivity includes heat-flowed passageway walls of synthetic material that are interspersed into the interstices of the foraminous elements. Metal screens of fine mesh are contiguously stacked to provide transverse heat conduction relative to longitudinal flow paths. Internal plastic barriers transverse to and at least partially penetrating the screens define composite passageway walls providing leak free construction capable of sustaining substantial pressure differentials between adjacent passageways. The passageways are varied in cross-sectional area along their lengths, as by incremental displacements of successive barriers, to provide flow equalization for maximum efficiency.

3,825,064

## HEAT EXCHANGER

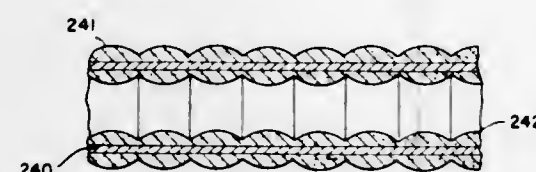
Kiyoshi Inoue, 16-8 3-Chome, Kamlyoga, Setagaya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 10,090, Feb. 16, 1970, which is a continuation of Ser. No. 611,497, Nov. 30, 1966, abandoned, which is a continuation-in-part of Ser. No. 356,714, April 2, 1964, Pat. No. 3,340,052, which is a continuation-in-part of Ser. No. 247,387, Dec. 26, 1962, Pat. No. 3,250,892. This application Oct. 12, 1971, Ser. No. 187,988

Claims priority, application Japan, Dec. 26, 1961, 36-47409  
Int. Cl. F28f 1/22

U.S. Cl. 165—179

1 Claim



A heat exchanger is formed by compacting metallic particles, especially of materials of high thermal conductivity to form the heat exchange surfaces, preferably against a substrate such as thermally conductive tube. The compaction involves electrical sintering, with the particle-particle interfaces and the particle-substrate interfaces metallurgically homogenized to form a monolithic structure free from corrosion sites.

3,825,065

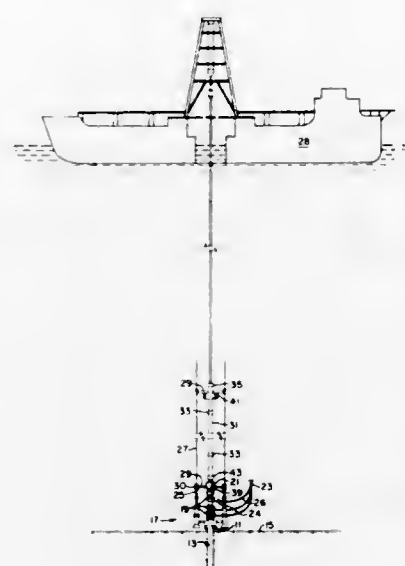
## METHOD AND APPARATUS FOR DRILLING IN DEEP WATER

James R. Lloyd; Robert E. Williams; Jack H. Bayless; Gerald D. Ortloff, and George H. Bruce, all of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Dec. 5, 1972, Ser. No. 312,415  
Int. Cl. E21b 7/12

U.S. Cl. 166—5

5 Claims



The specification discloses apparatus and methods for conducting operations in an underwater well from a floating vessel without use of a riser pipe. The system includes an elongated member having a hollow longitudinal bore extending from its upper end to its lower end and sized to permit a drill string to pass therethrough. A seal means is situated near the upper end of the hollow member for sealing the drill string within its bore. This seal means is adapted to permit the drill string to rotate and to translate vertically with respect to the member. The hollow tubular member is of adequate length to permit a span of drill string to extend downward therethrough beneath said seal having a weight sufficient to overcome the differential pressure acting on the drill string as a result of the difference between well pressure and hydrostatic head. Means are provided near the lower end of the elongated member for remotely connecting it to a subsea installation provided with valve means for opening and closing the orifice of the well.

3,825,066

## PROCESS FOR DEVELOPING INTERWELL COMMUNICATION IN A TAR SAND

David Arthur Redford, Fort Saskatchewan, Alberta, Canada, assignor to Petrofina Canada Ltd., Calgary, Canada  
Continuation-in-part of Ser. No. 79,346, Aug. 10, 1970, Pat. No. 3,706,341. This application July 31, 1972, Ser. No. 276,732

Int. Cl. E21b 43/22, 43/24

U.S. Cl. 166—261

3 Claims

Bituminous sand is contacted with ozone to render the bitumen partly water soluble and to create surface active agents in situ which promote oil-in-water emulsification and increase the water wettability of the sand. Bitumen can then be removed and recovered from the sand formation by flushing it with an aqueous solution.

3,825,067

## PREPARATION OF AQUEOUS SOLUTIONS OF POLYACRYLAMIDES SUITABLE FOR SUPPLEMENTED RECOVERY OF PETROLEUM

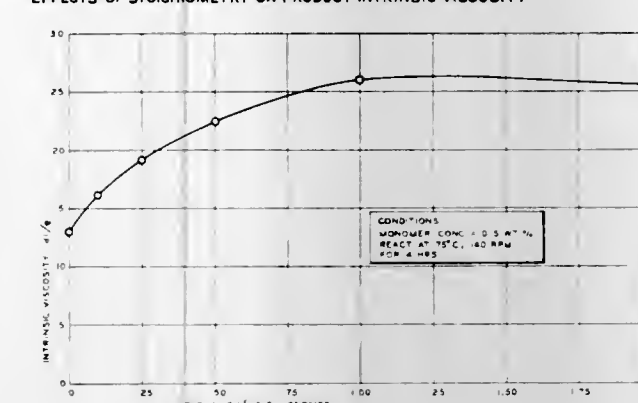
Charles R. Vestal, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1972, Ser. No. 319,431  
Int. Cl. E21b 43/22

U.S. Cl. 166—275

6 Claims U.S. Cl. 166—305 R

EFFECTS OF STOICHIOMETRY ON PRODUCT INTRINSIC VISCOSITY



Polyacrylamide gel or polyacrylamide powder is added to water and the pH is adjusted to within the range of from about 7 to about 14, e.g., with NaOH. The mixture is then heated to from about 20° to about 100°C. to form an aqueous solution having good efficiency in the recovery of petroleum from formations.

3,825,068

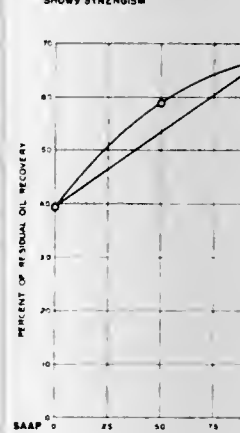
## CARBOXY VINYL POLYMER AND SULFONATED ALKYL ACRYLAMIDE POLYMER MOBILITY CONTROL AGENT AND PROCESS

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio  
Filed Mar. 27, 1972, Ser. No. 238,142  
Int. Cl. E21b 43/16

U.S. Cl. 166—305 R

5 Claims

THE THICKENER SYSTEM CVP-BAP SHOWS SYNERGISM



Carboxy vinyl polymer (CVP) (Carbopol 961) when dissolved with sulfonated alkyl acrylamide polymer, increases screen factor and provides enhanced supplemented recovery of oil.

3,825,069

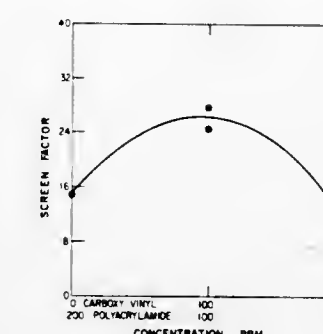
## CARBOXY VINYL POLYMER AND PARTIALLY HYDROLYZED POLYACRYLAMIDE MOBILITY CONTROL AGENT AND PROCESS

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Mar. 27, 1972, Ser. No. 238,143  
Int. Cl. E21b 43/16

6 Claims U.S. Cl. 166—305 R

11 Claims



Carboxy vinyl polymer (e.g., Carbopol 961) when dissolved with partially hydrolyzed polyacrylamide (e.g., Dow 700) increases screen factor and provides enhanced supplemented recovery of oil.

3,825,070

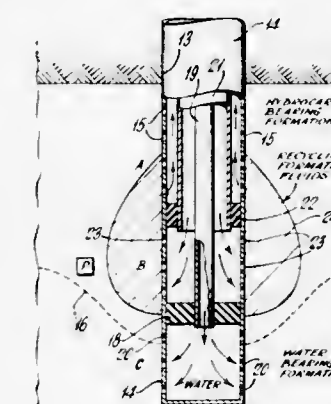
## GRADIENT BARRIER IN A SECONDARY RECOVERY OPERATION TO INHIBIT WATER CONING

Donald L. Hoyt, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,845  
Int. Cl. E21b 43/20

U.S. Cl. 166—306

9 Claims



The advance of the interface between subterranean hydrocarbon bearing formation fluids containing hydrocarbons and an underlying aquifer in a secondary recovery operation as it advances toward production perforations in a well bore to result in water coning during production is delayed by the imposition of recirculating barrier of an extraneous fluid, such as produced fluid hydrocarbons, injected into the subterranean hydrocarbon bearing formation via well perforations intermediate injection (lower) and production (upper) perforations in the well bore, the recirculation of the produced fluid hydrocarbons providing a gradient barrier.



3,825,071

**METHOD AND APPARATUS FOR FRACTURING OF SUBSURFACE FORMATIONS**

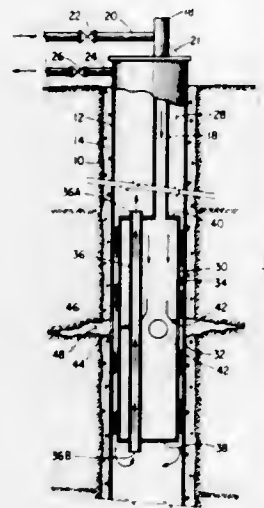
Ralph W. Veatch, Jr., Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Dec. 18, 1972, Ser. No. 316,173

Int. Cl. E21b 43/26

U.S. Cl. 166—308

6 Claims



This is a system for generating a high pressure, e.g., for stimulating by injecting fluid or fracturing, at a selected vertical interval in a subsurface formation penetrated by a well bore. A cylinder member which closely fits the walls of the well bore is inserted into the well bore at the interval to be stimulated. High-pressure fluid is directed through ports in the wall thereof at the center longitudinally of the cylinder to the point of the formation to be fractured. The fluid friction loss in the annular area between the close-fitting cylinder and the bore hole wall permits the high-pressure fluid to be at fracturing or stimulation pressure only at the selected interval.

3,825,072

**ELECTRONIC UPPER LINK SENSING**

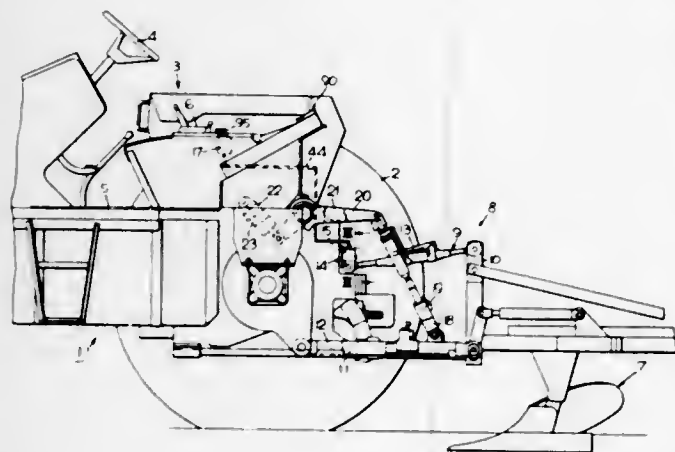
Eldred L. Collins, Cedar Falls, Iowa, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 28, 1972, Ser. No. 293,131

Int. Cl. A01b 63/112

U.S. Cl. 172—7

9 Claims



Electronic draft load sensing on the upper link of a three point hitch operating in combination with a hydraulic weight distribution system on a draft vehicle.

3,825,073

**SPRING CUSHION SHANK MOUNTING ASSEMBLY**

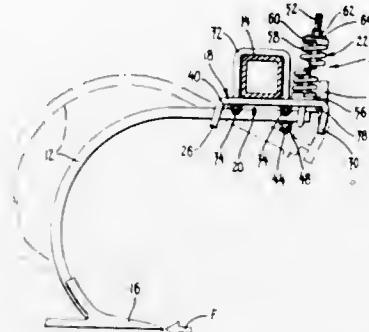
Guy F. Gardner, Dearborn, and Arnold C. Boyak, Jr., Detroit, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Jan. 10, 1973, Ser. No. 322,346

Int. Cl. A01b 15/00, 35/24

U.S. Cl. 172—710

1 Claim



A spring cushion shank mounting assembly for an earthworking tool including a bed bracket, a shank support assembly, a shank, and a spring assembly. The bed bracket, which is formed from a steel plate, includes a center section attached to an implement frame, a transversely extending depending rear flange with an aperture and two spaced depending front flanges. A shank support is positioned adjacent to the center section of the bed bracket with an arcuate rear section in contact with the transversely extending depending rear flange at each side of the aperture and an elongated guide member limited to vertical movement in the slot formed by the two spaced depending front flanges. One end of a shank passes through the aperture and is connected to the shank support. The spring assembly biases the forward end of the shank and the shank support toward the bed bracket.

3,825,074

**INTERACTING BULLDOZER STABILIZER AND EQUALIZER BAR**

Robert N. Stedman, Chillicothe, and Robert J. Purcell, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 21, 1972, Ser. No. 317,187

Int. Cl. E02f 3/76

U.S. Cl. 172—803

8 Claims

A bulldozer has a brace between the blade and the main frame of the tractor upon which the blade is mounted. An equalizer bar is pivotally coupled at its midpoint to the main frame and has its ends pivotally coupled to the track frames on either side of the main frame, the track frames being pivotally fixed to the main frame.

3,825,075

**DRILL ASSEMBLY**

Robert L. Mee, 3600 Paradise Rd., Apt. 94, Las Vegas, Nev. 89109

Filed June 18, 1973, Ser. No. 371,171

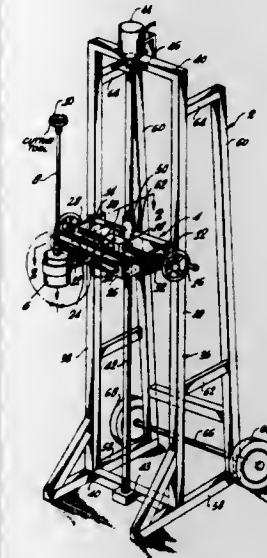
Int. Cl. E21c 5/02, 5/11

U.S. Cl. 173—43

9 Claims

A drill assembly particularly suitable for use in building construction. The assembly includes an upright framework supporting a vertically moveable carriage. A rotatable, first threaded rod extending transversely between two forwardly projecting, horizontal arms of the carriage carries a threaded traveling member to which is attached a forwardly projecting horizontal shaft. A drill motor connected with the forward end of the shaft may be selectively pivoted between positions in which the drill shaft is horizontal and vertical. The carriage includes support members which bear slidably against the upper

and lower surfaces of the shaft, thus providing a vertically stable support for the drill. In addition, a second threaded rod parallel to the first carries an aligned second traveling member



also secured to the shaft. The quadrilateral arrangement of two rods and two traveling members insures that the drill is provided with stable lateral support also.

3,825,076

**PILE MOUNTED DRILLING RIG AND METHOD**

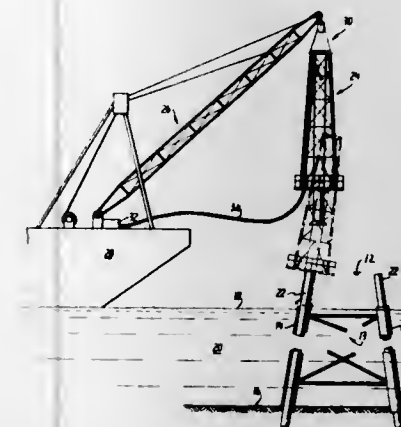
Alfred Reeves Kolb, Garalston on Sea, England, assignor to Brown &amp; Root, Inc., Houston, Tex.

Filed Feb. 9, 1973, Ser. No. 331,006

Int. Cl. E21b 7/12

U.S. Cl. 175—5

21 Claims



A rig for drilling in a pile projecting from a submerged surface to a location above the surface of a water body includes an elongate derrick operable to support drilling equipment and a deck fixed to the derrick at one end thereof. An elongate open ended sleeve for telescopically receiving a pile is suspended from the deck. An apertured rig support, fixed to and generally aligned with the sleeve, is engageable with a pile received by the sleeve and provides freestanding support of the rig on the pile. A conduit communicates with the interior of the pile and projects through a sleeve aperture. The conduit provides an outlet for drilling fluid and impedes turning of the rig on the pile.

A method for drilling in piles of an offshore structure entails supporting the rig in a freestanding manner on one pile, drilling a borehole at the pile base, and lifting the rig from the pile with lifting cables arranged in a sling arrangement. Thereafter the rig is supported on another pile and a borehole is drilled at the base thereof.

3,825,077

**METHOD FOR ANCHORING A DRILLING RIG IN PERMAFROST**

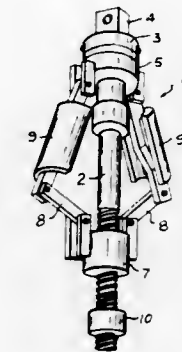
George Robert Jackson, R.R. 1, De Winton, Alberta, Canada

Filed Oct. 16, 1972, Ser. No. 297,859

Int. Cl. E21b 7/00

U.S. Cl. 175—57

1 Claim



A seismic rig first drills a shallow bore, about 10 feet deep, using its drill stem. The rig equipment is then used to set a retrievable anchor in the bore. The rig is moved and tied to the anchor. It is then in readiness to drill the main bore with increased penetration rate, since it is anchored.

3,825,078

**METHOD OF MOUNTING AND MAINTAINING ELECTRIC CONDUCTOR IN A DRILL STRING**

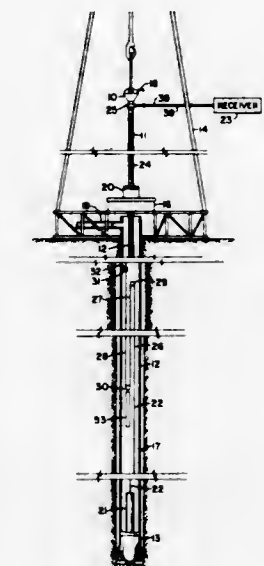
Joe K. Heilhecker, Donald B. Wood, and Karl O. Heintz, all of Houston, Tex., assignors to Easo Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 267,729, June 29, 1972, abandoned. This application Apr. 12, 1973, Ser. No. 350,459

Int. Cl. E21b 7/00, 47/12

U.S. Cl. 175—57

25 Claims



An insulated electric conductor employed in a tubular drill string to transmit electric energy between subsurface and surface locations is arranged within the drill string in a wound, helical, coiled, looped, folded, overlapped or other convoluted configuration. Preferably, the convoluted conductor, or a portion thereof, is maintained in tension. The convoluted configuration provides an excess length of conductor stored within the drill string which enables the conductor to be extended as the drill string is lengthened.



3,825,079

**METHOD FOR MOUNTING AN ELECTRIC CONDUCTOR IN A DRILL STRING**

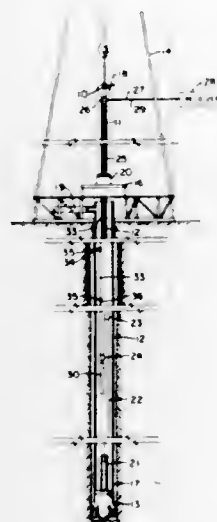
Joe K. Heilhecker, Houston, Tex., assignor to Esso Production Company, Houston, Tex.

Filed July 30, 1973, Ser. No. 383,959

Int. Cl. E21b 7/00, 47/12

U.S. Cl. 175—57

8 Claims



Method for performing wellbore telemetry operations wherein an electric circuit between a subsurface location in a pipe string and the surface is established and maintained by placing an electric conductor in the pipe string to extend from the subsurface location to the surface, arranging the conductor in an overlapped configuration having an upper loop and a lower loop, biasing the lower loop downwardly to remove slack from the conductor, advancing the wellbore in increments of sufficient length to require lengthening the pipe string and for each such incremental advancement, lengthening the pipe string by adding a length of pipe thereto. The length of pipe added to the drill string has extending therethrough an electrical conductor section for lengthening the conductor in the pipe string.

3,825,080

**DRILLING BIT FOR EARTH FORMATIONS**

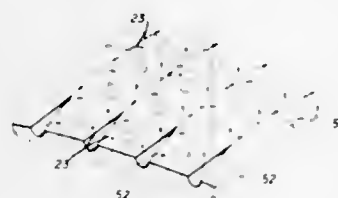
Lot W. Short, P.O. Box 252, Greenville, Tex. 75401

Filed Oct. 31, 1972, Ser. No. 302,544

Int. Cl. E21b 9/36

U.S. Cl. 175—65

11 Claims



A drilling bit for earth formations that are relatively difficult to drill that incorporate a body portion having a matrix thereon and defining a smooth annular cutting face of a configuration defining an annular line of tangency with a plane disposed in substantially normal relation to the axis of a bore hole being drilled by the bit. A plurality of cutting elements, such as industrial diamonds, are embedded in the matrix and include cutting portions thereof extending beyond the matrix for cutting engagement with the formation being drilled. The cutting elements are oriented in rows radiating from a coolant aperture formed centrally of the bit outwardly about the entire cutting face defined by the matrix. The cutting elements are arranged to create closely spaced generally circular scratches in the formation for erosion thereof as the bit is rotated rela-

tive to the formation. A plurality of coolant courses are formed in the matrix and extend from the coolant passage in radiating manner and terminate radially inwardly of said annular line of tangency thereby causing the velocity of the coolant fluid to increase materially as it is evenly distributed in the form of a relatively thin high velocity film flowing over the entire smooth matrix surface disposed radially outwardly of the coolant courses for efficient cooling of each of the cutting elements and removal of cuttings eroded from the formation by the cutting elements.

3,825,081

**APPARATUS FOR SLANT HOLE DIRECTIONAL DRILLING**

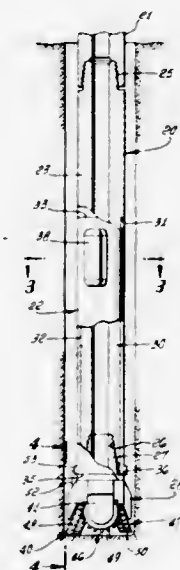
Harvey S. McMahon, 4661 Rhapsody Dr., Huntington Beach, Calif. 92649

Filed Mar. 8, 1973, Ser. No. 339,321

Int. Cl. E21b 7/08

U.S. Cl. 175—73

5 Claims



Method of slant hole directional drilling using a rotary drill wherein the drill collar carrying a plural cone bit is nudged upwardly on each revolution by a radially projecting lobe being cam bearing on the surface at the low side of the hole, in conjunction with the action of one oversize cone in the bit which upon each upward nudging of the drill collar cuts in a predetermined laterally angular direction, whereby the direction of the well bore will be altered.

The apparatus embodies a two cone or tricone bit in which the teeth of one cone are radially enlarged over the teeth of the other cone or cones, the bit being mounted on a drill collar with the larger cone at an angular displacement from a radially projecting lobe or cam mounted on the drill collar.

3,825,082

**APPARATUS FOR FORMING HOLES IN EARTH AND SETTING SUBTERRANEAN STRUCTURES THEREIN**

Roy J. Woodruff, 354 Menke Rd., Michigan City, Ind. 46360

Filed Mar. 12, 1973, Ser. No. 340,238

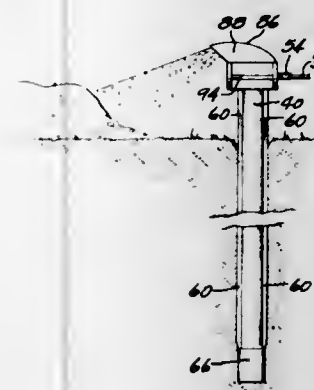
Int. Cl. E21b 21/00; E21c 7/02

U.S. Cl. 175—211

6 Claims

A method of forming a hole in earth and of installing a subterranean structure, wherein a rigid open-ended tube is lowered into the earth and simultaneously air under pressure is discharged into the lower end of the tube to displace and discharge soil. The subterranean structure is inserted in the tube at desired position and the tube is withdrawn while the structure remains in position. The apparatus employed to

practice the method includes means carried by the tube providing a gas pressure passage with an inlet at one end of the tube and an outlet into the opposite end of the tube, and



means by which the tube may be supported at the end adjacent the inlet. The supported end of the tube may mount a shiftable deflector for soil being discharged.

3,825,083

**DRILL BIT AND STABILIZER COMBINATION**

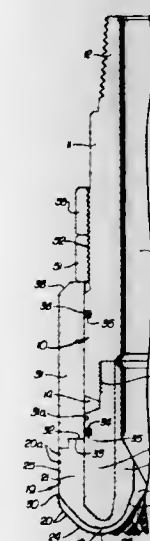
Frank O'Dell Flarity, Salt Lake City, Utah, and Waymon Rhea Eustace, Midland, Tex., assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Feb. 2, 1972, Ser. No. 222,826

Int. Cl. E21b 9/36, 17/10

U.S. Cl. 175—394

18 Claims



A closely coupled bore hole drill bit and stabilizer combination includes a body structure adapted to be coupled to a rotary drill string or downhole motor, the body structure having cutting elements on its lower portion for drilling the bore hole, the upper portion of the body structure being surrounded by a separate stabilizer in juxtaposition to the upper end of the lower portion of the body structure, the stabilizer being removably coupled to the body structure, as through the agency of a clutch device, by a threaded coupling, or by welding, allowing readily uncoupling or disconnection of the stabilizer from a worn drill bit and its appropriate association with another operable drill bit.

3,825,084

**SHUT-OFF MECHANISM FOR LOW PRESSURE LINES CONNECTED TO HIGH PRESSURE LINES IN NUCLEAR REACTORS**

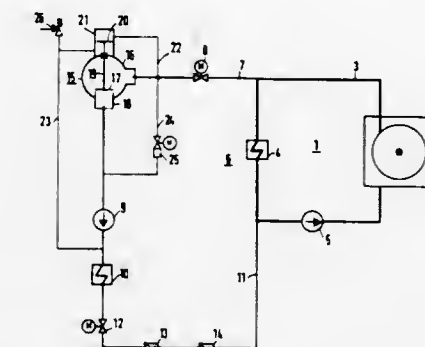
Hans Fruth, Buckenhof, and Wolfgang Muller, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 16, 1972, Ser. No. 253,881

Int. Cl. G21c 15/18

U.S. Cl. 176—65 RE

12 Claims



A control mechanism is disclosed for shutting off a low pressure liquid or gas line connected to a high pressure line. The control mechanism may be comprised of a piston controlled check valve mounted in the lower pressure line. The upper side of an actuator piston in the check valve is connected to the high pressure input side of the input line so that whenever the pressure at the input side becomes high, the check valve is closed. To open the valve a pump or other pressure generator is mounted after the valve and is connected by a pressure line to the lower side of the actuator piston. A safety valve is mounted within this pressure line to insure that a high pressure cannot be formed in this line to force the check valve open. To permit opening of the valve when required, a valve controlled, pressure equalization line is connected between the input line and the intake side of the pump.

3,825,085

**PRICE COMPUTING SCALE WITH PARITY CHECK OF PRICE ENTRY**

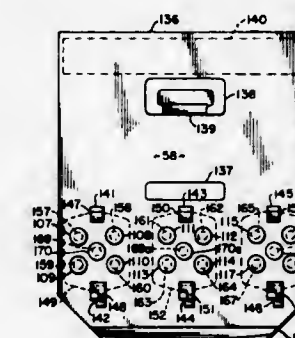
Orval J. Martin, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio

Filed Sept. 20, 1973, Ser. No. 398,969

Int. Cl. G01g 23/38, 23/22

U.S. Cl. 177—3

6 Claims

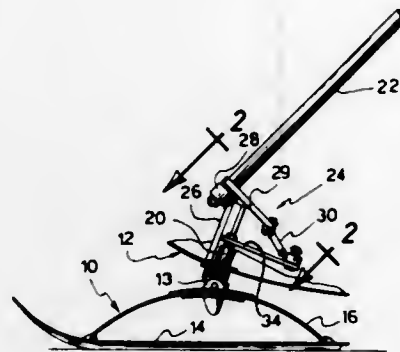


A computing weighing scale system comprising photosensitive means for setting up selected price factors in the scale's computer and interlock means for preventing initiation or completion of the system's operating cycle, which includes computing and printing, if part of the photosensitive means is defective or is missing or is plugged with foreign material.



### 3,825,086 STOP DEVICE FOR SNOWMOBILE STEERING MECHANISM

Jerome Bombardier, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada  
Filed Dec. 21, 1972, Ser. No. 317,274  
Claims priority, application Canada, Dec. 15, 1972, 159157  
Int. Cl. B62m 27/02  
U.S. Cl. 180—5 R 6 Claims

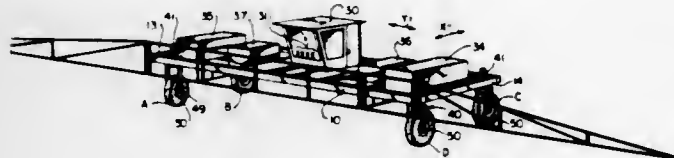


The disclosure herein describes a stop device for limiting the angular displacement of a snowmobile ski leg which comprises a collar fixedly secured to the lower portion of the ski leg housing and a projecting element extending from the lower portion of the ski leg and having one extremity extending through an opening in the collar. The opposite sides of the opening define the limits of the angular displacement of the ski leg.

### 3,825,087 MOTORIZED AGRICULTURAL TYPE CARRIER

William A. Wilson, 815 Woodland Ave., Woodland, Calif. 95695

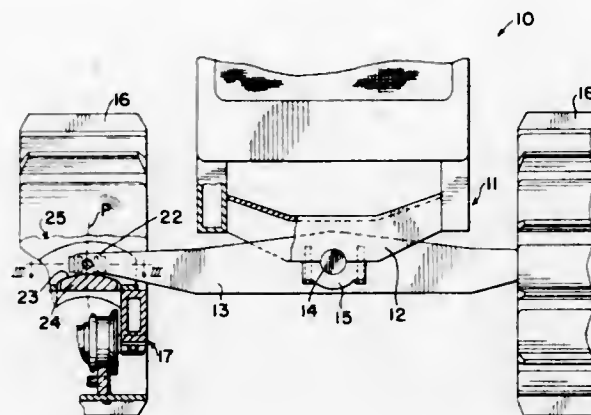
Filed Aug. 24, 1973, Ser. No. 391,042  
Int. Cl. B62d 49/40  
U.S. Cl. 180—6.48 13 Claims



A carrier vehicle useful for agricultural or industrial purposes, the vehicle having a large flat platform for carrying equipment and materials, and also capable of supporting various farm implements in operative positions, the platform comprising a frame supporting motor-driven ground engaging wheels in its corners each carried by an adjustable-height caster assembly, the width of the frame being power-adjustable and all four wheels being selectively power-steered, the frame carrying engine-driven pumps supplying hydraulic fluid to the wheel motors, to the frame expansion means, and to the steering means through a series of control valves clustered in a locker in the frame, and the vehicle having a rotatable operators cab connected by flexible control cables to the control valves in the frame.

### 3,825,088 EQUALIZER BAR MOUNTING FOR TRACK-TYPE VEHICLES

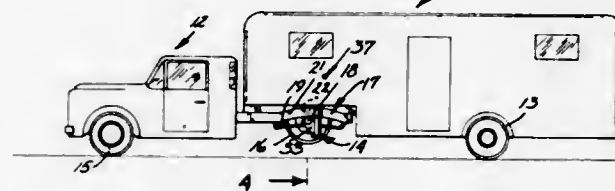
Kermit L. Copeland, Bellevue, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.  
Filed Dec. 7, 1972, Ser. No. 312,819  
Int. Cl. B62d 55/08  
U.S. Cl. 180—9.5 12 Claims



The undercarriage of a track-type vehicle comprises a pair of endless tracks each mounted on a track roller frame. An equalizer bar is pivotally mounted at the longitudinal axis of the vehicle and each end thereof is connected to a respective one of the track roller frames by a lost-motion connection. Such connection comprises a pin attached to a respective end of the equalizer bar and disposed in parallel relationship with respect to the vehicle's longitudinal axis and at least one pair of parallel bearing blocks mounted on either side of the pin.

### 3,825,089 HOUSE TRAILER HOOK-UP

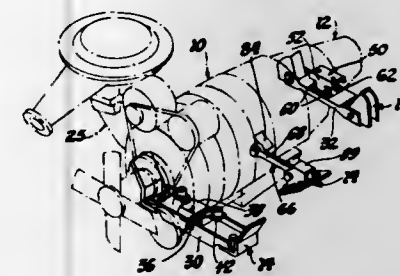
David M. Murphy, Mason City, Iowa, assignor to David Manufacturing Company, Mason City, Iowa  
Continuation of Ser. No. 115,587, Feb. 16, 1971, abandoned.  
This application Oct. 5, 1972, Ser. No. 296,319  
Int. Cl. B62d 53/04  
U.S. Cl. 180—12 15 Claims



The disclosure is directed to the combination of a house trailer and a truck or similar vehicle for hauling the trailer. The truck has front and rear wheels, the latter of which are retractable against the bias of suspension leaf springs. The front end of the trailer includes a retractable stand on each side for supporting the trailer when at rest. To transport the trailer, its forward portion is received by the bed of the truck, which is disposed over the rear wheels. The trailer stands are constructed and arranged to engage the rear wheels upon retraction to elevate the wheels from the ground and rigidly secure the trailer to the truck bed.

### 3,825,090 ROTARY ENGINE AND TRANSMISSION ASSEMBLY MOUNTING SYSTEM

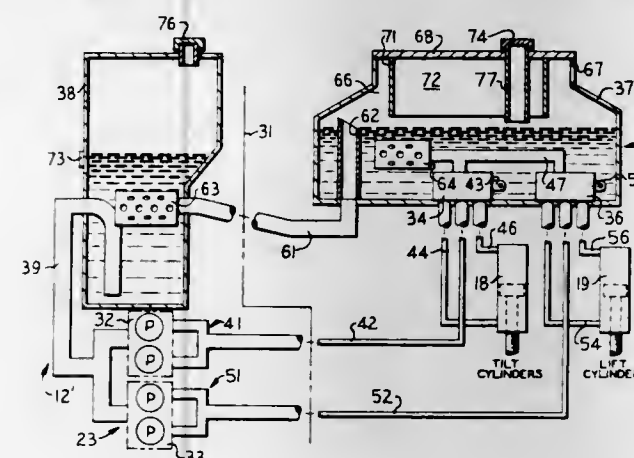
Donald L. Runkle, Royal Oak, and Charles N. Hughes, Milford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.  
Filed Aug. 8, 1973, Ser. No. 386,513  
Int. Cl. B60k 5/12  
U.S. Cl. 180—64 R 4 Claims



A rotary engine and transmission assembly mounting system having a pair of elastomeric mounts secured to the vehicle structure and the bottom of the rotary engine and transmission assembly for controlling vertical, lateral, and fore-aft movements and also yaw, pitch and roll of the engine and transmission assembly and an additional elastomeric mount including a strut for controlling only lateral movement, yaw and roll of the engine and transmission assembly.

### 3,825,091 HYDRAULIC FLUID CIRCUIT FOR VEHICLE HAVING ARTICULATED SECTIONS

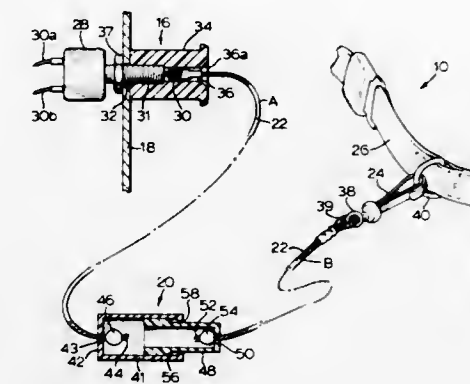
Thomas H. Geselbracht, Joliet, and David S. Vinton, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Division of Ser. No. 834,776, June 19, 1969, Pat. No. 3,604,205. This application May 24, 1971, Ser. No. 146,509  
Int. Cl. F15b 15/18  
U.S. Cl. 180—53 R 2 Claims



A hydraulic circuit having one or more pumps adjacent motor means in a machine with hydraulic motors which are supplied by the circuit being located in a relatively remote location from the pumps. A control valve is associated with each hydraulic motor and includes a return line in communication with a first hydraulic fluid tank. An assembly of one or more pumps for delivering fluid under pressure to the control valves is located adjacent the motor means and is driven by the motor means. A second hydraulic fluid tank is associated with the pump assembly, the second tank providing fluid to the pumps and being in communication with the first tank by a return conduit for delivering fluid from the first tank to the second tank. To prevent rupture of the first tank, a baffle is preferably arranged within that tank to assure a constant air pocket above the fluid.

### 3,825,092 SAFETY DEVICE FOR MOBILE CONVEYANCES

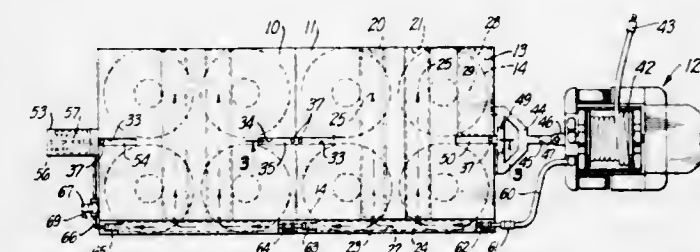
Kenneth Graydon, 298 Wellington St., and Harley W. Douglas, 38A King St. East, both of Ingersoll, Ontario, Canada  
Filed Apr. 10, 1972, Ser. No. 242,581  
Int. Cl. B60k 27/08  
U.S. Cl. 180—82 R 3 Claims



The device is used in conjunction with conveyances powered by internal combustion engines having electrical ignition systems. The device includes an on-off switch which is connected in series with the ignition system and which includes a plunger which moves from a retracted position in which the electrical system is activated to an extended position in which the engine is shut down. A cord is connected at one end to the plunger and at the other end, to attachment means which is adapted to be releasably connected to the driver of the conveyance. Incorporated in the cord is a severable member which, upon application by the cord of a tensile force greater than the force required to move the plunger from a retracted position to an extended position under normal weather conditions, separates so that the cord no longer interconnects the plunger and the attachment means. The cord is of sufficient length to accommodate movement of the driver while on the conveyance only so that upon removal of the driver from the conveyance, the cord becomes taut with resulting movement of the plunger from a retracted to an extended position thereby shutting off the engine.

### 3,825,093 MODULAR AIR CUSHION TRANSPORTING SYSTEM

Robert E. Burdick, and Baxter K. Wolf, both of Santa Barbara, Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.  
Filed Jan. 2, 1973, Ser. No. 320,138  
Int. Cl. B60v 1/18  
U.S. Cl. 180—119 5 Claims



A modular system for moving heavy loads, using a plurality of air cushion transporters coupled together. A plurality of identical air cushion transporters with load carrying platforms riding on air bearings, and means for mechanically and pneumatically interconnecting the transporters for movement as a unit.



### 3,825,094 REMOTE CONTROL FOR AIR BEARING TRANSPORTERS AND THE LIKE

Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.  
Filed Aug. 6, 1973, Ser. No. 385,963  
Int. Cl. B60v 1/00

U.S. Cl. 180—125

11 Claims



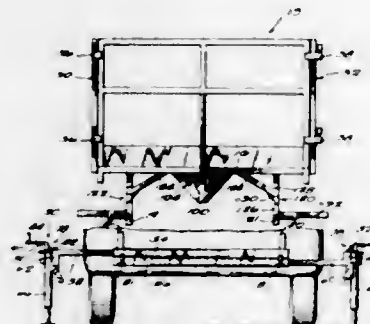
An air cushion transporter for moving large loads, typically 300,000 pounds, on air cushions using remote control permitting the operator to walk along with the transporter guiding it in forward, reverse, right and left rotational directions. A transporter with load carrying platform, plurality of air bearings, plurality of drive units and a pivot unit, and a remote control unit with components for selectively, separately and simultaneously actuating the drive and pivot units. A remote control unit readily carried by the operator providing manual control of direction and velocity and dead-man control for air bearing shut-off and drive motor braking. A transporter suitable for operation with air or other gas or a liquid.

### 3,825,095 AERIAL SCAFFOLD FOR VEHICLE

Albert L. Clark, West Bend, Wis., assignor to Pac-Craft Products, Inc., West Bend, Wis.  
Filed Oct. 10, 1972, Ser. No. 296,383  
Int. Cl. E04g 1/24

U.S. Cl. 182—17

2 Claims



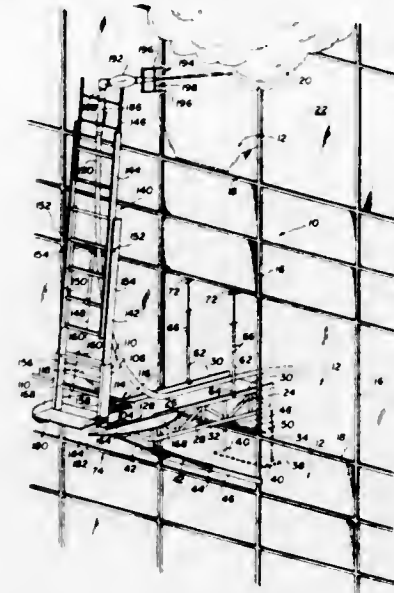
A vertically movable aerial scaffold which is mountable and demountable on the bed of a pick-up truck includes stabilizer bars telescopically received in channel members connected to the frame of the scaffold. The stabilizer bars include jack posts pivotally mounted to the bars for movement from an erected position for use to a collapsed storage position. The scaffold also includes a rear railing or guard with hinged side gates which can be folded against the rear gate when the platform is stored vertically during transportation of the vehicle. Other features include a hinged front safety gate, collapsible steps and a centrally located sleeve in the platform adapted to receive a column which forms part of a boom or a laterally extending access ramp.

### 3,825,096 FIRE LADDER EXTENSION APPARATUS

Robert F. Mendes, 42 Pearmain Pl., Merrick, N.Y. 11566  
Filed Mar. 14, 1973, Ser. No. 341,143  
Int. Cl. E06c 1/34

U.S. Cl. 182—86

19 Claims



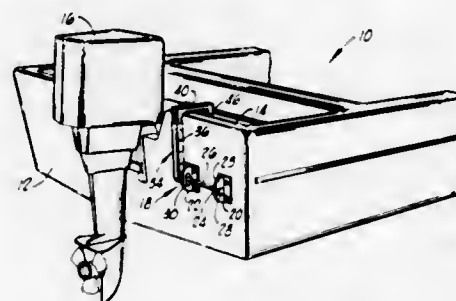
Ladder extension means for fighting fires comprising a portable support positionable in a window or other wall opening. The support is provided with means for fixedly bracing it against movement, and means at its outer end to receive a ladder. The means for receiving the ladder is movable so that the ladder may be positioned in selected altitudes with respect to the building providing extension from the wall opening to another part of the building, such as from floor to floor.

### 3,825,097 STEP ASSEMBLY APPARATUS FOR USE ON SKI BOAT OR THE LIKE

Harold D. Owen, 2605 Woodruff Rd., Edmond, Okla. 73034  
Filed July 13, 1973, Ser. No. 378,921  
Int. Cl. B60r 3/00; E06c 5/00

U.S. Cl. 182—91

5 Claims



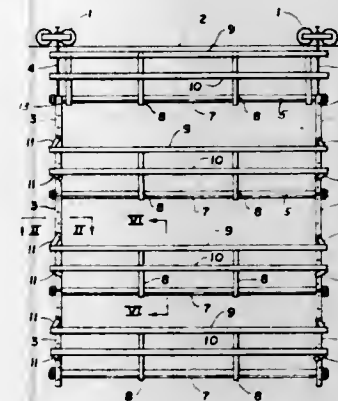
An improved step assembly apparatus for boarding a boat over the stern transom thereof, wherein a hook-shaped extendible step assembly is pivotally connected to a portion of the transom by means of a resilient shaft rotatably connected to a mounting bracket and extending therefrom a predetermined distance, parallel to the transom surface and at a relatively short distance therefrom, through an elongated slot formed through a portion of a second mounting bracket. The resilient shaft is spaced a predetermined distance below and parallel with the stern gunwale and the shank portion of the hook-shaped step assembly is extended a like distance from the pivot shaft such that the assembly may be pivoted to a storing position wherein the hook-shaped step is secured to the gunwale, and the torsion effect produced by the resilient shaft bent upwardly within the upper portion of the elongated slot formed through a portion of the second mounting bracket retains the assembly in a stored position.

### 3,825,098 HANGING SCAFFOLDING

Thomas M. Shingler, Pittsburgh, Pa., assignor to Cyclops Corporation, Pittsburgh, Pa.  
Filed Dec. 21, 1972, Ser. No. 317,180  
Int. Cl. E04g 3/10

U.S. Cl. 182—106

9 Claims



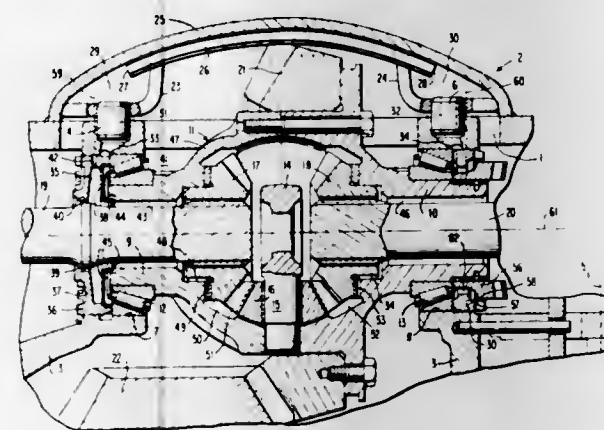
A handrail system for hanging scaffolding including a pair of spaced, confronting ladders suspended on an outrigger beam. The rungs of the ladders directly support the scaffold decks of a plurality of stages. A handrail and midrail for each stage is secured, at its ends, to the outer sides of the ladders by pivotal handrail brackets attached to channel clamps which are adjustably fastened within the rail to compensate for variations in distance between the confronting ladders. Special flange clamps are provided for supporting the deck side rails without the necessity of perforating and weakening of the side rails. A toe rail or plate prevents tools and equipment from falling onto lower stages or the ground.

### 3,825,099 LUBRICATING SYSTEM FOR AXLE GEAR

Wilhelm Hopf, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany  
Filed Oct. 12, 1972, Ser. No. 296,874  
Claims priority, application Germany, Oct. 12, 1971, 2150676

U.S. Cl. 184—6.12

51 Claims



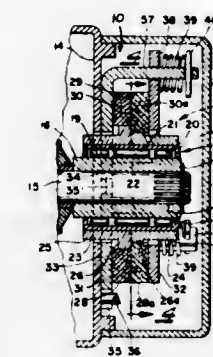
A lubricating system for an axle gear inserted into an axle bracket of a motor vehicle in which the axle bracket includes one or several collecting chambers in the form of pockets for lubricant centrifuged up by the bevel gear while the axle gear housing includes one or several distributor chambers for the lubricant; lubricant connections are provided both between a distributor chamber and a collecting chamber as also between a distributor chamber and at least one lubricating place of the differential gear housing such as the teeth of differential bevel gears and a conical roller bearing or bearings of the differential gear housing.

### 3,825,100 HOIST WITH CONSTANT PRESSURE ONE WAY BRAKE

Harvey Freeman, Brinkley, Ark., assignor to Eaton Corporation, Cleveland, Ohio  
Filed June 14, 1972, Ser. No. 262,909  
Int. Cl. F16d 67/02

U.S. Cl. 188—71.2

4 Claims



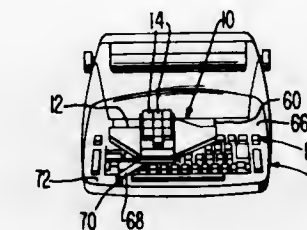
A low cost hoist operated by a motor on whose shaft is an overrunning clutch that rotates a load brake disc when the motor shaft rotates in load lowering direction, the disc engaging between a pair of brake plates acting with constant frictional pressure against opposed surfaces of the disc and enabling the hoist to support a load. Heat that is developed by slip friction will be divided between the brake plates when the motor operates to lower a load, and one of those plates is in heat conducting surface contact with the hoist frame, controlling temperatures due to the slip friction and reducing deterioration of the brake and hoist. The brake disc is formed by two disc portions in contact and mounted on the clutch through keying portions so staggered as to offer surfaces that locate the disc in a predetermined axial position on the clutch.

### 3,825,101 AUXILIARY KEYBOARD DEVICE FOR KEY-OPERATED MACHINE

Neal B. Wineman, 210 Warren Rd., San Mateo, Calif. 94402  
Filed June 5, 1972, Ser. No. 259,635  
Int. Cl. B41j 5/30

U.S. Cl. 197—19

11 Claims



A 10-key keyboard device adapted to be removably placed over the keyboard of a key-operated machine and having motion-transfer bars which mechanically couple certain of its keys to corresponding keys of the machine even though the device keys are spaced laterally from the corresponding machine keys. The device is suitable for providing a 10-key format for the numeral keys of a typewriter.

### 3,825,102 TYPE HEAD TILT AND ROTATING MECHANISM

Herbert Decker, Lauf, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany  
Continuation of Ser. No. 76,733, Sept. 30, 1970, abandoned.  
This application Nov. 21, 1972, Ser. No. 308,622  
Int. Cl. B41j 1/32

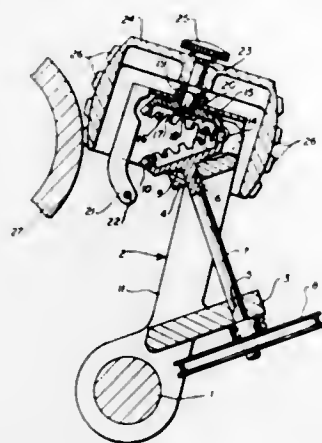
U.S. Cl. 197—55

7 Claims

A tilt bridge for a type carrier carries unitarily rotatable thereon a type carrier and a gear, and such gear is in constant



engagement with another gear at an axis location whereabout the tilt bridge is required to tilt. The gear on the tilt bridge has freedom for tilting movement about said axis location in



respect to the other gear and is in constant mesh therewith for receiving therefrom rotary type-selective movements for the type carrier. The tilt and rotate axes are mounted on a swivable support whereby the carrier may be swung to print.

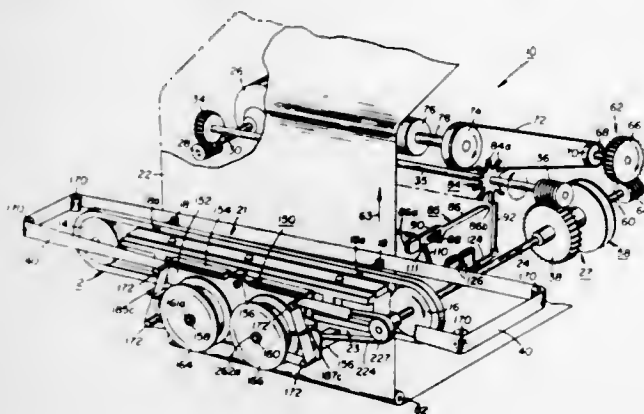
3,825,103

**HIGH-SPEED PRINTER HAVING IMPROVED RIBBON DRIVING, REVERSING AND TENSIONING MECHANISM**  
Arthur F. Riley, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Mar. 27, 1973, Ser. No. 345,407  
Int. Cl. B41J 33/22

U.S. Cl. 197-164

18 Claims



A high-speed impact printer has an improved ribbon driving, reversing, and tensioning mechanism that is jam-proof, of compact-simplified construction, reliable and substantially maintenance free in operation. By being compact, the drive mechanism may be centrally located at the front of an impact printer so as to facilitate spool and/or ribbon replacement. The drive mechanism, through the use of two sets of pivotally mounted, two-stage biased planetary coupling gears, effects gradual rotational engagement and disengagement of the selectively coupled driving and driven gears of the drive mechanism. This results in minimal gear wear, and produces smooth, automated reversal of ribbon travel, while the latter is continuously maintained under uniform tension.

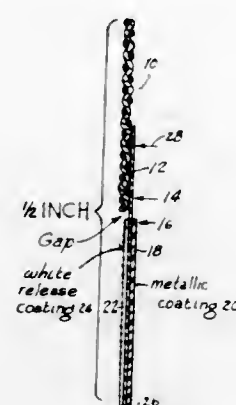
3,825,104  
**COMPOSITE INKING AND OBLITERATING TYPEWRITER RIBBON**

William H. Wolowitz, 6905 Persimmon Tree Rd., Bethesda, Md. 20034

Filed Mar. 26, 1973, Ser. No. 345,127  
Int. Cl. B41J 31/02

U.S. Cl. 197-172

8 Claims



A class of "self-correcting" typewriter ribbons is described, having an inking portion and an obliterating portion, whose members share the common property of having those portions spaced apart from one another by a gap (either edgewise or face-wise) to ensure against transfer of ink to the obliterating material. The gap facilitates manufacture, and in one form, or group of forms, a metallic layer on one of the portions is used to reduce friction in the ribbon guides, improve the appearance of the ribbon, and provide a visual indication to the user that the ribbon is properly installed for use.

3,825,105

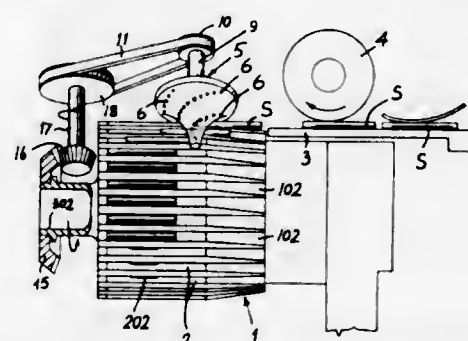
**DECELERATOR OF CIGARETTES COLLECTED BY A FLUTED DRUM**

Athos Cristiani, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,393  
Int. Cl. B65g 47/14

U.S. Cl. 198-20 C

9 Claims



In combination with a rotatable fluted catcher drum, a rotatable pneumatic decelerator means providing braking for reducing the axial speed of rod-like members entering endwise into the open flutes of the drum to prevent damaging the rod-like members, and means for coordinating the rotation of the drum and decelerator means.

3,825,106

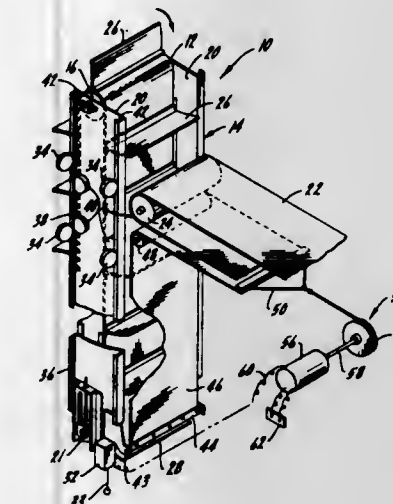
**AUTOMATIC CRATE FILLER**

Irwin Edward Wickam, Dodge City, and Jerry K. Perkins, Arkansas City, both of Kans., assignors to Speed King Manufacturing Company, Inc., Dodge City, Kans.

Filed Mar. 29, 1972, Ser. No. 239,101  
Int. Cl. B65g 37/00

U.S. Cl. 198-101

6 Claims



An apparatus for depositing a quantity of articles in a container utilizing an endless conveyor mounted on a vertically movable support structure. Belt curtain means attached to the support structure adjacent the article support means of the conveyor aid in confining the articles being transported. When the article level in the container reaches a predetermined height, a limit switch is activated, initiating drive means connected to the belt curtain. Tension applied to the support structure by the belt curtain incrementally and vertically raises the support through a preselected distance or interval, whereby the limit switch is again deactivated and the support structure stops.

3,825,107

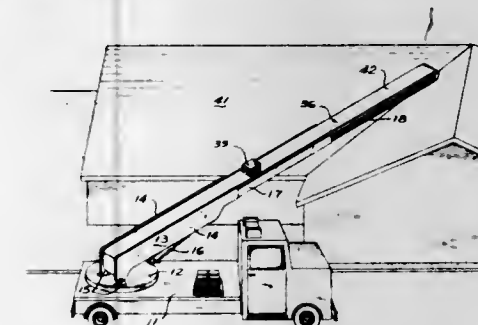
**EXTENDIBLE CONVEYOR SYSTEM**

John M. Cary, 2958 Maryann Ln., Pittsburgh, Calif. 94565, and Michael F. Mahacek, 9092 Cherry Ave., Orangevale, Calif. 95662

Filed July 26, 1971, Ser. No. 166,186  
Int. Cl. B65g 15/26

U.S. Cl. 198-139

7 Claims



An extendible and retractable conveyor includes a telescoping arrangement of conveyor sections or beam members which may be mounted on a truck or other vehicle. A first or outer beam member is pivoted and inclined upwardly on a rotatable base member. A second or intermediate beam member is movable longitudinally along and with respect to the first beam member, and a third or inner beam member is further longitudinally movable along and relative to the second beam member. A continuous conveyor belt has a first reach and a second reach spanning the combined lengths of the beam members and extending and retracting therewith.

Two pulleys, supporting four additional reaches of the belt, are mounted to move longitudinally of the first beam member to retract and extend in complement to the extending and retracting of the second and third beam members. Friction gears or the like are mounted on the second beam member to provide a differential drive means for extending and retracting the third beam member and the first two reaches of the conveyor belt at twice the rate of complementary retracting and extending of the pulleys supporting the four additional belt reaches.

3,825,108

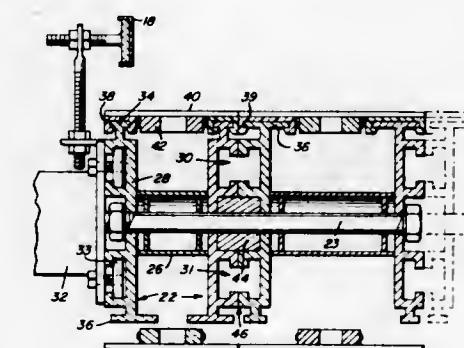
**CONVEYOR ASSEMBLY WITH CONVERTIBLE EXTRUSIONS**

Guthrie B. Stone, Honeoye, N.Y., assignor to Stone Conveyor, Inc., Honeoye, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,211  
Int. Cl. B65g 15/60

U.S. Cl. 198-204

9 Claims



A conveyor assembly comprising a pair of elongated convertible side frame sections of extruded aluminum, or the like, each of said frame members including a vertical side wall with first and second elongated support flanges at the top and bottom edges thereof, respectively, said flanges being of different horizontal dimensions to accommodate different size standard conveyor chains. The frame members are selectively oriented during installation to provide the desired flanges at the top to support a conveyor chain of corresponding dimensions with the pivot joints of the chain disposed between the opposite top flanges.

3,825,109

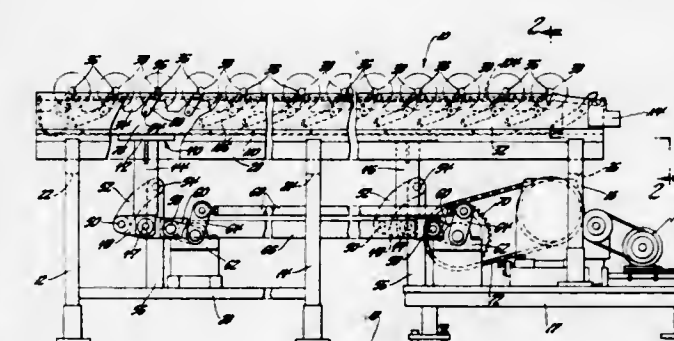
**ACCUMULATING LIFT-AND-CARRY CONVEYOR**

John M. Stockbridge, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 25, 1973, Ser. No. 373,186  
Int. Cl. B65g 25/04

U.S. Cl. 198-219

3 Claims



An accumulating lift and carry conveyor for moving individual parts along the longitudinal axis of the conveyor. The conveyor includes a pair of laterally spaced side plates having a series of transversely aligned stations formed in the upper portions of the side plates for supporting and spacing the



parts. A lifter member having a plurality of carrier members is located between the side plates and is adapted to be driven in a closed circular path about an axis extending transversely to the longitudinal axis of the conveyor. The side plates carry a plurality of actuator members which cooperate with the carrier members for moving the latter to appropriate positions so as to cause the individual parts to be moved from one station to the next or to remain in the accommodating stations depending upon whether one or more of the stations is unoccupied.

3,825,110

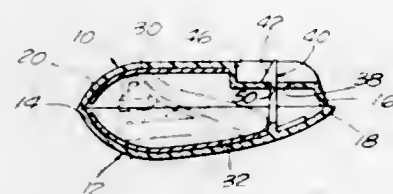
## PLASTIC CASE FOR GLASSES

Frank Halblach, 6132 Jamieson Ave., Reseda, Calif. 91335, and Stuart W. Needleman, 9524 Babbitt St., Northridge, Calif. 91324

Filed July 14, 1972, Ser. No. 271,876  
Int. Cl. A45c 11/20; B65d 45/18, 1/22

U.S. Cl. 206—6

1 Claim



A plastic molded hard case for glasses formed from integral molded halves connected by a hinge part and contoured to form a rigid case, the halves having abutting perimetral edges and latch means to latch the halves together.

3,825,111

CONTAINER CONTAINING A CARBONATED PRODUCT  
David D. Pipkins, Downers Grove, Ill., assignor to The Valspar Corporation, Minneapolis, Minn.

Division of Ser. No. 154,411, June 18, 1971, Pat. No. 3,747,523, which is a continuation-in-part of Ser. No. 80,833, Oct. 15, 1970, Pat. No. 3,705,044. This application Apr. 18, 1973, Ser. No. 352,214  
Int. Cl. B65d 81/00

U.S. Cl. 206—84

4 Claims

A container has a carbonated paint or ink therein and carbon dioxide is interstitially spaced in an amount sufficient to evolve into the head space of the container to provide a protective atmosphere having improved "anti-skinning" characteristics.

3,825,112

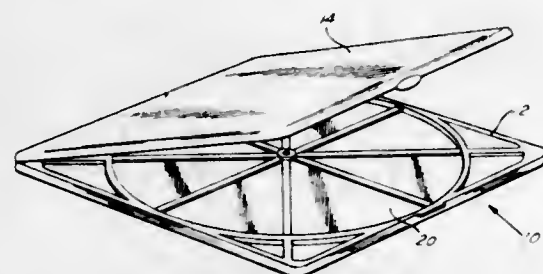
## RECORD COVER

Aaron C. Schumaker, Denver, Colo., and Isaac K. Hay, Jr., Lafayette, Ind., assignors to Crested Butte Records, Inc., Denver, Colo.

Filed Oct. 30, 1972, Ser. No. 301,822  
Int. Cl. B65d 85/30

U.S. Cl. 206—310

7 Claims



A phonograph record cover preferably is composed of a high strength plastic material and is made up of two panels

each having a shallow recessed portion on its inner surface opening toward the other, and the panels are connected along a common edge by a living hinge. The recessed portion in each panel is provided with a plurality of radially extending ribs and a circular rib in one of the panels defines an annular shoulder against which the outer perimeter of a phonograph record is adapted to engage. The extent of projection or depth of the radial ribbing on the one panel which is disposed within or inward of the circular rib is less than that of the circular rib whereby a record can be placed against the radial ribbing so as to be substantially flush with the circular rib; and when the opposite panel is pivoted into overlying relationship with the one panel, a record in the cover will be snugly retained between the annular shoulder around the perimeter of the record and the radial ribs which engage opposite faces of the record.

3,825,113

## PACKING ASSEMBLY AND METHOD OF ITS MANUFACTURE

Emil Kramer, Nyborg, and Elgil Vangsgaard, Bovense, both of Denmark, assignors to Interessentskabet Nyborg Plast, Fabrikation og handel, Nyborg, Denmark

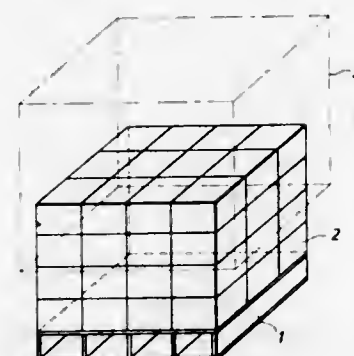
Filed July 9, 1971, Ser. No. 161,062

Claims priority, application Denmark, Aug. 10, 1970, 4099/70

Int. Cl. B65d 19/00, 65/10; B65b 53/02

U.S. Cl. 206—386

5 Claims



A packing assembly including a plurality of single packings each containing one or more articles and being surrounded by a plastic foil. The assembly is surrounded wholly or partly by two layers of plastic foil which are shrunk by heat. The invention also relates to a method of manufacturing a packing assembly of said type, in which a stack of single packings is surrounded by two plastic foils which are subsequently shrunk by heat.

3,825,114

## NEST AND STACK CONTAINER

Lewis T. Johnson, and Willard E. Bull, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 9, 1972, Ser. No. 261,371

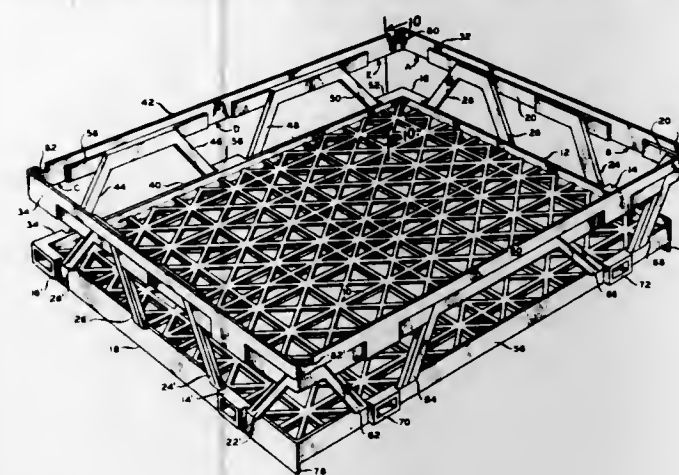
Int. Cl. B65d 21/04

U.S. Cl. 206—507

18 Claims

A nest and stack container adapted to nest in a like oriented lower container of like construction, or to stack in said lower container when turned with respect thereto. The walls of the container comprise inclined bars which extend between the bottom and an upper rim of the container. Said inclined bars are arranged such that the bars of an upper container parallel

the bars of a lower container during nesting. Opposite ends or sides of the container are provided with guide means which



make possible "blind stacking" of the containers, even at heights greater than the height of the person stacking the containers.

3,825,115

## COIN ROLL PICK-UP CONVEYOR

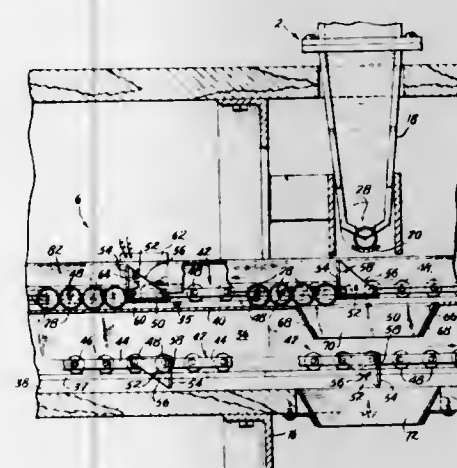
Thomas J. Black, Vienna, and Frank L. Bennett, Chantilly, both of Va., assignors to Universal Machine Company, Inc., Falls Church, Va.

Filed Oct. 30, 1973, Ser. No. 411,147

Int. Cl. B07c

U.S. Cl. 209—73

9 Claims



A plurality of coin wrapping machines are arranged so that each delivers sequential rolls of coins to a tiltable cradle associated therewith and which is caused to tilt at a controlled time to drop the roll onto a common conveyor apparatus having a fixed surface, the rolls are dropped immediately behind pushers on roller chains rollable on the surface. Spaced pushers on the chains are far enough apart to accommodate a roll from each machine so that each roll drops directly onto the surface even though other rolls are in the same space between adjacent pushers. An open grid below each cradle permits loose coins to pass through the conveyor system but retains unbroken rolls. Overhead tracks guide the roller chains along upwardly curved portions of the surface.

3,825,116

## PARTICLE DISENGAGING AND FINES REMOVAL

Arthur R. Greenwood, Niles, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 15, 1973, Ser. No. 323,578

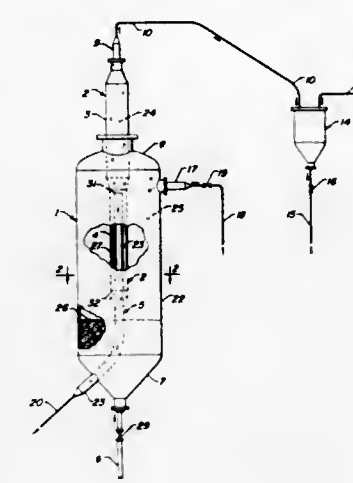
Int. Cl. B07b 7/00

U.S. Cl. 209—141

7 Claims

An apparatus is disclosed for disengaging particles from a mixture of a lift fluid and particles, and for the separation of

fine particles from larger particles. The apparatus utilizes a two-stage elutriation conduit to produce current contacting of lift fluid and particles and cause the separation of fine particles from larger particles. A higher upward fluid velocity in the smaller cross-sectional area lower stage of the



elutriation conduit enhances fine particle removal. The lower velocity in the upper stage increases large particle retention. The elutriation conduit is present within a larger receiving hopper which receives the large particles which have been separated. Fine particles and lift fluid are recovered from the top of the elutriation conduit.

3,825,117

## SUPPORT FOR METAL BAR BEING TAPERED

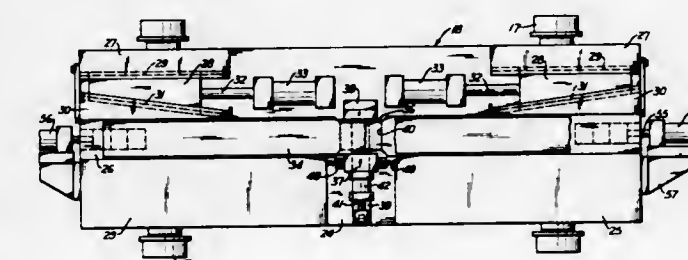
Richard P. Krause, 1503 Highland Ave., New Castle, Pa. 16105

Filed Jan. 15, 1973, Ser. No. 323,504

Int. Cl. B21d 7/08; B23q 3/08; B25b 1/06

U.S. Cl. 269—217

8 Claims



A support with an upper surface for receiving a metal bar while it is being rolled to taper it also has laterally spaced side walls extending upwardly along the opposite sides of the end portions of that surface, with the walls at one end spaced from the walls at the other end to form a gap. In the gap there are gripping means mounted on the support for engaging the opposite edges of a bar on said surface. The support is provided with means for lifting the bar after tapering so that it can be grasped and carried away from the support.

3,825,118

## OSCILLATING SCREEN

Ron Feller, Ramat-Gan, Israel, assignor to The State of Israel, Ministry of Agriculture, Jerusalem, Israel

Filed Apr. 17, 1972, Ser. No. 244,677

Claims priority, application Israel, May 20, 1971, 36925

Int. Cl. B07b 1/36

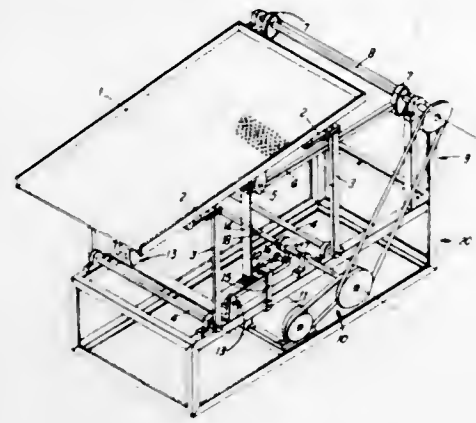
U.S. Cl. 209—330

2 Claims

Device for the classification of solid objects of the oscillating screen type. In operation the oscillating screen is gradually



pulled down against the action of springy means. From the lowermost position the screen is released and receives an up-



ward thrust which is abruptly interrupted by stop means, whereby the screen is unclogged.

3,825,119

## WASTE WATER TREATMENT UNIT

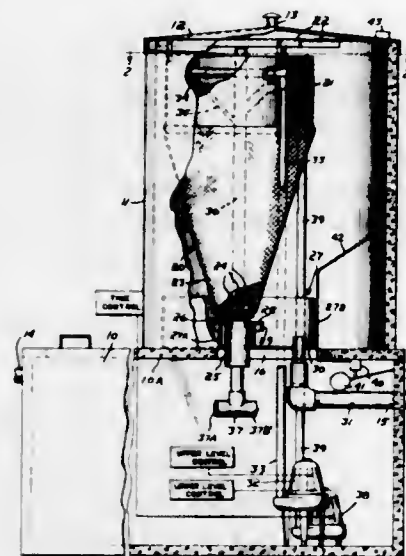
Kal Lennart Rost, The Ledge, Hallowell, Maine 04347

Filed Mar. 8, 1973, Ser. No. 339,184

Int. Cl. B01d 21/24, 35/00

U.S. Cl. 210-97

19 Claims



A waste water treatment unit, particularly adapted to meet household requirements, has a tank receiving the waste water and a chamber above the tank. A filter within the chamber consists of a downwardly and inwardly tapering fabric bag containing a trickling filter body and has its bottom end open and in communication with the tank. A pump in the tank, operable between maximum and minimum levels, delivers the waste water through a conduit provided with a distributor or diffuser above the filter body and a return pipe in communication with the tank and provided with an aspirator by which returned waste water draws air into the tank. The return pipe adjacent the distributor is of a smaller diameter than the distributor with the result that pressure builds up in the distributor forcing some of the circulating water through lengthwise slots and into the filter with solids continuing with the rest of the water into and through the return pipe. Water passing downwardly through the trickling filter body to the bottom of the bag returns to the tank while that filtered by the bag is discharged from the unit. Time controlled means are also shown for use in aerating the tank contents by circulating them through the chamber and into the return pipe by bypassing the distributor.

3,825,120

## SIMPLIFIED FILTERING SYSTEM

Toshinao Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Sayama Seikakusho, Tokyo, Japan

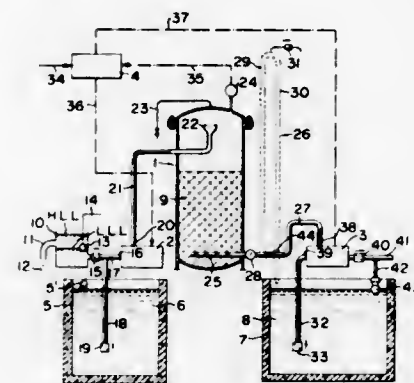
Filed July 20, 1972, Ser. No. 273,528

Claims priority, application Japan, July 28, 1971, 46-55935; Aug. 13, 1971, 46-60988; Apr. 5, 1972, 47-33464

Int. Cl. B01d 23/24

U.S. Cl. 210-104

5 Claims



A simplified filtering system capable of repeating filtration of liquid and cleaning of the filter of the system with the filtrate alternately by use of simple electric control means and valvular means.

3,825,121

## APPARATUS FOR THE CONTINUOUS FILTRATION OF THERMOPLASTIC OR ELASTOMERIC MATERIALS USED IN EXTRUSION PROCESSES

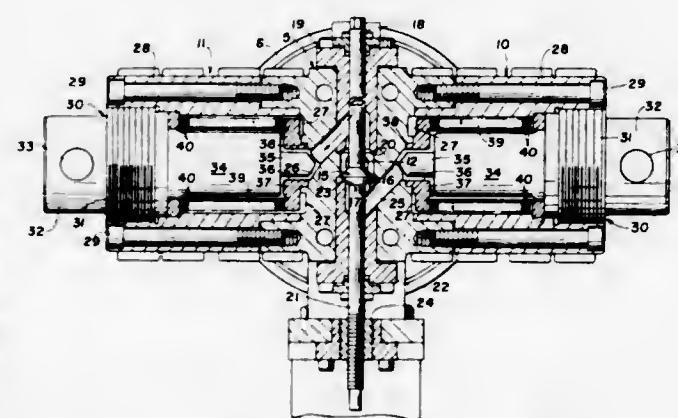
Edgar W. Irving, Jr., Somerville, N.J., assignor to GK Systems, Inc., Flemington, N.J.

Filed June 1, 1973, Ser. No. 365,951

Int. Cl. B01d 29/36

U.S. Cl. 210-132

9 Claims



The disclosure is that of an invention directed to a dual unit changeover filter, particularly for use with hot melt plastics, in which the changeover from one unit to the other can be effected without adversely affecting the quality characteristics of the throughput. Sequentially operated valves, with appropriate bleed unit connecting passages, are employed to condition an idle filter unit for operation while still permitting the operating filter unit to operate properly until the idle filter unit has been placed on line, after which the previously operating filter unit becomes shut down.

3,825,122

## REVERSE-OSMOSIS PUMP

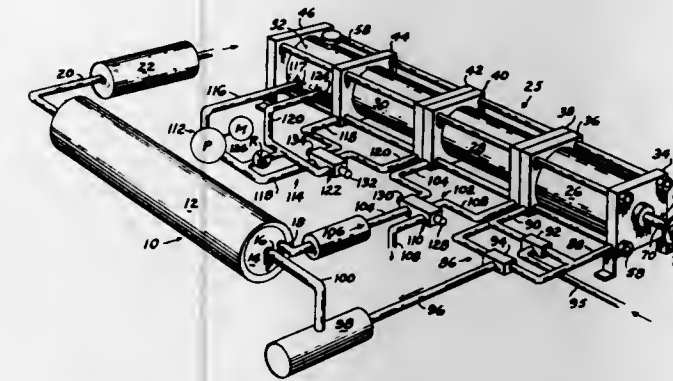
Julian S. Taylor, 8300 S.W.8, Oklahoma City, Okla. 73108

Filed June 11, 1973, Ser. No. 369,034

Int. Cl. B01d 31/00

U.S. Cl. 210-134

10 Claims



A multiple stage pump comprising a main chamber, a booster chamber and a driving chamber each having a piston therein with the pistons interconnected by a common piston rod for reciprocating the pistons in unison. Main conduit means connects the main chamber with a fluid supply and the inlet of a reverse-osmosis device. Second conduit means connects the fluid reject discharge port of the reverse-osmosis device with the booster chamber. Hydraulic pump means including a pressure compensated pump and hydraulic conduits connected with a hydraulic fluid reservoir is connected with the driving chamber. Control means actuated by the reciprocating action of the piston rod operates valve devices in the hydraulic conduits and second conduits to maintain a continuous flow of fluid, under a predetermined pressure, from the main chamber to the reverse-osmosis device.

## ERRATUM

For Class 210-138 see:  
Patent No. 3,825,494

3,825,123

## INJECTION MOLDING FILTER

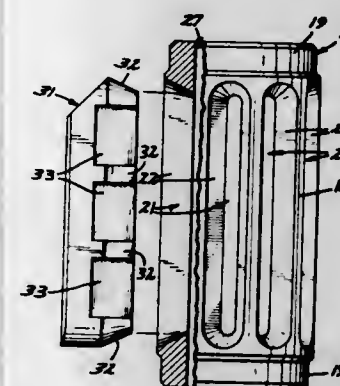
Gordon E. Neuman, Coon Rapids, Minn., assignor to A-1 Engineering, Inc., Osseo, Minn.

Filed Aug. 10, 1972, Ser. No. 279,680

Int. Cl. B01d 25/16

U.S. Cl. 210-232

19 Claims



Apparatus for filtering hot running plastic in an injection molding process. The filtering apparatus includes a housing defining a chamber with an inlet and outlet. A thick walled tubular member is disposed in the chamber to define concentric fluid passages respectively communicating with the inlet and outlet. The tubular member has a plurality of elongated

openings formed therethrough in parallel, spaced relation which establish fluid communication between the concentric passages. A plurality of removable insert bars are disposed in the outer concentric passage and held in place between the chamber wall and the tubular member. Each insert bar cooperates with an elongated opening to define therewith a plurality of slotted filter passages through which the plastic is forced before injection into a mold.

3,825,124

## FILTER ELEMENTS FOR CONTINUOUS FILTERS

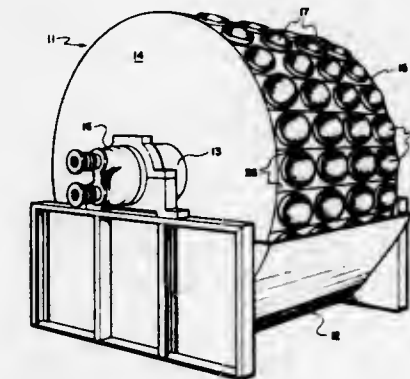
Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed July 27, 1970, Ser. No. 275,513

Int. Cl. B01d 33/34, 33/02

U.S. Cl. 210-330

9 Claims



A plurality of concave filtering elements are fixed about the periphery of a rotary filter drum so that the mouths of the elements are open and the closed ends of the elements are directed substantially radially inward of the drum. As the drum rotates in submergence in a slurry, solids are collected in the elements by applying suction to the elements to draw the liquid therethrough; to discharge the collected solids, the elements are everted by reversing the pressure thereon.

3,825,125

## FILTER AND GUIDE APPARATUS

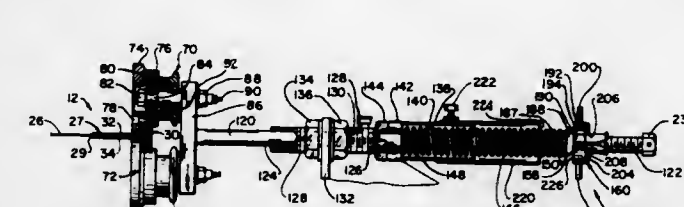
C. Lynn Peterson, Salt Lake City, and Jesard Morris, Roy, both of Utah, assignors to Peterson Filters and Engineering Company, Salt Lake City, Utah

Filed May 24, 1972, Ser. No. 256,281

Int. Cl. B01d 33/14

U.S. Cl. 210-401

17 Claims



There is herein disclosed a movable cloth filter belt construction for filter apparatus comprising a guide element having a bifurcated cloth gripping portion within which a cloth filter is fastened and a roller engaging portion having an inclined roller engaging surface facing the cloth filter. Flanged roller apparatus engages the inclined surface on the guide element to transversely alignably guide the filter belt during movement and is associated with resilient biasing spring means including detent-type release means which permits disassociation of the spring means and the roller apparatus under high stress conditions.



3,825,126

## FLOWER POT GRATE-TRAY

Siegfried Pohl, Niederkassel-Rheidt, and Gunther Nothen, Provinzialstr. 98, Niederkassel-Mondorf, both of Germany, assignors to said Nothen, by said Pohl

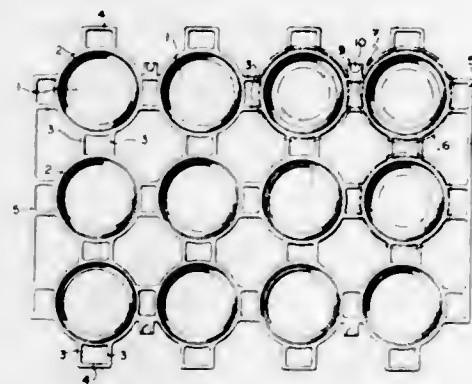
Filed Mar. 15, 1972, Ser. No. 234,720

Claims priority, application Germany, Mar. 19, 1971, U.S. Cl. 212-15 2113499

Int. Cl. A47g 7/02

U.S. Cl. 211-71

3 Claims



A symmetrical grate-like flower pot pallet or tray molded from impact resistant plastic providing rows and columns of equi-spaced downwardly convergent pot-receiving rings connected to each other and to hand-grip end bars by paired parallel struts; support legs shaped and externally vertically channelled to receive and be received by legs of like trays for nesting when empty; the end bars and strut-like end-joined paired lateral projections on the rings along the other two sides affording abutments for adjacent trays maintaining an ordered arrangement in a horizontal tray array.

3,825,127

## HINGE HANGER

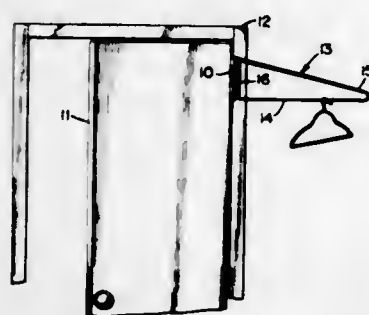
Robert A. Morrison, La Canada, Calif., and John E. Wagner, 1041 E. Green St., Suite 202, Glendale, Calif. 91106

Filed Nov. 17, 1971, Ser. No. 199,553

Int. Cl. A47f 5/08

U.S. Cl. 211-96

4 Claims



A hanger for hanging a variety of household or office articles designed to be secured to the upper hinge of any hinge-supported door.

A device is preferably metal rod formed with a horizontal portion designed to act as a support for either hangers or objects of any type. The device includes a support portion secured to the horizontal portion which terminates in a vertical extending pin portion. The pin portion has approximately the same dimensions as a conventional hinge pin. In one embodiment, the pin portion is substituted for the hinge pin in the door. In another embodiment, a bracket is designed to engage the top and bottom of the hinge pin and the pin portion of the hanger engages the bracket. In both embodiments, the hanger swings freely independent of the door and automatically folds behind the door when it is opened.

3,825,128

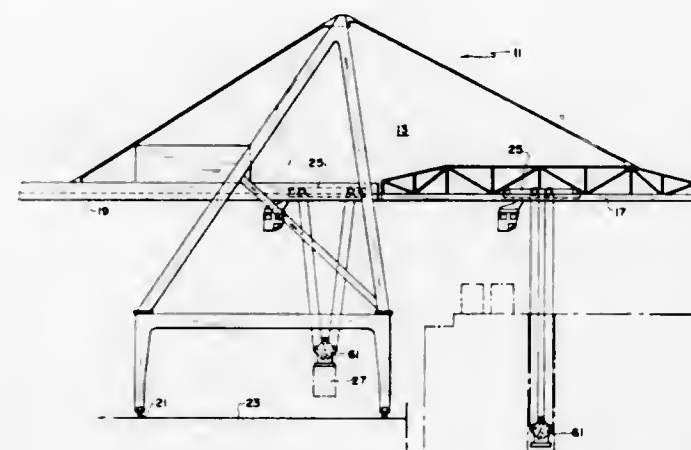
## SWAY-ARREST SYSTEM

George W. Cooper, San Leandro, Calif., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Aug. 23, 1971, Ser. No. 173,869

Int. Cl. B66c 17/20

7 Claims



A sway-arrest suspension system for a gantry crane, including a trolley having a plurality of sheaves mounted in a pair of movable sheave heads held within the trolley. The sheave heads move over the same set of rails on which the trolley moves and support a load engaging means by reeving which is acted upon by sheaves held in the load engaging means to arrest sway of the load.

3,825,129

## PIPE HANDLING APPARATUS

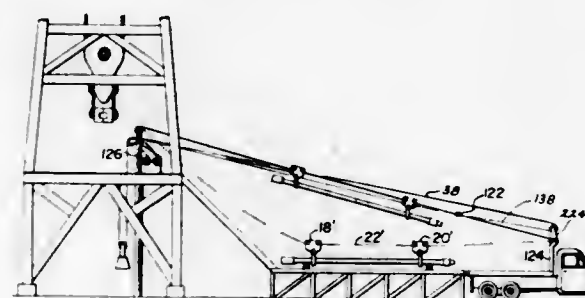
Don D. Beck, 3203 Eastover, Box 1369, Odessa, Tex. 79760

Continuation-in-part of Ser. No. 17,768, March 9, 1970. This application Aug. 31, 1971, Ser. No. 176,478

Int. Cl. E21b 19/00

U.S. Cl. 214-2.5

13 Claims



Pipe handling apparatus for transporting pipe between a derrick floor and a pipe rack by a cable-way. A portion of the cable overhangs the derrick floor and the pipe rack and slidably supports pipe receiving carriages which are provided with means for being moved from a location adjacent to the derrick floor to a location which overhangs the pipe rack. One of the carriages include a swingable bulkhead which is opened upon the carriage arriving at the derrick floor. The tension of the cable is controlled to enable the pipe receiving carriages to be vertically positioned with respect to the pipe rack.

3,825,130

## MATERIAL HANDLING SYSTEM

Sidney D. Lapham, 2324 Tice Creek Dr. Manor No. 3, Walnut Creek, Calif. 94529

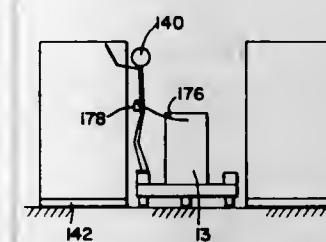
Filed June 26, 1972, Ser. No. 266,219

Int. Cl. B65g 1/04

U.S. Cl. 214-16 B

5 Claims

U.S. Cl. 214-86 A



A dispensary type warehousing system featuring palletizing vehicle providing a mobile platform work station, together with pick aisles sufficiently narrow so that all merchandise to be picked is within the picker's reach without the need for leaving the vehicle. The invention makes it unnecessary for the picker to dismount from the mobile platform to perform his task, and this in turn permits partial automation of the vehicle control equipment as shown.

3,825,131

## MULTIPLE LOAD STORAGE AND TRANSFER APPARATUS

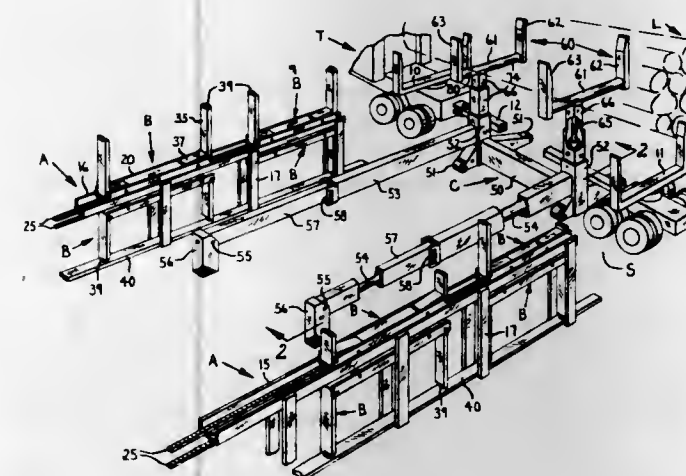
Dossie M. Batson, 1503 N. Hayden Dr., No. 35, Portland, Oreg. 97217

Filed Dec. 20, 1972, Ser. No. 316,846

Int. Cl. B65g 67/12

U.S. Cl. 214-38 C

11 Claims



A storage deck is equipped with a plurality of bunks connected to endless chains for receiving and storing preformed loads such as logs. These bunks are movable toward or away from a vehicle station beyond one end of the deck. A transfer carriage has vertically movable bunks to lift a load off the deck bunks and extend the load over a truck such as a log truck. Then the carriage lowers the load onto the truck and retracts clear of the truck, allowing the truck to depart with its load. The apparatus remains in readiness to transfer the next load to another empty truck as soon as one becomes available. In the meantime, other deck bunks are being filled with loads to keep a supply of the preformed loads on hand so that loads are always available when an empty truck arrives without causing any delay in the trucking operations and without any delay in the load preforming operations. The apparatus is also operable in reverse sequence to store loads received from trucks.

3,825,132

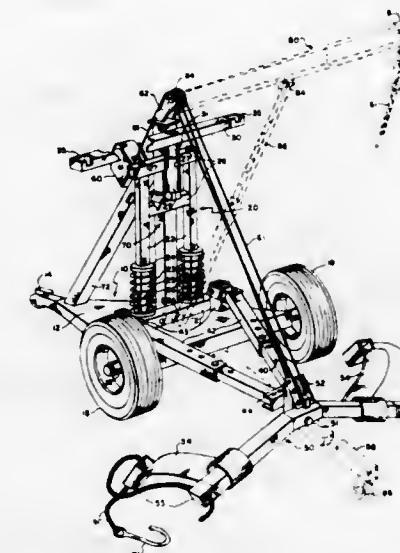
## TOWING AND LIFTING APPARATUS

Michele Colangelo, c/o World Wide Real Estate Investment Center, 908 Salem St., Revere, Mass. 02148

Filed May 11, 1973, Ser. No. 359,318

Int. Cl. B60p 3/12

10 Claims



Towing of a disabled passenger car or like tow load by another passenger car at turnpike speeds is facilitated by an apparatus comprising a towable wheeled platform, a vertical shock isolator mounted on the platform and a steering yoke mounted on the vertical isolator. A pivotal lift and a motor drive therefor are mounted on the platform and the lift engages the end of the vehicle to be towed and lifts it up and over the wheel of the towing apparatus and is then locked to the above-described yoke to ready the disabled vehicle for towing. The apparatus is convertible to a yard crane by the addition of a pivotal boom and related components.

3,825,133

## PIVOTABLE REFUSE CART DUMPING APPARATUS WITH HORIZONTALLY MOVABLE AND SPREADABLE ARMS

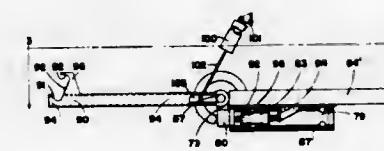
Thomas G. Owen, Jr., R.R. 7 Box 250, Bloomington, Ind. 47401

Division of Ser. No. 203,815, Dec. 1, 1971, Pat. No. 3,790,011. This application Dec. 26, 1972, Ser. No. 318,221

Int. Cl. B66c 23/00

U.S. Cl. 214-148

1 Claim



A dumping apparatus having a pair of arms mounted to a truck for engaging a refuse cart. The arms are pivotally mounted to a beam which is slidable horizontally to and from the truck by a cylinder motor. The beam is mounted to a pair of channels which are slidably mounted to a second pair of channels fixedly attached to the truck. The cylinder motor is attached to the truck and has a piston rod connected to the beam. A second cylinder motor mounted to the truck has an extendable piston rod connected to a lever which is fixedly connected to a shaft upon which the arms are hingedly mounted. A pair of cam plates mounted to the truck receive cam followers rotatably mounted to the arms which are urged against the cam plates by a pair of springs. The cam plates diverge and extend beneath the arms thereby allowing the



arms to spread apart as they are pivoted downward past the horizontal position. A pair of slotted hands are mounted to the ends of the arms for receiving handles mounted to the refuse cart. The handles are slidable through the slots so as to achieve a shaking motion of the cart.

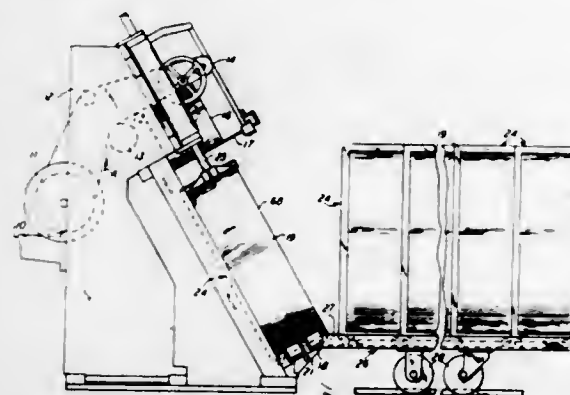
3,825,134

# METHOD FOR BUNDLING, TRANSPORTING, AND FEEDING SHEETS

Anton R. Stobb, R.D. 1, Pittstown, N.J. 08867  
Division of Ser. No. 159,329, July 2, 1971, Pat. No. 3,739,924.  
This application Apr. 9, 1973, Ser. No. 348,976  
Int. Cl. B65g 57/03, 59/08

U.S. Cl. 214—152

3 Claims



Method for bundling, transporting, and feeding sheets of paper which are preferably in a folded or signature form to be assembled and form a magazine, book, or the like. The sheets are handled by a delivery device, such as a folding machine, and are placed into discrete stacks which are subjected to a compressing device. The stack is formed at an inclined angle and a clamp is applied to the compressed stack. The clamp is shown to have rollers which permit the clamped stack to be wheeled to a transport device such as a cart which is shown. The cart with a plurality of the clamped stacks is then moved to a feeding device which receives the clamped stack in an inclined attitude, and the clamp is removed from the sheets and the sheets are then singly fed into the feeding device which causes the sheets to be collated into an assembled magazine or book. The clamp is shown to be of two extendable and contractable pieces which have a self-locking device for holding the clamp in the contracted position when it is clamping the sheets, and the locking device is releasable when the stack is released in the feeding device.

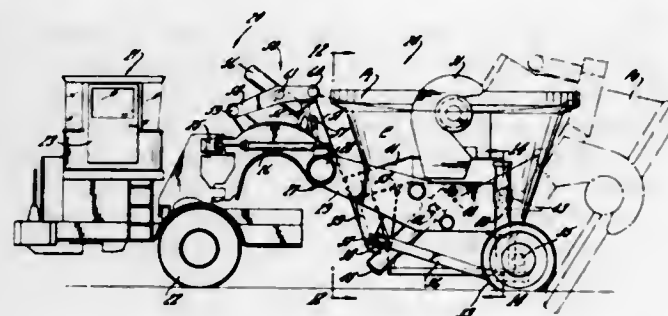
3,825,135

# SLAG POT CARRIER

Edward S. Kress, P.O. Box 368, Brimfield, Ill. 61517  
Division of Ser. No. 98,306, Dec. 15, 1970, Pat. No. 3,722,874.  
This application Aug. 22, 1972, Ser. No. 282,728  
Int. Cl. B65b 21/02

U.S. Cl. 214—313

4 Claims



An improved slag pot load carrier is provided. Fluid powered means are included to assist the primary dump

mechanism in moving a vehicle load pivoted on the main vehicle frame from a carry to a dump position, and to return the load to its carry position. Suspension means are provided to lower and raise at least a portion of the vehicle frame and to resiliently support the frame against shocks. A hydro-pneumatic system is also provided to appropriately actuate the suspension means, and the primary dump and return assist mechanisms.

## ERRATUM

For Class 214—331 see:  
Patent No. 3,825,869

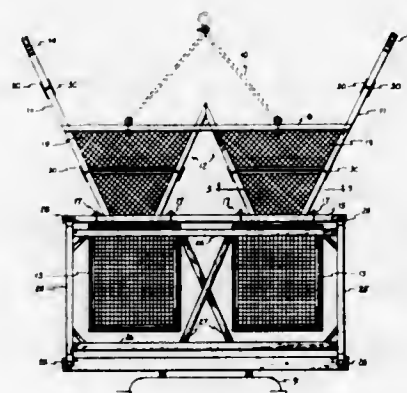
3,825,136

# GOLF BALL PICKER AND COLLECTOR

Cecil D. Rettedal, 2700 S. Lincoln, Sioux Falls, S. Dak. 57103  
Filed Sept. 18, 1972, Ser. No. 290,176  
Int. Cl. B60p 1/00

U.S. Cl. 214—350

1 Claim



A golf ball collector for use at driving ranges; the collector including gathering arms of a specific shape to collect and direct the balls to a central area and threshold over which the balls are directed into a box where the balls are collected. The arms may be articulated for more complete contact with the ground, and means are provided to keep the balls within the collector. Removable carriers may also be provided for easy unloading.

3,825,137

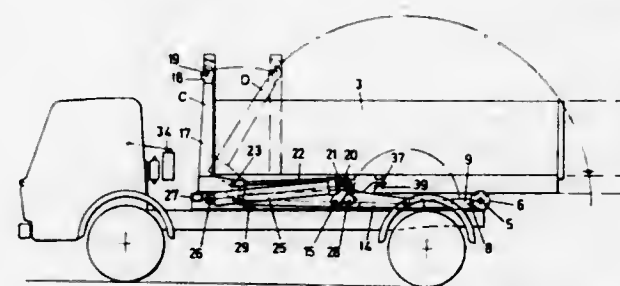
# VEHICLE FOR TRANSPORTING A CONTAINER

David Mackrill; Denis Cecil John Carpenter, and Michael John Howard, all of Bury St. Edmunds, England, assignors to Sheppard Equipment Limited, Barnham, Norfolk, England  
Filed Dec. 7, 1972, Ser. No. 313,165  
Claims priority, application Great Britain, Dec. 8, 1971, 57034/71

U.S. Cl. 214—515

Int. Cl. B60p 1/64

18 Claims



A vehicle for loading, unloading and tipping a container comprises a first frame pivoted at the rear of the vehicle on a

bedframe, and extending (normally) forwardly from the pivot underneath the container when loaded, a second frame or second members pivoted to the first frame and extending forwardly thereof under the container, an L-shaped third member having the outer end of its horizontal limb pivoted to the second frame members underneath the container and its upright limb provided with at least one hook to attach to the container, with the upright limb in front of the container, two tie-rods-cum-struts pivoted at their front ends to the upright limb and at their rear ends to the rear end of a hydraulic ram, the front end of the ram being connected to the bedframe, the ram also being connected with the second frame or members, so that the one ram can both pivot the third member relative to the second frame or members and also pivot the second frame or members and the third member as one unit relative to the first frame or (when the second frame or members and the first frame are in fixed relationship due to engagement with the container) pivot the first frame, second frame or members, third member and container as one unit relative to the bedframe for tipping.

3,825,138

# UNLOADER FOR THE GRAIN BIN OF A COMBINE

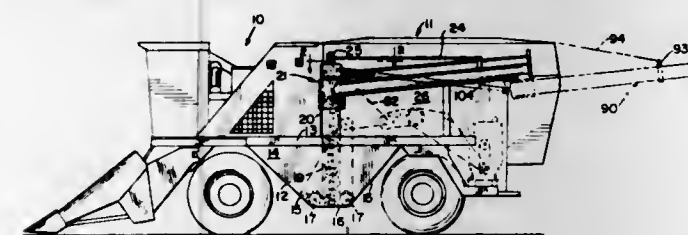
Stuart D. Pool, Crystal Lake, Ill., assignor to Bernard C. Mathews, Crystal Lake, Ill.

This application Oct. 24, 1972, Ser. No. 299,825

Int. Cl. B60p 1/42

U.S. Cl. 214—522

10 Claims



An unloader for the grain bin of a combine comprises a vertical auger conveyor extending upwardly from the grain bin, and a swinging boom assembly mounted on top of the vertical auger conveyor. The boom assembly including a substantially horizontally disposed auger conveyor and a turret. The vertical auger shaft extends upwardly through and beyond the turret which overlies the vertical auger conveyor. A propeller shaft is disposed externally of the horizontal auger conveyor for driving the horizontal auger shaft from its remote end. A gear assembly located above the turret connects the vertical auger shaft, the external propeller shaft, and a power shaft so that the driving mechanism is located externally of the path of the grain flow through the two conveyors. An additional extension auger conveyor is provided for loading a trailer.

3,825,139

# MEANS FOR LOCKING FORKLIFT TRUCK FORKS IN STORED POSITION

Warren P. Gels, Port Washington, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed June 11, 1973, Ser. No. 368,817

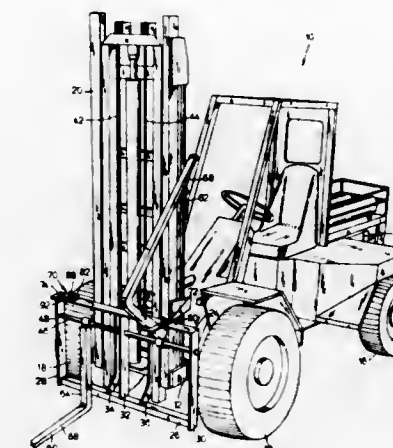
Int. Cl. B66f 9/14

U.S. Cl. 214—731

15 Claims

A forklift truck comprises an upright mast on which a vertically movable carriage or grill is mounted. A pair of load handling forks are mounted on a horizontally disposed shaft on the grill. Each fork is laterally slidable on the shaft to achieve desired spacing between the forks. Each fork is also vertically pivotable between an in-use position wherein the fork tine extends outwardly of the truck and a stored position wherein the fork tine extends inwardly of the truck and adjacent a side of

the mast. Locking means are provided to maintain the forks in stored position and to prevent lateral displacement of the forks on the shaft while stored. The locking means for each fork comprise a generally L-shaped locking bracket which is pivotally attached to the grill and swingable horizontally from a stored position clear of the fork to a locking position in engagement with the fork. The locking means for each fork



further comprise pin means releasably engageable with the bracket and the grill to maintain the bracket in stored or locking position. In one embodiment of the invention the locking bracket is positioned so as to entrap the fork against a side of the mast to prevent lateral movement of the stored fork on its shaft. In another embodiment of the invention the locking bracket is provided with a projection engageable with the fork to prevent lateral movement of the stored fork.

3,825,140

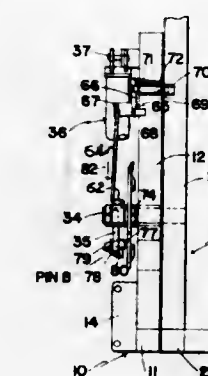
# STOOK INVERTOR

Floyd Reid Smith, P.O. Box 154, Hillspring, Alberta, Canada  
Continuation-in-part of Ser. No. 112,281, Feb. 3, 1971, Pat. No. 3,716,175. This application Jan. 26, 1973, Ser. No. 326,683

Int. Cl. B65g 7/00

U.S. Cl. 214—768

6 Claims



A triangular stook inverter for picking up a stook consisting of a plurality of bales in triangular formation, and the inverter turns the stook upside down so that it will nest between two adjacent, normally positioned stooks thus enabling a relatively large stook to be built.

3,825,141

# COVERED GLASS BOTTLE OR THE LIKE

Edward R. Campagna, Horseheads, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed July 13, 1971, Ser. No. 162,103

Int. Cl. B65d 23/08

U.S. Cl. 215—1 C

6 Claims

A container comprising an inner glass receptacle and a closely adhering, but not chemically bound exterior protective



sheath substantially covering said receptacle. The exterior protective is comprised of a shape-retaining, preferably thermoplastic resin adapted to restrain and retain glass fragments should the glass receptacle become broken. The sheath is



further provided with a plurality of outwardly protruding nodular means that minimize the container surface frictional characteristics, increase shock resistance and provide maximum non-slip characteristics to the sheath when the container is hand-held.

3,825,142

**THERMOPLASTIC SHIELDED GLASS BOTTLE**

Edward R. Campagna, Horseheads, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 162,103, July 13, 1971. This application Mar. 7, 1972, Ser. No. 232,412

Int. Cl. B65d 23/08

U.S. Cl. 215-1 C

3 Claims



A container comprising an inner glass receptacle and a closely adhering exterior protective sheath substantially covering said receptacle. The exterior protective is comprised of a shape-retaining, preferably thermoplastic resin adapted to restrain and retain glass fragments should the glass receptacle be broken. The sheath is further provided with a plurality of outwardly protruding nodular means that lend a roughened appearance to the sheath surface and which produce a surface elevation variance from the mean thickness of the sheath by between about 6 and 60 percent. This surface characteristic minimizes the container surface frictional resistance, increases shock resistance and provides maximum non-slip characteristics to the sheath when the container is hand-held.

3,825,143

**CHILDPROOF MEDICINE VIAL**

Randall K. Julian, Elberfeld, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Nov. 8, 1972, Ser. No. 304,630

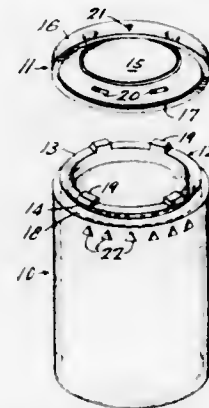
Int. Cl. B65d 55/02

U.S. Cl. 215-9

3 Claims

A childproof medicine vial or the like. The vial consists of a container having a circular neck with an undercut annular

groove in its outer side. A domed circular cap for the container has an annular rim extending around the container neck. The rim has an inwardly extending lip adapted to snap into the groove for retaining the cap on the container. There are a plurality of axially extending abutments on the container neck and the same number of downwardly extending lugs are formed on the inner surface of the cap. The series of abutments and the series of lugs lie in axially aligned circles. Both



the abutments and the lugs are spaced unevenly but identically around the circles so that they are axially aligned in only one relative position of the cap and the container. When the abutments and lugs are aligned, depression of the center of the domed cap engages the abutments and lugs and spreads the cap rim to disengage the lip from the groove in the container neck. Cooperating indicia on the cap and the container indicate when the two are in proper relative angular positions so that the vial can be opened.

3,825,144

**CONTAINER CLOSURE PARTICULARLY FOR SEALING BOTTLES HAVING A GAS EMITTING CONTENT**

Walter Wiedmer, Nafels, Switzerland, assignor to Walter Wiedmer Plastikform, Nafels, Switzerland

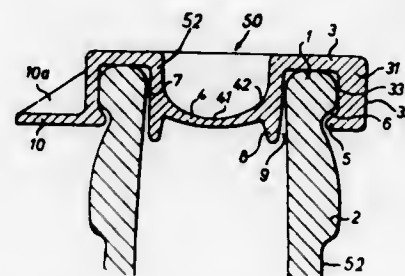
Filed Oct. 16, 1972, Ser. No. 297,836

Claims priority, application Switzerland, Oct. 26, 1971, 15566/71

Int. Cl. B65d 41/18

U.S. Cl. 215-41

6 Claims



A container closure particularly for sealing bottles which have gas contents comprises a sealing member having a deformable disc portion which engages into the bottle neck and which has a side wall with a sealing lip engaged against the interior of the neck wall and a centering lip portion which is connected to the lower end of the disc and extends into the bottle neck. A holding element portion is connected to the opposite end of the wall of the disc portion from the centering lip and it extends over the annular mouth bead or rim of the container and terminates in a skirt portion on the exterior extending around the bead and includes an intumed bottom portion which engages the bead from the exterior. The holding element portion carries a tab which projects outwardly from one side and the material of the sealing member increases in thickness substantially from the center of the disc member toward the end which is opposite to the tab end.

3,825,145

**BEER KEG**

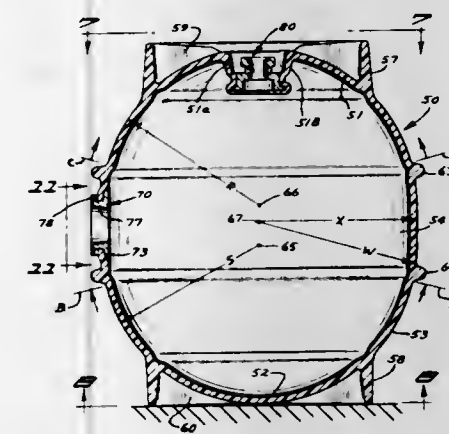
Richard W. Reynolds, Burnsville, Minn., assignor to Huck Finn, Inc., Spring Lake Park, Minn.

Continuation-in-part of Ser. No. 217,306, Jan. 12, 1972, which is a continuation-in-part of Ser. No. 58,341, July 27, 1970, abandoned. This application Oct. 18, 1972, Ser. No. 298,469

Int. Cl. B65d 1/20

U.S. Cl. 220-1 R

14 Claims



A beer keg having the top, bottom and side walls made of plastic, and tapper and filler plug mounting members made of plastic or metal which in one embodiment are cast in position as the top and side walls are formed. In the second and third embodiments, the filler plug mounting member is retained in the central part of the keg mold as the keg is molded and thereafter mounted in a filler opening formed in the keg.

3,825,146

**METHOD FOR CLOSING BORES AT WORKPIECES AND IMPROVED PLUG CONSTRUCTIONS FOR THE PERFORMANCE OF THE AFORESAID METHOD**

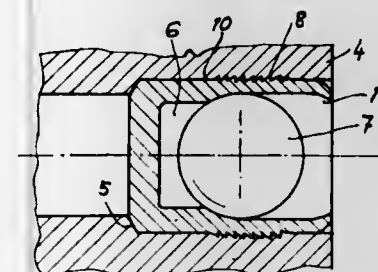
Georg Hirmann, Zurich, Switzerland, assignor to Dr. Ing. Koenig AG, Dietikon, Switzerland

Filed July 6, 1971, Ser. No. 159,647

Int. Cl. B65d 39/12

U.S. Cl. 220-24.5

12 Claims



A plug for closing the bores of workpieces as well as a method for closing such bores wherein there is provided a plug sleeve which is inserted into the bore of the workpiece. An expanding member is driven into the bore of the plug sleeve for progressively radially expanding the plug in the axial direction thereof. This causes anchoring means at the outside surface of the sleeve to fixedly engage with the material of the wall of the bore of the workpiece. The expanding member should possess a substantially ball-like configuration at least at the region intended to bear against the bore of the plug sleeve. This expanding member may be preferably in the form of a ball.

3,825,147

**FILLER CAP**

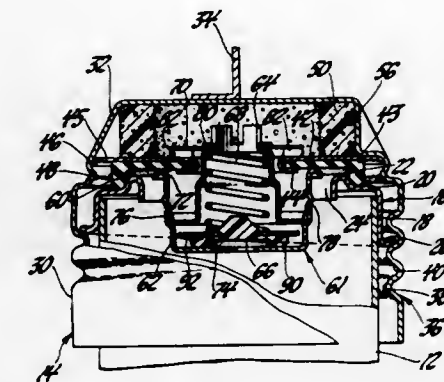
Harold W. Noponen, Flint, and Tom B. Miller, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1972, Ser. No. 296,039

Int. Cl. B65d 51/16

U.S. Cl. 220-44 A

1 Claim



A filler cap for a motor vehicle fuel tank has a rolled thread engageable with a helical lip on the fuel tank filler neck and includes pressure and vacuum relief valves, and a relief valve filter.

3,825,148

**HERMETIC SEALING SYSTEM FOR PLASTIC TANK AND COVER**

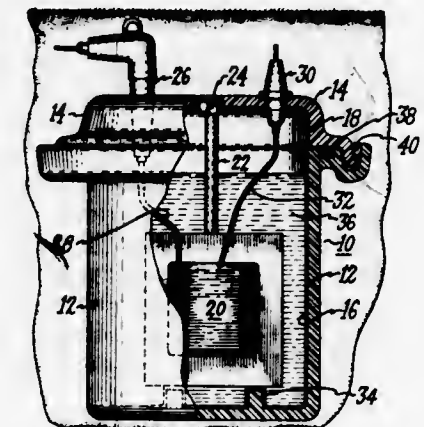
Richard F. Hunter, Hickory, N.C., and Robert B. Truitt, West Lafayette, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,728

Int. Cl. H01f 27/02; H05k 5/06; B65d 53/06

U.S. Cl. 220-46 R

1 Claim



An hermetic sealing system for plastic tanks and covers. A plastic tank has a flat surface on the upper edge of its wall, such surface having a first groove formed therein. A lip portion extends from the flat surface and has a second groove therein. A flexible gasket is mounted in the first groove extending above the flat surface. A cover member rests on the flat surface compressing the flexible gasket and has an extending edge portion which fits into the second groove. An epoxy material is poured into the second groove and cured thus sealing the cover to the tank.



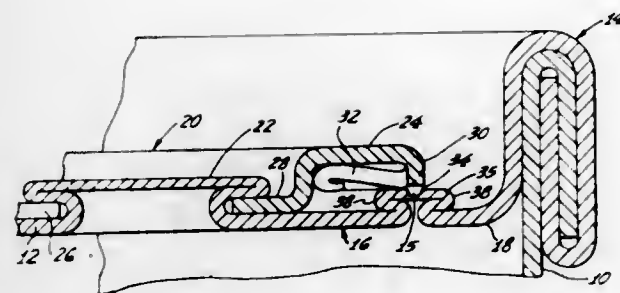
3,825,149

**EASY OPENING CONTAINER HAVING SHOULDERS TO SAFEGUARD ALL SEVERED EDGES**

Omar L. Brown, and James R. Schubert, both of Dayton, Ohio, assignors to Ermal C. Frazee, Dayton, Ohio  
 Filed Dec. 6, 1972, Ser. No. 312,700  
 Int. Cl. B65d 17/20

U.S. Cl. 220—54

18 Claims



The sheet material of the container wall is offset to form a channel that conforms to the periphery of the tear portion of the wall. The channel has longitudinal side walls connected by a transverse web and a score groove defining the tear portion is formed in the web centrally thereof. The two longitudinal walls of the channel are in the form of two rounded shoulders to safeguard respectively the sharp edge of the severed tear portion of the container and the corresponding sharp severed edge of the remaining fixed portion of the container wall.

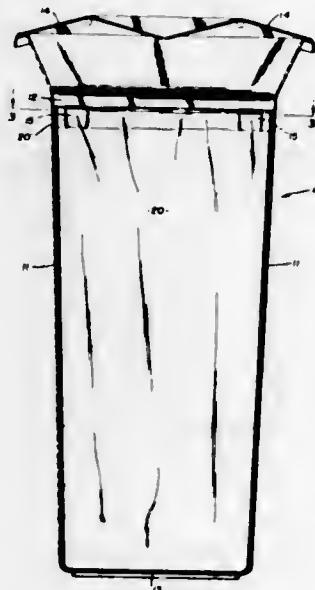
3,825,150

**WASTE RECEPTACLE HAVING LINER BAG HOLDERS**

William D. Taylor, Wooster, Ohio, assignor to Rubbermaid Sales Corp., Wooster, Ohio  
 Filed Aug. 23, 1972, Ser. No. 283,218  
 Int. Cl. B65d 25/14

U.S. Cl. 220—63 R

2 Claims



A molded waste receptacle having integral resilient tabs formed in its side walls and adapted to be sprung inwardly by pressing on their exterior surfaces for engaging under and pinching the periphery of a liner bag between the tabs and the adjacent receptacle wall.

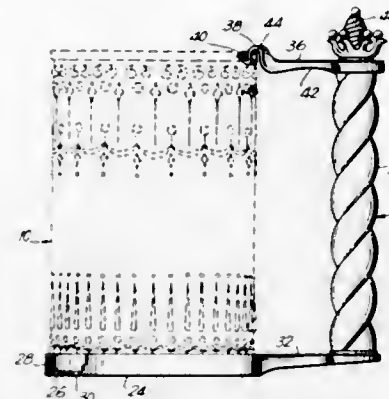
3,825,151

**CONTAINER AND DETACHABLE HANDLE STRUCTURE THEREFOR**

Fabian Arnaud, Reforma No. 1755, Mexico City, Mexico  
 Continuation-in-part of Ser. No. 251,072, May 8, 1972. This application Dec. 1, 1972, Ser. No. 311,440  
 Int. Cl. B65d 25/28

U.S. Cl. 220—94 R

12 Claims



A combined drinking vessel and container having a recessed upper closure which upon removal provides a container rim structure suitable for drinking purposes. A detachable handle having a lower container-supporting flange and an upper clamping member fastened to the ends of a gripping handle is adapted to engage the lower and upper portions of the container so as to form a mug-type arrangement therewith.

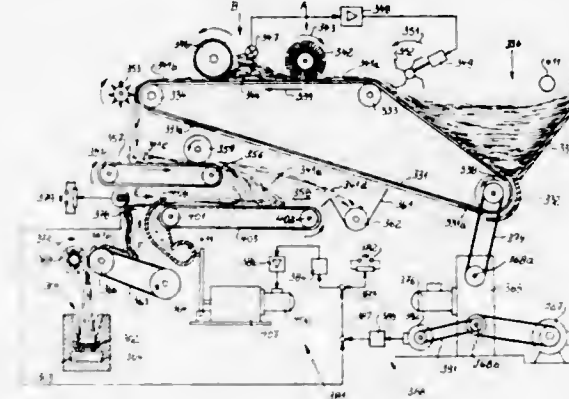
3,825,152

**METHOD AND APPARATUS FOR MEASURING THE RATE OF FEED OF FIBROUS MATERIAL**

Harry Davis, Hamburg, and Willy Rudszinat, Dassendorf, both of Germany, assignors to Hauni-Werke Koerber & Co. KG, Hamburg, Germany  
 Filed July 17, 1972, Ser. No. 272,630  
 Claims priority, application Great Britain, July 20, 1971, 34043/71; Nov. 9, 1971, 51993/71  
 Int. Cl. G01f 1/00

U.S. Cl. 222—1

19 Claims



A distributor for tobacco shreds in a cigarette rod making machine employs a system of conveyors which transport a continuous wide layer of tobacco shreds from a magazine toward a channel wherein the shreds form a narrow tobacco stream. A pivotable baffle extends across the path of the layer and a rotary brush or a rapidly moving endless apron propels the shreds of successive increments of the layer at a constant speed against the baffle whereby a potentiometer whose sliding contact shares the movement of the baffle produces signals whose intensity varies as a function of changes in the quantity of shreds per unit length of the layer. The thus obtained signals are used to change the rate of withdrawal of tobacco shreds

from the magazine or to intercept a larger or smaller percentage of shreds which are being propelled toward the baffle. The main prime mover of the cigarette rod making machine can be operated at several speeds, and a compensating circuit is provided to prevent the potentiometer from changing the rate of tobacco feed into the channel in response to changes in operating speed of the prime mover.

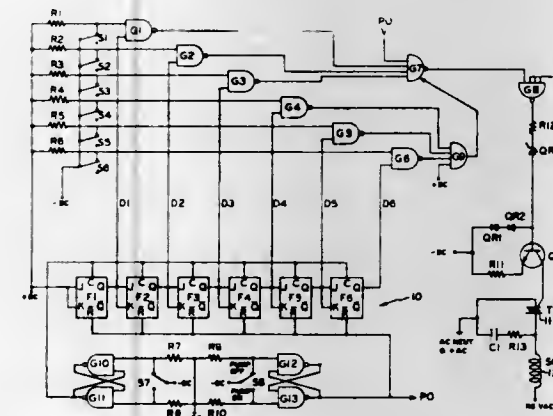
3,825,153

**SOLID STATE AUTOMATIC FLUID DISPENSING MEANS**

Bruce R. Patrick, Stow, Ohio, and Herbert W. Timms, Tucson, Ariz., assignors to Herbert W. Timms, Tucson, Ariz.  
 Filed Feb. 22, 1973, Ser. No. 334,635  
 Int. Cl. B67d 5/30

U.S. Cl. 222—14

5 Claims



A unique solid state control circuit is disclosed whereby a preselected volume of fluid may be automatically dispensed. Fundamentally, the invention comprises a plurality of selection switches, each of which is associated with a particular volume of fluid. A sequential logic circuit indicates the actual volume of fluid which has been dispensed. A logic network compares the states of the selection switches with the output of the sequential logic circuit so as to determine when the volume of fluid actually dispensed equals the preselected volume indicated by the selection switches. When equivalency occurs the logic network indicates the same to a current source transistor which in turn, through a triac, controls the solenoid pump valve through which the fluid is being dispensed. The circuit disclosed is adaptable for use in presently existing gasoline pumps and is designed with specific considerations given to the ambient conditions in which the circuit must operate.

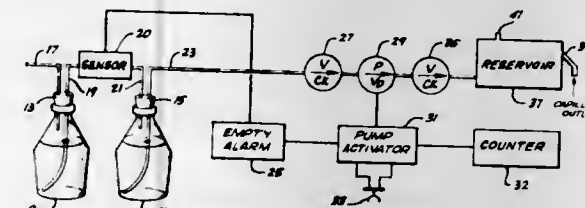
3,825,154

**FLUID DISPENSING SYSTEM**

Wilbert J. Jaeger, 1582 Elm Pl., Anaheim, Calif. 92802  
 Filed Jan. 17, 1972, Ser. No. 218,333  
 Int. Cl. B67d 5/44

U.S. Cl. 222—136

7 Claims



A multiplicity of fluid conducting stoppers are inserted into and seal the open mouths of a plurality of containers. Each fluid conducting stopper has a first and second conduit communicating with the interior of the container into which it is inserted. The multiplicity of fluid conducting stoppers and containers are connected in tandem by attaching the second

conduit of one to the first conduit of another. A variable displacement diaphragm pump with check valves is attached to the first conduit of the first fluid conducting stopper in the series of tandem connected stoppers and containers for removing the fluid product from the containers. The output of the pump is connected to a dispensing outlet from which fluid is dispensed by force of gravity when the fluid level rises above the outlet in response to the pumping action of the diaphragm pump. A plurality of individual modular systems of tandem containers and pumps can be utilized to simultaneously dispense a variety of fluids.

3,825,155

**APPARATUS FOR THE INJECTION OF PLASTIC MATERIALS**

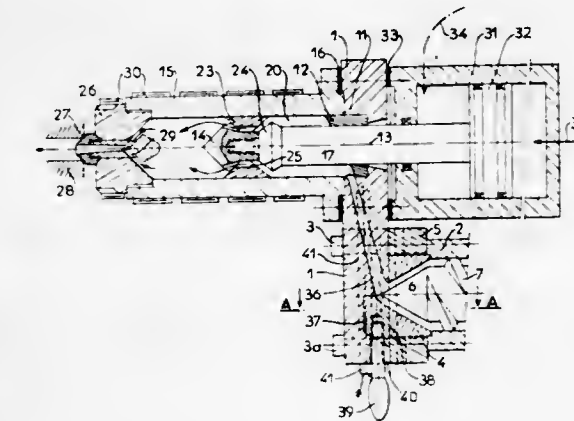
Gabriel Morault, 9 allée Turenne, Nantes 44, France  
 Filed May 18, 1972, Ser. No. 254,385

Claims priority, application France, May 21, 1971, 71.20032

Int. Cl. B67d 5/62

U.S. Cl. 222—146 HE

4 Claims



The invention is an apparatus for the injection of pasty materials such as thermoplastic materials, the apparatus including an injection cylinder formed with a material-receiving chamber and an extruder having an outlet face defining an outlet opening for the material. A connecting transfer plate is secured to the injection cylinder in a manner to extend laterally of the cylinder. It is also mounted on the extruding device for pivotal action of the latter about an axis extending laterally of the axis of the injection cylinder. The pivotal action is between an open position wherein the outlet face of the extruder stands free of one face of the transfer plate and a closed position wherein the said one face of the transfer plate stands flat against the outlet face of the extruder. The transfer plate is secured in releasable manner in closed position and has a communication channel for the flow of pasty materials, the channel extending from the outlet opening of the extruder outlet face and opening into the material receiving chamber whereby it becomes accessible for inspection when the apparatus is in open position.

3,825,156

**AUTOMATIC LIQUID POURING DEVICE FOR VACUUM BOTTLE**

Shirae Nobuo, Nishinomiya, Japan, assignor to Tiger Vacuum Bottle Industrial Company, Limited, Osaka Pref., Japan  
 Filed Feb. 13, 1973, Ser. No. 332,092

Int. Cl. B67d 5/48

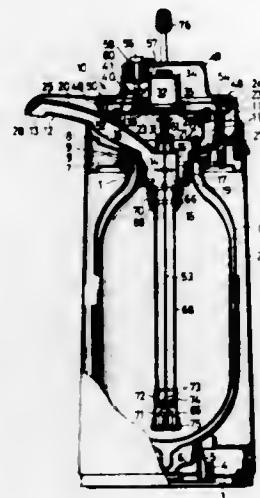
U.S. Cl. 222—183

6 Claims

An automatic liquid contents pouring device for a vacuum bottom. The lid of the bottle is in part formed into a holder containing a motor, dry cells, circuits and a switch related therewith. The lid forms a plug cylinder portion in the center of a bottom bottle member formed integrally with the holder.



A propeller shaft having a motor-driven propeller at the lower end extends longitudinally through a liquid feed pipe joined to the plug cylinder portion and extending downwardly of the



bottle. The other end of a gutter designed to lead the liquid contents and extending laterally in continuous relation with the plug cylinder portion reaches a bottle mouth projecting from a part of the bottom bottle member.

3,825,157

## AUTOMATIC CLOSURE FOR CONTAINERS

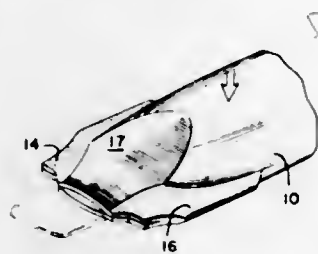
Albert M. Herzig, 700 N. Rexford Dr., Beverly Hills, Calif. 90212

Filed Aug. 10, 1973, Ser. No. 387,470

Int. Cl. B65d 1/32

U.S. Cl. 222-212

7 Claims



This invention is an improved automatic closure for squeeze bottles or the like, tubes, or containers of the type formed from flexible or semi-rigid, flexible material such as polyethylene or semi-rigid polyvinyl chloride having properties of resilient flexibility. The container is provided with a preferably tapered neck portion terminating in end lips which form an openable closure which is elongated. The material adjacent one or both of these lips is preferably formed with a deformation or set so that when portions of tapered side edges are sealed together, they provide the closure which is opened by pressure digitally exerted on the container and closes on release of pressure.

3,825,158

## CUBE ICE STORAGE BIN WITH DISTURBER BARS

William F. Morris, Jr., 801 Fayetteville St., Raleigh, N.C. 27601

Filed May 16, 1973, Ser. No. 360,951

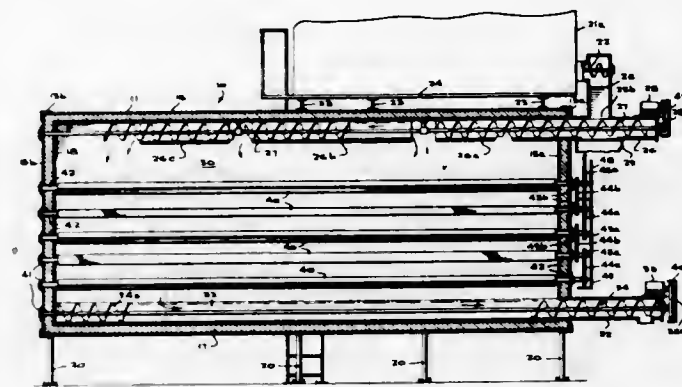
Int. Cl. F25c 5/18

U.S. Cl. 222-238

9 Claims

Ice cube storage apparatus in the form of a storage bin having a feed screw conveyor near the top thereof for delivering ice cubes into the bin, an inclined bottom wall, a discharge conveyor screw and trough adjacent the lowermost part of the inclined bottom for withdrawing the cube ice from the bin,

and a plurality of rotatable disturber bars at plural vertically spaced levels above the discharge conveyor to prevent forma-



tion of ice bridges above the discharge conveyor and assist in proper delivery of ice cubes from the bin without damaging their cube form.

3,825,159

## AEROSOL VALVE ASSEMBLY

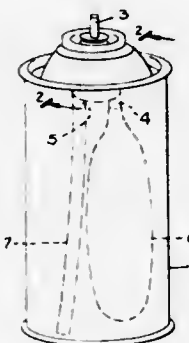
Robert H. Lauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417

Filed June 7, 1972, Ser. No. 260,460

Int. Cl. B65d 83/14

U.S. Cl. 222-402.24

6 Claims



An aerosol valve assembly has a valve which is pressure biased to a normally closed position, the valve being opened by an operator actuated by the application of manual force, and the assembly including a means for applying a resistance to movement of the valve when the operator receives an initial application of manual force and which releases said resistance with an increase in this force so that this increased force causes the valve to open with a snap action.

## ERRATUM

For Class 223-30 see:  
Patent No. 3,824,964

3,825,160

## SELF-CLOSING CONTROL ROD GRIPPERS

Harold V. Lichtenberger, West Simsbury, and Christian W. Ruoss, Enfield, both of Conn., assignors to Combustion Engineering Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,205

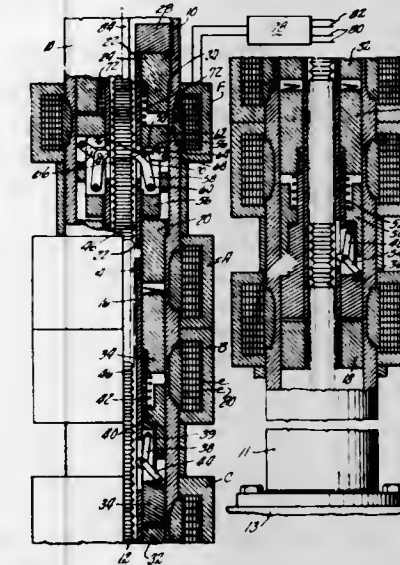
Int. Cl. G03b 1/28

U.S. Cl. 226-59

14 Claims

Control mechanism for a nuclear reactor non-scramming control rod including a latch, spring and gravity urged into

latching position, and electromagnetically released and having a spring and gravity actuated over-center toggle locking said



latch and locking said control rod against movement in either direction upon loss of electricity.

3,825,161

## DRIVE DEVICE FOR A FLEXIBLE STRIP PROVIDED WITH MARGINAL PERFORATIONS

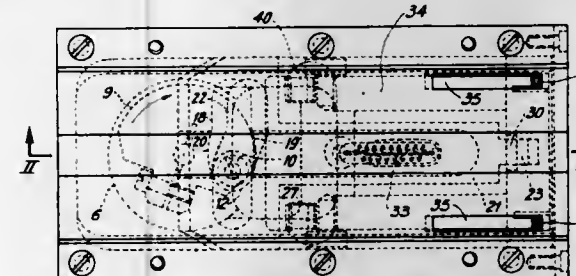
Raymond Louis Delorme, Bagnolet, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed May 29, 1973, Ser. No. 364,226

Int. Cl. G03b 1/22

U.S. Cl. 226-67

11 Claims



A device for driving a flexible strip provided with two rows of regularly spaced lateral perforations. This device includes a first slider to which is imparted a first reciprocating movement back and forth parallel to the direction of said strip, a second slider which moves with the first slider as far as the first reciprocating movement is concerned, but to which is also imparted a second reciprocating movement with respect to the first slider, a hinging plate mounted to pivot on the first slider and carrying claws each of which may cooperate with a perforation in one of the said lateral rows, and means enabling the said hinging plate to be moved towards or away from the second slider.

3,825,162

## FEED MECHANISM

Leo J. Hubbard, 200 Anchor Dr., Somerset, Mass. 02726

Filed Feb. 20, 1973, Ser. No. 333,816

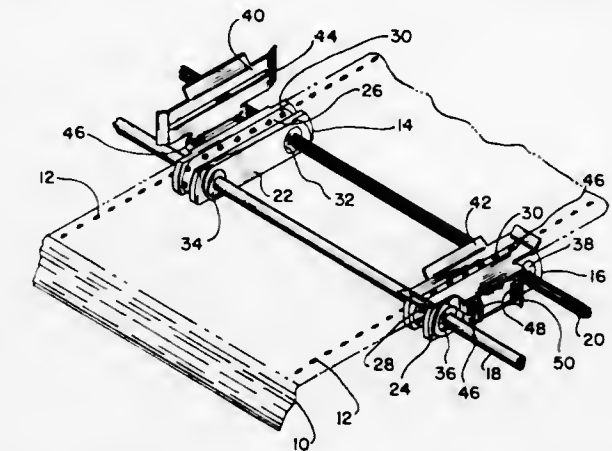
Int. Cl. G03b 1/30

U.S. Cl. 226-74

9 Claims

Mechanisms for feeding documents having perforations along their marginal edges are described. These mechanisms have frames which define linear paths for endless belts made of spring material along the drive path of the document perforations. The frames support the belts for curvilinear motion

around and away from the ends of the linear paths. The belts have unitary pin and roller drive elements which extend through perforations in the belt at equidistant intervals



therealong. Sprockets supported by the frame and journaled therein carry the belt around the curvilinear paths. The drive elements and the belts can be molded together into a unitary structure.

3,825,163

## APPARATUS FOR THE PRODUCTION OF REINFORCEMENT

Gljsbert Versteeg, Nunspeet near Stationslaan, Netherlands, assignor to Imex AG, Zurich, Switzerland

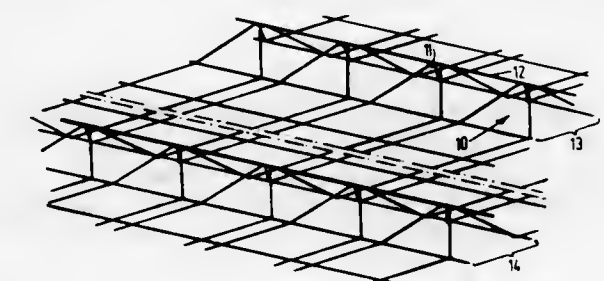
Division of Ser. No. 226,175, Feb. 14, 1972, Pat. No. 3,748,720. This application May 14, 1973, Ser. No. 359,920

Claims priority, application Switzerland, Feb. 18, 1971, 2378/71

Int. Cl. B23k 37/00

U.S. Cl. 228-5

10 Claims



A reinforcement for concrete ceilings, concrete walls and the like is produced by providing first a reinforcing mat from longitudinal reinforcing bars and groupwise disposed transverse reinforcing bars. In one or more spaced rows of meshes of the mat which extend parallel to the longitudinal reinforcing bars, the transverse bars of each group in such mesh rows are bent apart in directions obliquely to the plane of the mat and simultaneously flexed V-wise in such a way that the bent and flexed transverse bars meet each other again groupwise at their flex apexes, so as to form a row of protruding pyramids instead of each of these mesh rows. Thereupon, the summits of the pyramids are interconnected by means of a straight individual bar to form a protruding lattice girder. The apparatus for producing such reinforcement comprises pairwise supporting means to receive and support the reinforcing mat, pairwise securing means cooperating with the supporting means for holding the mat, bending means for simultaneously bending apart and V-wise flexing the transverse bars of a row of meshes, transport means for handling a straight individual bar, and welding means for welding the individual bar to the row of pyramids formed by bending and flexing the transverse bars of a row of meshes.



3,825,164

**APPARATUS FOR SOLDERING PRINTED CIRCUIT CARDS**

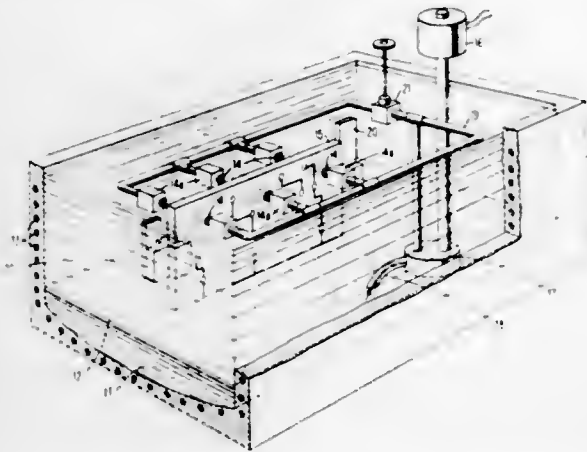
Frank H. Sarnacki, Johnson City, and Robert V. Steenstrup, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,080

Int. Cl. B23k 1/08

U.S. Cl. 228—37

8 Claims



A method and apparatus for soldering component devices to a printed circuit card or board by immersing an assembled printed circuit card into a tank of a controllably heated fluxing composition or bath wherein the assembly is preheated to a suitable temperature. A pumping apparatus is applied to a pool of molten solder residing at the bottom of the tank to cause the solder to flow upwardly through a piping system and exit an orifice or plurality of orifices extending transversely of the direction of movement of the printed circuit card assembly. The solder spray system is immersed in the bath and creates a wall of molten solder which is impinged against the printed circuit card to effectively join the components to the printed circuit card as the card is being uniformly withdrawn from the tank at a controlled movement rate.

3,825,165

**EXPLOSIVE WELDING APPARATUS FOR PIPE**

William G. Howell, Lakewood, Colo., assignor to Esso Research and Engineering Company, Linden, N.J.

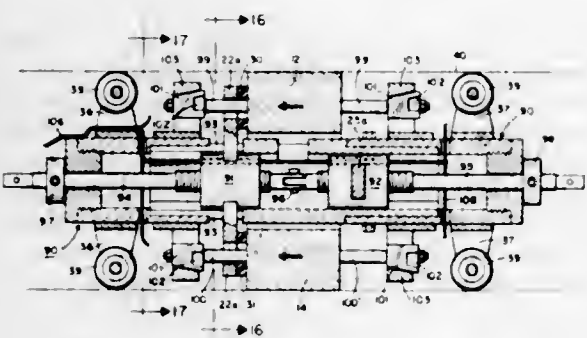
Continuation of Ser. No. 252,820, May 12, 1972, abandoned.

This application Aug. 24, 1973, Ser. No. 391,363

Int. Cl. B23k 5/22, 9/02

U.S. Cl. 228—50

31 Claims



An expandable mandrel for explosive welding of pipe is formed of a plurality of opposing pairs of arcuate segmented tapered members slidably arranged on each other and adapted when compressed to form a hollow cylindrical mandrel. Plate members on each end of the mandrel angularly arranged relative to each other have resilient means between the plate members and the mandrel which are compressed to compress the segments. The mandrel is equipped with means for movement through pipe sections.

**CONTAINER HAVING AN OPEN TOP SURROUNDED BY A LIP**

Pietro Padovani, Verona, Italy, assignor to O.M.V. S.p.A., Parona, Verona, Italy

Filed Feb. 7, 1972, Ser. No. 223,945

Claims priority, application Italy, Feb. 13, 1971, 84912/71

Int. Cl. B65d 3/00

U.S. Cl. 229—1.5 B

1 Claim



A rotationally symmetrical container which is open at its top and which is made of a thermoplastic sheet material of a given thickness. The container has a constant wall thickness and carries an outwardly and downwardly extending lip at the upper end surrounding and spaced from an upper wall region of the container and defining a continuous uninterrupted groove therewith. This lip has a solid cross section the thickness of which is greater than the thickness of the sheet used for production of the container.

3,825,167

**EXPANDING MANDREL OR CHUCK**

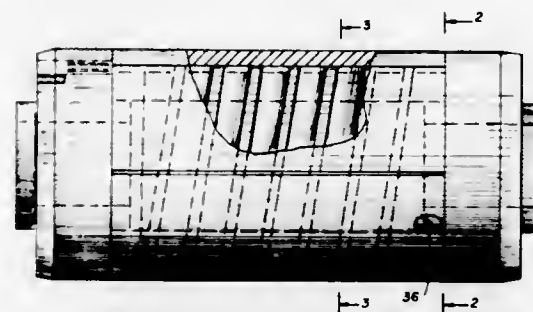
Anthony J. Komorek, Warren, N.J., and Lawrence R. Damour, 16 Chesler Square, Succasunna, N.J. 07876, assignors to said Damour, by said Komorek

Filed Dec. 26, 1972, Ser. No. 318,519

Int. Cl. B23b 31/40

U.S. Cl. 279—2

13 Claims



This invention pertains to an expanding mandrel or chuck in which air or hydraulic fluid is fed to and into a resilient tube arranged in a helical spiral. This tube is carried by and in grooves formed in a body and when pressurized air is fed into the tube it is expanded in a controlled manner to move three longitudinally disposed and retained jaws outwardly to positively drive a supported member carried on the chuck. In an alternate arrangement the jaws are made smooth to provide a controlled torque shaft which, with fixed retaining collars, provide a differential rewind shaft.

3,825,168

**GABLE TOP CONTAINER**

George E. MacEwen, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1970, Ser. No. 28,348

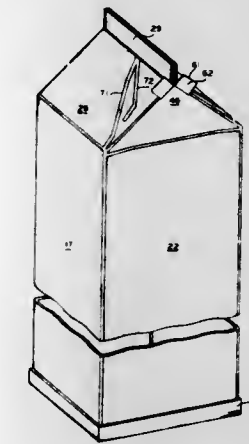
Int. Cl. B65d 5/72

U.S. Cl. 229—17 G

8 Claims

A gable top container and blank for forming same. The container includes inclined roof panels which define a gable open-

ing therethrough, and a pair of end closure panels for closing opposite ends of the gable opening. Roof panels of the gable



top structure are provided with novel score line configurations for causing one of the end closure panels to snap outwardly forming a pouring spout.

3,825,169

**PAPERBOARD CONTAINER AND BLANK THEREFOR**

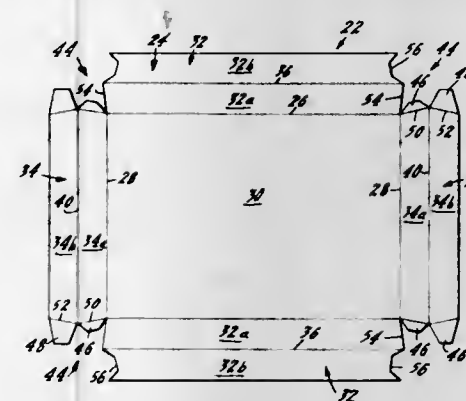
George Leroy Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed July 21, 1972, Ser. No. 273,838

Int. Cl. B65d 5/22

U.S. Cl. 229—34 A

20 Claims



A paperboard container and blank therefor wherein the container is formed having tapered double thickness side walls and corner configurations wherein superimposed tabs extend from one of two adjacent side walls to adhesively bond to one side of a second adjacent side wall to thereby provide double thickness of material at the corner. One thickness of the second adjacent side wall is cut out co-extensively with the tab next adjacent thereto into which the tab is recessed thereby providing three thicknesses at the overlap of the corner connection.

3,825,170

**DOUBLE-BOTTOM, ONE-PIECE BEVERAGE CASE**

John J. Aust, Toledo, and Charles D. Gray, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 18, 1973, Ser. No. 352,116

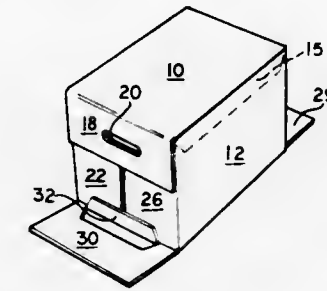
Int. Cl. B65d 5/08, 5/46

U.S. Cl. 229—37 E

2 Claims

A wrap-around or end-loading style container, adapted to be formed in a typical rectangular, tubular configuration, but with a double thickness cushion bottom, a blank for making same, and a method for folding the blank into the container as disclosed. The design of this invention is unique in that a double thickness bottom with cushioning characteristics is ob-

tained using a blank no larger than a standard blank, thereby giving minimal additional costs. To a typical rectangular container blank with four adjacent top, bottom, and side panels are added end closure flaps at each opposite end of the respective panels. The side panel closure flaps are inwardly folded after the four panels are rectangularly arranged and attached by way of a manufacturer's flap or joint. The top closure flap is glued and folded inwardly and down against these side panel flaps. The bottom panel closure flap is formed with two sec-



tions, each foldable along the line connecting the flap to the bottom panel. One of these sections, resembling a manufacturer's tab, is glued and folded inwardly to contact the first-folded side panel flaps, while the second section is glued and reversibly folded to contact the bottom of said container, thereby giving, in conjunction with the similarly folded flap at the opposite end of said bottom panel, a double thickness over a substantial portion of the surface of the bottom of the container for cushioning properties.

3,825,171  
CARTONS

Ernest James Dewhurst, 29 Euphrasia Dr., Toronto, Ontario, Canada

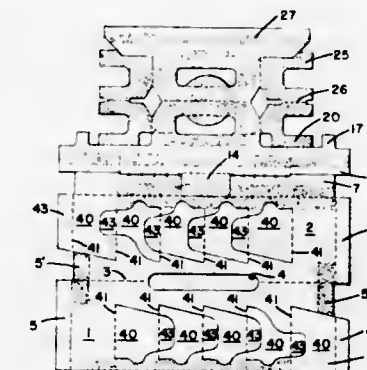
Filed Aug. 15, 1972, Ser. No. 280,896

Claims priority, application Canada, Apr. 18, 1972, 139948

Int. Cl. B65d 5/46

U.S. Cl. 229—52 A

6 Claims



The invention relates both to a carton having a plurality of article receiving compartments therein and an extensible carrying handle as well as to a one-piece blank forming an interior divider assembly within the carton and the handle. The handle is formed from various panels and is detachably secured to the remainder of the assembly whilst the transverse partitions, forming part of the latter, have "tits" inhibiting contact between the lower portions of adjacent articles.

3,825,172

**TUBULAR FLEXIBLE BAG WITH LAP WELDED ENDS**

Carlos A. Mollura, 2824 Del Oro Ln., Fullerton, Calif. 92632

Division of Ser. No. 170,209, Aug. 9, 1971, Pat. No. 3,753,819.

This application Apr. 23, 1973, Ser. No. 353,293

Int. Cl. B65d 3/10, 5/12, 5/16

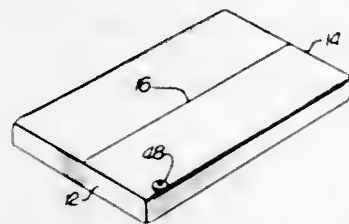
U.S. Cl. 229—5.5

3 Claims

A length of plastic material is rolled to form a tube, the ends being lapped and partially welded to leave an access opening



to the inside of the bag. The bag is then telescoped over welding die or form having the general configuration of the tube, but axially compressed. The tube is then accordion folded about the thin form so that the ends of the tube can be



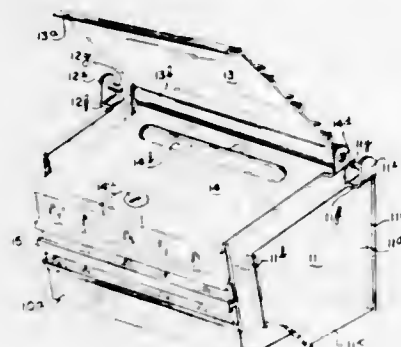
wrapped around peripheral rims of the form. End pieces are then welded in place, the form is removed through the access opening and the partially welded lap joint forming the access opening is sealed.

### 3,825,173 MAIL BOX

William V. Sunday, 9904 Manor Ave., Cleveland, Ohio 44104  
Filed Mar. 26, 1973, Ser. No. 344,912  
Int. Cl. A47g 29/12

U.S. Cl. 232-17

2 Claims



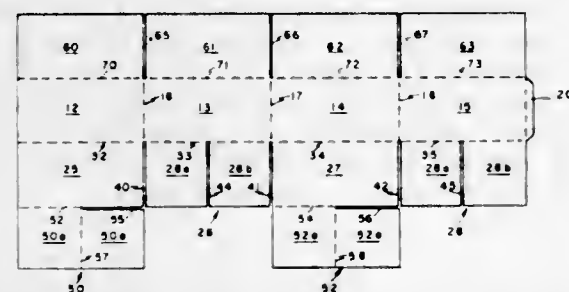
A mail box is presented adapted to be cheaply and efficiently formed of either four or five different elements, each of which is capable of being molded or extruded of synthetic plastic material, although the design would lend itself to construction in metal also.

### 3,825,174 COMPARTMENTALIZED CARTON

Clarence R. Booth, Jr., Charlotte, N.C., assignor to Continental Can Company, Inc., New York, N.Y.  
Filed June 22, 1972, Ser. No. 265,376  
Int. Cl. B65d 5/48

U.S. Cl. 229-28 R

2 Claims



A carton formed of paper or corrugated board having four side walls folded to form a rectangular section with four bottom flaps attached thereto. Two opposing bottom flaps are provided with integral partition panels for dividing the carton into four compartments thereby increasing the carton's stacking strength.

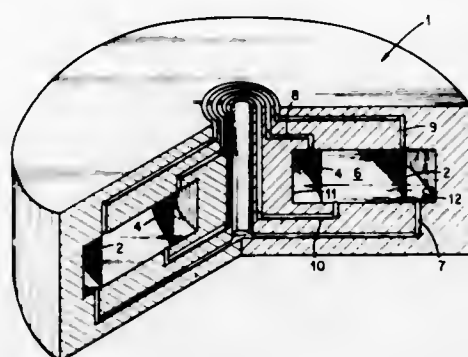
### 3,825,175 CENTRIFUGAL PARTICLE ELUTRIATOR AND METHOD OF USE

Walter K. Sartory, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 6, 1973, Ser. No. 367,684  
Int. Cl. B04b 3/00, 5/06

U.S. Cl. 233-2

6 Claims



A method and apparatus for carrying out centrifugal elutriation using a rotatable cylinder having an annular cavity within. Samples are introduced into the cavity at a central part thereof. A suspending liquid is introduced into the cavity at the centrifugal side. A first portion of particles within the sample moves in the centripetal direction with the flowing liquid and a second portion of larger particles moves in the centrifugal direction. Exit ports at the centripetal and centrifugal sides of the cavity provide a means for continuously removing the separated first and second portions of particles.

### 3,825,176 CENTRIFUGE FOR THE CLARIFICATION OF LIQUIDS

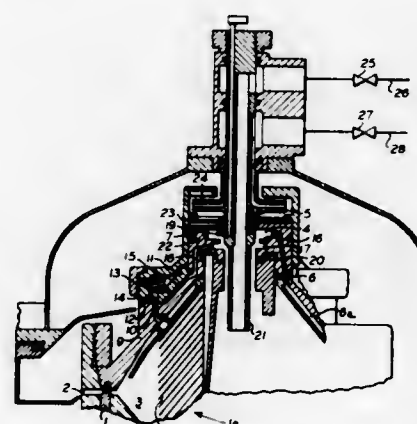
Heinz Hemfort, Jr., Oelde, Germany, assignor to Westfalia Separator AG, Oelde, Westfalen, Germany  
Filed Apr. 11, 1973, Ser. No. 350,224

Claims priority, application Germany, Apr. 27, 1972, 2220718

Int. Cl. B04b 1/14

U.S. Cl. 233-20 R

5 Claims



Self-dumping centrifugal separator having a main valve at the periphery of the drum for periodic dumping of solids and a secondary valve for removal of liquid from the separating zone to reduce the discharge of liquid through the main valve during dumping. Means, such as springs, urge the secondary valve into a normally closed position. A control chamber is provided for receiving liquid to urge the secondary valve to the open position and a passageway communicates the control chamber with an annular groove in the drum adjacent the drum axis. The drum includes means for sensing build-up of solids in the solids collecting chamber, including a sensing liquid receiving

chamber, having a lower lip and an upper lip, in the drum formed as an annular groove about the drum axis, means for delivering sensing fluid to that chamber and means for delivery of sensing fluid from the chamber to the inner boundary of the solids collecting chamber, and a pulse sensing means projecting into that chamber. The control chamber and the sensing liquid receiving chamber are separated by one of the lips of the sensing liquid receiving chamber. The separating lip is of greater inside diameter than the other lip of the sensing liquid receiving chamber, and the pulse responsive means projects into the sensing liquid receiving chamber to a point radially outward of the inside diameter of the separating lip. Upon build up of the liquid level in the sensing liquid receiving chamber, the pulse responsive means is first contacted and then the liquid overflows into the control liquid receiving chamber. Thereby, the control chamber is filled with liquid which forces the control valve to the open position for discharge of liquid from the separating chamber.

### 3,825,177 SELF-DUMPING DRUM CENTRIFUGE FOR THE CLARIFICATION OF LIQUIDS, EQUIPPED WITH A PARING DISK FOR REMOVING THE CLARIFIED LIQUID UNDER PRESSURE

Werner Kohlstedt, and Heinz Hemfort, Jr., both of Oelde, Germany, assignors to Westfalia Separator AG, Oelde/Westfalen, Germany

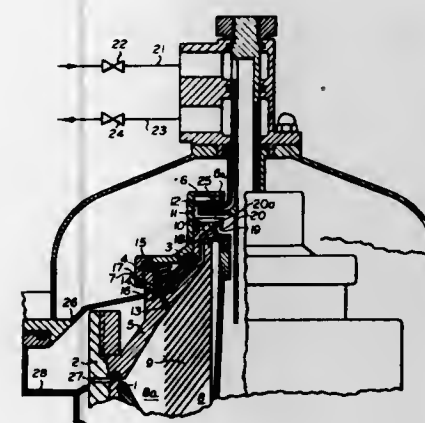
Filed Apr. 11, 1973, Ser. No. 350,279

Claims priority, application Germany, Apr. 27, 1972, 2220717

Int. Cl. B04b 1/14

U.S. Cl. 233-20 A

3 Claims



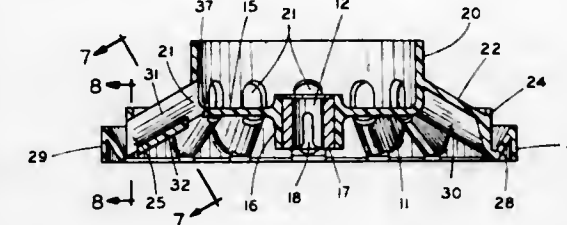
Self dumping centrifugal separator having a paring chamber and disk for removal of clarified liquid, and, for dumping, a main valve at the periphery of the drum for periodic ejection of solids and a secondary valve for removal of liquid from the separating zone to reduce the discharge of liquid through the main valve during dumping. Means, such as springs, urge the secondary valve into a normally closed position. A control chamber is provided for receiving liquid to urge the secondary valve to the open position and a passageway communicates the control chamber with an annular groove separated by a weir from the paring chamber, the weir being of greater inside diameter than the inside diameter of the paring chamber cover. Upon interruption of flow of clarified liquid from the paring disk, during initiation of dumping, liquid in the paring chamber overflows the weir and flows into the annular groove, through said passageway to the control chamber and forces the secondary valve to the open position for discharge of liquid from the separating zone.

### 3,825,178 CENTRIFUGE ROTOR

Donald E. Burg, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.  
Filed Dec. 17, 1971, Ser. No. 209,272  
Int. Cl. B04b 9/12

U.S. Cl. 233-26

17 Claims



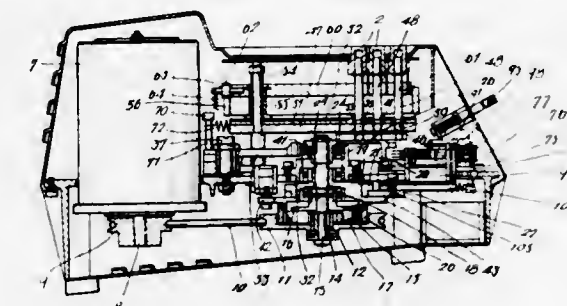
A fixed angle centrifuge rotor is provided which can be molded from a single cavity mold with no secondary operations. The rotor includes a central hub portion and a generally frusto-conical outer portion extending downwardly and radially outwardly from the central portion for holding the tubes to be centrifuged. The frusto-conical portion is provided with a plurality of radially outwardly extending recesses, each recess being defined by radially-spaced bottom wall portions and radially-spaced top wall portions, the top wall portions being aligned with the spaces in the bottom wall portions. A tube positioned within a recess is held securely by a pair of bottom wall portions and a pair of top wall portions, but at any cylindrical cross section through the frusto-conical wall the tube is held by only a top wall or a bottom wall.

### 3,825,179 ELECTRIC MARK PERFORATOR

Katsumi Otsuka, Funabashi, Japan, assignor to New Kon Industrial Co., Ltd., Tokyo, Japan  
Filed Oct. 13, 1972, Ser. No. 297,247  
Claims priority, application Japan, May 23, 1972, 47-60052  
Int. Cl. G06k 1/10

U.S. Cl. 234-51

10 Claims



An electric mark perforator in which when a lead tape having a selected thickness has been positioned in the perforation station defined between a perforated wheel and a cooperating perforating mechanism having a plurality of movable needles, one push button selected from a plurality of push buttons bearing different characters, numerals and/or other symbols which project out of the main body of the perforator is pushed down to rotate the perforated wheel having in its periphery perforated marks corresponding to those of the push buttons until the perforated mark corresponding to that of the pushed-down button comes to face the perforation station in which the lead tape is positioned whereupon rotation of the wheel is stopped and thereafter, the perforation mechanism advances to the perforated wheel so as to insert its plurality of perforation needles through the perforations defining the marks in the perforated wheel, but the needles which define the contour of the particular mark strike against the unperforated areas in the periphery of the wheel, thereby stopping their advance,



whereas the remaining needles which do not define the contour of that particular mark pass through the perforations thereby defining the particular mark in the lead tape, and thereafter, the push button is returned to its original position. The above procedure is repeated to define a desired number of marks in the lead tape which in combination represent an information by perforations.

3,825,180

## AIRCRAFT APPROACH GUIDE

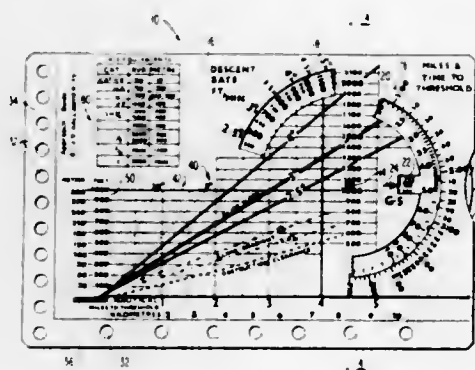
John D. Gallagher, R.R. No. 1, Inglewood, Ontario, Canada

Filed June 21, 1973, Ser. No. 372,019

Int. Cl. G06c 27/00

U.S. Cl. 235—78 HO

4 Claims



A landing approach computer is disclosed which allows computation of landing approach data in relation to ground speed. The computer is cooperable with a grid which provides a profile display of a glide path which is related to the data obtainable from the computer. Both the computer and the grid are cooperable over an infinite range of parameters.

3,825,181

## TIDE AND TIME CALCULATING DEVICE

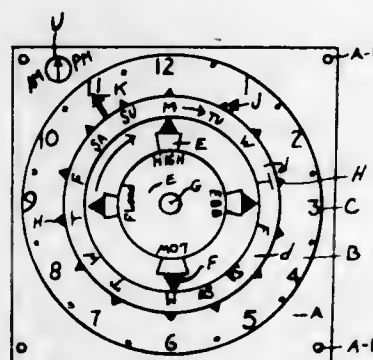
Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y. 11758

Filed Apr. 11, 1972, Ser. No. 243,001

Int. Cl. G06c 3/00; G04b 19/26

U.S. Cl. 235—88

5 Claims



A time and tide calculating device that registers the tides and time of the tides, comprising a base having a standard time dial face imprinted upon same and a rotatable concentric tide calandar dial member, associated with said time dial and base peripherally adjacent and for indicative registration with the calibrations of said time dial. Another smaller tide selector dial concentric and rotatable independently to the other dial members and base, having exact tide definitions and markings with arrows settable to the calandar dial below it, so that the tide and time values can be pre-set upon a calculator or time piece so as to render this important information, necessary to all navigation.

3,825,182

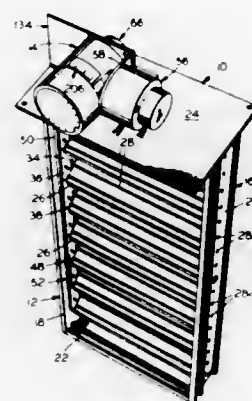
CONTROL DEVICES FOR DAMPERS AND THE LIKE  
Donald K. Bauchmann, 1801 St. George Pl., Kinston, N.C. 28501

Filed May 17, 1973, Ser. No. 361,280

Int. Cl. H02k 11/00; F16k 31/04

U.S. Cl. 236—1 C

16 Claims



A control device is provided for dampers and the like which are adapted to be installed in a duct system whereby the combined control device and damper function as an air valve to control the flow of heated or cooled air to zones of individual rooms or offices of a building. The control device is mounted on a damper unit so as to be operatively engaged with a push rod which is utilized for simultaneously moving all of the blades of the damper unit from the closed to the open position thereof, with the blades being moved from their open to their closed positions preferably by means of a return spring. The control device includes a housing having a shaft extending outwardly from one end thereof and having any one of a plurality of interchangeable control caps detachably mounted at the other end of the housing in such a manner as to be operatively connected to the shaft. Each of the control caps is capable of housing therewithin the components of one of a plurality of different forms of electrical circuits, each of which is adapted to be actuated in response to a signal received from a thermostat. The outwardly extending shaft is operatively connected to one end of a worm gear which comprises one of the components of a gear train that is driven by an electrical motor, the latter being connected in circuit relation with the circuitry of the control cap and the thermostat. The other end of the gear train has mounted thereon a cam which is supported so as to be engageable with a cam follower that is connected to the push rod thereby providing the means whereby the control device is operatively engaged with the push rod of the damper unit to control the flow of air through a duct system, by controlling the extent to which the blades of the damper unit are opened or closed.

3,825,183

## ORCHARD HEATING SYSTEM &amp; BURNER

Sigmund H. Machlanski, 7017 Park Lawn Dr., Gregory, Mich. 48137

Division of Ser. No. 125,053, March 17, 1971, Pat. No. 3,750,642. This application Dec. 13, 1972, Ser. No. 314,631

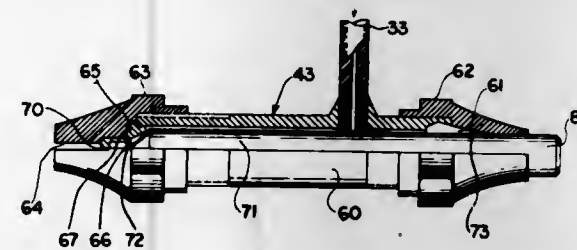
Int. Cl. G05d 23/275

U.S. Cl. 236—93

6 Claims

A system for supplying liquefied petroleum or gaseous fuel to an array of grove heaters including a central gas supply valving distribution system and thermostatic control. The system includes a number of high efficiency heaters, each with a shielded pilot flame burner and assembly and automatic cut-off valve in the event of pilot flame extinguishment. The burner includes a helical flame path in intimate contact with a tubular body member constituting horizontal radiating surface and a top diffuser cover for optimum heat distribution in a horizontal direction. The burner assembly includes a shielded

pilot flame with a continuous metal flame attachment member for insuring the expansion of burner flame from pilot to full pulses produced by the digitizer. Preferably, pulses can be added to or subtracted from the pulses produced by the



flame in full operation without flameout. The burner includes a temperature responsive valve which is effective and readily adjustable in the field.

3,825,184

## LEVEL CROSSING STRUCTURES

Gerhard Hartl, Vienna, Austria, assignor to Semperit Aktiengesellschaft, Vienna, Austria

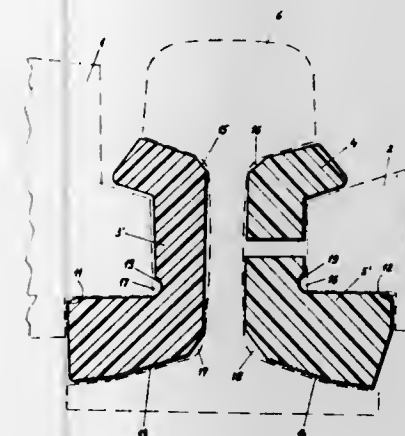
Filed July 10, 1972, Ser. No. 270,025

Claims priority, application Austria, July 9, 1971, 5980/71

Int. Cl. E01b 21/00

U.S. Cl. 238—8

2 Claims



The invention relates to level crossing structures of the kind in which slabs, which form part of the roadway and on whose upper edge level with the rails there is a stepped recess for a wheel rim, are held in place by a lower part, projecting from the recess and engaging moulded bodies forming a bearing and adapted to conform with the lateral profile of the rails.

3,825,185

## PAINTING OF INTERRUPTED LINES ON ROAD SURFACES

Francis A. Moon, Palos Verdes, and Robert G. Halliday, Malibu, both of Calif., assignors to Unimasco, Inc., Gardena, Calif.

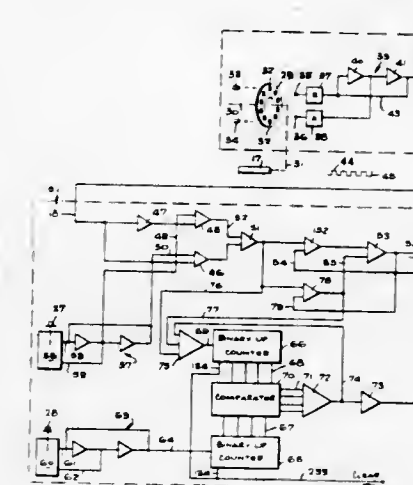
Filed Feb. 8, 1973, Ser. No. 330,595

Int. Cl. B05b 1/28

U.S. Cl. 239—150

22 Claims

Apparatus for painting an interrupted line on a road surface, including a digitizer for producing a series of pulses in accordance with movement of a motor vehicle along the road surface, and control means operable by the digitizer to actuate a paint spraying gun carried by the vehicle between spraying and nonspraying conditions in accordance with the number of



3,825,186

## IRRIGATION RISER BASE SYSTEM

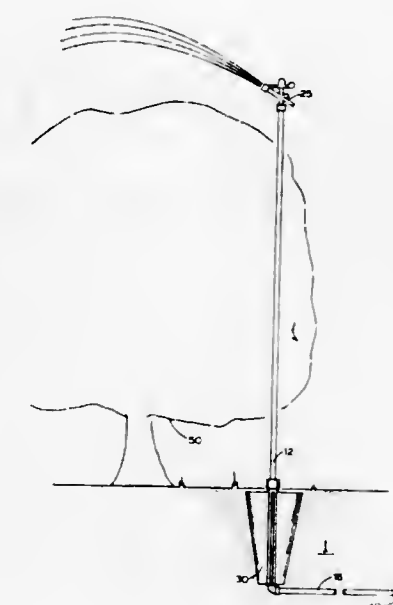
Richard H. Heenan, and George M. Litsinger, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Apr. 20, 1973, Ser. No. 353,055

Int. Cl. B05b 3/10

U.S. Cl. 239—280

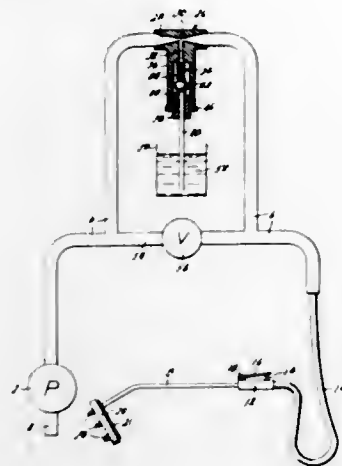
8 Claims



An irrigation riser base system is described which substantially improves the support capabilities of a permanent overhead irrigation system in different soil conditions, including sandy soils. The irrigation riser base system is composed of an improved riser base that is sunk into the soil for a length sufficient to facilitate its connection to a central irrigation system connected to the base and arising approximately 20-25 feet above the ground is a riser pipe that has a sprinkler head fastened to the top end thereof. During normal operations, an irrigating liquid is supplied through the system and distributed to the citrus trees or other vegetation. The irrigation riser base system is lightweight, yet strong and rigid for dependable performance in different soil conditions, has excellent support capabilities in sandy soils, inexpensive to manufacture and requires very little maintenance over extended use.

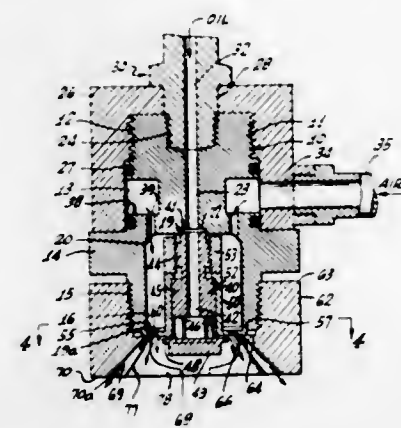


**3,825,187**  
**SYSTEM FOR SUPPLYING WASHING MACHINE NOZZLES**  
 Harlan H. Tatge, 118 N. Broadway, Herington, Kans. 67449  
 Filed June 29, 1973, Ser. No. 375,084  
 Int. Cl. B05b 7/30  
 U.S. Cl. 239—312 2 Claims



A system for supplying washing machine nozzles consisting of a pump operable to deliver water through a conduit to a nozzle head with selectively usable nozzles having different flow restrictions, an aspirator pump disposed in the water conduit and operable by flow in the conduit to draw a liquid detergent from a reservoir through a detergent conduit and to intermix it with the water, a valve in the detergent conduit adjustable to open at or above an adjustably predetermined flow rate in the water conduit, and a by-pass conduit by-passing the aspirator pump in the water conduit and including a manually operable valve.

**3,825,188**  
**LIQUID SPRAY HEAD**  
 Beauford C. Doering, Arcadia, Calif., assignor to Par-Wey Mfg. Co., Los Angeles, Calif.  
 Filed Mar. 23, 1973, Ser. No. 344,075  
 Int. Cl. B05b 1/02, 7/06, 15/04  
 U.S. Cl. 239—498 8 Claims

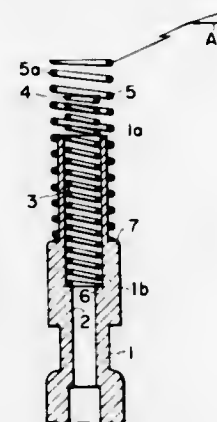


A nozzle for spraying liquids is provided. In a useful example, cooking oil is sprayed into baking pans using a conduit which discharges the oil at a center point between two concentric closely-spaced circular discs, in parallel horizontal planes, the lower disc being smaller than the upper disc, there being a large number of small air passages in a circular pattern extending downwardly through the upper disc, all around the border of the lower disc. The oil flows radially out from between the discs, and is impinged upon by air under pressure issuing downward from the air passages. Thereby the oil film is largely atomized and sprayed downwardly. Oil from between

the discs not so atomized reaches the internal surface of a conical skirt, and is guided thereby down the skirt and off the lower edge thereof in an atomized condition. A solid cone of atomized oil particles is thereby delivered downwardly in a burst of only a few hundredths of a second. The skirt may be shaped to produce a round or square pattern of atomized oil.

**ERRATUM**  
 For Class 239—568 see:  
 Patent No. 3,825,402

**3,825,189**  
**BURNER VALVE NOZZLE ARRANGEMENT FOR LIQUID GAS LIGHTER**  
 Yoichi Ohsawa, Tokyo, Japan, assignor to Ohsawa Manufacturing Co., Ltd., Tokyo, Japan  
 Filed May 25, 1972, Ser. No. 256,772  
 Claims priority, application Japan, Oct. 22, 1971, 46-97304; Nov. 22, 1971, 46-108559; Nov. 22, 1971, 46-108560  
 Int. Cl. F23d 13/00  
 U.S. Cl. 239—590 9 Claims

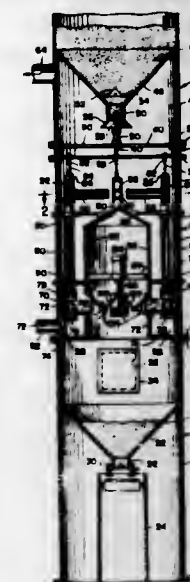


In a liquid gas lighter, the burner valve nozzle is arranged so that a plurality of mutually spaced air-communicating cylindrical members are provided on the nozzle to extend longitudinally beyond the edge thereof close to an electric discharge electrode which points to said nozzle and said members. This nozzle arrangement can be manufactured at low cost and serves to improve the mixing of the fuel gas with the ambient air and provides an improved igniting condition of the gas fuel.

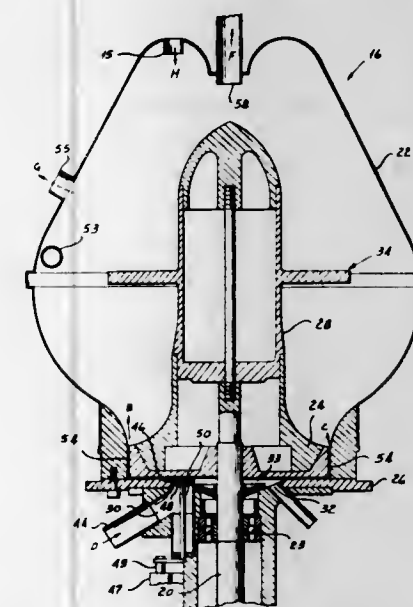
**3,825,190**  
**APPARATUS FOR TREATING GRANULAR MATERIAL**  
 John H. Kauffman, Richland Center, Wis., assignor to National Engineering Company, Chicago, Ill.  
 Filed Feb. 14, 1973, Ser. No. 332,415  
 Int. Cl. B02c 19/06  
 U.S. Cl. 241—40 14 Claims

Apparatus for cleaning granular material such as foundry sand and the like comprises a housing having upstanding tubular inner and outer walls in spaced apart coaxial relation defining an annular receiving chamber adjacent the lower end for holding granular material to be cleaned, annular plenum chamber means below said receiving chamber having an upper wall forming a base of said chamber and supporting a plurality of spaced apart injection nozzles for directing high velocity air flow upwardly into the granular material to lift the same via lift tubes having their lower ends coaxially aligned with and spaced above said nozzles for carrying an upward flow of airborne granular material for impacting against target means spaced above said inner wall, outlet means defined in

said outer wall for removing from said housing airborne fine particles of material obtained after impact of said material



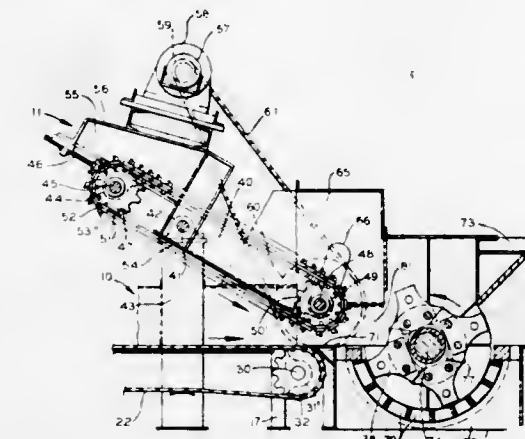
**3,825,191**  
**CENTRIFUGAL MILL FOR CONTACT TRANSFER ELECTROSTATIC COPIER**  
 Ian E. Smith, Lockleys, South Australia, and Dennis I. Scroggs, Para Hills, South Australia, both of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.  
 Filed Oct. 5, 1972, Ser. No. 295,115  
 Int. Cl. B02c 13/14  
 U.S. Cl. 241—46.11 13 Claims



A centrifugal impingement mill and developer supply system for an electrostatic copier using a developer made up of particles of tacky toner suspended in a carrier liquid in which a cylindrical spindle having a conical apex is provided with an annular radially extending vane located in the bulbous generally pear-shaped cavity of a housing and is provided with a relatively broad cylindrical base disposed in relatively close-spaced relationship to the wall of a shallow cylindrical recess in the housing below the cavity to form a vortex of developer liquid in the cavity above the recess and in which a first circulating path for developer containing relatively fine toner particles is provided from a point above the major

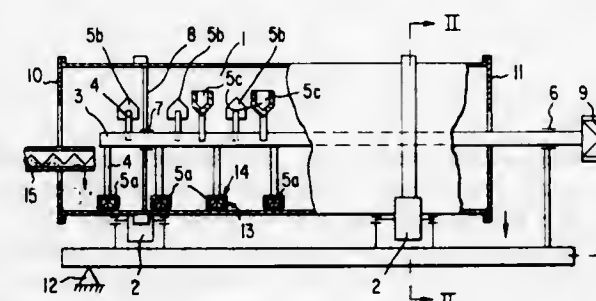
diameter of the cavity to a developer applicator and back to an orifice adjacent to the top center of the housing and in which a second circulating path is provided for developer containing relatively coarse toner particles from a point adjacent to the major diameter of the cavity to the space between the spindle base and the housing recess wherein shear forces are applied to the toner particles and thence to the cavity. Means are provided for allowing air trapped in the form of bubbles in the developer liquid contained in the cavity to escape to the ambient atmosphere.

**3,825,192**  
**FEEDING MECHANISM FOR REDUCTION APPARATUS**  
 Lloyd K. Knight, Columbus, Ohio, assignor to Jeffrey Gallon, Inc., Columbus, Ohio  
 Filed Jan. 22, 1973, Ser. No. 325,885  
 Int. Cl. B02c 23/02  
 U.S. Cl. 241—186 R 7 Claims



Feeding mechanism to control and regulate the feed of a mass of materials into a reduction apparatus. There is a feeding table on which the materials are moved forwardly to the reduction apparatus. A hold-down is positioned above the feeding table, with its forwardmost end ahead of the feeding table and close to the reduction apparatus. The hold-down engages the materials and also moves the materials forwardly, while holding the mass of materials as the reduction means tears into the mass of materials to reduce the materials to a small product size.

**3,825,193**  
**GRANULATING APPARATUS**  
 Wilhelm Lodge, Eisenerstr. 9c; Fritz Lodge, Leuschnerstr. 12; Josef Lucke, Im Lonfeld 15, and Karlheinz Luke, Detmolder Str. 27, all of Paderborn, Germany  
 Filed Apr. 14, 1972, Ser. No. 244,152  
 Claims priority, application Germany, Apr. 15, 1971, 2118231  
 Int. Cl. B02c 13/06, 13/28  
 U.S. Cl. 241—187 6 Claims



Apparatus for granulating loose, fine-grained and/or powdered materials comprising a rotary drum and a separately



driven system of granulating tools. The tools are generally wedge-shaped and spaced at constant radial distances from the drum wall. The axial distance between adjacent tools decreases from the points to the rear ends thereof, thereby subjecting the material to a continual axial pulsating compression with subsequent expansion, thereby enhancing the granulating effect. The drum can be driven in opposite directions or at a faster or slower rate than the tools whereby optimum granulate formation can be achieved.

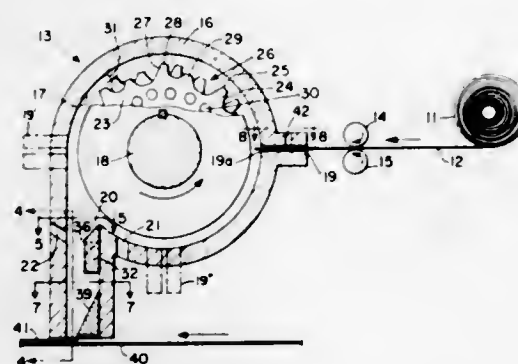
3,825,194

## APPARATUS FOR PREPARING AIRFELT

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
Filed Sept. 22, 1971, Ser. No. 182,795  
Int. Cl. B02c 13/06

U.S. Cl. 241-191

14 Claims



Apparatus for continuously converting dried cellulosic fibrous sheet material into a dispersion of individual fibers in air and thereafter forming said individual fibers into an airfelt.

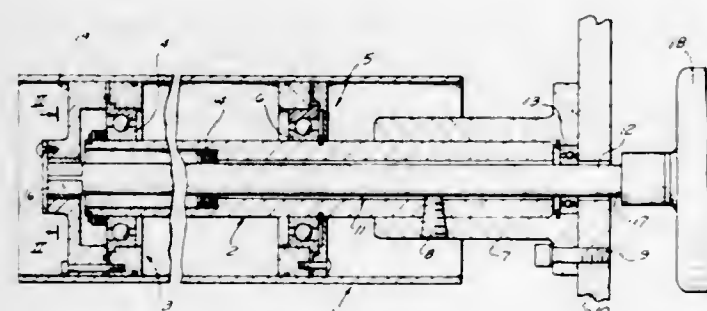
3,825,195

## DRIVE ROLL FOR WINDERS OF FILAMENTARY MATERIAL

Harry B. Miller, Hopedale, Mass., assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany  
Continuation-in-part of Ser. No. 262,973, June 15, 1972. This application Nov. 6, 1972, Ser. No. 304,253  
Int. Cl. B65h 54/46

U.S. Cl. 242-18 DD

5 Claims



A hollow shaft is stationarily cantilevered on a support. A tubular friction roller is journaled on the shaft for rotation about the same. A drive shaft extends through the hollow shaft, being journaled therein, and has one endportion extending beyond one end of the hollow shaft but within the friction roll with which this endportion is drivingly connected. The other endportion of the drive shaft extends outwardly beyond the hollow shaft and friction roll for coupling with a drive.

3,825,196

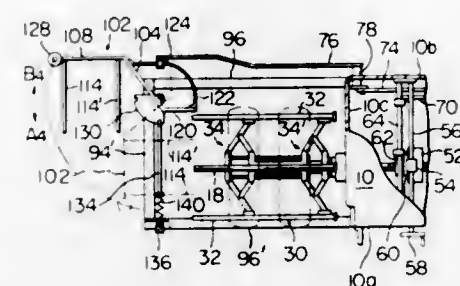
## HANK REELING MACHINE

Sakuzo Yamazaki, Kiryu City, Japan, assignor to Sankin Engineering Company Limited, Kiryu City, Japan  
Filed Jan. 11, 1973, Ser. No. 322,871  
Claims priority, application Japan, Jan. 15, 1972, 47-6462; Jan. 15, 1972, 47-7380

Int. Cl. B65h 54/56

U.S. Cl. 242-53

15 Claims



A improved hank reeling machine having a swift structure which is adapted to collapse around its axis as a spindle coaxially extending through the swift structure is axially moved in response to movement of a hank doffing unit which is incorporated in the reeling machine, wherein an arrangement is provided to vary the axial displacement of the spindle depending upon a selected perimetrical length of the swift structure so that the axial movement of the spindle is effected at an increased efficiency in accordance with the selected perimetrical length of the swift structure.

3,825,197

## CABLE TENSION PRELOADER

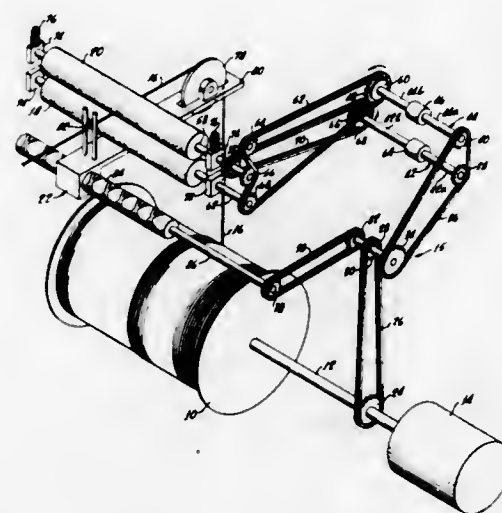
Larry O. Sturgeon, 615 N. Hamlin St., Orange, Calif. 92669, and Leonard L. Dueker, 2241 E. Evergreen, Mesa, Ariz. 85203

Filed Dec. 4, 1972, Ser. No. 312,028

Int. Cl. B65h 75/00

U.S. Cl. 242-54 R

14 Claims



Apparatus and method for maintaining tension on a cable being wound on, unwound from, or held in readiness on a drum. Two contactors grip the cable and keep it in tension relative to the drum by means of a chain drive system powered by a motor driving the drum.

3,825,198

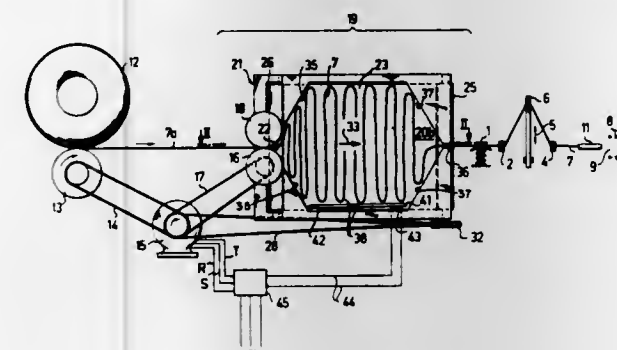
## APPARATUS FOR THE STORAGE OF ELONGATE MATERIAL

Jurg Oehninger, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland  
Filed Aug. 24, 1972, Ser. No. 283,508  
Claims priority, application Switzerland, Sept. 2, 1971, 012874/71

Int. Cl. B65h 75/02

U.S. Cl. 242-55

11 Claims



A container having entrance and exit apertures and two substantially flat parallel sides at least one of whose dimensions is large compared to their separation is provided with a driven endless belt, one of whose runs extends from the entrance to the exit aperture and forms at least part of one of those sides. Feed rolls at the entrance aperture and a spool unwinding roll exterior to the enclosure are driven from the same source as that which drives the endless belt, and a sensor in the container adjusts the speed of the driving means inversely with the quantity of material in the container.

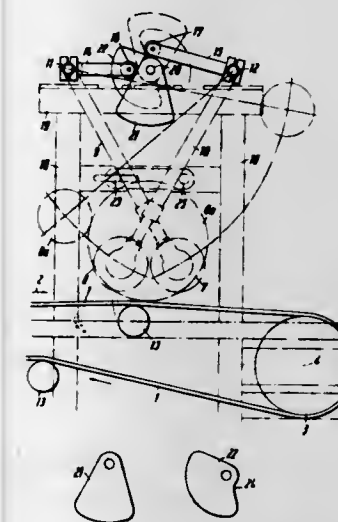
3,825,199

## DEVICE FOR THE MANUFACTURE OF PEAT BAND ROLLS

Pentti Samuel Nisula, Hamevaara, Finland, assignor to Lannen Sokeri Oy, Lansi-Sakyla, Finland  
Filed May 30, 1973, Ser. No. 365,183  
Int. Cl. B65h 75/00

U.S. Cl. 242-55

10 Claims



Apparatus for use in winding peat band rolls is provided wherein a pair of winding rolls is adapted to engage opposite sides of the forming peat band roll which is carried on a conveyor belt. The winding rolls are connected to rotatable lever arms which are in turn connected to eccenters, the eccenters being adapted to lift said winding rolls away from the completed peat band roll to permit its removal by the conveyor belt.

3,825,200

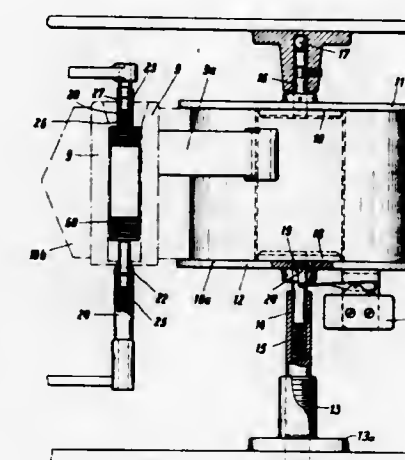
## MECHANISM FOR MOUNTING ROLL PAPER

Werner Puhahn, Philippsburg, Germany, assignor to Standardwerk Eugen Reis GmbH, Bruchsal, Germany  
Division of Ser. No. 61,758, Aug. 6, 1970. This application Feb. 11, 1972, Ser. No. 225,646  
Claims priority, application Germany, Aug. 8, 1969, 693902

Int. Cl. B65h 25/06, 25/32

U.S. Cl. 242-57

1 Claim



A money coin counting and wrapping machine having a support for a substantially endless reel of wrapping paper. The support is formed of a pair of spaced disks one of which is rotatable, the other of which is axially movable and non-rotatable and includes spring means to hold the reel pressed against the one disk. Means for sensing the quantity of paper in the reel are mounted on the non-rotatable disk. Also there is provided a support for stack of coins comprising an upper and lower axially aligned rotatable gripping pins cooperatively arranged to grip the stack there between.

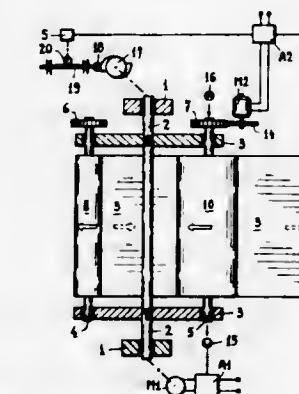
3,825,201

## DEVICE FOR CONTROLLING THE LAUNCHING OF A REEL OF WEB IN AN UNWINDER WITH AUTOMATIC REEL CHANGE

Francesco Osta, Via Spanzotto 3, 15.033 Casale Monferrato (Alessandria), Italy  
Filed May 22, 1973, Ser. No. 362,819  
Int. Cl. B65h 19/18

U.S. Cl. 242-58.1

4 Claims



An automatic reel change unwinder wherein the reel holder arms are controlled by a change motor stopped by a detecting device, and a signal generator produces a signal depending on the stop position of the said arms for generating, in a computer, a signal suitable for controlling a launching motor which accelerates a new reel intended to replace an exhausted one.



3,825,202

## CHART TRANSPORT

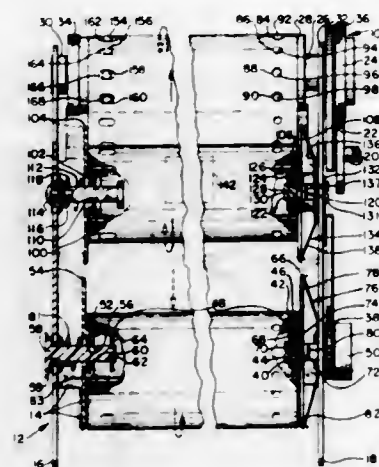
Clayton F. Robinson, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1972, Ser. No. 295,708

Int. Cl. B65h 17/18, 75/18

U.S. Cl. 242-67.2

4 Claims



A universal strip chart transport mechanism to support and laterally transport a strip chart between a supply roll and a reroll, said strip chart being adapted to be driven by a drive roll and having perforations adjacent opposite edges thereof for snugly receiving drive pins carried at the opposite ends of the drive roll. The supply roll and reroll are each provided with flanges at the opposite ends thereof, the pairs of flanges at adjacent ends of said rolls being biased toward the other ends of their associated rolls, the biasing forces acting on one pair of flanges being greater than the biasing forces acting on the other pair of flanges. Two modes of operation of the transport mechanism are contemplated, one in which the strip chart is referenced to one edge thereof and another in which the strip chart is referenced to the other edge, the perforations adjacent the remote edge of said strip chart, in each case, being laterally elongated. In said one mode of operation of said transport mechanism, a reference position for said chart is established by said one pair of flanges by the use of retaining means to determine the extreme position to which said one pair of flanges is movable by the associated biasing means. In the alternative mode of operation of said transport mechanism, a reference position for said chart is established by said other pair of flanges by employing the said retaining means to said last mentioned pair of flanges in a fixed position. This arrangement tends to minimize the tendency for the drive pins on the drive roll to become disengaged from the perforations in the chart as the result of lateral expansion and contraction of the chart due to variations in moisture content thereof. In each mode of operation the laterally elongated perforations are at the side of the chart that undergoes the greatest movement as the result of changes in moisture content.

3,825,203

## PNEUMATICALLY CONTROLLED BISTABLE REEL HUB MECHANISM

Kagne Jarle Kjos, Thousand Oaks, and Johan Henri Molleman, Newsbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 20, 1972, Ser. No. 290,768

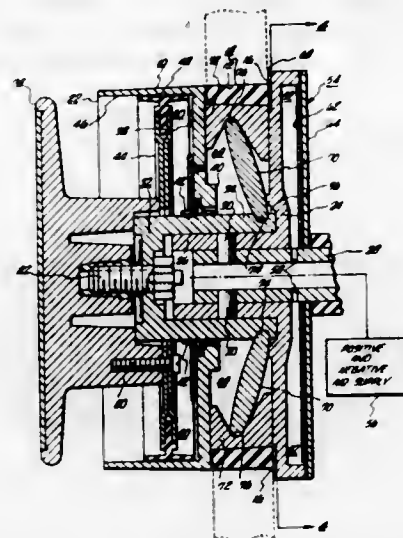
Int. Cl. B65h 19/02

U.S. Cl. 242-68.3

10 Claims

A bistable, pneumatically controlled hub, with a manual override, for locking a properly positioned reel on the hub by means of the expansion of a resilient ring channeled in the hub. The hub has an inner air chamber, including a reciprocable wall actuated by positive and negative air pressure sup-

plied through the hub drive shaft and an auxiliary air chamber. Apertures in the auxiliary chamber are sealed only by the proper positioning of the reel on the hub permitting the



reciprocable wall to pivot an over-center device for alternately exerting and releasing pressure on portions of the inner circumference of the resilient ring, and thereby on the inner bore of the reel.

3,825,204

## SENSING DEVICE FOR CONTROLLING THE MOVEMENT OF SHEET STOCK

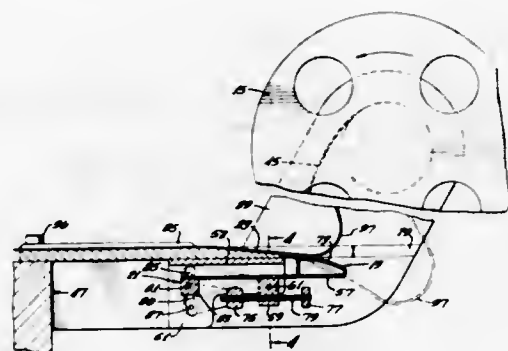
Paul Vinson, 7821 N. 65th St., Scottsdale, Ariz. 85253

Filed Sept. 20, 1972, Ser. No. 290,460

Int. Cl. B65h 23/20

U.S. Cl. 242-75.3

18 Claims



A sensing device including a support, an arm pivotally mounted on the support by a low friction connection, and a switch responsive to the angular position of the arm for controlling stock movement. The switch is of the type which requires no energy to operate it. The low friction connection includes a ball and a cooperating recess along the pivotal axis of the arm. A weight is mounted on the arm so that it can be moved toward and away from the pivotal axis.

3,825,205

## MOTOR VEHICLE SAFETY DEVICES

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 157,562, June 28, 1971. This application June 8, 1972, Ser. No. 260,872

Claims priority, application Japan, Oct. 14, 1970, 45-090684; Oct. 6, 1970, 45-087139; July 14, 1970, 45-069730; Aug. 27, 1970, 45-084724

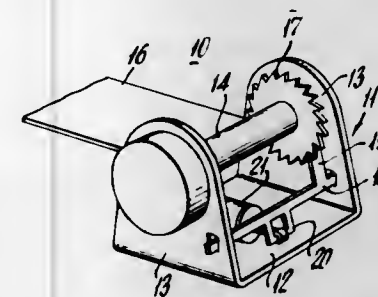
Int. Cl. A62b 35/00; B65h 63/00

U.S. Cl. 242-107.4

8 Claims

A vehicle safety belt system includes a spring rewind belt retractor reel provided with a solenoid actuated brake and a

network controlled by an inertia switch to brake the reel by the energization or deenergization of the solenoid and to maintain the reel in a braked condition an adjustable time interval following the deactuation of the inertia switch. The net-



work includes a solid state Darlington switch having across its input a memory capacitor which is charged by the actuation of the inertia switch and a relay across its output which controls the brake solenoid.

3,825,206

## WINDING DEVICE WITH DRIVE-ROLLER DRIVE

Heinz Schippers; Erich Lenk, and Hansjochen Busch, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

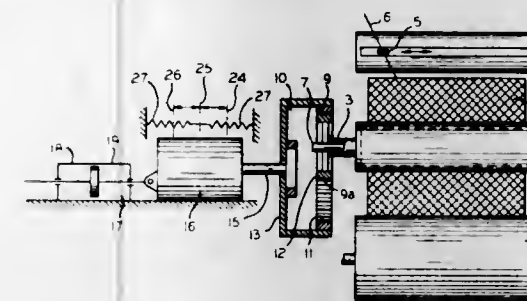
Filed Mar. 1, 1972, Ser. No. 230,851

Claims priority, application Germany, Mar. 4, 1971, 2110367

Int. Cl. B65h 54/42

U.S. Cl. 242-18 DD

9 Claims



Winding device with drive-roller drive for winding endless threads on a bobbin tube securely held by means of a chuck, with a pressure-operated rod axially movable in the chuck for releasing the chuck and an electric or a pneumatic or hydraulic drive motor for starting rotation of the empty bobbin or providing an additional drive moment in the chuck shaft.

3,825,207

## VISCIOUS SENSOR

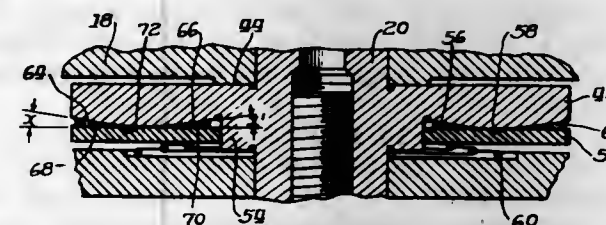
Mervin W. LaRue, Jr., Barrington, Ill., assignor to Bell &amp; Howell Company, Chicago, Ill.

Filed July 3, 1972, Ser. No. 268,838

Int. Cl. B65h 25/32

U.S. Cl. 242-191

11 Claims



A viscous end-of-run and jam sensor and indicator for a cassette-type motion picture camera. A drag disk is mounted for

rotation about the axis of rotation of the film take-up assembly and has a drag surface in closely-spaced juxtaposition with a rotatably-driven annular surface of the film take-up assembly. A quantity of viscous fluid is disposed between the drag surface and the rotatably-driven surface to form a viscous coupling therebetween to impart torque to the drag disk during rotation of the film take-up assembly. The drag surface and the rotatably-driven surface have continuous peripheral portions which define a small acute angle of divergence sufficient to effect retention of the viscous fluid between the drag surface and the driven surface by capillary attraction. A bias spring maintains the drag disk in a predetermined quiescent position in the absence of rotation of the film take-up assembly. An electrical circuit includes in series connection a voltage source, a manually-actuable camera-actuation switch, a sensing switch, and an indicator lamp. The sensing switch is maintained closed by an arm extending from the drag disk when the drag disk is in its quiescent position. The indicator lamp thus will be energized in response to a cessation of rotation of the film take-up assembly due to the end of the run of the film or a film jam occurring while the camera-actuation switch is closed.

3,825,208

## CARTRIDGE AND STORAGE APPARATUS

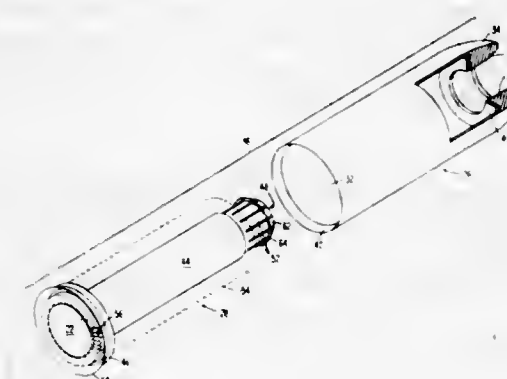
Daniel H. Johnston; Rudy Mannheimer, both of Boulder; Helfried O. Rinkleib, Longmont; Ivan D. Walker, Boulder, all of Colo., and John R. Kellner, Big Pine Key, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,954

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242-197

32 Claims



This cartridge storage apparatus includes detents for engaging and supporting a cartridge. The cartridge is comprised of a hub member for receiving a wound web and a shell cover to generally enclose the winding surface of the hub. One end of the hub is hollow and open. The hollow open end of the hub is accessible both when the winding surface of the hub is enclosed within the shell and when the hub is separated from the shell. The cartridge and the hub of the cartridge are both unique in that the inner surface portion of the hub, accessible through the hollow open end, includes a portion that actively grips the detent, that portion including a surface irregularity. The hub member and shell each carry a portion of a locking mechanism which enables them to be releasably locked together in a closed position. The locking arrangement is distinguished by the requirement that a separate tool is normally needed to disengage it when separation of the hub and shell is desired. The invention also includes the combination of a unique cartridge with a record handling system when the cartridge includes a wound record media.



3,825,209

## TAPE RECORDER DRIVING MECHANISM

Eric Mikkelsen, Struer, Denmark, assignor to Baag and Olufsen A/S, Struer, Denmark

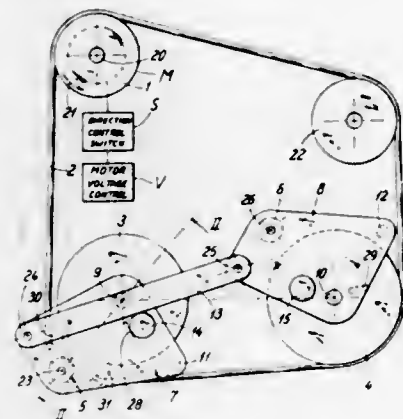
Filed Nov. 27, 1972, Ser. No. 309,917

Claims priority, application Denmark, Nov. 26, 1971, 5795/71

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242-201

12 Claims



A tape recorder drive mechanism comprising a motor driven capstan and motor driven spool carriers operable to selectively cause the tape to be wound up and unwound, respectively, with low speed by normal operation and with high speed by fast forward or rearward winding, characterized by the combination that the capstan is driven by a separate motor and that for driving the spool carriers there is used a single winding motor operable to selectively drive either of said spool carriers with a high or a low moment of rotation depending of the operation condition, whereas said winding motor is electrically reversible and is connected with automatic coupling means operable to establish driving connection between the motor and one or the other spool carrier in accordance with the direction of rotation of the motor, said driving means being established through substantially nonslipping transmission means, said winding motor being adapted to be fed with a higher or lower voltage, respectively, for producing said high or low moment of rotation.

3,825,210

## CARRIER FOR PNEUMATIC TUBE SYSTEMS

Peter Brinkerhoff Weaver, 5 Brushwood Ct., Don Mills, Ontario, Canada

Filed Feb. 8, 1973, Ser. No. 330,490

Int. Cl. B65g 51/06

U.S. Cl. 243-34

9 Claims



The invention relates to a carrier for transporting articles through pneumatic tube systems. The carrier has first and second shells disposed about a longitudinal axis and connected by hinges such that the shells are moved transversely relative to one another when opening and closing the carrier. A pair of ring seals are provided intermediate the ends of the carrier for guiding the carrier through a pneumatic tube system and for limiting air seepage past the carrier. End portions of the carrier are tapered to terminate in bumpers and a pair of latches are coupled to the shells for retaining the carrier in a closed position. A lock is provided for combining with the closed shells to prevent unauthorized opening of the carrier.

tions of the carrier are tapered to terminate in bumpers and a pair of latches are coupled to the shells for retaining the carrier in a closed position. A lock is provided for combining with the closed shells to prevent unauthorized opening of the carrier.

3,825,211

## LASER ROCKET

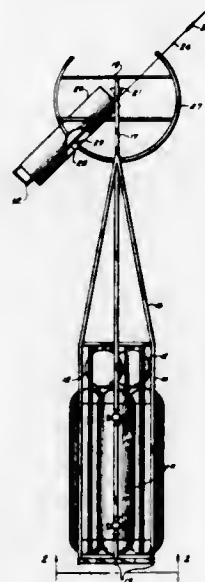
Michael A. Minovitch, Los Angeles, Calif., assignor to Phaser Telepropulsion, Inc., Los Angeles, Calif.

Filed June 19, 1972, Ser. No. 263,987

Int. Cl. B64g 1/00

U.S. Cl. 244-1 SB

13 Claims



This space vehicle carries a vaporizable propellant and energy is transmitted to the vehicle while in space by a laser beam originating on the ground or some other body or satellite. The space vehicle has replaceable propellant tanks and propellant flow from them through a transparent tube on the focal axis of a parabolic cylindrical reflector. A high energy laser beam concentrated by the reflector heats the propellant which then travels through a swivel to a rocket nozzle aligned with the vehicle center of mass. The reflector and tube form an energy gathering assembly that is mounted for pivoting about an axis transverse to the vehicle axis for maintaining alignment with a remote laser station. Several incremental operations of the laser rocket can sequentially boost it to more energetic orbits and eventually to escape velocities. Such a vehicle can be conveniently used as a "tug" for other space vehicles.

3,825,212

## AIRCRAFT HEATING AND VENTILATING SYSTEM

Walter Darges, Wayne, Pa.; John J. Karpis, Newark, Del.; George L. Pettigout, Gradyville, and Walter G. Witbeck, Media, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed July 10, 1973, Ser. No. 377,982

Int. Cl. B64d 13/08

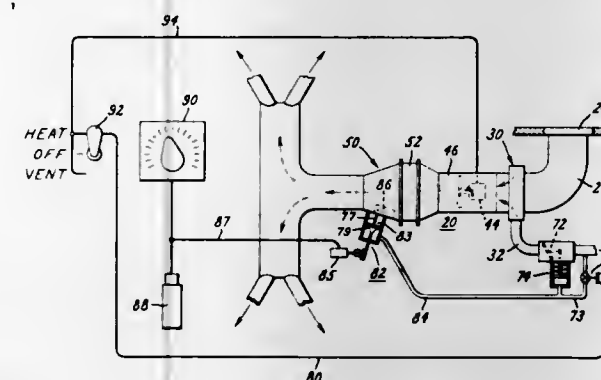
U.S. Cl. 244-118 P

9 Claims

A heating and ventilating system, for use in aircraft, which provides a constant flow of air to the aircraft cabin is described. Ambient air is mixed with bleed air from the compressor stage of a turbine engine. The mixture of ambient and bleed air is propelled into the aircraft cabin by a constant

R.P.M. blower. Prior to entering the cabin the mixed air may pass through a water and particle separator. A suitable control

holder means with stop means to orient the holder in a predetermined position relative to the holder and to securely



system is provided which maintains a pre-selected temperature by varying the amount of bleed air introduced into the system.

3,825,213

RELEASE MECHANISM FOR A SONOBUOY  
ROTOCHUTE ASSEMBLY

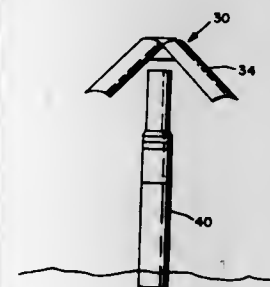
Roger I. Saunders, Hollis, and Edward J. Cloutier, Londonderry, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Mar. 1, 1973, Ser. No. 337,034

Int. Cl. B64d 19/02

U.S. Cl. 244-138 A

15 Claims



A mechanism to effectuate the release of a rotochute assembly from a sonobuoy unit upon impact with the surface of water. The release mechanism comprises an arming device, a moveable inertial catch and associated latch arrangement, and a compressed spring device. When the sonobuoy unit is ejected from an airplane, the arming device is activated and the inertial catch of the release mechanism is now free to move. Upon impact with the water surface, the inertial catch disengages itself from the latch arrangement, the latch arrangement pivots away from the unit in the presence of the released compressed spring device, and the rotochute assembly is free to separate from the sonobuoy unit.

3,825,214

## FLAG HOLDER

Quentin P. Clolli, Rt. 1, Box 110, Miami, Fla. 32570

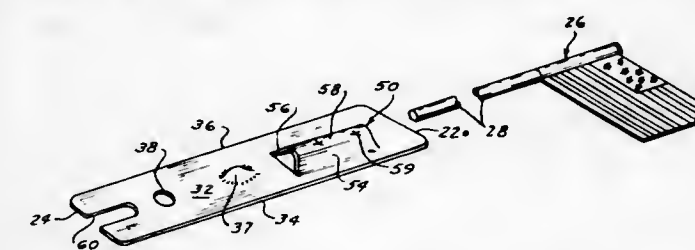
Filed Aug. 16, 1973, Ser. No. 388,990

Int. Cl. F16m 13/02

U.S. Cl. 248-43

4 Claims

An improved flag holder which includes optional means for a quick release attachment in the form of a slot to interconnect to the rear axle of a bicycle or motorcycle or other type of axle for a vehicle and which also includes a through opening adjacent to the slot whereby the flag holder may be more permanently attached to the axle of a vehicle and which includes



hold the same in a fixed anchored position which includes a web and portions deformed out of the plane of the web and defining the holder means and stop means.

3,825,215

## COVER ASSEMBLY

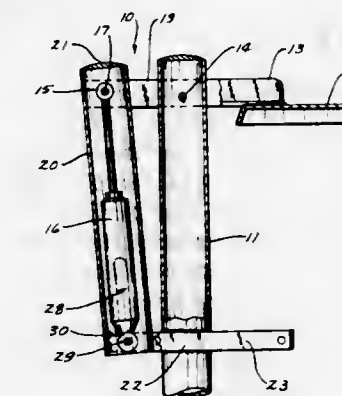
Keith B. Borglum, 218 Loma, Waterloo, Iowa 50701

Filed June 22, 1972, Ser. No. 265,400

Int. Cl. B65d 45/00

U.S. Cl. 248-147

1 Claim



A cover assembly for refuse containers or the like including dampening means adapted to allow the cover to close slowly and automatically from any open position. The cover and dampening device (preferably a telescoping hydraulic cylinder) are connected by pivot means to a post which may be fixed in concrete or ground or may be attached to a base plate.

3,825,216

## FOLDING DISPLAY

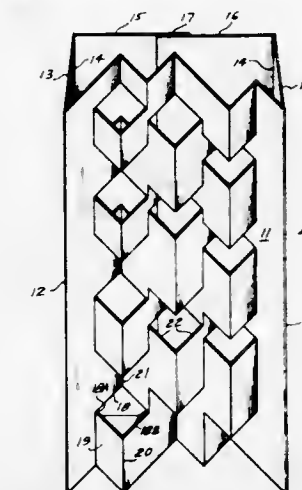
Samuel H. Rodvien, 5400 Yarmouth Ave., Encino, Calif. 91316

Filed Dec. 29, 1972, Ser. No. 319,363

Int. Cl. A47b 97/00

U.S. Cl. 248-174

1 Claim



A screen of alternately oriented accordian folds opens out for display of small objects placed on support points or shelves thereon.



3,825,217

**BRACKETS ATTACHABLE TO AN OUTSIDE BRIDGE GIRDER**

Howard B. Fleming, 89 Pleasant Ave., South Portland, Maine 04106

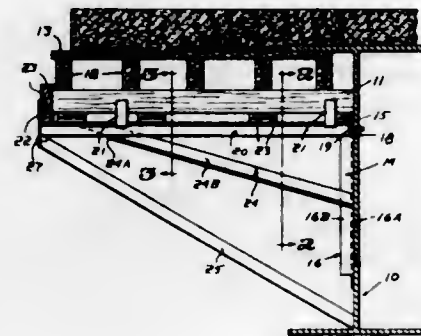
Continuation of Ser. No. 175,500, Aug. 27, 1971, abandoned.

This application Dec. 13, 1972, Ser. No. 314,593

Int. Cl. E04g 3/00; A47g 29/02

U.S. Cl. 248—205 R

2 Claims



A bracket is disclosed that is attachable to an outside bridge girder for supporting the form for a concrete overhang. The bracket includes a T-shaped member whose inner face is flat and whose head is attachable to the web of the girder with said face in contact therewith. The outer face of the member has an outwardly disposed reinforcement extending from its lower end into the head. The inner ends of a support and of a brace are welded to the member in vertically spaced relationship and the outer end of the brace is welded to the support adjacent its outer end which has an end plate having a portion disposed below the support which serves as an anchor for an additional brace.

3,825,218

**PROJECTOR WITH ADJUSTABLE IMAGE REFLECTING MIRROR**

Fritz Krumbeln, Stuttgart-Möhringen, and Hans Lieckfeldt, Stuttgart, both of Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

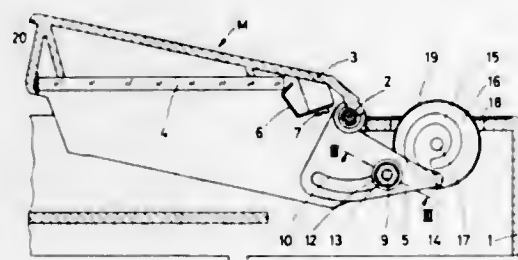
Filed Nov. 27, 1972, Ser. No. 309,650

Claims priority, application Germany, Nov. 25, 1971, 7144352

Int. Cl. G03b 21/28

U.S. Cl. 248—466

16 Claims



A projector wherein the housing supports a mirror which is pivotable from an inoperative position to any one of a number of image projecting positions. The mirror has a projection extending into an arcuate slot provided in a selector which is adjustable relative to the housing about the pivot axis of the mirror by way of a rotary cam. By rotating the cam, the user of the

projector can move the mirror by way of the selector to and from any desired projecting position. The mirror can be yieldably biased against the selector so that it normally shares the movements of the selector but can be pivoted relative to the selector in order to be moved to and from its inoperative position. The selector cannot change the angular position of the cam.

3,825,219

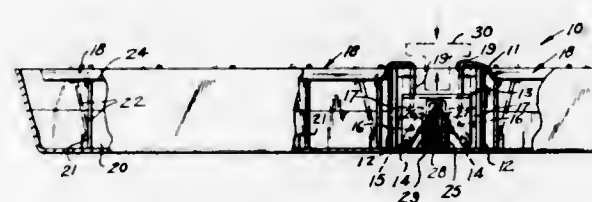
**ONE-HAND OPERATED ICE CUBE TRAY**  
Aaron E. Cummings, 4706 10th Ave., No. D3, Brooklyn, N.Y. 11219

Filed July 13, 1973, Ser. No. 378,973

Int. Cl. B29c 7/00

U.S. Cl. 249—71

5 Claims



This cube tray consists primarily of a pair of parallel spaced apart divider walls running longitudinally of the tray, the divider walls having pivotable crosswise dividers, the combination being moved by means of levers secured to vertical members in which rollers are slideable, the rollers being pivotably secured to the ends of a depressible frame which is returnable by spring and plunger means.

3,825,220

**CONCRETE FORM WORK JOINT MEMBERS**

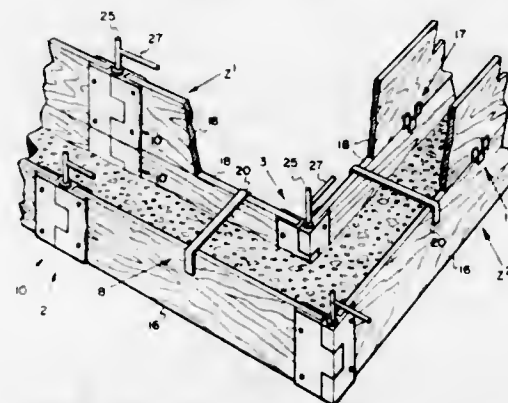
Edwin Schinaltz, 46 Nordale Cres., Toronto 15, Ontario, Canada

Filed Nov. 7, 1972, Ser. No. 304,506

Int. Cl. E04g 11/08

U.S. Cl. 249—194

1 Claim



A removable form for moulding concrete has mortice and tenon type joints permitting adjacent forms to be arranged in a selected one of a three-way relation, with locking bars to secure the joints having a cam lock to retain the locking bar in place. The joints provide a substantially impermeable pouring face, and the locking bar carries a protective loose piece to seal the cam lock against pouring splash.

3,825,221

**VALVES FOR ROASTING APPARATUS AND OTHER APPLICATIONS**

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

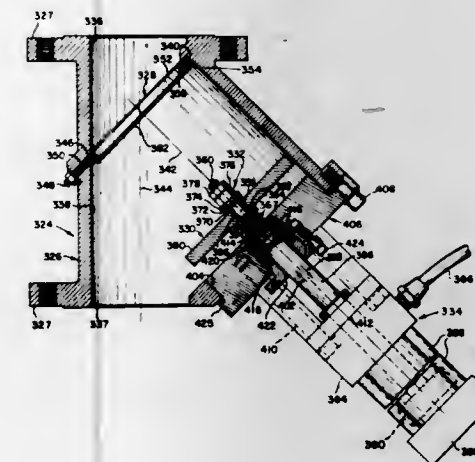
Division of Ser. No. 301,977, Oct. 30, 1972, Pat. No.

3,763,766. This application May 22, 1973, Ser. No. 362,824

Int. Cl. F16k 31/43

U.S. Cl. 251—62

8 Claims



Apparatus for roasting particulate solids which includes a system for heating and circulating a fluid through a roasting vessel and arrangements for supplying material to be processed to and discharging it from the reactor.

3,825,222

**CHARGING PIPE UNION**

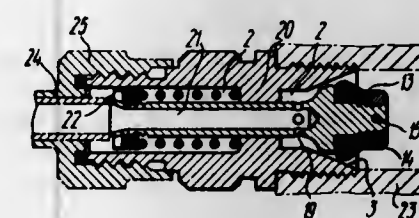
Nina Vladimirovna Petrova, Leningradsky Prospekt 5, kv. 152, Moscow, U.S.S.R.

Filed June 8, 1972, Ser. No. 260,735

Int. Cl. F16l 29/00

U.S. Cl. 251—149.6

1 Claim



A charging pipe union comprising a body with an axial through passage having from the side of an apparatus being charged a tapered seat which is to be covered by a spring-loaded check valve shaped like a truncated cone, the valve being made integral with a pusher located within the passage of the body. An elastic sealing ring, attached to the check valve, is made with a truncated cone shape, having its larger base facing the check valve. The sealing ring is provided with a rounded portion touching the tapered seat under some preloading pressure to assure sealing of the check valve, while a smaller base of the ring is made rigid.

3,825,223

**CONNECTING PLUG FOR TESTING TUBES AND WITH INTERNAL VALVE THEREIN**

William D. Richardson, Palos Heights, Ill., assignor to Tuthill Pump Company, Palos Heights, Ill.

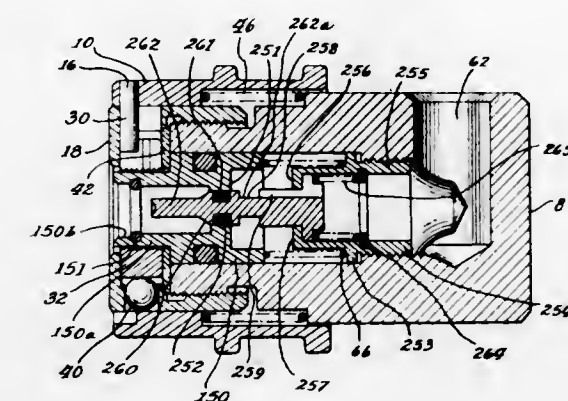
Continuation-in-part of Ser. Nos. 231,332, March 2, 1972, Pat. No. 3,727,952, and Ser. No. , which is a continuation-in-part of Ser. No. 54,288, July 13, 1970, abandoned. This

application Sept. 20, 1972, Ser. No. 291,389

Int. Cl. F16l 37/28

U.S. Cl. 251—149.6

8 Claims



An easily manipulable tube connector for connecting tubing to test equipment and the like wherein the connector has gripping means for gripping a tube therein and an internally movable plunger which is sealed to the tube being tested. The plunger moves axially within the connector when a tube is being sealed thereto and in the course of that movement opens a valve within the plunger for exposing the tube to a pressure passage.

3,825,224

**NEEDLE PLUG COCK**

Roger Remane, Sainte-Colombe, France, assignor to Societe Anonyme "Application Des Gaz", Paris, France

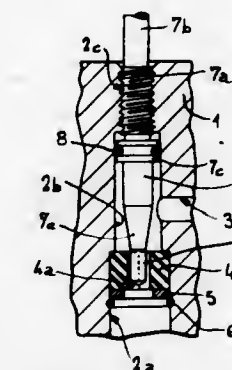
Filed July 5, 1973, Ser. No. 376,517

Claims priority, application France, Oct. 25, 1972, 72.38344

Int. Cl. F16k 47/00

U.S. Cl. 251—205

3 Claims



Needle plug cock with seat made of elastically deformable material such as rubber or elastomers of the same kind, characterized in that the said seat (4) comprises an orifice (4a) having a non-circular cross-section such that under the action of the deformation to which it is subjected by the conical portion (7e) of the needle plug as the said plug engaged further into it, it adapts itself gradually to the circular cross-section of the said portion until it bears against the said portion over its entire periphery.



3,825,225

**MANIFOLD ARRANGEMENT AND PARTS THEREFOR OR THE LIKE**

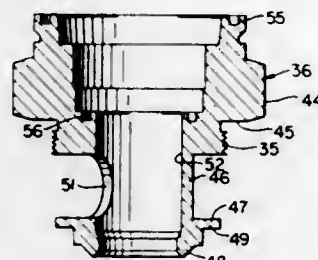
Roy C. Deml, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 219,445, Jan. 20, 1972, Pat. No. 3,744,754, which is a continuation of Ser. No. 24,037, April 2, 1970, abandoned. This application May 16, 1973, Ser. No. 360,657

Int. Cl. F16k 43/00

U.S. Cl. 251-363

10 Claims



A manifold arrangement for a fuel burning apparatus, the manifold arrangement interconnecting a source of fuel to the burner means thereof. A manifold fitting is disposed between the fuel source and the burner means and has passage means therethrough through which the entire fuel flow must pass to reach the burner means. The manifold fitting has a transverse opening therein leading from the exterior thereof to the passage means. A self-contained pressure regulator is received in the opening, the regulator having a housing that closes the opening and intersects the passage means of the manifold fitting in such a manner that the entire fuel flow through the fitting passes through the regulator housing and is thus under the control of the pressure regulator. When the regulator is removed or is not to be included in the arrangement, a plug is utilized to close the opening of the fitting.

**3,825,226  
STAPLE REMOVER**

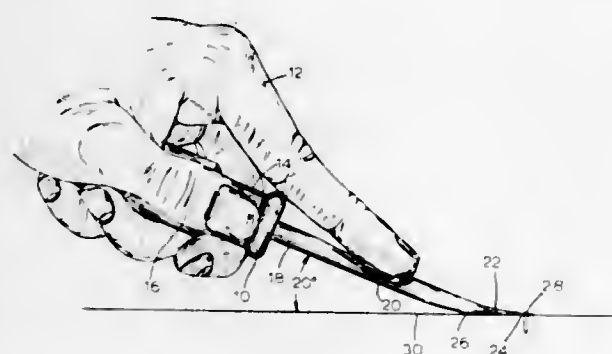
James D. Appleman, 4 Filbert St., Hanover, Pa. 17331

Filed Jan. 18, 1973, Ser. No. 324,765

Int. Cl. B25c 11/00

U.S. Cl. 254-28

1 Claim



A staple remover having handle and a shank terminating in a sharply tapered tip which at its extremity is substantially semi-circular in plan view to facilitate insertion beneath the cross member of an inserted staple, the lower surface of the tapered tip portion being gradually curved to form a progressive fulcrum engageable with an article from which a staple is being removed by rocking said curved surface thereon. The upper surface of the extremity of said tip portion also is offset downwardly to provide a stop shoulder for engagement by the cross member of a staple to limit insertion of said tip and also increase the sharpness of said extremity and thereby facilitate the insertion thereof beneath such cross member of a staple.

3,825,227

**TENSIONING DEVICES**

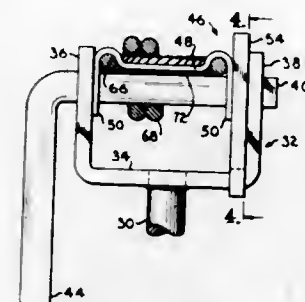
Rex G. Whitehill; Gerald D. Berchenbriter, both of Shennadoah, Iowa, and Winton D. Jensen, Leawood, Kans., assignors to Wickers Corporation, Saginaw, Mich.

Filed Aug. 16, 1972, Ser. No. 281,175

Int. Cl. A63b 61/04

U.S. Cl. 254-161

15 Claims



A device for tensioning cables, straps or like flexible members employed in such applications as the anchoring of mobile homes against wind loads. A wind-up shaft receives the cable or strap and, after tensioning, is held against rotation by a locking plate that is shifted transversely of the shaft to a locking position engaging the shaft within an opening in the plate. For initially attaching the end of the flexible member to the shaft, a retainer thereon provides both eyes for a cable and a slot for receiving a strap in order to accommodate either.

3,825,228

**WIRE STRETCHER**

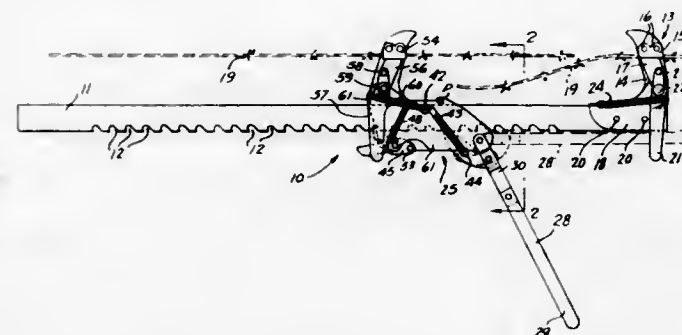
William J. Greutman, Box 234, Miller, Nebr. 68858

Filed May 1, 1973, Ser. No. 356,154

Int. Cl. B66f 1/04

U.S. Cl. 254-71

3 Claims



A wire stretcher including an elongate notched bar having a travelling wire gripper and a stationary wire gripper associated therewith. The travelling wire gripper utilizes a pair of dogs cooperating with the spaced notches on the bar to move the travelling wire grippers step by step along the bar. A lever connected with one of the dogs is straight and can be folded into parallel relation with the bar with its dog disengaged from the notches. In this position the second dog can then be also disengaged so that the travelling wire gripper can be moved to any desired position along the bar.

3,825,229

**COMBINATION HANDRAIL AND WALL PROTECTOR**  
Gary F. Bartlett, Muncy, Pa., and Patrick L. Zampetti, Cranford, N.J., assignors to Construction Specialties Inc., Cranford, N.J.

Filed Dec. 7, 1972, Ser. No. 312,849

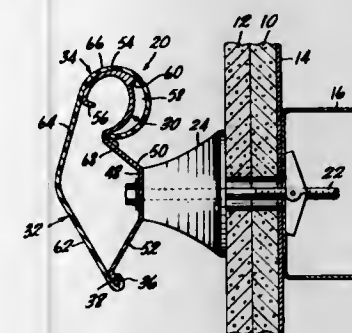
Int. Cl. E04h 17/14

U.S. Cl. 256-59

25 Claims

A handrail comprises an elongated, substantially rigid retainer and an elongated moderately resilient trim piece

received on the retainer, the retainer and trim piece together defining an elongated hollow unit. The trim piece is made of a durable, impact-resistant, resilient material and is mounted on the retainer in a manner affording limited and controlled deformation and displacement for absorption of energy upon impacting of the trim piece by some object. Nonetheless, an outwardly convexly curved handgrip portion on the trim piece



is supported and is in engagement with a correspondingly curved handgrip portion of the retainer so that the retainer imparts substantial rigidity to the handgrip portion of the trim piece. The retainer and trim piece are shaped in cross-section and provided with appropriate retaining structure such that the trim piece may be snapped into place on the retainer after the retainer has been installed.

3,825,230

**SAFE GEOMETRY NUCLEAR FUEL POWDER BLENDER**

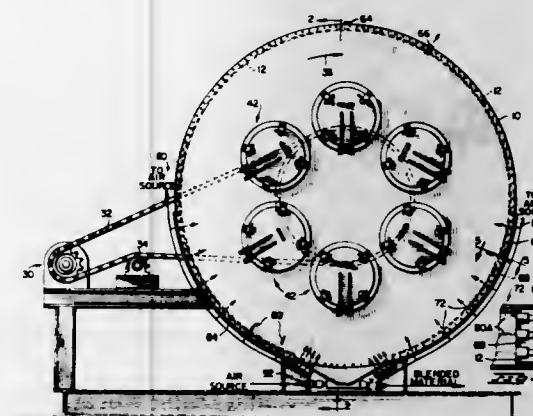
James A. Frye, Oklahoma City, and Ralph B. Morton, Del City, both of Okla., assignors to The Boardman Company, Oklahoma City, Okla.

Filed May 4, 1972, Ser. No. 250,130

Int. Cl. B01f 9/06

U.S. Cl. 259-3

10 Claims



A safe geometry nuclear fuel powder blender of a tumble type having unique and improved concepts of loading and unloading, powder mixing pins, access hatches, and drive means. The powder is fluidized by an appropriate gas and subjected to a rocking motion to facilitate flow to a discharge mechanism of a vacuum pickup or screw conveyor type. Structural integrity and safe and easy operating access hatches are provided.

3,825,231

**TWIN SCREW CONTINUOUS PROCESSING MACHINE**

Archie Rae McFarland, Salt Lake City, Utah, assignor to Beehive Machinery Inc., Salt Lake City, Utah

Filed July 24, 1972, Ser. No. 274,574

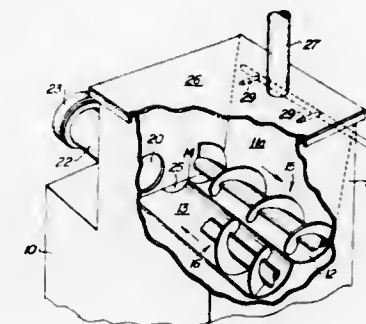
Int. Cl. B01f 7/04, 7/08

U.S. Cl. 259-41

2 Claims

A pair of conveyor screws located in side-by-side relationship on fixed, substantially horizontal axes at the bottom of a

vessel such as a feed hopper are adapted to be rotated, preferably toward each other, to provide mixing action, and are preferably located peripherally of such bottom to provide a peripheral conveying path to a discharge outlet. One of the screws serves to transfer material to the other screw whose discharge end is substantially coincident with the discharge outlet of the vessel. In material-processing equipment, wherein the vessel constitutes a feed hopper, a passage leads from the discharge outlet and communicates with material-processing mechanism, such as a grinder, meat or fish



deboner, etc. A pump may be interposed in such passage for advancing the discharge material from the hopper under pressure to the processing mechanism. A preferred aspect of the invention is to provide respective troughs at the bottom of the hopper for the conveyor screws, and to provide a material-transferring means at the discharge end of the transfer screw and a by-pass from the discharge end of the trough of the discharge screw to the trough of the transfer screw, so the material will idly circulate within the vessel if the discharge outlet is obstructed for any reason.

3,825,232

**APPARATUS FOR TRANSPORTING AND MIXING CONCRETE**

Piercelestino Pecorari, Via Pagliani, 41100 Modena, Italy

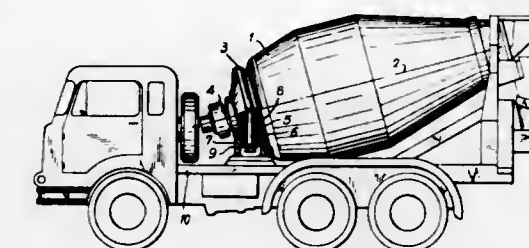
Filed Dec. 14, 1972, Ser. No. 315,172

Claims priority, application Italy, Dec. 16, 1971, 40155/71

Int. Cl. B28c 5/20

U.S. Cl. 259-177 R

8 Claims



An apparatus for transporting and mixing concrete. The apparatus includes a vehicle having an elongated chassis which terminates in a rear end, and situated over this chassis is a rotary concrete mixer which has a rear discharge end at the region of the rear end of the chassis and a front end distant from its rear discharge end. A supporting structure supports the rotary concrete mixer at its front end for rotary movement about a given axis of rotation, and this supporting structure is interconnected with the chassis by way of a universal joint structure which gives the concrete mixer the capability of moving in all directions with respect to the chassis. A frictional resistance is provided at the universal joint structure to frictionally resist movement of the concrete mixer with respect to the chassis and the universal joint structure to a given extent, so that in response to forces transmitted to the concrete mixer from the chassis it will be possible for the concrete mixer to displace itself with respect to the chassis when the forces are great enough to overcome the frictional resistance.



3,825,233

**CARBON BLACK PELLETER**

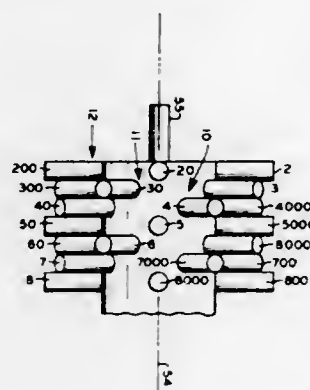
Eulas W. Henderson, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 14, 1972, Ser. No. 225,981

Int. Cl. B01f 7/08, 7/02

U.S. Cl. 259—182

3 Claims



A carbon black pelletter in which the center lines of the pins on the shaft are spaced apart, when viewed in relation to the longitudinal axis of the shaft, a distance not greater than one pin diameter.

3,825,234

**MACHINE FOR DRAWING SUGAR BASED PLASTIC MATERIAL**

Giovanni Ruffinatti, Glavento, Italy, assignor to S.A.S. Giovanni Ruffinatti &amp; Co., Turin, Italy

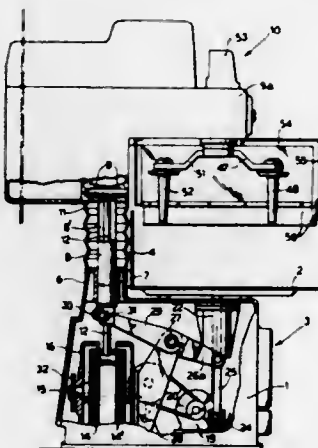
Filed Apr. 9, 1973, Ser. No. 349,546

Claims priority, application Italy, Dec. 22, 1972, 71058/72

Int. Cl. B01f 7/04

U.S. Cl. 259—186

5 Claims



A machine for treating sugar based material in the plastic state by pulling or drawing and folding it to incorporate air into the material and to impart a fibrous silky appearance. The machine comprises a base carrying a table upwards from which extends a central post which is retractable below the table, and a head which projects over the table and carries two arms which are pivoted at one end and which have downwardly extending pins at the other end; the arms are positioned and shaped such that when they rotate about their pivoted ends the pins describe circles which overlap and which encircle the upstanding post without interfering with it or each other but such that when the material to be treated is placed in a central position on the table both the pins and the post can extend into it.

3,825,235

**METHOD AND APPARATUS FOR PROCESSING PLASTICIZABLE MATERIAL**

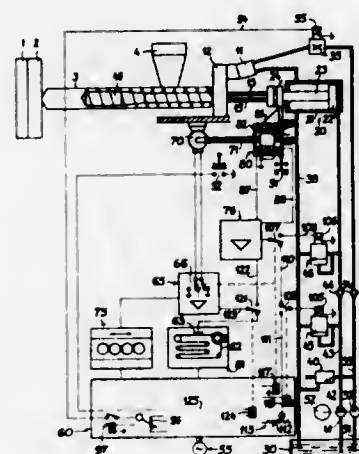
Walter Schwertfeger, Im Scheln, 9244 Niederuzwil, and Bruno Stillhard, Wildeggstrasse 38, 9000 St. Gall, both of Switzerland

Division of Ser. No. 42,987, June 3, 1970, abandoned. This application June 29, 1972, Ser. No. 267,451

Int. Cl. A21c 1/06

U.S. Cl. 259—191

16 Claims



Apparatus for processing plasticizable material by extrusion from a die comprises a processing tool, such as a rotatable and reciprocable screw, which is supplied with power in accordance with a predetermined processing program. The desired and actual values of the movement of either the processing tool or the plasticized material processed by the tool are compared, as a function of time, along certain sections of the path of movement. The movement of the processing tool is regulated in accordance with differences between the compared desired and actual values. The apparatus is hydraulically operated under electrical, electromechanical or electrohydraulic controls. The desired values of the movement may be stored, for example, on an endless magnetic tape and supplied as pulses to comparing means which also receive pulses corresponding to the actual movement of the processing tool or the material plasticized by the tool. A forward and backward counter is included in the apparatus. In one embodiment of the apparatus, digital-analog converters are used.

3,825,236

**MACHINE FOR THE PREPARATION AND EXTRUSION OF PLASTICS**

Jurgen Hussmann, Gelsenkirchen, and Dieter Kurth, Bochum, both of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

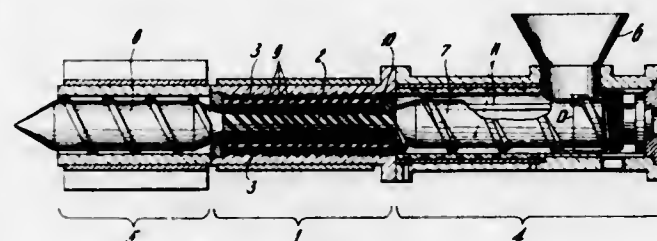
Filed Nov. 20, 1972, Ser. No. 307,803

Claims priority, application Germany, Nov. 24, 1971, 2158246

Int. Cl. B29b 1/10

U.S. Cl. 259—191

10 Claims



The machine includes a planetary roll extruder, a single-screw feeding device in advance of the extruder and a single-

screw extrusion press following the extrusion. The feeding device includes a cylinder and a feed hopper, and the feeding device, the extruder and the extrusion press are combined by having a common shaft extending therethrough. The common shaft, in the range of the feeding device and of the extrusion press, is designed as a screw shaft and, in the range of the planetary roll extruder, is designed as a central or "sun" shaft. The feeding device is constructed as a feed press, and at least one of the planetary spindles of the extruder is axially fore-shortened relative to the other planetary spindles to form a revolving receiving chamber for the material supplied by the feed press. The feed press is constructed to have a feed performance exceeding the receiving capacity of the planetary roll extruder and thus of the single-screw extrusion press. Preferably every other planetary spindle of the extruder is axially fore-shortened to form a receiving chamber.

3,825,237

**FUEL FEEDING & CHARGE FORMING APPARATUS**

Tajzo Aoyama, Tokyo, and Katsuya Kamosawa, Yokosuka, both of Japan, assignors to Nippon Carburetor Co. Ltd., Tokyo, Japan

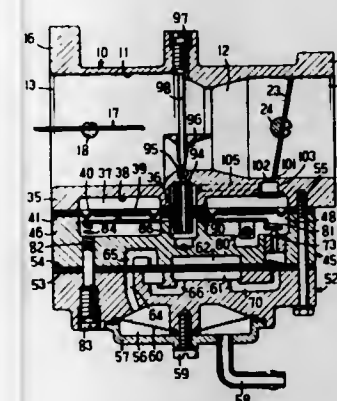
Filed Nov. 22, 1971, Ser. No. 200,890

Claims priority, application Japan, Oct. 24, 1970, 45-105982

Int. Cl. F02m 17/04

U.S. Cl. 261—35

4 Claims



A carburetor and fuel feeding arrangement for internal combustion engines which includes a substantially horizontally extending mixing passage with venturi and a fuel chamber located below said passage. A diaphragm constitutes an upper wall of the fuel chamber and is adapted to operate a fuel inlet valve. The diaphragm also forms a lower wall of a chamber which communicates with the atmosphere. A main fuel discharge orifice is positioned substantially on the center line of the diaphragm. A slow fuel passage branches from a fuel passage connecting the fuel chamber and the orifice and communicates with secondary orifices. Means is provided for discharging into the fuel passages the vapor generated when the apparatus is tilted to extreme positions or inverted. Means between the main fuel passage and the slow fuel passage is provided for preventing the flow of air from the main orifice to the secondary orifices during idling or slow speed motion of an engine.

3,825,238

**OVERFLOW TYPE CARBURETTOR**

Yoshio Nishihara, Atsugi, and Isamu Ohashi, Odahara, both of Japan, assignors to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1972, Ser. No. 302,378

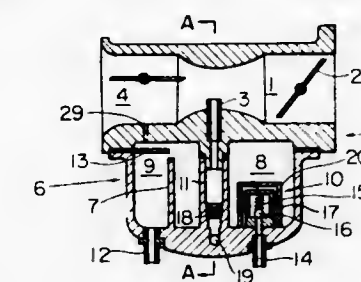
Claims priority, application Japan, Oct. 10, 1971, 46-90086

Int. Cl. F02m 17/06

U.S. Cl. 261—36 A

13 Claims

An overflow type carburettor provided with fuel supply valve which closes the fuel inlet of the carburettor when the fuel supply pressure is not applied. Further the carburettor



may be provided with a fuel channel which communicates with the lower end of the fuel feed duct leading to the fuel spray nozzle and the bottom of the fuel well of the fuel

chamber. This carburetor is free from leaking of fuel even when the stopcock of the fuel supply duct is left open, and provides stabilized engine operation even when the vehicle is driven in an extremely inclined position.

3,825,239

**SPARK-IGNITION INTERNAL COMBUSTION ENGINE CARBURETORS**

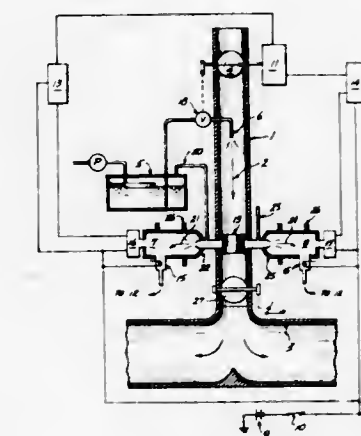
Eldred A. Rice, 905 163 Ave., Bellevue, Wash. 98008

Filed Aug. 21, 1972, Ser. No. 282,248

Int. Cl. F02m 7/16

U.S. Cl. 261—50 R

7 Claims



A carburetor for spark-ignition internal combustion engines in which the desired fuel-air mixture is maintained by electronically comparing the temperatures of combustion of two sampling burning jets. One sample is enriched with pure fuel vapor, while the other sample is diluted with pure air. The combustion temperatures of both jets are sensed by electronic means and a constant temperature difference between them is maintained by regulating the fuel-air mixture. The mixture regulation is accomplished by electro-mechanical means.

3,825,240

**DEVICE FOR MAKING NODULAR CAST IRON**

Hans Lustenberger, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Oct. 2, 1972, Ser. No. 294,273

Claims priority, application Switzerland, Oct. 5, 1971, 14443/71

Int. Cl. C21c 7/00

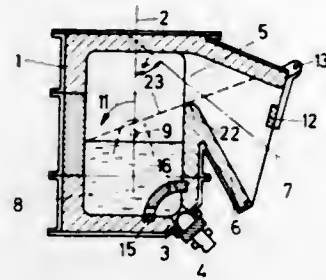
U.S. Cl. 266—34 T

4 Claims

A device for making nodular cast iron with nodular graphite by introducing metallic magnesium into an iron-carbon melt, includes a drum-shaped treatment vessel with a longitudinal axis. The vessel has an opening for charging and discharging the melt and a chamber is formed within the vessel for supplying magnesium into the melt. Disposed around the opening in



the vessel is a collar which extends outwardly from the vessel and the axis of the collar is positioned at an acute angle to the longitudinal axis of the vessel. Further, as the axis of the collar extends outwardly it is inclined toward the opposite end of the vessel which contains the charge chamber. The treatment vessel is pivotally displaceable between three positions, a filling position, a treatment position, and a discharging position.



When the vessel is in the filling position its longitudinal axis is horizontal, while in the other two positions its longitudinal axis is approximately vertical. In the filling position, the vessel opening and the charge chamber are located above the longitudinal axis. In the treatment position the charge chamber is located below the opening and their positions are reversed in the discharging position.

3,825,241

#### APPARATUS FOR INTRODUCING GAS TO HOT METAL IN A BOTTOM POUR VESSEL

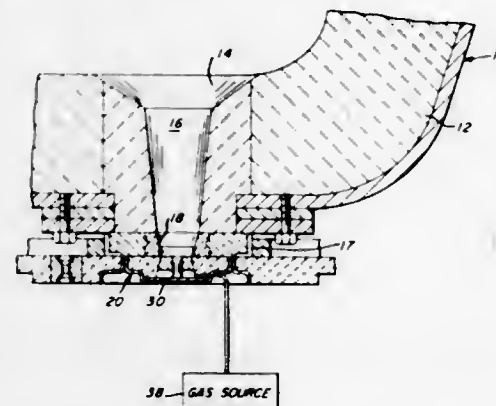
James T. Shapland, Wilkins Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 409,834

Int. Cl. F27d 3/14

U.S. Cl. 266—38

11 Claims



A sliding gate apparatus for controlling the pouring of hot metal from a bottom pour vessel into a continuous casting mold is disclosed. The gate includes a permeable refractory block positioned beneath the vessel pouring opening when the gate is in the active position. The permeable plug has a low permeability center, thus any gas introduced to the hot metal through the plug will tend to flow near the sides of the vessel opening.

3,825,242

#### APPARATUS FOR DIRECT MELT SYNTHESIS OF INTERMETALLIC COMPOUNDS

Wilson P. Menashi, Lexington; Joseph F. Wenckus, Needham, and Roger A. Castonguay, Salem, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 169,315, Aug. 5, 1971, Pat. No. 3,777,009.

This application May 30, 1973, Ser. No. 365,135

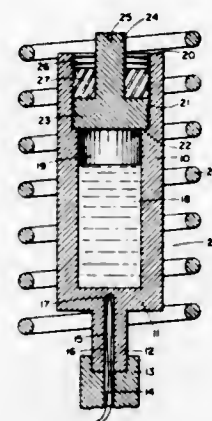
Int. Cl. F27b 14/10

U.S. Cl. 266—39

16 Claims

Method and apparatus for the melt synthesis of intermetallic compounds from metal components, at least one of which

is highly volatile. The metal components are placed in a reaction vessel which is sealed by a liquid sealant in combination with a mechanical seal prior to heating the reactants to a temperature at which one or more of the reactants develops an appreciable vapor pressure. The atmosphere surrounding the



reaction vessel is pressurized to a pressure above the maximum vapor pressure developed by the reactants during the melt synthesis which is accomplished by heating the reactants. The combination of mechanical and liquid seal is of a character to permit diffusion by high-pressure gas through it.

3,825,243

#### MECHANICALLY ACTUATED HYDRAULIC VEHICLE LEVELING SYSTEM

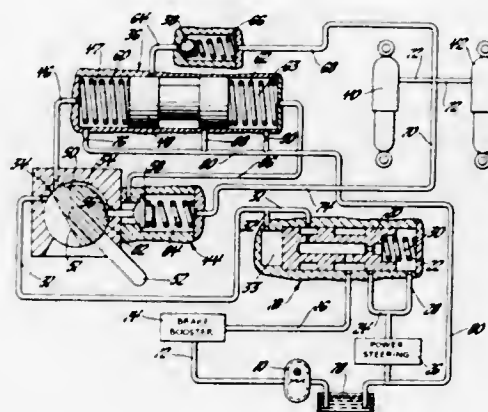
Ralph D. Unterborn, Dayton; Roy C. Bodem, and Joseph W. Wanner, both of Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1972, Ser. No. 310,678

Int. Cl. F16f 5/00

U.S. Cl. 267—65 D

3 Claims



A vehicle hydraulic leveling system utilizing pressurized fluid supplied by an automatic transmission pump having a sump, the fluid being automatically supplied to leveling devices maintaining a normal constant height between sprung and unsprung masses. The fluid pressurized by the transmission pump is first supplied to a brake booster assembly and then is applied to a flow divider assembly which regulates flow between the leveling system and a power steering fluid circuit. If the vehicle height is normal or above normal, flow to the leveling system is blocked, the flow divider being biased directing 100 percent of the flow to the power steering system. If the height is below normal, the leveling system is automatically connected in fluid communication with the flow divider which directs approximately 10 percent of the flow to the leveling system. The pressurized fluid in the leveling system raises the leveling devices until the normal height is reached whereupon a control valve responsive to the height, moves blocking flow to the leveling devices. When the vehicle height

is above normal, the control valve is mechanically moved mechanically actuating an exhaust valve discharging pressurized fluid from the leveling devices to the pump sump until the normal height is re-established.

3,825,244

#### HYDRAULICALLY LOCKABLE LIFTING DEVICE

Fritz Bauer, Nurnberg, Germany, assignor to Suspa Federungs-technik GmbH, Altdorf b. Nurnberg, Germany

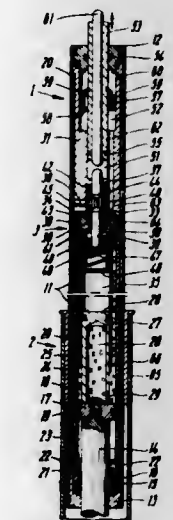
Filed Dec. 29, 1972, Ser. No. 319,751

Claims priority, application Germany, Dec. 28, 1971, 2164943

Int. Cl. F16f 9/18

U.S. Cl. 267—124

9 Claims



A hydraulically lockable lifting device particularly adapted for height adjustment of tables comprising a gas spring in which a piston mounted in a piston rod and acting against compressed gas travels in a tube which is sealed with respect to the outside, wherein both sides of the piston are connected by an openable passage that connects chambers filled with an incompressible medium and a pump for pumping the incompressible medium from one chamber into the other.

3,825,245

#### WORKPIECE CHANGER MECHANISM FOR A MACHINE TOOL

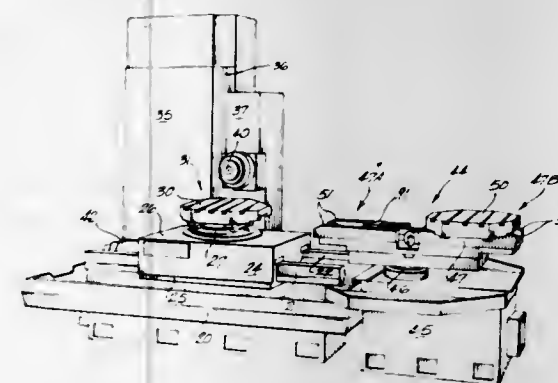
John G. Osburn, Milwaukee, and John J. Schachte, Wauwatosa, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Apr. 24, 1972, Ser. No. 246,827

Int. Cl. B23q 3/08, 1/06; B65q 47/04

U.S. Cl. 269—30

9 Claims



This invention relates to a work changing mechanism comprising a plurality of separate work receiving pellets, a working station for receiving one pallet for performing a working operation, and a plurality of storage stations including one

empty storage station. A plurality of separate pallet securing means are associated with the storage stations, and are separately extensible relative to the working station. One of the securing means is operable to releasably retain a pallet in a storage station for selective interchange with a pallet supporting a workpiece for the performance of an operation in the working station. Another of the securing means in a storage station is empty and is selectively operative to bodily retract the pallet then in the operating station at the completion of the operation performed on the workpiece carried by that pallet. Retraction of the pallet from the operating station to the storage station by the empty securing means, is accomplished by the other securing means bodily interchanging the stored pallet in position in the now empty operating station.

#### ERRATUM

For Class 269—217 see:  
Patent No. 3,825,117

3,825,246

#### GATHERING MACHINE AND CONTROL THEREFOR

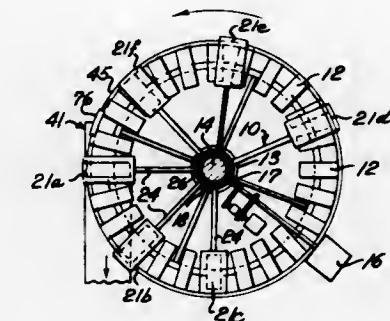
Frederick J. Elia; Donald C. Brothers, both of Easton; Clewell Hofschild, Saylorsburg, and Robert A. Bryson, Easton, all of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Apr. 5, 1971, Ser. No. 131,257

Int. Cl. B65h 39/02

U.S. Cl. 270—58

15 Claims



Gathering machine in which a gathering station and feed stations are moved relatively to each other to feed items in sequence to the gathering station. If a feed station misses a feed, downstream stations for feeding the sequence are shut off until the group is again positioned to receive the missed item of the sequence. Feeding of the sequence is then reinitiated. When a station feeds double items at a rate greater than a predetermined rate, a control operation is performed.

3,825,247

#### ROTARY GATHERING MACHINE

Victoriano Fernandez-Rana, Easton, and Henry R. Mebus, Nazareth, both of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Mar. 8, 1973, Ser. No. 339,144

Int. Cl. B65h 39/02

U.S. Cl. 270—58

11 Claims

A signature gathering machine includes a signature gatherer conveyor. A plurality of hoppers are spaced along the gatherer conveyor and are adapted to receive signatures therein. Associated with each hopper is a means for removing signatures from the hopper and conveying the signatures to the gatherer conveyor. The means which removes and carries the signatures includes a drum having a pair of grippers which rotate about an axis transverse to the direction of movement of the signature conveyor and which release the signatures in the direction of movement of the gatherer conveyor. The gatherer



conveyor has a plurality of pins projecting therefrom which engage signatures and move the signatures past the hoppers to a subsequent handling station. Adjacent pins are spaced apart a distance which is less than the distance between the hoppers and the grippers on adjacent hoppers are dephased with respect to each other. Each hopper includes a separator having a disc which separates the signatures from the hopper so as to be gripped by the grippers. The separator may be operated at either twice the speed of the grippers or at the same speed as the grippers.

In one mode of operation of the machine, the separator disc operates at a speed to separate two signatures per each revolution of the gripper drum and both grippers on the drum convey signatures to the gatherer conveyor. The spacing between pins on the signature conveyor is less than the spacing between hoppers and the gatherer conveyor speed is less than



gripper speed. An individual signature is dropped from each hopper into each pocket defined by adjacent pins on the gatherer conveyor. This operation enables relatively short signatures to be handled at either a very high output rate of books per minute (one-third more than conventional), or for the standard output of books per minute enables the signatures to be handled and collected at a slower speed (one-third less than if the units were not dephased).

In another mode of operation of the gatherer, the separator disc is operated to separate one signature per each revolution of the gripper drum and the gripper drum and the gatherer conveyor are operated in the same speed relationship as in the first mode. In this mode of operation, each hopper deposits signatures in alternate pockets on the conveyor. The signatures deposited from adjacent hoppers may be the same signature so that every pocket on the signature gatherer conveyor receives the same signatures, or may be different signatures to provide different completed books.

3,825,248

## SINGULATOR DEVICE FOR LETTER MAIL

Lindsay C. Friend, 3352 Walnut St., Camp Hill, Pa. 17011

Filed Sept. 7, 1972, Ser. No. 286,909

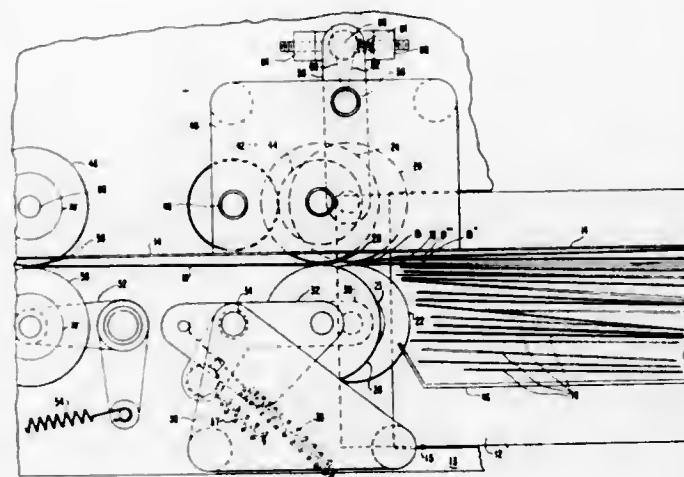
Int. Cl. B65h 3/52

U.S. Cl. 271-10

5 Claims

The singulator device has a flat conveyor belt for edge-feeding a continuous supply of letter mail pieces, having their address sides facing in the same direction and extending axially of said belt on their top edges in random endwise overlapping sequence on said belt between converging vertical guide walls, for funneling said mail pieces toward the nip of a first pair of rollers with high friction material on their peripheries, one of the rollers being driven forwardly through a slip clutch to pass the letter mail singly between the rollers and thereby frictionally drive the other roller against its reverse torque drive applied to it by a friction clutch, so that this roller will move back any overlapping letters that might enter the nip on its side of the passing letter which is next to said forwardly driven roller until said letter has cleared the nip, there being another

set of at least one similar pair of rollers having their nips spaced slightly downstream from that of the first pair. One of the rollers in each pair of the second set may be an idler roller biased resiliently against the other so as to accommodate varying thicknesses of mail passing therebetween. The forwardly driven roller(s) in this set may be driven at a somewhat higher speed to pull the mail pieces which reach their nips through the first pair of rollers, which are thus driven at the higher speed as permitted by their respective slip clutches. The forwardly driven roller of the first pair is furthermore mounted on a lever extending substantially normally to the path of the mail pieces, so that this pull causes the lever to shift into a "stop" position, braking the slip clutch drive to the roller and



thus causing the roller to hold back any overlapping mail which may tend to enter the nip on the corresponding side of the piece being pulled therethrough. When this piece passes the nip, the lever is allowed to shift back to its normal "run" position by reason of a return spring biasing it thereto, and this roller then resumes its single feed to the nips of the pairs of the second set of rollers.

A third pair of rollers spaced further downstream not more than the length of the shortest piece of mail that might be fed to this device, and the drive roller of this pair is positively driven at a further increased speed to pull the piece through the lower speed rollers to secure a positive output of single letter mail with a fixed spacing between pieces so that they may be properly fed to a cancelling machine.

3,825,249

## SHEET DISPENSER

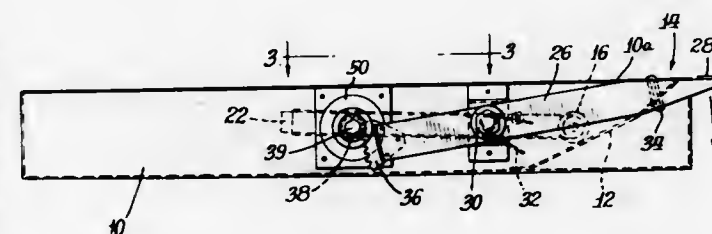
Robert E. Zimmer, Niles, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Feb. 12, 1973, Ser. No. 331,916

Int. Cl. B65h 3/06; F16d 13/00; F16h 27/02

U.S. Cl. 271-109

1 Claim



A container or drawer for storing a stack of sheets, and feeding sheets one-by-one from the stack, includes a feed mechanism comprising a manual lever swingable between the top and bottom boundary planes of the drawer and mechanically connected to feed elements resting on the paper stack through a speed augmenting gearing and a one-way clutch.

3,825,250

## MATERIAL EDGE ALIGNING DEVICE

Roy E. Miller, Mechanicsburgh, Pa., assignor to Blue Bell, Inc., Greensboro, N.C.

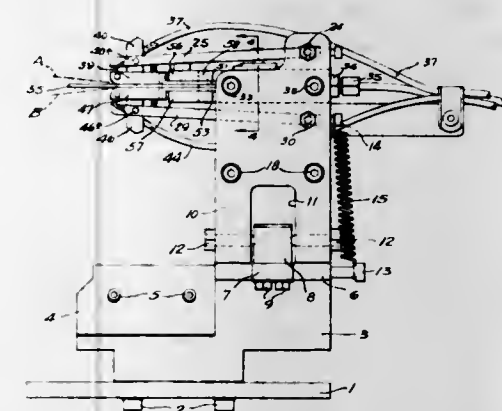
Continuation of Ser. No. 11,183, Feb. 13, 1970, abandoned.

This application Dec. 28, 1971, Ser. No. 213,177

Int. Cl. B65h 9/04

U.S. Cl. 271-59

17 Claims



The present apparatus is for guiding an edge of the marginal portion of material or the edges of a pair of superposed pieces of material being fed along guiding members so that the edges are given a desired direction and in the case of superposed pieces of material the edges are in alignment and adjustably supported pneumatic means moves the material against said guiding members during the feeding and guiding thereof.

3,825,251

## SYSTEM FOR CONTROLLING THE FEED OF DOCUMENTS INTO AND ALONG A DOCUMENT TRANSPORT PATH

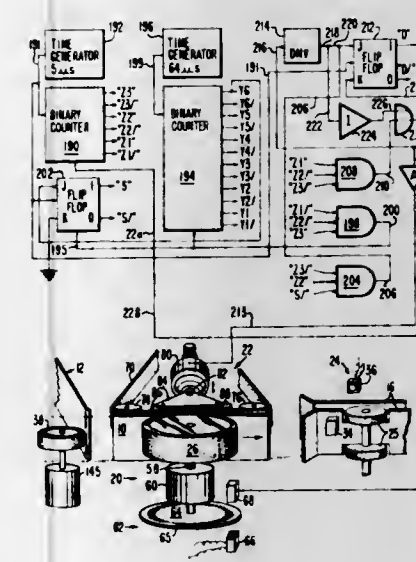
Jack Beery, Farmington, and Gerald A. De Carteret, Detroit, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,919

Int. Cl. B65h 3/52

U.S. Cl. 271-258

57 Claims



Disclosed is a control system for document transport mechanism including provisions for controlling the feeding, spacing, and throughput of documents, such as bank checks and the like, into and along a guideway leading from a hopper to discharge equipment which may be a stacker or a series of sorting pockets. The system is capable of operating purely synchronously, purely asynchronously or as a hybrid of the

same. If purely synchronous operation is desired, the longest document by its length will determine the constant and maximum throughput rate for all other documents. For purely asynchronous operation, each document by its own length determines its own throughput rate. For hybrid operation, a standard document length can be arbitrarily selected whose own throughput rate will be the maximum and also the constant throughput rate for all other relatively shorter documents, and all documents relatively longer than the standard length will determine their own throughput rate by their length which will be less than the standard document's throughput rate.

The system further includes speed retarding means that acts in a digital manner for close control of document speed in the guideway and effects a very efficient separation of overlapping documents due to the high acceleration-deceleration forces that are quickly built up and impressed against documents passing through. Additionally, the system includes various rollers disposed serially along the guideway having speed differentials which together with any subsequent documents length will determine the degree of interdocumental spacing between successive documents. More specifically, the document speed control instrumentality is comprised of a document feed roller disposed adjacent to the inlet of the guideway and a pressure actuator for applying pulsating forces on the documents as they are engaged and impelled by the drive roller into the guideway, such pressure pulses additionally acting to retard the speed of the drive roller to an acceptable document throughput rate.

3,825,252

## SPRING-TYPE EXERCISER

Friedrich Geiger, Burgstrasse 1, 8901 Todtenweis, Germany

Filed Dec. 29, 1972, Ser. No. 319,167

Claims priority, application Germany, Dec. 30, 1971, 2165488; June 5, 1972, 2227239

Int. Cl. A63b 21/00, 23/02

U.S. Cl. 272-82

7 Claims



Two handles are attached to a bar which is suspended by a plurality of resilient members from an overhead support and which is within reach of an erect person who may grip these handles to perform oscillatory or gyrating body motions at a natural frequency determined by the spring constant and body mass; the feet of the user may be positioned on a spring-centered mobile base that is reciprocally mounted. The bar may be hollow to receive therethrough a cord made up of the resilient members. The resilient members may be attached at the respective ends of the bar. The bar may also be secured by resilient members at points on the overhead support that are spaced apart by a distance greater than the length of the bar.



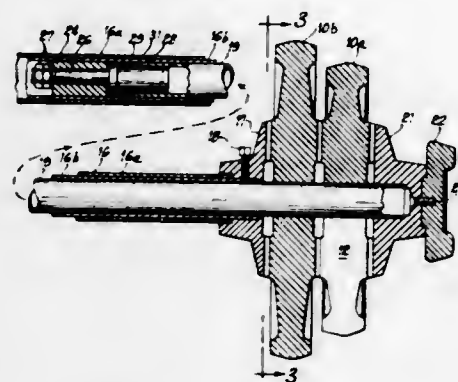
### 3,825,253 BARBELL WITH REMOVABLE WEIGHTS

Henning J. Speyer, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Division of Ser. No. 267,696, June 29, 1972, Pat. No. 3,771,785. This application Aug. 8, 1973, Ser. No. 386,532  
Int. Cl. A63b 11/02

U.S. Cl. 272-84

7 Claims



A barbell exercising device having weights adapted for mounting on a barbell. Each weight has a circular shape and a centrally disposed, axially aligned bore formed therein, and includes walls defining a radial slot extending from the bore to the periphery of the weight with the walls defining the slot being disposed at an angle with respect to the axis of the bore. The radial slot in each weight allows the weight to be mounted on a barbell and demounted therefrom without removing a collar or other weight retaining device by passing the barbell through the canted slot of the weight and then aligning the barbell with the axially aligned bore of the weight. A barbell is provided for supporting the weights which includes a hollow rod having flanges affixed to each of its terminal ends and a pair of bar members. Each bar member is partially, telescopically insertable into the rod and has locking means affixed thereto for retaining each bar member in the hollow interior of the rod and retarding movement of the bar member axially of the rod. Protuberances formed on flanges positioned on the barbell, the rod and a weight form castellated mating surface portions capable of interengaging in antirotational relationship.

### 3,825,254 GLIDE SWING

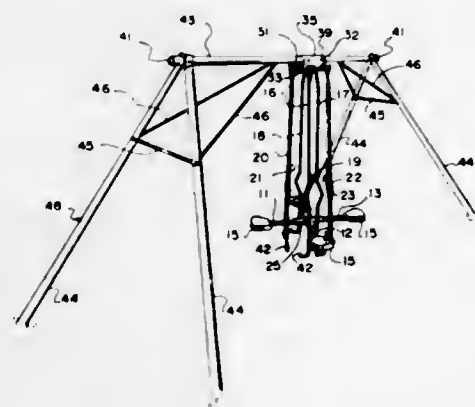
Martin J. McGuire, 215 N.E. 90th, Seattle, Wash. 98115

Filed Nov. 18, 1971, Ser. No. 199,934

Int. Cl. A63g 9/00

U.S. Cl. 272-85

1 Claim



A glide swing is suspended from an overhead supporting structure or from its own supporting frame. It is mounted to

provide a modified swinging and gliding ride to one or more persons riding below, depending on the number participating and/or the seating accommodations offered in a respective embodiment. In a preferred embodiment, the tops of upstanding seat hangers are secured above respectively in pairs, to one of two parallel and spaced rotatable shafts secured to the supporting structure for oscillating movements of themselves and the tops of the seat hangers whereas, the bottoms of these same upstanding seat hangers are secured below to seat supports for pivotal movements in a direction other than the direction of the oscillating movements. Each of these potential movements is modified to create the controlled glide swing motion. The modification is undertaken by providing an interplay structure located between the seats and respectively rotatably mounted to each seat. Because of this rotatable mounting of the seats during glide swing motions each seat slightly and controllably banks or tips to maintain the rider in a comfortable action position with respect to the arcuate motions and related forces of the glide swing. Yet at all times the glide swing remains under the control of the riders who can always ride safely.

### 3,825,255

#### NUMBER GUESSING GAME DEVICE

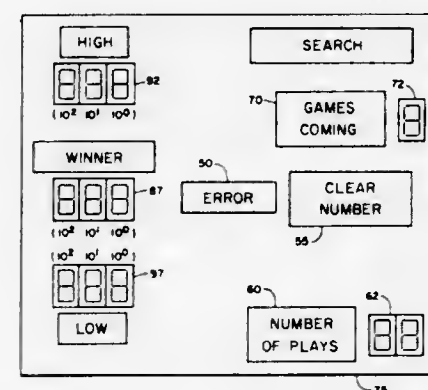
Thomas J. Kennard, 9160 N.W. East River Blvd., Coon Rapids, Minn. 55433, and Lawrence E. Moseman, 1444 Circle Dr., Burnsville, Minn. 55337

Filed Feb. 14, 1973, Ser. No. 332,326

Int. Cl. A63f 9/00

U.S. Cl. 273-1 E

17 Claims



A game device or apparatus of the electronic type where the concept of the game is to find a hidden and random number generated automatically by the electronic apparatus. The game includes a keyboard entry unit by means of which players may select a number in search of the hidden random number and the number so selected will be displayed on a numerical readout display. Once the number has been selected, a test command will compare the selected number with the hidden random number to determine the relationship of the same relative thereto. The selection can either be higher than, lower than, or equal to the hidden random number. If the selection is equal to the hidden random number, the game is completed with a win indication displayed on the display modules on the face of the apparatus. Should the number be higher or lower than the hidden random number, an indication will be provided on the display apparatus of this relationship and the number transferred from its initial position to a higher or lower register wherein it will be displayed. As the game progresses, and after initial selections, the selected number, when found to be higher or lower than the hidden random number will be compared with the next previous selection of a higher or lower number so that its relationship relative to the previous numbers which are stored and displayed on the dis-

play modules must be closer to the hidden random number than the previous number or an error situation exists and no transfer of the selected number as a new high or low selection takes place. The keyboard entry unit provides for a clear command to clear the error in the selected number by removing the same from the main keyboard register in the display modules and permits a new try or selection by the player in the search for the random number. The keyboard selection entries together with the logic control operating the display modules are all in binary coded decimal form. The hidden random number is generated by a continuously running clock apparatus whenever the game is energized but not in operation and is determined by initial operation of a keyboard entry unit at the start of a game.

### 3,825,256

#### DEVICE FOR SIMULATING A RUNNING ANIMAL

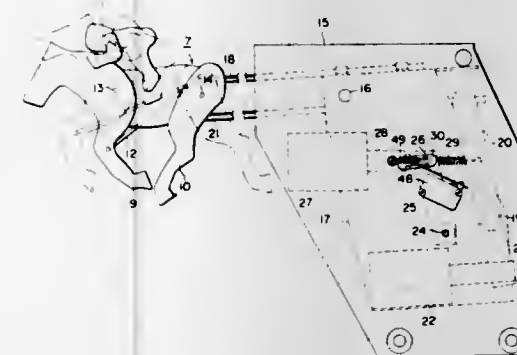
Shikanosuke Ochi, Tokyo, Japan, assignor to Kabushiki Kaisha Sega Enterprises, Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 332,789

Claims priority, application Japan, July 6, 1972, 47-79187  
Int. Cl. A63f 9/00, 9/14

U.S. Cl. 273-1 E

5 Claims



A device for simulating a running animal is disclosed. The device comprises a cabinet, an endless belt located in the cabinet and having a plurality of obstacles located on the outer surface thereof and a movable model. The model has first and second legs which are adapted for reciprocal motion relative to each other. The model oscillates in a vertical plane as the legs are activated to simulate galloping. A jump mechanism is adapted to cause the model to rapidly rise and separates the legs thereof when activated. The jump mechanism may be manually activated for causing the model to rise to a maximum height by synchronizing the actuation of the jump mechanism with the periodic oscillation of the model in the vertical plane.

### 3,825,257

#### APPARATUS FOR PRACTICING BASKETBALL THROWS

George L. Palmer, Box 1316, Sheridan Lake, Colo. 81071

Filed Oct. 19, 1973, Ser. No. 407,915

Int. Cl. A63b 63/02

U.S. Cl. 273-1.5 A

9 Claims

The invention is a basketball practice apparatus which combines a backboard and an outstanding shelf at the base of the backboard. This unit may be mounted against a wall or upon a

post at any suitable height. Tripping switches at selected locations on this shelf will actuate light or sound signals to indicate that a basketball tossed against the practice apparatus is accu-



rately thrown. The practice apparatus may be marked in any suitable manner to help a player aim a basketball against the apparatus.

### 3,825,258

#### FLOOR TYPE BILLIARD GAME WITH COMPENSATING POCKET DENSITY ARRANGEMENT

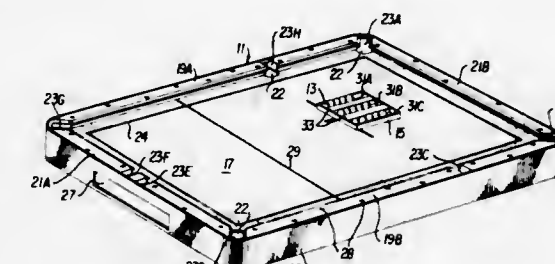
E. Michael Frierman, 217 Martha Lee Dr., Hampton, Va. 23366

Filed Mar. 17, 1972, Ser. No. 235,493

Int. Cl. A63d 15/00

U.S. Cl. 273-2

5 Claims



A floor-type billiard game is described wherein a rectangular playing surface has a length dimension range of from 8 to 12 feet, a width dimension range of from 6 to 8 feet and a length-to-width ratio of less than 2. Playing balls for the game are approximately the same size and composition as standard billiard balls. There are two oppositely-disposed, off-center side pockets which are closer to a spotting end of the playing surface than to a scratch-line end, and two side-by-side center end pockets at a scratch-line end of the playing surface. This pocket arrangement provides for a pocket density which compensates for the relatively large size playing surface. A spotting rack, which is used to rack balls at the spotting end of the playing surface has a plurality of parallel compartments for racking balls in separated parallel rows. The rack incorporates a device for transporting balls within the rack. A removable boundary is provided for dividing the normal playing surface into a smaller playing area. Rounded ball deflectors are positioned in boundary pocket breaks for deflecting balls driven into the breaks downwardly into pocket openings. A protective covering protects a seam between cushions and boundary frames. A game-mallet head is made of steel. At one end thereof, there is a flat striking surface and at the other end thereof, there is a smaller "tip" striking surface. The tip end has a resilient covering thereon. The flat end also has a cover-



ing to protect a cue ball from damage. The tip end also has a centered aiming edge which is used by players to align the striking tip with balls. A removable spin peg is mountable on the mallet head for use to impart additional spin to a struck cue ball.

3,825,259

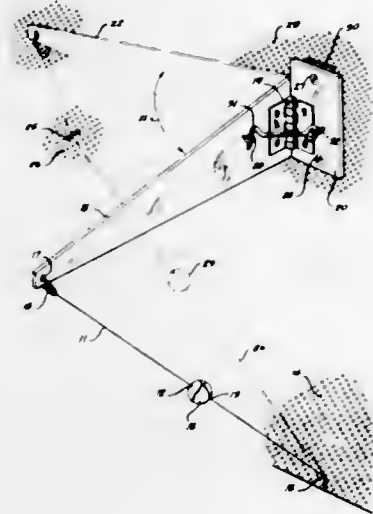
**TETHERED BALL FOR SPORTS PRACTICE**

Paul James Burchett, 410 Acacia, Corona Del Mar, Calif. 92625

Filed Dec. 11, 1972, Ser. No. 261,734  
Int. Cl. A63b 69/38

U.S. Cl. 273—29 A

1 Claim



A tethered ball tennis practice device having a support arm pivotally attached at one of its ends to a vertical support surface whereby the arm will pivot in a horizontal plane. A tennis ball has an elastic cord extending diametrically therethrough. One end of the elastic cord is attached to the support arm at the end which is remote from the vertical support surface. The other end of the elastic cord is attached to the vertical support surface at a point below the support arm. The arm may be locked in an extended position which is substantially perpendicular to the support wall. In the extended position, the tennis ball is suspended for tennis practice. When the arm is pivoted to a stored position the arm, ball and the tether lie substantially against the vertical wall. The device may also be locked in the stored position.

3,825,260

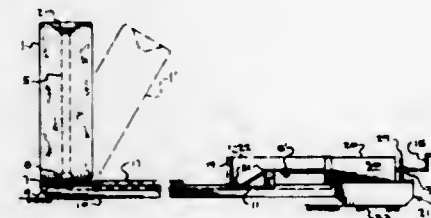
**MOBILE, VARIABLE RESISTANCE FOOTBALL PRACTICE DUMMY**

John D. Thomas, Sr., Rt. 2, Box 104X, Bogalusa, La. 70427  
Filed Apr. 11, 1972, Ser. No. 242,983

Int. Cl. A63b 67/00

U.S. Cl. 273—55 R

8 Claims



A mobile football practice blocking and tackling dummy comprising a padded dummy rotatably mounted on a vertical support element, whose lateral resistance is variable, and a

laterally extended base support and stabilizing arm on which is positioned a crank-operated, variable resistance system. The resistance and righting force of the dummy is controlled by a spring loaded tension cable, the tension of which is varied by altering the compression of a high-strength spring attached to one end of the cable. By rotating the crank arm, the tension on the cable through the spring is changed which alters the righting force and resistance of the vertical dummy to lateral forces such as occur in football blocking and tackling practice.

In use, when approached in line from and along the lateral support arm, the mobile practice dummy will move straight ahead; while, when approached from the opposite direction, the practice dummy will move from side to side as it is driven back, providing practice in lateral stability as well as driving for the football player.

3,825,261

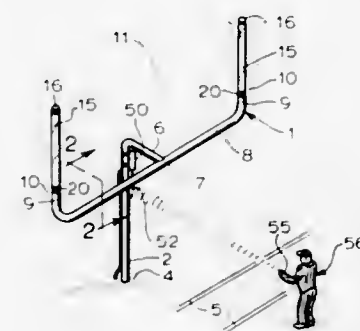
**FOOTBALL LIGHTED GOAL POSTS**

Nick G. Zapos, 2142 N. Latrobe Ave., Chicago, Ill. 60639  
Filed Aug. 20, 1973, Ser. No. 390,003

Int. Cl. A63b 67/00

U.S. Cl. 273—55 R

10 Claims



A goal post structure for football including referee-actuatable signaling device for lighting the goal posts to signal a goal. The goal post structure comprises a vertical ground-engaging center post having a horizontal tubular member attached to the upper end of the center post and a vertically extending post or upright attached to each end of the horizontal tubular member; each upright comprises a plastic translucent shield having a bulb mounted therein. Mounted on the ground engaging center post and connected to the bulb is a radio receiver and a timer connected such that a referee may activate an electrical circuit by means of a remote transmitter. The timer is utilized in deactivating the electrical circuit after a predetermined time.

3,825,262

**HAND-HELD AMUSEMENT DEVICE WITH TETHERED BALL AND PLURAL TARGETS**

Andrzej Grzybowski, and Alicja Grzybowski, both of 340 Lake Merced Blvd. 8, Daly City, Calif.

Filed Aug. 13, 1973, Ser. No. 387,896

Int. Cl. A63b 71/02

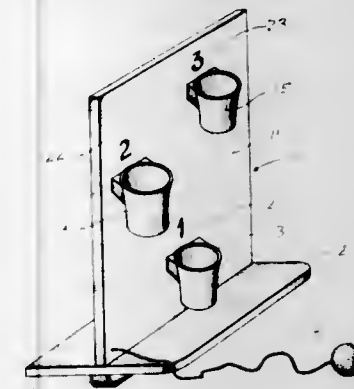
U.S. Cl. 273—97 R

5 Claims

A hand-held amusement device having a base member and a vertical support member arranged at substantially right angles to the base member. A plurality of basket-like containers are secured to one face of the support member in a prearranged pattern and numbered in correspondence with their degree of difficulty. A small ball is attached to a lower corner of the vertical support member by means of a string to restrain the ball to the vicinity of the toy. An elastic band is attached to the outer underside portion of the base member to enable the toy to be attached to the user's hand. In use, the ball is rested

in the palm of the hand and hurled upwardly while at the same time the toy is manually maneuvered to attempt to catch the

shuffleboard, there being provided a collapsible cage adapted to be detachably attached to the end of the game table behind the normal placement of the bowling pins thus providing a



ball in a basket. For successful attempts, points are awarded on the basis of the basket number.

3,825,263

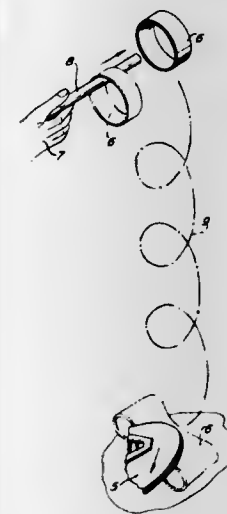
**ROD AND RESILIENTLY PROJECTED RING**

Joseph Santangelo, 362 Prospekt Ave., Bridgeport, Pa. 19405  
Filed Oct. 19, 1972, Ser. No. 299,012

Int. Cl. A63b 71/04

U.S. Cl. 273—100

4 Claims



The game device includes a circular band of a resilient material such as plastic, and a rod. The resilient member is placed on the ground or floor and the toe-portion of the shoe is then pressed down on it from above and moved to the rear. This compresses the resilient member and when the shoe tip slides far enough backward that it is free of the member, the resilient member jumps into the air whereupon the player attempts to place the rod through the aperture in the resilient member while it is still in the air.

3,825,264

**MINIATURE TABLE MODEL SHUFFLEBOARD AND SHUFFLEBOWLING GAME**

Arthur L. Dockum, 628 N. Circle Dr., Colorado Springs, Colo. 80909

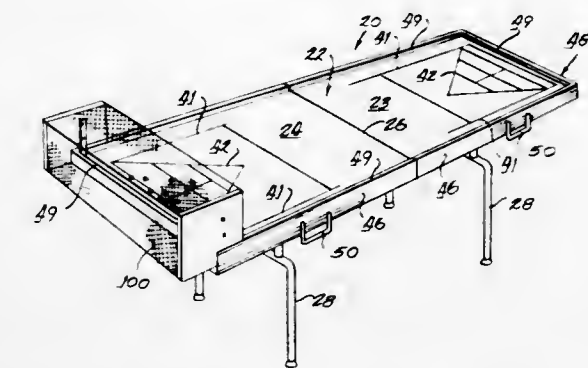
Filed Aug. 27, 1973, Ser. No. 391,961

Int. Cl. A63d 3/00

U.S. Cl. 273—126 R

9 Claims

A portable readily transportable combined shuffleboard and shufflebowling game for selectively playing either the game of shuffleboard or the game of shufflebowling which is played in a manner analogous to regular bowling but utilizes a bowl shaped member in place of a bowling ball which is propelled down the alley by a cue such as used when playing



combined backstop and collecting tray disposed behind and beneath the end of the game board for catching any pins leaving the game table after being struck by the bowl member during the play of shufflebowling.

3,825,265

**AMUSEMENT MACHINE**

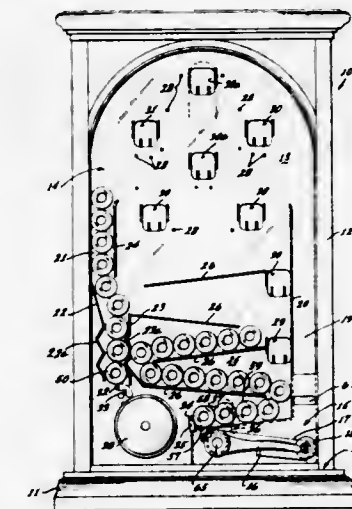
Alan R. Pitkanen, Manhattan Beach; Melvin R. Kennedy, Harbor City; Dietmar Nagel, Redondo Beach; William J. Gross, and Denis V. Bosley, both of Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 5, 1973, Ser. No. 412,924

Int. Cl. A63f 3/00

U.S. Cl. 273—126 R

14 Claims



An amusement machine featuring a vertically disposed playing surface wherein perforated tokens or slugs are propelled upwardly so as to descend into a plurality of slots or reservoirs. The machine includes a jackpot reservoir, a jackpot payoff slot, a predetermined number payoff reservoir, and a plurality of predetermined number payoff slots. A propelling mechanism propels only perforated tokens or slugs, and it automatically rejects and returns coins or imperforated slugs.

3,825,266

**ELECTRONIC GAME OR EDUCATIONAL DEVICE**

James D. Bissell, Rt. 1, Pfafftown, N.C. 27040

Filed Jan. 5, 1973, Ser. No. 321,384

Int. Cl. A63f 9/14

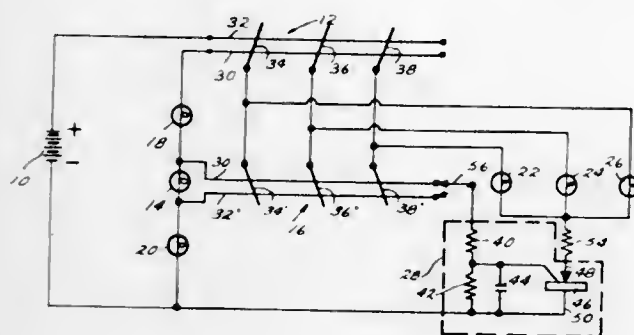
U.S. Cl. 273—130 AB

15 Claims

A game or educational device is provided employing an electronic circuit for enabling selection by a first player of one of a plurality of possible game plays. A "ready" light is pro-



vided in the circuit for indicating when selection of a game play by the first player has been accomplished. Switches are also provided for enabling selection by a second player of one of a plurality of possible game plays, and a "move" light is provided for indicating when the first and second players have selected different game plays. A "penalty" light is in the circuit to be illuminated instead of the "move" light when the



first and second players select the same game play, and additional indicator lamps are provided for indicating the play selections of the players. A "lock-out" feature may also be employed whereby the second player must make his play selection within a predetermined time after the first player's selection and after illumination of the "ready" light, or the additional indicator lamp associated with the second player's selection will not light.

3,825,267

**EXPANDED CHESS AND CHECKER BOARD**

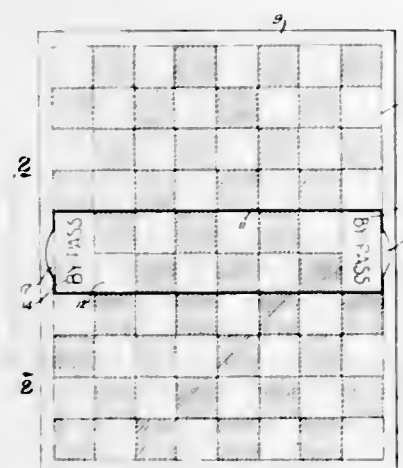
Mark Rubinoff, 60 E. 9th St., New York, N.Y. 10003

Filed Mar. 8, 1973, Ser. No. 339,229

Int. Cl. A63f 3/00

U.S. Cl. 273-131 B

5 Claims



A game board for the playing of checkers, chess and the like has two removable and replaceable central rows of squares. Some of these squares carry different inscriptions forbidding the movement of the pieces thereon under the playing rules. The removable rows may be located upon panels, sheets, films or the like. Their number and location can be varied. Games can be varied to the greatest extent by the use of differently located movement forbidding squares.

3,825,268  
**SELECTABLE PLAY MECHANISM FOR STATIONARY RECORD**

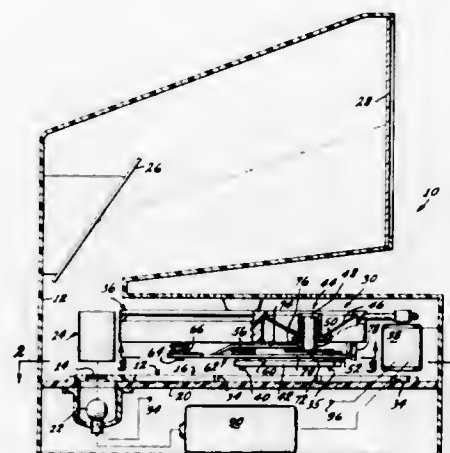
Andrew M. Holland, Los Angeles, and William B. Pester, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed July 6, 1972, Ser. No. 269,335

Int. Cl. G03b 31/06; G11b 3/40

U.S. Cl. 274-9 C

10 Claims



A simple toy phonograph for playing a stationary record of the type which has several interleaved spiral grooves with lead-in portions circumferentially spaced about the record. A rotatable carrier carries a tone arm whose stylus can enter any of the grooves, and also carries a mechanical speaker assembly whose piston is biased against the tone arm to pick up vibrations from it. A cam also mounted on the rotatable carrier is moved by the tone arm when it enters the end of a spiral groove, so that the cam lifts the speaker piston away from the record, to allow the tone arm to lift from the record and pivot to a position over the outside of the record where the tone arm can drop into another lead-in portion of a record groove.

3,825,269

**SHUT-OFF DEVICE FOR A RECORD CHANGER**

Kurt Eisemann, Berlin, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

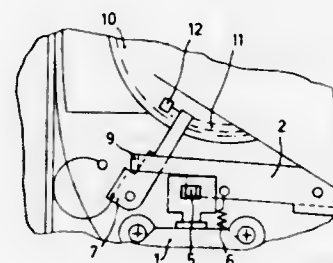
Filed Apr. 13, 1972, Ser. No. 243,638

Claims priority, application Germany, May 25, 1971, 2125708

Int. Cl. G11b 17/08

U.S. Cl. 274-10 R

5 Claims



Shut-off device for a record changer in which one end of an initially tensioned leaf spring is secured in a switch-off track of a cam disc designed as a control mechanism. The other end of the leaf spring projects through an opening in the cam disc. A

follower pin when travelling along the switch-off track thrusts the free spring end through the opening in the cam disc. This free spring end operates the on-off switch which is provided with mechanical time delay elements.

3,825,270

**WIPER SEAL FOR APPARATUS SUCH AS METALLIC CAN BODY FORMERS**

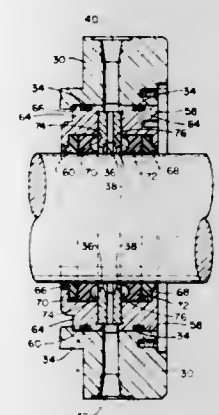
Elpidio Paramonoff, Los Angeles; Frederick C. Olsen, Huntington Beach, and Robert C. Labeda, Buena Park, all of Calif., assignors to Standum, Inc., Compton, Calif.

Filed May 9, 1972, Ser. No. 251,802

Int. Cl. F16j 15/32, 15/40

U.S. Cl. 277-15

8 Claims



The ram of a can body former has a bearing oil flowing thereon at one side of a wiper seal and metal forming liquid at the opposite side thereof. The wiper seal includes an outer housing portion mounting an inner housing ring axially slideably removable therefrom with sealing means therebetween. The inner housing ring, in turn, mounts a manifold ring forming a manifold chamber surrounding the ram with single or multiple sealing rings at opposite sides of the manifold ring slideably engaging the ram. A pressure fluid inlet into the manifold chamber maintains a fluid pressure therein and a fluid bleed-off from the manifold chamber constantly bleeds off a portion of the pressure fluid having mixed therein quantities of the bearing oil and forming liquid bypassing the seals during ram reciprocal movement. The mounting of the manifold ring and sealing rings within the inner housing ring permits the entire assembly to be axially slideably removed as a unit from the outer housing portion.

3,825,271

**FLUID SEALING DEVICE FOR ELECTRIC CABLE CURING APPARATUS**

Aldo Bellastio, Milan, Italy, assignor to Industriale Pirelli Società per Azioni, Milan, Italy

Filed Jan. 10, 1973, Ser. No. 322,453

Claims priority, application Italy, Feb. 3, 1972, 160/72

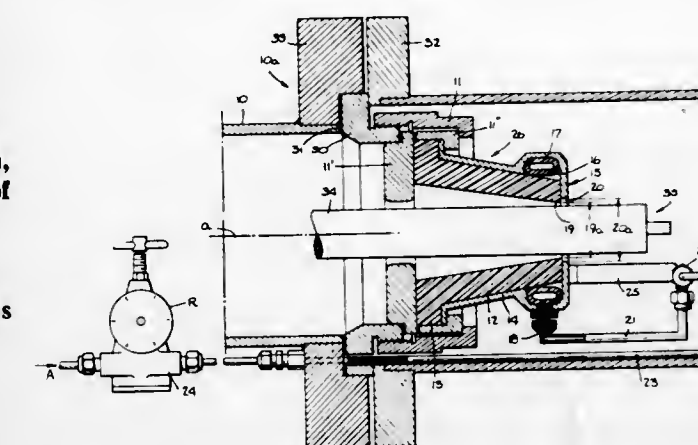
Int. Cl. F16j 15/46

U.S. Cl. 277-34.3

6 Claims

A sealing device for controlling the water flow from between a cable sheath and the end of a sheath curing tube as the cable passes through the tube, the sealing device comprising a frusto-conical elastic sleeve having its larger inner diameter larger than the sheath diameter and its smaller inner diameter approximately equal to that of the cable sheath. Most of the exterior surface of the sleeve is covered by a rigid sleeve shaped like the elastic sleeve but having a portion spaced from the smaller diameter end of the elastic sleeve to form a chamber which receives an air expandable elastic member in the shape of a toroid to vary the diameter of the

elastic sleeve opening. The rigid sleeve also covers most of the smaller diameter end of the elastic sleeve to hold the latter in



3,825,272

**FACE SEAL FOR FOOD PROCESSING EQUIPMENT**

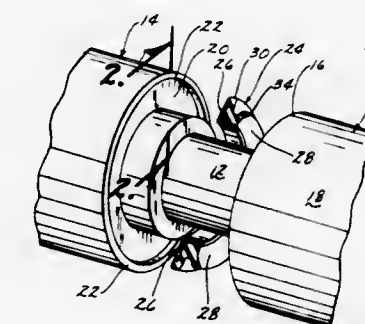
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed May 19, 1971, Ser. No. 144,879

Int. Cl. F16j 15/34

U.S. Cl. 277-94

1 Claim



A face seal which is especially well adapted for use in food processing equipment is disclosed herein. A rotatable member such as a toothed roll has its opposite ends rotatably journaled in bearing members having an annular groove formed therein. The annular grooves are positioned adjacent the ends of the rotatable member and are in communication with the outer periphery of the bearing member. A lip element overhangs and extends around and partially over each of the annular grooves to partially enclose the same. A resilient sealing element is positioned in the annular groove and engages the rotatable and bearing members to form a face seal therebetween. At least one-half the thickness of the sealing element is exposed to view from beyond the outer periphery of the bearing member to permit visual inspection and cleaning of the exposed portion of the sealing element.

3,825,273

**SKI BINDING**

Leonard M. Greene, c/o Safe Flight Instrument Corp., P.O. Box 550, White Plains, N.Y. 10514

Filed June 7, 1971, Ser. No. 150,677

Int. Cl. A63c 9/08

U.S. Cl. 280-11.35 K

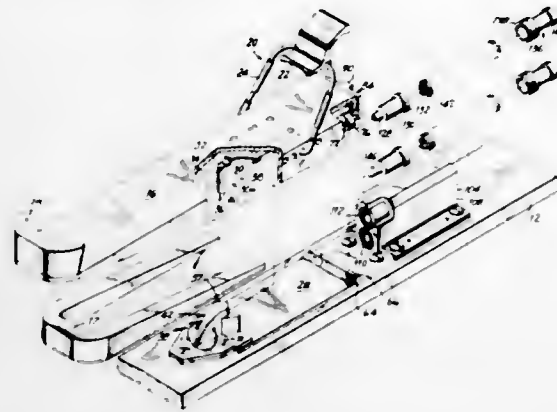
25 Claims

A ski binding including a sole plate to which a ski boot is secured. The sole plate is supported on a ski plate for rotatable movement of the sole plate about forward pitch and yaw axes located beneath a skier's center of gravity. Means is provided



for preventing movement of the sole plate relative to the ski plate about these axes when subjected to pitching and yawing

protruding from said end member, whereby said spike, with the ski pole unloaded, is retained by means of a spring in its



torques occurring during normal maneuvers and for allowing said sole plate to be released for settable abnormal (excessive) pitching and/or yawing torques.

3,825,274

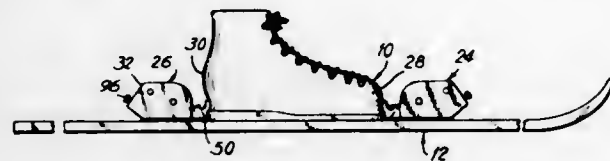
### SKI BINDING WITH AUTOMATIC BOOT-TO-SKI RETURN

Barton Alan Weinstein, New York, N.Y., assignor to National Recreation Industries, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 90,361, Nov. 17, 1970, abandoned. This application May 22, 1972, Ser. No. 255,375 Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 N

27 Claims



A safety-type binding in which spring-actuated drums are rotatably mounted on the ski adjacent the heel and toe to pay out and retract elongated, flexible leashes connected to the boot. In a skiing phase of operation, the binding yieldably holds the boot in the normal skiing position and permits limited shock-absorbing movement in which the leashes are payed out slightly under decreasing resistance. If forces in excess of a preselected safe level are applied and cause relative movement beyond the shock-absorbing range, the binding shifts to a release phase to permit more of the leashes to be payed off of their respective drums and the boot and ski to move relatively freely away from one another, while the ski remains leashed to the boot. The leashes are retracted and the boot and ski are drawn back together when the separation forces have abated and, once they are proximate one another, the binding automatically shifts back to the skiing phase to further retract the leashes and bring the boot back into the skiing position.

3,825,275

### SKI POLE

Ernst Klemm, Lautenbacher Strasse 16-18, Gernsbach, Germany

Filed Oct. 2, 1972, Ser. No. 293,837

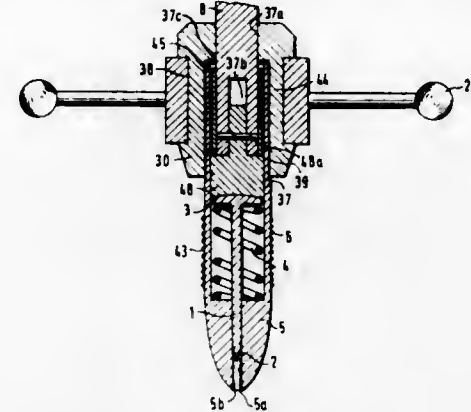
Claims priority, application Germany, Nov. 3, 1971, 2154628

Int. Cl. A63c 11/22

U.S. Cl. 280—11.37 N

19 Claims

A ski pole comprises a nail-shaped spike movably mounted relative to a profiled end member and adapted to be moved, when a load is exerted onto the ski pole, into a position



position concealed by the end member, and comprising a sleeve member being longitudinally movably connected with the lower end of the ski pole shaft by positive engagement.

3,825,276

### SKI-STICK AND ASSOCIATED LOOPED CARRIER STRAP

Robert Witsenhausen Adelmann, Saint Vallier Sur Rhone, France, assignor to Societe Anonyme de Recherches de Mecanique Appliquee, Saint Vallier sur Rhone (Drome), France

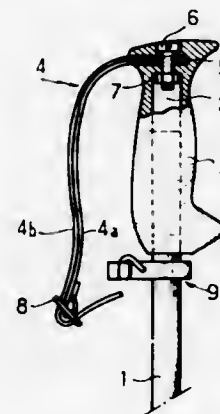
Filed Nov. 22, 1972, Ser. No. 308,847

Claims priority, application France, Nov. 24, 1971, 71.42089

Int. Cl. A63c 11/22

U.S. Cl. 280—11.37 H

3 Claims



The handle of the ski-stick carries adjacent the lower end of the handle, a fastener provided with a port. Thus, a looped two-stranded strap which can be secured solely to the upper end of the handle, may as well extend as a half-loop between the upper end and the fastener through the port in which the free end of at least one strand of the strap is introduced, so as to be held in position thereby. This allows the skier to insert his hand between the handle he grasps and the half-loop formed by the strap.

3,825,277

### MAT SWITCH

Clarence I. Steinback, Edina, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.

Filed Aug. 16, 1973, Ser. No. 388,993

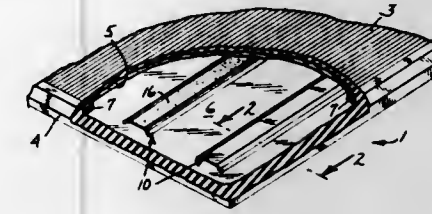
Int. Cl. H01h 13/16

U.S. Cl. 200—86 R

6 Claims

A flexible casing of electrical insulating material, having spaced top and bottom walls and a peripheral wall enclosing a

pair of spaced apart electrical conductor plates. An elongated spacer strip of flexible resilient electrical conducting material is disposed between the conductor plates, the strip being secured along a longitudinally extended transversely central portion to one of the conductor plates, but insulated therefrom, by a band of insulating material. The strip includes



a pair of longitudinally extending flanges at opposite edges of the strip, the flanges diverging toward the opposite conductor plate, the outer edge portions of the flanges engaging the other conductor plate. Downward movement of the top wall and top conductor plate bends one or more of the flanges, so that the flanges engage both conductor plates to close an electrical circuit.

3,825,278

PASSENGER PROTECTIVE INSTALLATION FOR VEHICLES, ESPECIALLY FOR MOTOR VEHICLES  
Gerhard Schiesterl, Stuttgart, and Helmut Wolf, Nellingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

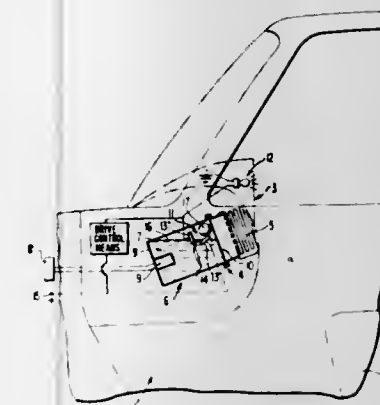
Filed Mar. 24, 1972, Ser. No. 237,641

Claims priority, application Germany, Mar. 25, 1971, 2114475

Int. Cl. B60r 21/08

U.S. Cl. 28—150 AB

1 Claim



A passenger protective installation for vehicles, especially motor vehicles which includes at least one air bag that is adapted to be inflated by means of a pressure gas when exceeding a predetermined deceleration value of the motor vehicle, whereby the pressure gas is produced from liquefied gas in a pressure gas producer that includes a tank for the liquefied gas; a float with an electrically conductive surface is arranged in the tank to which are coordinated contact surfaces separated from one another which, in relation to the liquid level, converge toward one another in the downward direction at least within the upper area thereof and which are so arranged that the float abuts at the contact surfaces when the liquid level is disposed below the predetermined minimum level of the electrically non-conductive liquid gas; the abutment of the float at the contact surfaces thereby closes a circuit which includes or operates an indicating and/or control device.

3,825,279

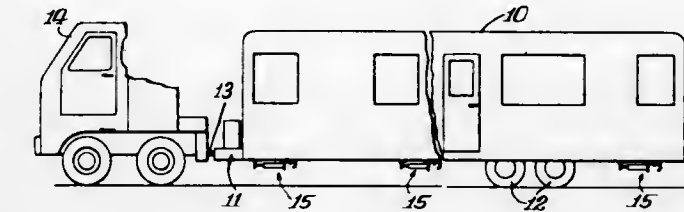
TRAILER JACK SUPPORT MEANS FOR MOBILE HOMES  
Edmund E. Schmeichel, St. Joseph, Mich., assignor to Edmund D. Schmeichel, St. Joseph, Mich.

Filed June 22, 1972, Ser. No. 265,350

Int. Cl. B60s 9/02

U.S. Cl. 280—150.5

5 Claims



Means for supporting a mobile home permitting the setting up of the mobile home quickly and substantially permanently during the time the mobile home is maintained at a given location. The support means are selectively disposable in a retracted position or in the mobile home supporting position while being permanently connected to the mobile home at all times.

3,825,280

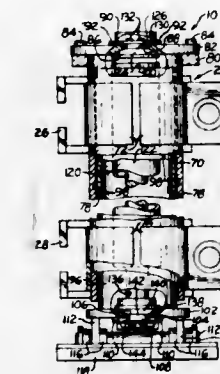
ADJUSTABLE STABILIZER SUPPORT FOR VEHICLES  
Jimmy D. Myers, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 27, 1973, Ser. No. 391,548

Int. Cl. B60s 9/10

U.S. Cl. 280—150.5

6 Claims



An adjustable stabilizer support for a vehicle selectively engageable with a support surface for stabilizing the vehicle when subjected to external loading includes an axially fixed elongated guide member supported on the vehicle with a leg member disposed in relatively extendible guided relation on the guide member wherein elevationally spaced spherical bearing sockets are formed on the guide and leg members and an extensible retractable fluid motor having spherical bearing surfaces formed on the opposite ends thereof is disposed for self-aligning load bearing contact with the spherical bearing sockets when the leg member is extended into engagement with the support surface by extension of the fluid motor.

3,825,281

### TRAILER COUPLING MEANS

Durrell U. Howard, 306 Krameria, San Antonio, Tex. 78213

Filed Nov. 12, 1971, Ser. No. 198,378

Int. Cl. B62d 53/06

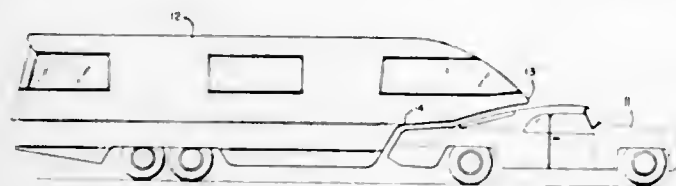
U.S. Cl. 280—423 R

9 Claims

The disclosure relates to a means of coupling a trailer to an automobile wherein the weight of the trailer carried by the coupling means is distributed and carried by the automobile at a point adjacent to or forward of its rear axles. A self-aligning and shock-absorbing coupling means is also disclosed. The



coupling means uses a fifth wheel and spring-loaded roller-de-  
tent means to maintain alignment in yaw between the vehicle



and the trailer. A speed-responsive means reduces the "stiff-  
ness" in yaw between the automobile and the trailer when the  
vehicle speed is below a predetermined value.

3,825,282

## SWAY CONTROL FOR TRAILERS

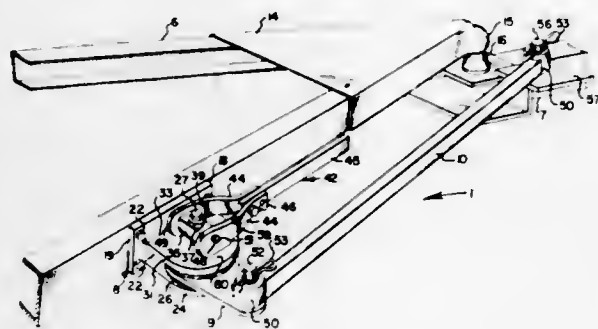
John W. Meinholdt, 1900 Central, Topeka, Kans. 66608

Filed Jan. 2, 1973, Ser. No. 320,284

Int. Cl. B60d 1/00

U.S. Cl. 280-446 B

4 Claims



A sway control device for trailers and the like comprising a  
brake member secured to a portion of the trailer and having  
means for selectively activating brake shoes thereon. A link is  
universally mounted on and extends between the brake shoe  
member and the towing vehicle and is operable to activate a  
brake arm member frictionally engaging the brake shoes for  
resisting turning and swaying of the trailer in response to turn-  
ing of the towing vehicle and/or wind gusts striking the trailer.

3,825,283

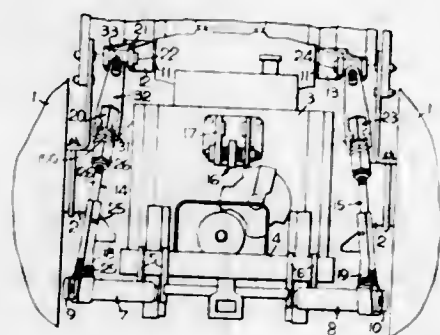
ADJUSTABLE LINK WITH LOCKING WRENCH FOR A  
TRACTOR THREE-POINT HITCHKenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chal-  
mers Corporation, Milwaukee, Wis.

Filed June 4, 1973, Ser. No. 366,869

Int. Cl. B60d 1/14

U.S. Cl. 280-461 A

10 Claims



An adjustable link of a three-point hitch on a tractor for ad-  
justably raising and lowering the lower draft arms or extending

the upper link of a three-point hitch. A wrench member is car-  
ried on the link to adjust the length of the link and lock the  
link at its adjusted length.

3,825,284

## SAFETY HITCH PIN

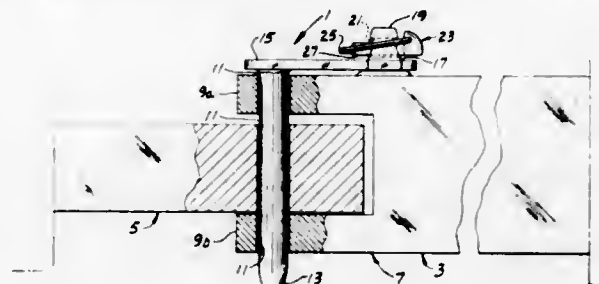
Clyde J. Behrie, Perryville, Mo., assignor to Bill G. Bailey, Per-  
ryville, Mo., a part interest

Filed Oct. 11, 1973, Ser. No. 405,565

Int. Cl. B60d 1/02

U.S. Cl. 280-515

4 Claims



A safety hitch pin for coupling the tongue of an implement,  
such as a farm wagon or the like, to a towing vehicle. The  
safety hitch pin includes a hitch pin, a bar secured to one end  
of the hitch pin, a hole in the bar spaced from the hitch pin, a  
stud secured to one face of the tongue of the implement and  
spaced from the hitch pin holes in the tongue a distance cor-  
responding to the distance the hole in the bar is spaced from  
the hitch pin. The stud has a transverse hole therethrough so  
that with the hitch pin inserted in the hitch pin holes in the im-  
plement tongue, the stud is received by the hole in the bar. A  
safety retaining pin insertable through the transverse hole has  
a pivotally movable retainer ring for locking the retaining pin  
relative to the stud thereby to prevent removal of the retaining  
pin and to positively prevent withdrawal of the hitch pin from  
the tongue of the implement, thus preventing inadvertent un-  
coupling of the implement and the towing vehicle.

3,825,285

## TUBING STINGER WITH HOLD DOWN RING

Ralph F. McArthur, Huntington Park; Melle F. Geurts, Los  
Angeles, and John M. Kelleber, La Palma, all of Calif., as-  
signors to Kobe, Inc., Huntington Park, Calif.

Filed July 17, 1972, Ser. No. 272,386

Int. Cl. F16l 39/00

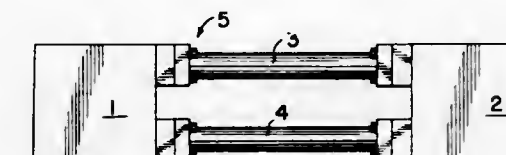
U.S. Cl. 285-27

2 Claims



Two parallel tubing strings are suspended in a well and  
respectively carry at their lower ends a bottom hole assembly

and a stinger adapted to be stabbed into a socket in the bottom  
hole assembly. A hold down ring on the stinger and engagea-  
ble with the wall of the socket resists withdrawal of the stinger  
from the socket with a force which is large compared to that  
required to insert the stinger into the socket. If resistance to  
further movement is encountered when running the stinger-  
equipped tubing string in, it can be readily determined  
whether such resistance is due to insertion of the stinger into  
its socket, or is due to some other obstruction. In other words,  
if the pull out force is high compared to the run in force ex-  
perienced just before termination of tubing string movement,  
stabbing of the stinger into its socket was achieved, in which  
case the stinger is reinserted. However, if the pull out force is  
small, then the termination of tubing string movement was due  
to some other obstruction.



connect the respective inlet and outlet manifolds in a hydrau-  
lic motor-pump set.

3,825,286

## PIPING CONNECTOR

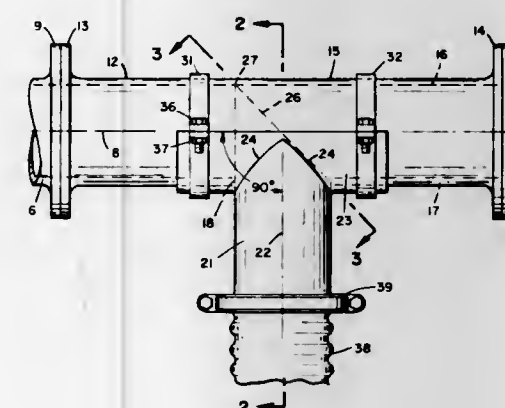
Calvin Scott Henry, III, Umpqua, Oreg., assignor to Winery  
Systems, Inc., Folsom, Calif.

Filed Jan. 8, 1973, Ser. No. 321,756

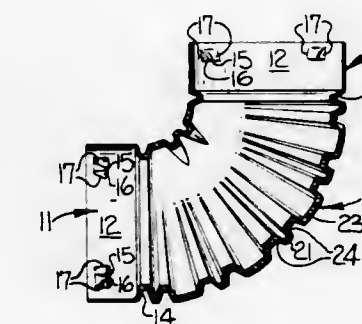
Int. Cl. F16l 35/00

U.S. Cl. 285-93

10 Claims



A piping connector includes a primary pipe of predeter-  
mined internal diameter, having a primary axis and having an  
opening through the pipe wall with a transverse dimension  
about equal to the primary internal diameter. A saddle is  
adapted to be removably clamped to one side of the primary  
pipe overlying the opening. A secondary pipe of an external  
diameter about equal to said internal diameter and having a  
secondary axis extends through the saddle and is secured  
thereto with the secondary axis intersecting the primary axis at  
a predetermined angle. The end of the secondary pipe within  
the primary pipe terminates in a curve with an opening on one  
side and in possible other ways and in one case terminates in a  
plane bisecting the minimum angle between the primary and  
secondary axes. Preferably, a flexible hose is secured to the  
outside end of the secondary pipe.



A plastic fitting for corrugated plastic drainage or irrigation  
pipe. The fitting comprises a corrugated tubular body portion  
and couplings integrally formed with the body portion at the  
ends thereof, each coupling including a relatively thin-walled  
flexible annular sleeve adapted for receiving an end of a length  
of corrugated plastic pipe therein and also including a plurali-  
ty of wedge-shaped latching members integrally formed on the  
sleeve and having a relatively rigid camming surface facilitat-  
ing insertion of an end of a corrugated pipe in the sleeve. The  
thin-walled sleeves are extremely flexible and permit indepen-  
dent movement of the latching members relative to each other  
when the sleeve is flexed during insertion of a pipe in the  
sleeve. The fitting is capable of receiving and connecting cor-  
rugated plastic pipes even though they vary somewhat in ex-  
ternal diameter.

3,825,287

## HIGH PRESSURE MANIFOLD COUPLING MEANS

Rodney R. Erickson; Donald L. Hopkins, both of Joliet, and  
William B. Norick, Dunlap, all of Ill., assignors to Caterpillar  
Tractor Co., Peoria, Ill.

Filed Nov. 1, 1972, Ser. No. 302,775

Int. Cl. F16l 39/00

U.S. Cl. 285-137 R

8 Claims

A high pressure fluid coupling means provides a fluid tight  
connection between two separable members in a fluid circuit  
while concurrently allowing slight axial and lateral misalign-  
ment between such members. An expansible, flexible seal ring  
provides sealing with movement accommodation while a rigid  
back-up ring abuts said expansible, flexible seal ring to

3,825,289

## LATCH BOLT AND KEEP ASSEMBLY

Richard James Armstrong, Toronto, Ontario, Canada, as-  
signor to Decalock Limited, Toronto, Ontario, Canada

Filed June 27, 1972, Ser. No. 266,571

Claims priority, application Canada, June 15, 1972, 144,774

Int. Cl. E05b 15/02; E05c 21/00

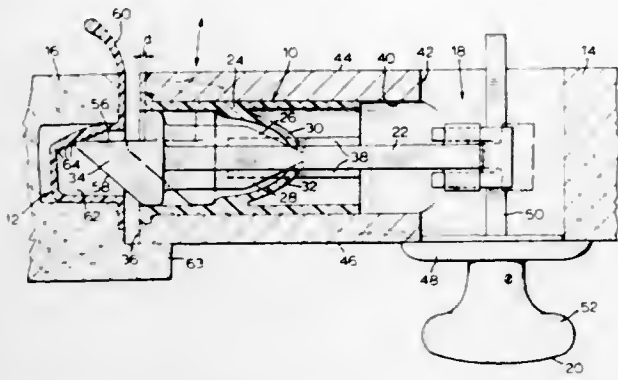
U.S. Cl. 29-2

1 Claim

The invention relates to the combination of a latch bolt and  
latch keep having co-operating structure for holding a door  
closed, and more particularly to a latch bolt and latch keep  
combination which when fitted respectively to a door and



door frame provide limited adjustment to close the door more tightly should the door rattle. The latch keep includes a series



of steps for selective engagement by an end portion of the latch bolt to retain the door in a closed position.

3,825,290

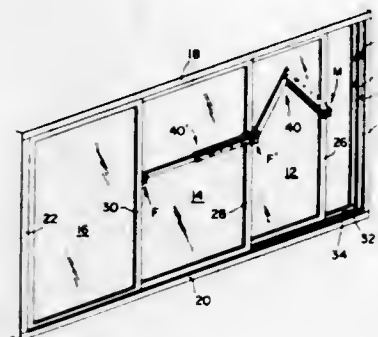
**SLIDING DOOR LOCK BAR APPARATUS**

Victor J. Messina, 6749 Ixora Dr., Miramar, Fla. 33023, and Richard J. Messina, 1322 N.W. 188th Ter., Miami, Fla. 33169

Filed July 13, 1972, Ser. No. 271,368

Int. Cl. E05c 17/04

U.S. Cl. 292—262



A sliding door security lock is provided comprising at least one pair of rigid bars hingedly secured to each other. Where there is only one sliding panel in the door, one end of one of the bars is rigidly secured to a non-movable portion of the frame. The furthest end of the other bar is rigidly secured to the frame of the slidable panel. The two remaining adjacent ends of the two bars are pivotally secured to each other. When there are two sliding panels in the door, there will be two pairs of the hinged bars having the same general arrangement as described hereinabove with the adjacent ends of each of said pair of bars being hingedly secured to each other as well as to the frame of the second slidable glass panel. The hinged bars are arranged to fold in order to permit the door to open and to automatically lock in an unfolded or linear condition in order to maintain the door closed.

3,825,291

**TAMPER SHIELD FOR SPRING BOLT LOCK**

Ivan F. Sprunger, 729 W. Seventh St., Seymour, Ind. 47274

Filed Dec. 14, 1972, Ser. No. 315,078

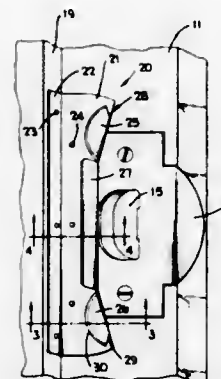
Int. Cl. E05b 17/00

U.S. Cl. 292—346

2 Claims

A shield mountable to a door jamb to prevent tampering with the bolt lock of the door. The shield includes a mounting plate with a pair of walls integrally joined together at a right angle with each wall being fixedly secured to the door jamb. A third wall is integrally connected at an acute angle to one of the walls forming a stop to prevent passage of a burglary tool

through the gap between the door and door jamb. A pair of end tabs are integrally mounted to the plate at a position above and below the bolt of the door. The stop and end tabs are spring biased to an original position and will return to the



original position after the door is closed and opened. The outer distal ends of the stop and end tabs are beveled or turned inwardly to prevent the shield from snagging on the door as it is opened.

3,825,292

**SHOCK ABSORBER FOR AUTOMOBILE BUMPERS**

Kihel Nakamura, Yokohama; Harumichi Yamazaki, Tokyo; Hirotsugu Masuda; Takeshi Sato, both of Yokohama, and Yoshinori Kluchi, Itsukaichi, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

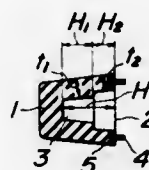
Filed Jan. 31, 1973, Ser. No. 328,432

Claims priority, application Japan, Feb. 9, 1972, 47-16368

Int. Cl. B60r 19/06

U.S. Cl. 293—71 R

1 Claim



A shock absorber for automobile bumpers comprising a hollow rubber body with a trapezoidal cross section, with closed top and side walls and an open bottom. The hardness of the rubber material and the  $t/H$  ratio ( $t$  being the side wall thickness and  $H$  being the height of the trapezoidal hollow space) are such that the differential of the rate of increase of the load of the shock absorber for an increase of the deflection thereof is negative. Preferably, the  $t/H$  ratio is not smaller than 0.2 but not greater than 0.5.

3,825,293

**BRICK GRIPPING APPARATUS**

Josef Schwarz, Vohringen/Ilser, Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed July 27, 1973, Ser. No. 383,198

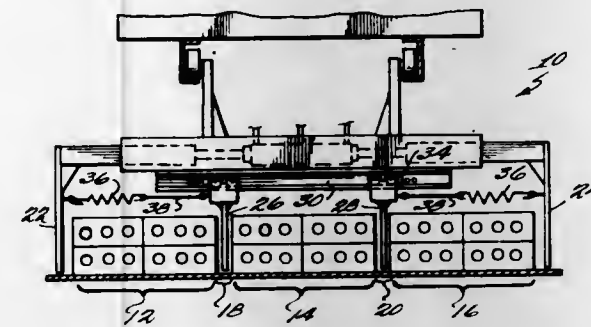
Int. Cl. B66c 1/30

U.S. Cl. 294—63 R

6 Claims

Apparatus for gripping a column of block-shaped articles such as bricks arranged in an end-to-end relationship to one another with at least some of the articles being initially spaced from one another to form at least one corresponding intermediate gap in the column. Intermediate tongues are provided for insertion into the intermediate gaps thus providing intermediate support for the gripped column. The intermediate tongues are mounted in a novel manner and cooperate with novel apparatus to provide a positive return motion to the intermediate tongues for positively, accurately and quickly positioning the tongues in proper predetermined positions when

the gripper is in an open condition such that the intermediate tongues are readily insertable into the gaps of the column. Then, when the gripper is closed, the positive return force is



released thus permitting the intermediate tongues to float or move as required into gripping engagement with the adjacent bricks of the column thus providing the required intermediate support.

3,825,294

**TWIST LOCK ARRANGEMENT FOR TYING CONTAINER DOWN**

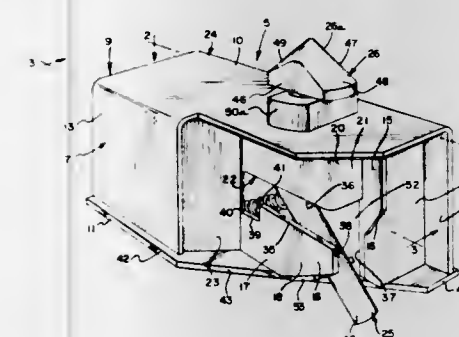
George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 21, 1972, Ser. No. 219,631

Int. Cl. B62d 25/00

U.S. Cl. 296—35 A

8 Claims



A chassis-to-container locking arrangement which includes a housing defined by the lateral end extension of the chassis crossmember, the housing including a cam slot which has a front horizontal slotted portion and said slot having a side vertical slot portion connecting with the front slot portion which side slotted portion allows the handle to move a locking cone to a locked position, with a slightly outwardly sloping lower edge and an inner lower cutout section for entrapping the handle for holding the locking cone in an unlocked position and although the locking cone may be held in either the locked or unlocked position by gravity a biasing spring connected to the handle and the interior of the housing aids in seating the handle in a biased down location attendant to locking or unlocking of the locking cone. By this arrangement the locking cone is rotated 90° in going from its locked position to its unlocked position.

3,825,295

**TRUCK CAB LATCH**

James W. Saunders, Milpitas, and Donald L. Stephens, Los Gatos, both of Calif., assignors to Paccar Inc., Bellevue, Wash.

Filed Apr. 3, 1972, Ser. No. 240,537

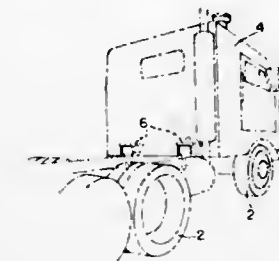
Int. Cl. B62d 27/06

U.S. Cl. 296—35 R

5 Claims

A latch mechanism for use upon a cab over engine truck which is adapted to be unlatched upon introduction of fluid under pressure to the cylinders which raise the cab and yet is

designed to latch and remain secure under pulling, twisting or application of pressure different from the sequence predetermined to unlatch. The latch is adapted to withstand great pressure without damage to the structure. The hook of the



3,825,296

**ANTI-GLARE SYSTEM FOR MOTOR VEHICLES**

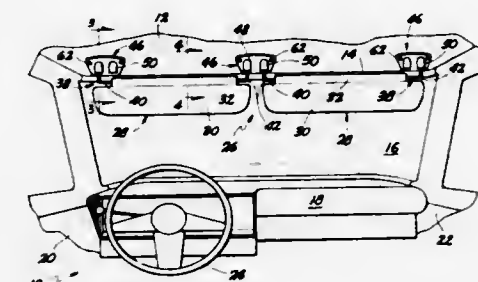
Stuart R. Peterson, 790 Southgate Office Plaza, 5001 W. 78th St., Minnetonka, Minn. 55437

Filed Apr. 24, 1972, Ser. No. 246,858

Int. Cl. B60j 3/02

U.S. Cl. 296—97 D

39 Claims



A pair of glare shields have ball-shaped ends releasably engageable with several brackets attached at fixed locations adjacent the windshield of a motor vehicle. In one embodiment the brackets are formed with sockets and resilient members that releasably hold the ball-shaped ends. In a second embodiment the brackets are formed with sockets and magnetic members that releasably hold the ball-shaped ends. In both embodiments the driver or front seat passenger may elect to have both shields in a generally planar relation with the windshield, or a choice may be made as to whether either shield is in a planar relation with the windshield in front of the driver or in front of the passenger with the other shield angling rearwardly away from the windshield at the left of the driver, between the driver and passenger, or at the right of the passenger. In this way the two glare shields can be individually swung into a number of sun-obstructing positions, the user selecting an arrangement most effective for the particular light conditions then being encountered.

3,825,297

**ARRANGEMENT OF A ROOF IN A MOTOR VEHICLE**

Bela Barenyl, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Sept. 13, 1972, Ser. No. 288,798

Int. Cl. B62d 25/06

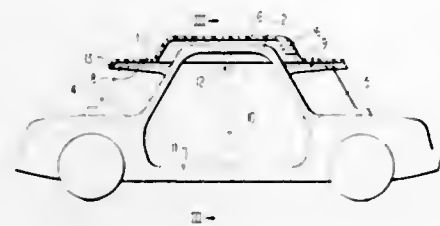
U.S. Cl. 296—137 R

43 Claims

An arrangement of a roof of a motor vehicle, especially of a passenger motor vehicle, which includes two lateral roof girders extending approximately from a windshield pane to a rear window panel; the roof girders are disposed above the base



surface of the roof constructed as lifting or pivoting roof, which is provided within the area of the roof girders with connection with the frame and the platform for supporting a table centrally of the platform, the table swinging in and tan-



raised portions projecting upwardly above its base surface and whose edges serve as boundary for door apertures.

3,825,298

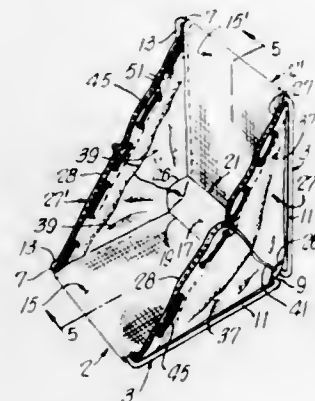
## COMBINATION CARRY CASE AND SEAT

Julian C. C. Chipman, 1321 Sherbrooke St. W., Montreal, 109, Quebec, Canada

Filed May 22, 1972, Ser. No. 255,483

Int. Cl. A47c 13/00

U.S. Cl. 297-129



This invention relates to a combined carry case and seat. The carry case and seat comprises a pair of rectangular or square, tubular frames. Main fabric panels are provided on each frame extending between the top and bottom of the frame. A bottom fabric panel extends between the main fabric panels near the bottom of the frames to join the frames together. A pair of side fabric panels extend between opposite side edges of the main panels and are joined along a bottom edge to the ends of the bottom panel. A continuous drawstring is provided about the upper edges of the side panels and extending through the upper corners of the main panels. The frames can be placed at right angles to one another in one position so as to form a seat with the bottom panel loose. In a second position, the frames, together with the bottom panel, form a flat bottom carry case for carrying articles, by means of the drawstring. The side panels are pleated in the carry case position and extended in the seat position.

3,825,299  
LAWN SWING

Romeo Oliva Gaucher, Bonneyville, Alberta, Canada

Filed July 13, 1972, Ser. No. 271,631

Int. Cl. A47b 39/00

U.S. Cl. 297-157

A lawn swing having a level swing platform which is suspended for swinging movement in a supporting frame by hinged swing support members, hinged connections defining corners of a parallelogram so that the platform remains level when it swings; and a centrally located strut having a hinged

gential to an arc having as its center the hinged connection of the strut with the supporting frame.

3,825,300

## CHAIR AND GANGING STRUCTURE

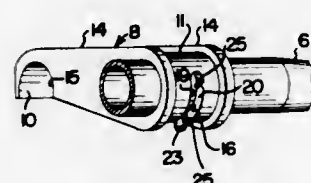
Edgar M. Lieberman, and Bobble L. Snyder, both of Kansas City, Mo., assignors to Fixtures Mfg. Corp., Kansas City, Mo.

Filed Feb. 20, 1973, Ser. No. 334,071

Int. Cl. A47c 15/00

U.S. Cl. 297-248

6 Claims



A chair having a back and seat structure mounted on a frame structure and having a pair of legs on each side of the chair depending therefrom for engagement with a supporting surface. Ganging clips are movably mounted on certain legs of the chair for engagement with legs of an adjacent similar chair to gang same in side-by-side relation. The ganging clips each have an open portion for receiving and retaining the leg of said adjacent chair. The ganging clips are movable from a ganging position to a retracted position and are suitably limited in movement to the selected positions.

3,825,301

## HEAD AND NECK REST

Bernhard Schwarz, 11 Eichenstrasse, Muri, Bern, Switzerland  
Continuation-in-part of Ser. No. 4,346, Jan. 20, 1970, Pat. No. 3,652,128. This application Jan. 10, 1972, Ser. No. 216,454

Claims priority, application Switzerland, Jan. 23, 1969, 1155/69; July 12, 1969, 10710/69; Aug. 29, 1969, 13298/69; Germany, Jan. 21, 1970, 2002566 The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

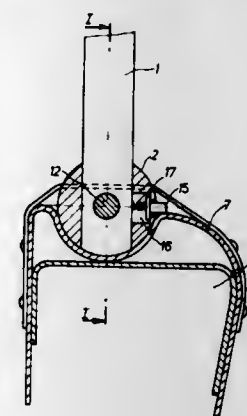
Int. Cl. A47c 7/36

U.S. Cl. 297-408

8 Claims

A head and neck rest for vehicle seats comprises a head piece secured to a supporting rod which is mounted by the intermediary of an articulated joint on a saddle member on the back rest of a seat. The joint allows a backwards tilting movement of the supporting rod to which is secured the head piece. Movable and stationary axially aligned joint members are axially traversed by a clamping rod for exerting a predetermined clamping force on the movable member of the joint by the sta-

tionary members and causing the movable joint member carrying the head piece to resist a tilting movement due to the ac-



tion of a shock received by the head or neck of a passenger using the seat of a vehicle.

3,825,302

## SEAT FASTENING MEANS

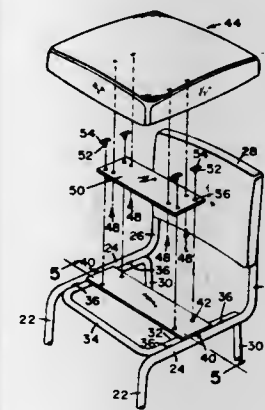
Leo Kurtz, 230 174th St. No. 1208, Cincinnati, Ohio 33160

Filed Dec. 14, 1972, Ser. No. 315,169

Int. Cl. A47c 7/00, 7/14

U.S. Cl. 297-452

16 Claims



A chair frame has a pair of spaced substantially horizontal side members for support of a seat, and said side members are spanned by a fixed panel upon which a chair seat may be superposed and anchored with great ease and despatch and without the use of tools or mechanical ability. The seat carries fastening means to engage the fixed panel either permanently or releasably, whereby the chair is fully prepared for use.

3,825,303

## FLUID PRESSURE REGULATING DEVICE FOR AUTOMOTIVE BRAKING SYSTEMS

Keiichi Yabuta, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed Sept. 22, 1972, Ser. No. 291,384

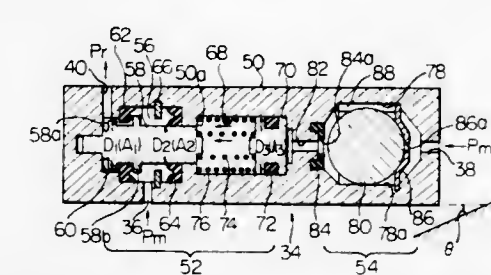
Claims priority, application Japan, Sept. 23, 1971, 46-74278; Sept. 23, 1971, 46-74279; Nov. 12, 1971, 46-90455

Int. Cl. B60t 13/06

U.S. Cl. 303-6 C

13 Claims

An improved fluid pressure regulating device which is incorporated in a motor vehicle braking system having a master cylinder and a wheel cylinder or cylinders. The pressure regulating device includes a pressure proportioning or limiting valve section using a combination of a fluid operated plunger and a fluid operated and spring loaded piston, an inertia-responsive valve section including a valve member usually in the form of a ball which is responsive to a predetermined rate of deceleration so as to vary the fluid pressure acting on the piston, and control means for controlling the axial movement



ders. Various preferred constructions of the control means are disclosed.

3,825,304

## METHOD OF ELECTRICALLY CONTROLLING BRAKING OF A VEHICLE AND AN ELECTRONICALLY CONTROLLED BRAKING DEVICE FOR A VEHICLE

Edmond Klatipoff, Paris, France, assignor to Andre Sauget, Saint-Cyr and Michel Fremand, Saint-Oven, both of, France

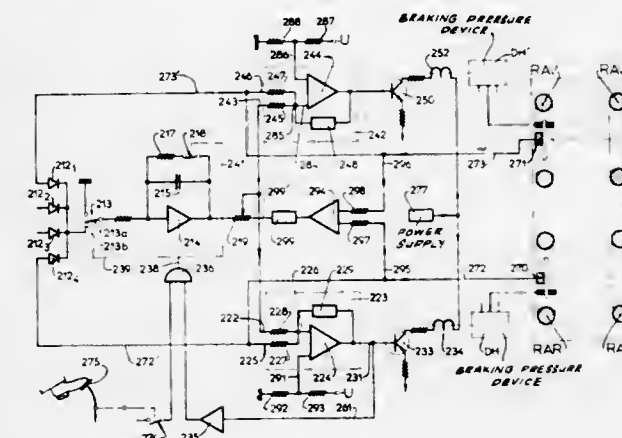
Filed May 24, 1972, Ser. No. 256,541

Claims priority, application France, May 27, 1971, 71.19285; Apr. 28, 1972, 72.15346

Int. Cl. B60t 8/08

U.S. Cl. 303-21 BE

18 Claims



The present invention relates to an electronic braking method and installation for wheeled vehicles.

The installation comprises sensors for determining the speeds of the wheels, apparatus for memorizing the speed of the vehicle and apparatus for braking the rear wheel or wheels in such a way as to bring it (them), during a braking phase, to a speed equal to a first fraction of the memorized speed of the vehicle until the speed of the vehicle is equal to that of the rear wheel or wheels, apparatus for braking the front wheel or wheels, during said braking phase and concurrently with the braking of the rear wheel or wheels, in such a way as to bring it (them) to a speed equal to a second fraction, smaller than the first fraction, of the memorized speed of the vehicle, and apparatus for operating the memorization apparatus at the end of said braking phase to start new braking phases.

3,825,305

## ADAPTIVE BRAKING SYSTEM

John T. Kasselmann, Southfield; George B. Hickner, South Bend; Donald W. Howard, South Bend, and James M. Needham, South Bend, all of Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed June 16, 1972, Ser. No. 263,520

Int. Cl. B60t 8/12

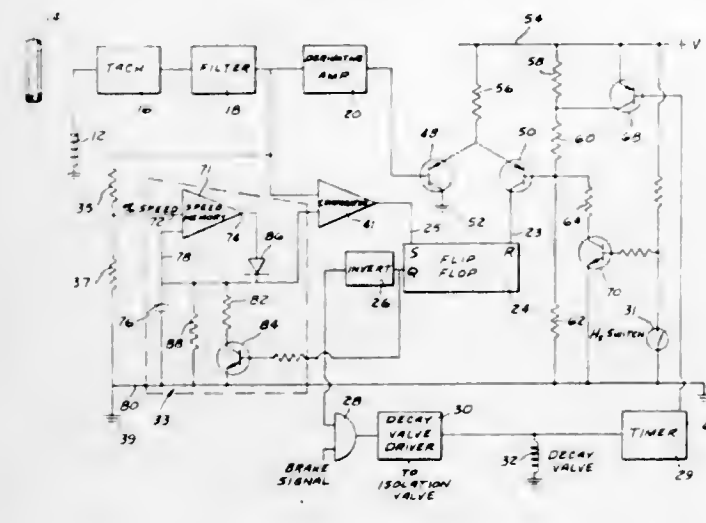
U.S. Cl. 303-21 BE

6 Claims

An adaptive braking system for an automotive vehicle is disclosed which includes a speed reacquisition feature which



precludes termination of a brake pressure decay cycle until the controlled wheel attains a predetermined percentage of the angular velocity at which the wheel was rotating at the time that the decay cycle was initiated. The adaptive braking system includes the usual comparator which compares wheel acceleration to a predetermined reference level and generates a signal initiating a decay cycle when the wheel decelerates in



excess of the reference level. The output signal of the comparator also enables a speed memory circuit which memorizes a predetermined percentage of the wheel speed. A comparator compares the instantaneous wheel speed during the decay cycle with the memorized value, and generates a signal which may maintain the decay cycle even though the wheel reaccelerates past an acceleration reference level which would normally terminate the decay cycle.

3,825,306

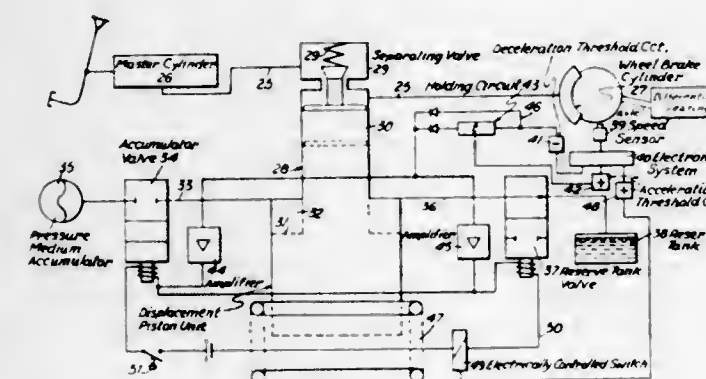
#### DIFFERENTIAL-LOCK TYPE DEVICE FOR A MOTOR VEHICLE

Werner Fink, Frankfurt/Main, Germany, assignor to ITT Industries, New York, N.Y.  
Division of Ser. No. 166,849, July 28, 1971, Pat. No. 3,771,839. This application Mar. 19, 1973, Ser. No. 342,655  
Claims priority, application Germany, Oct. 7, 1970, 2049262

Int. Cl. B60t 8/12

U.S. Cl. 303—21 BE

9 Claims



There are disclosed arrangements combined with known anti-skid systems that will prevent spinning of one drive wheel while the other drive wheel is stationary due to differential gearing. This is accomplished by providing a threshold circuit responsive to excess acceleration of the spinning wheel, in addition to the normal acceleration threshold circuits of an anti-skid system, to cause brake pressure to be applied to the wheel brake cylinder of the spinning wheel. The additional threshold circuit is placed in operation by the vehicle driver.

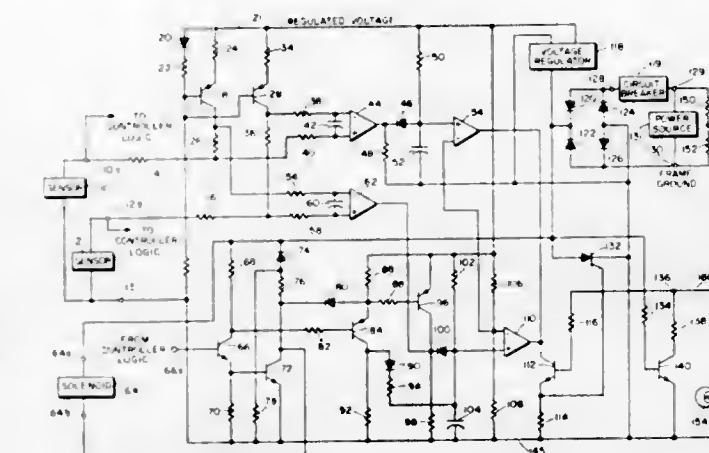
3,825,307  
MEANS FOR DETECTING FAILURE OF VARIOUS ELEMENTS OF AN ADAPTIVE BRAKING SYSTEM THROUGH THE USE OF TRICKLE CURRENTS  
Ralph W. Carr; Ward A. Ingels, and Leoncio T. Ang, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 13, 1973, Ser. No. 351,064

Int. Cl. B60t 8/00

U.S. Cl. 303—21 AF

6 Claims



A circuit useful in adaptive braking systems for detecting sensor and load failures provides an operator warning and prevents automatic braking should a failure occur. Cross coupled comparators consider d.c. currents through the wheel speed sensors and interrupt electrical power to the braking system if a sensor is opened or shorted. A threshold circuit considers a trickle current through the brake pressure modulator to detect failures therein.

3,825,308

#### PROPORTIONING VALVE CONTROL MEANS

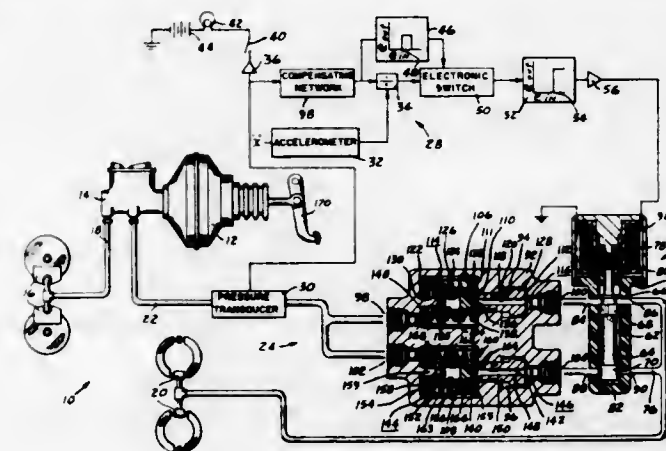
John T. Kasselmann, Southfield, and Michael B. Goran, Bloomfield, both of Mich., assignors to The Bendix Corporation, South Bend, Ind.

Filed Apr. 30, 1973, Ser. No. 355,615

Int. Cl. B60t 8/26

U.S. Cl. 303—21 A

11 Claims



A system of selectively controlling a plurality of proportioning valves through means of a computer control signal. The control signal is derived by dividing a first signal representative of the available fluid pressure output from a master cylinder by a second signal representative of the rate of change in speed of a vehicle. A plunger valve responsive to the control signal is moved to allow fluid to flow in a selected flow path. The fluid will activate the rear wheel brakes with a force proportional to the front wheel brakes to provide optimum braking during deceleration.

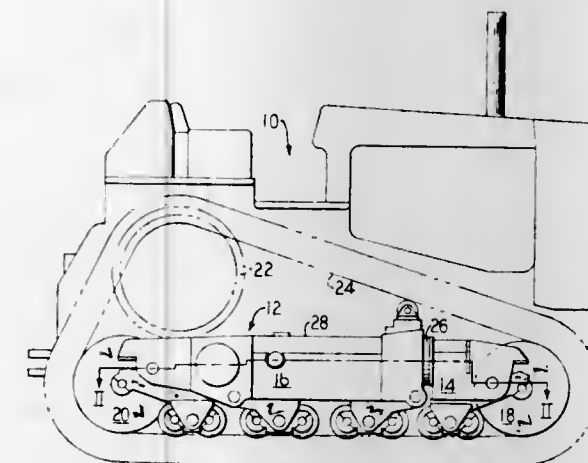
3,825,309  
TRACK FRAME RECIPROCATING MECHANISM FOR TRACK-TYPE TRACTORS  
Ronald L. Krolak, Metamora, and Eldon D. Oestmann, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 22, 1972, Ser. No. 282,698

Int. Cl. B62d 55/30

U.S. Cl. 305—31

3 Claims



A vehicle has on either side thereof a drive sprocket and front and rear ground idlers, and a track trained over and engaged by the drive sprocket and idlers. A frame is associated with the vehicle and has a forward portion on which the front idler is mounted, and a separate rearward portion on which the rear idler is mounted. The front and rear frame portions are associated by means of a pair of tubes extending from each, one inside the other, in sliding relation. Splined means are associated with the tubes to keep the front and rear idlers aligned relative to each other, and resilient means are associated with the tubes to allow recoil of the front idlers, meanwhile urging the front idler forwardly into a biased condition.

3,825,310

#### INTERNALLY REINFORCED DRAWER GUIDE

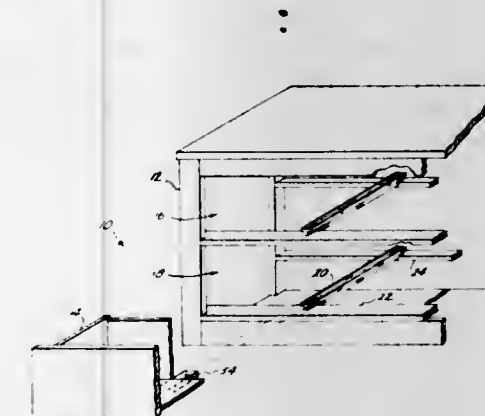
Bruce W. Roemer, Portland, Oreg., assignor to Barker Manufacturing Company, Portland, Oreg.

Filed Mar. 1, 1973, Ser. No. 337,072

Int. Cl. F16c 21/00

U.S. Cl. 308—3.6

4 Claims

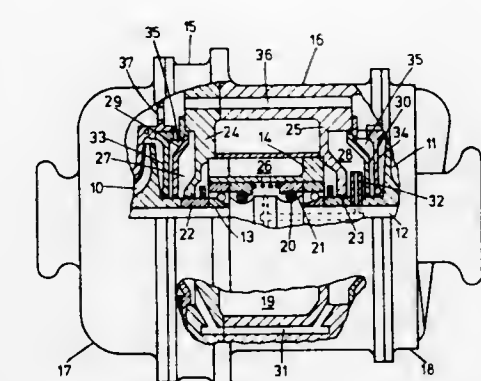


An internally reinforced, molded plastic drawer guide for chests using center-guide construction. A guide having balanced strength and stiffness is produced by distributing glass fibers substantially uniformly throughout the body of the guide, including regions spanning the joint of the body's component parts.

3,825,311  
HIGH SPEED ROTATING MACHINES  
Brian Desmond Allan Murray, Somerset, England, assignor to Normalair-Garrett (Holdings) Limited, Somerset, England  
Filed Jan. 17, 1973, Ser. No. 324,515  
Int. Cl. F16c 33/74

U.S. Cl. 308—36.3

7 Claims



Bearing seal means for high speed rotating machines which have a rotatable assembly supported by bearings and enclosed lubricating means therefor. The seal means provides ducts directing pressurized air towards the rotating shaft assembly outboard of both ends of the enclosure. The pressurized air bleeds from the ducts adjacent to the shaft assembly to pressurize a region between the seal means and the outboard faces of the enclosure to prevent oil seepage from the enclosure. Air bleed from the ducts is also permitted in an outboard direction and can provide cooling across the back of a compressor wheel.

3,825,312

#### SHAFT LOCK DEVICE

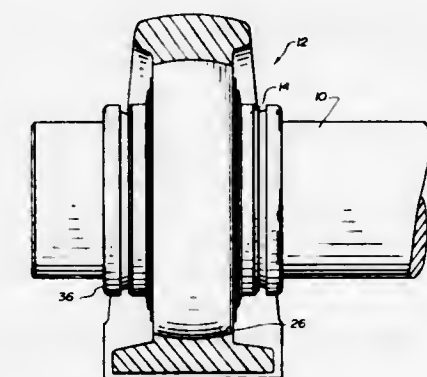
Charles M. Allaben, Jr., Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 9, 1973, Ser. No. 331,137

Int. Cl. F16c 33/30

U.S. Cl. 308—236

4 Claims



A relatively compact arrangement for locking power transmission parts, such as bearings, pulleys, gears, sprockets and the like to shafts which comprises a cylindrical portion of the part having an inside truncated conical surface surrounding the shaft and a sleeve having an exterior surface complementary to the inside conical surface of the part and a bore for the shaft whereby a wedging action caused by axially moving the sleeve relative to the part, the part is locked to the shaft.

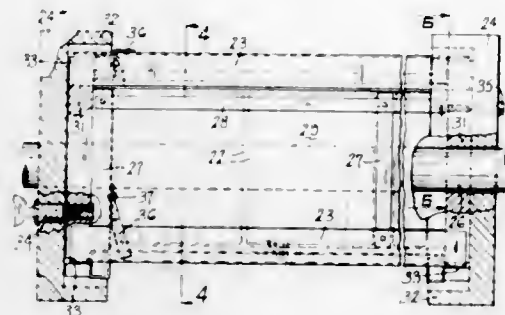


### 3,825,313 THEFT-RESISTANT DISPLAY CASE FOR TAPE CARTRIDGES OR THE LIKE

Albert R. Cuzzo, 77 First Ave., West Haven, Conn. 06516  
Filed May 24, 1973, Ser. No. 363,479  
Int. Cl. A47f 3/10

U.S. Cl. 312-135

8 Claims



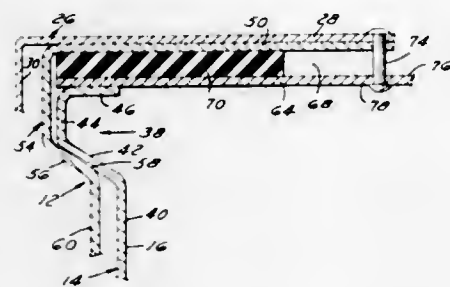
A theft-resistant display case for tape cartridges or the like, comprising: a plurality of elongated, generally rectangular cage-like racks for holding the tape cartridges or cassettes side by side, the cages being formed of metal straps or of plastic with apertures therethrough for viewing indicia on the cartridges. The racks are arranged together in column form with removable rails running between the longitudinal edges of the racks. The racks have portions arranged to overlap the faces of the cartridges above and below the indicia so as to prevent lifting of the cartridges out of the racks. End caps fit over the ends of the racks and the rails, and are lockable thereon. The display case is rotatable about its longitudinal axis for viewing of the cartridge indicia, while affixed to a suitable surface to prevent removal.

### 3,825,314 ASH RECEPTACLE FOR AUTOMOBILES

Jack W. Blake, Grand Rapids, Mich., assignor to F. L. Jacobs Co., Southfield, Mich.  
Continuation of Ser. No. 220,236, Jan. 24, 1972, abandoned.  
This application June 26, 1973, Ser. No. 373,733  
Int. Cl. B60n 3/08, 3/10, 3/12

U.S. Cl. 312-246

15 Claims



The ash tray is of the drawer type conventionally utilized in vehicles. A housing or retainer is provided for attachment to the dashboard or other suitable support structure within the vehicle. The drawer, which is for the reception of ashes, is slidably received within the housing for withdrawal as the need arises. The housing includes a center panel with depending flanges on opposite sides thereof, with tracks provided on the flanges. A pressure plate extends across the housing beneath the center panel and is spaced therefrom. Resilient means made from a yieldable material such as rubber or from a plastic material is interposed in the space between the center panel and the pressure plate. Fastening means yieldably connect the pressure plate to the center panel of the retainer. With such a construction the end portions of the pressure

plate engage rails provided on the drawer and yieldably urges the rails of the drawer against the tracks provided on the housing.

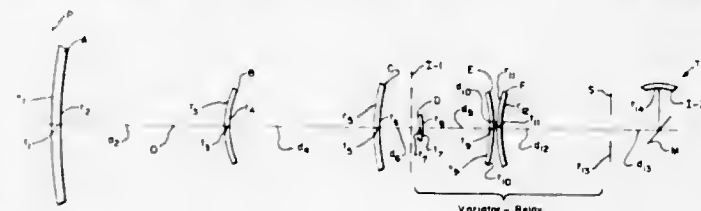
### 3,825,315 ZOOM LENS OPTICAL SYSTEM FOR INFRARED WAVELENGTHS

Richard M. Altman, 22216 Victory Blvd., and Jerome J. Rosenblatt, 20334 Alerion Pl., both of Woodland Hills, Calif. 91364

Filed Jan. 29, 1973, Ser. No. 327,516  
Int. Cl. G02b 15/14

U.S. Cl. 350-2

9 Claims



There is disclosed a zoom lens optical system suitable for use at infrared wavelengths comprising a fixed position front objective lens group and a variably positioned variator or zoom lens group both positioned along an optic axis and related in such a fashion that the variator lens means serves to relay a fixed position intermediate image formed by the objective lens means to the image surface or focal plane of the system which image is also fixed in position on the optic axis within design tolerance limits. The movement of the variator produces a continuous zoom effect in that the focal length of the system is different for each different position of the variator lens. Such a zoom lens is particularly adapted for, but not restricted in use to, optical systems for forming an image at infrared wavelengths. Such infrared systems include a detector array positioned at the second image or focal surface with a scanning device such as a mirror and an aperture stop between this array and the variator lens. The detector array must be multiplexed due to the scanning technique which in turn must be such as to accommodate the response time of the infrared detector. The resulting problem of aperture scanning or loss of part of the image forming beam by vignetting or the like which occurs in such infrared systems is overcome by designing the foregoing lens arrangement to position the entrance pupil of the system at the front surface of the objective lens for any position of the variator lens as a starting design point. Specific lens constructional parameters are given for two exemplary embodiments.

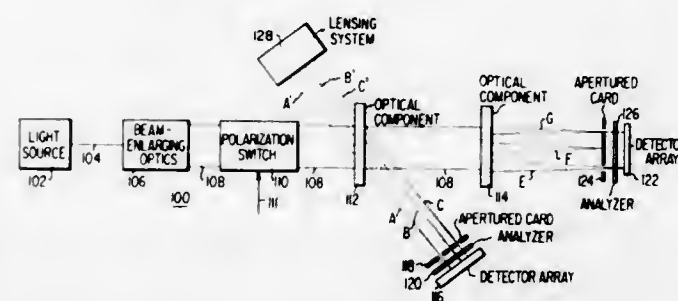
### 3,825,316 APPARATUS FOR PROVIDING AN OPTICAL SYSTEM USING ADAPTIVE HOLOGRAPHIC COMPONENTS

Juan Jose Amodi, Langhorne, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,653  
Int. Cl. G02b 5/18, 27/00

U.S. Cl. 350-3.5

2 Claims



A laser produces a beam of polarized coherent light which is transmitted through a polarization switching device that ad-

justs the orientation of the plane of polarization of the transmitted light in either one of two mutually orthogonal states in response to an input signal. The light transmitted by the polarization switching device then impinges on a transparent electro-optic crystal material whose index of refraction along its C-axis varies in accordance with the interference fringes of a preestablished holographic pattern. In one embodiment, the optical system includes an electro-optic beam deflector to provide a strongly polarization dependent digital laser beam deflection system, whereby the beam will be deflected in a different predetermined direction depending on the polarization state of the beam. In another embodiment, the optical system includes a complex optical component to provide light deflection apparatus for selectively deflecting a beam of light from a source to one of a plurality of discrete target positions.

### 3,825,317 APPLICATION OF A NOVEL PHOTSENSITIVE MEMBER TO HOLOGRAM

Eiichi Inoue; Junpei Tsujitani; Hiroshi Kokado, all of Tokyo, Takashi Yamaguchi, Yokohama; Isamu Shimizu; Hiraku Sakuma, both of Tokyo; Hiroshi Hanada, Yokohama, and Yukio Tokunaga, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 27, 1972, Ser. No. 275,736  
Int. Cl. G03c 5/04

U.S. Cl. 350-3.5

17 Claims

A hologram comprises an interference pattern composed of a mutual diffusion portion of a photoconductor and a metal formed at an exposed portion of a photosensitive member, the photosensitive member containing two constituting elements, that is, a photosensitive receptor containing a photoconductor and a photosensitive intensifier capable of diffusing into the photoconductor when irradiated and at least one of the constituting elements being in a layer form, and the combination of the constituting elements being selected from the group consisting of (i) each of the two constituting elements being in a form of layer, (ii) one constituting element being in a form of layer and the other constituting element being dispersed in said layer, and (iii) one constituting element being in a form of layer and the other constituting element being contacted with the surface of said layer.

### 3,825,318 WAVEGUIDE COUPLER HAVING TRANSPARENT STRATIFIED STRUCTURE WITH PARALLEL FACES

Michel Crosset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

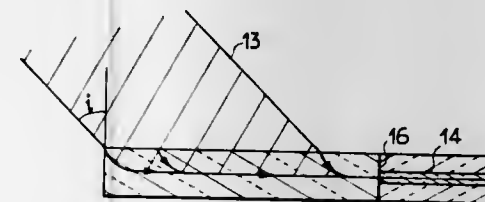
Filed Aug. 10, 1972, Ser. No. 279,361

Claims priority, application France, Sept. 16, 1971, 71.33389

Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

5 Claims



An optical structure with parallel faces, has a refractive index decreasing continuously from one face to the other.

The structure is produced by reactive cathode sputtering of tantalum in the presence of oxygen. It makes it possible, by refraction, to render parallel light rays which enter at varying angles of incidence.

### 3,825,319

#### BUTT-JOINED OPTICAL FIBERS

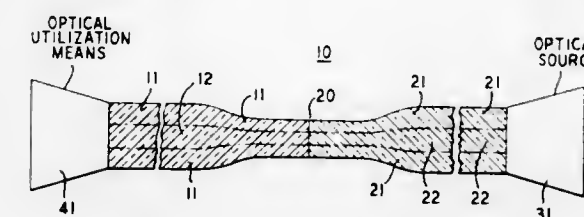
John Stone Cook, Summit, and Enrique Alfredo Jose Marcatili, Rumson, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,667

Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

3 Claims



In order to minimize electromagnetic radiation losses in optical fibers (especially single-mode fibers) at the locations where the fibers are joined together as by butt-joining, such optical fibers are constructed with a reduced diameter at the joint locations. The reduced diameters of the fibers at the locations of joining ("joints") cause an increase in the diameter of the cross section of electromagnetic field at these locations. Thereby, electromagnetic radiation losses due to lateral misalignments at joint locations in optical fibers are reduced.

### 3,825,320

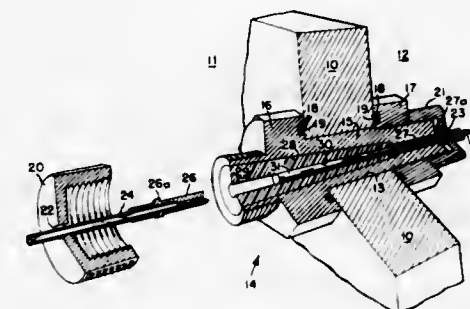
HIGH-PRESSURE OPTICAL BULKHEAD PENETRATOR  
John T. Redfern, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 2, 1973, Ser. No. 337,492

Int. Cl. G02b 5/16

U.S. Cl. 350-96 B

9 Claims



A fitting including a bushing extending through a high-pressure hull provides a multichannel data capability while possessing resistance to an extreme pressure differential. A cylindrical or tapered plug of glass having a graded refractive index or a cylindrical or tapered bundle of fiber optics is bonded within an accommodatingly shaped bore coaxially disposed in the bushing. Having such a configuration and manner of construction allows the fitting to be of reduced size with respect to contemporary electrical hull-penetrators, yet a much greater data transfer capability is provided and this fitting will stand up under the crushing pressures encountered at extreme ocean depths.

### 3,825,321

#### WIDE ANGLE LENS SYSTEM

Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 26, 1973, Ser. No. 345,145

Claims priority, application Japan, Mar. 28, 1972, 47-30975

Int. Cl. G02b 9/62

U.S. Cl. 350-215

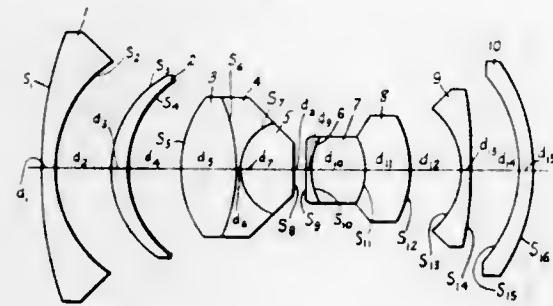
1 Claim

A wide angle lens system includes 10 lenses in which the third, fourth and fifth lenses and the sixth, seventh and eighth



lenses are cemented to form respective first and second triplet subsystems, the system satisfying the following conditions:

$$\begin{aligned} F/0.9 < F_1 < F/0.6, F_1 < 0 \\ F/0.95 < F_{1,2} < F/0.57, F_{1,2} < 0 \\ 5F < F_2 \\ F/2.3 < F_{1,2} < F/1.65 \\ F/1.3 < F_{1,2} < F/1.05 \\ 0.25F < r_{13} < 0.37F, r_{13} < 0 \\ 0.5F < r_{15} < 0.6F, r_{15} < 0 \\ 0.1 < n_4 - n_5 < 0.2 \end{aligned}$$



$$\begin{aligned} 0.12F < r_1 < 0.2F \\ \nu_8 - \nu_7 < 0.6 \\ 0.05 < n_8 - n_7 < 0.15 \\ 0.18 < r_{11} < 0.26F, r_{11} < 0 \end{aligned}$$

Wherein  $F$  is the focal length of the entire system,  $F_{1,2} \dots$  is the focal length of the subsystem including the first to the  $i$ th lens,  $F_i$  is the focal length of the  $i$ th lens,  $N_i$  is the d-line refractive index of the  $i$ th lens,  $\nu_i$  is the Abbe's number of the  $i$ th lens, and  $r_j$  is the radius of curvature of the  $j$ th lens surface, cemented confronting lens faces defining a single surface.

3,825,322

## ILLUMINATION SYSTEM

Fred Mast, Wil, Saint Gall, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

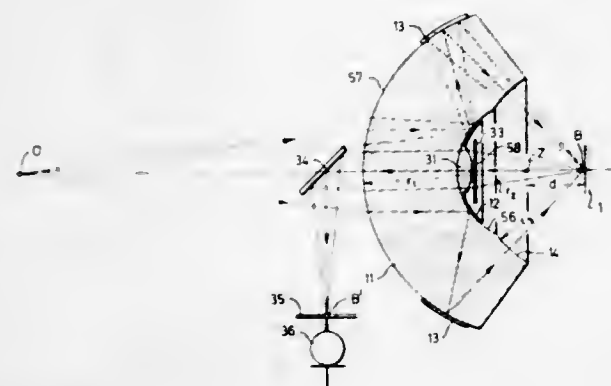
Filed Dec. 29, 1972, Ser. No. 319,169

Claims priority, application Switzerland, Dec. 31, 1971, 19246/71

Int. Cl. G02b 27/02

U.S. Cl. 350—236

7 Claims



An optical system is provided which in conjunction with a light source is used to illuminate an object whose reflective properties are required to be measured. The optical system comprises a condenser lens having first and second spherical surfaces, the first having an annular reflective surface on its

periphery and the second an annular reflective surface at its central portion. A positive lens is mounted in the aperture of the reflective annular surface on the second surface of the condenser lens which has a third spherical surface surrounding the second surface. The center of curvature of the third surface defines the position of the object which is illuminated by light entering the first surface, being reflected from the reflective surface on the second surface back through the condenser, reflected from the reflective surface on the first surface back through the condenser lens to exit from the third surface to be focussed on the object. Light reflected by the object is focussed by the positive lens through the condenser on to a light measuring system.

3,825,323

# ROTARY DISC RECORDING AND READOUT SYSTEM HAVING CAPACITANCE CONTROLLED LENS POSITIONING MEANS

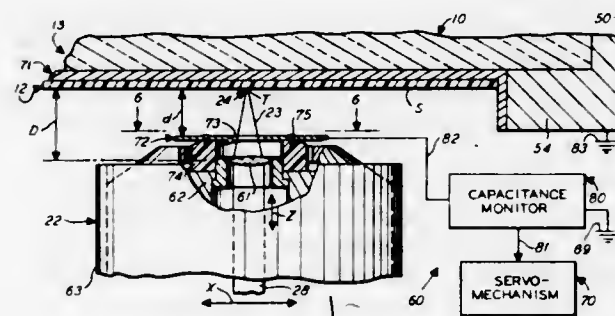
Donald C. Landwer, Arlington Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 17, 1973, Ser. No. 361,376

Int. Cl. G02b 7/02; G01d 15/14

U.S. Cl. 350—255

4 Claims



The focal plane of a focused energy beam is adjusted to match the instantaneous position of the surface of a nonconductive film being treated by the beam. For example, the position of a focused laser beam used to record and read-out data in the surface of a moving thermoplastic film is adjusted to accommodate vagaries in the location of successive spots along the surface of the film. The film is formed on the surface of a record, which is mounted on a turntable during recording and readout. The positioning is done by backing the film with a conductive surface of the record; mounting an electrode to the lens used to focus the beam, in closely spaced relationship to the film; and sensing the capacitance between the conductive surface and the electrode. The sensed capacitance is used to drive a servomotor for adjusting the position of the lens so that the focal plane coincides with the surface of the film.

3,825,324

# REMOTELY CONTROLLED MIRROR AND POWER AMPLIFIED DRIVE MEANS THEREFOR

Harold G. Brewington, P.O. Box 176, Widenor, Ark. 72394

Filed June 13, 1972, Ser. No. 262,201

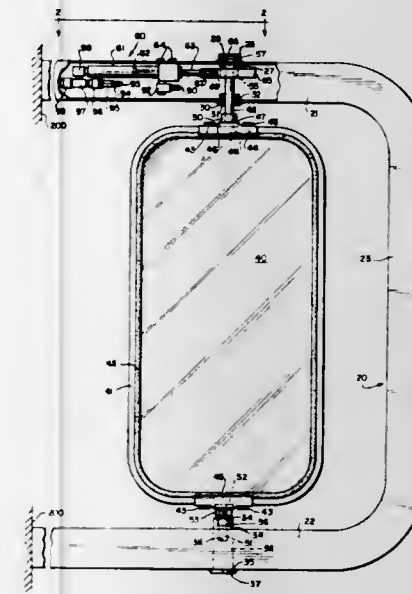
Int. Cl. G02b 5/08

U.S. Cl. 350—289

5 Claims

An apparatus for remotely controlling, from the inside of a vehicle, the position of a side-view mirror mounted on the outside of the vehicle. The apparatus includes a support for

rotatably mounting a mirror to a vehicle, an electrical, hydraulic, or pneumatic power amplified driving mechanism for



rotating the mirror to the desired position, and associated control devices for controlling the driving devices.

3,825,325

## LIGHT TRAP

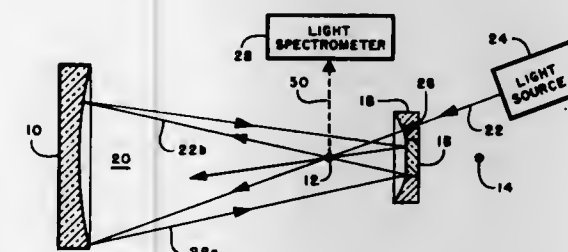
Danny L. Hartley, Livermore, Calif., and Ronald A. Hill, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 14, 1973, Ser. No. 332,541

Int. Cl. G02b 5/10

U.S. Cl. 350—294

5 Claims



A light trap into which a beam of light is directed and caused to be reflected many times through a focal point over a different path on each reflection to achieve an increase in light energy density at the focal point from a given light energy beam. Very large gains may be achieved utilizing a concave ellipsoidal light reflector which reflects light directed from a primary focal point toward a secondary focal point along a common axis and a second light reflector which reflects light directed toward the secondary focal point back toward the primary focal point and the concave ellipsoidal reflector, the second light reflector being either an ellipsoidal or planar reflector, in combination with an appropriately oriented spherical reflector.

3,825,326

# INSTRUMENT FOR IMPROVED EYESIGHT-REFRACTION TESTING

Eastman Smith, Mountain Home, Ark. 72653

Filed May 18, 1972, Ser. No. 254,757

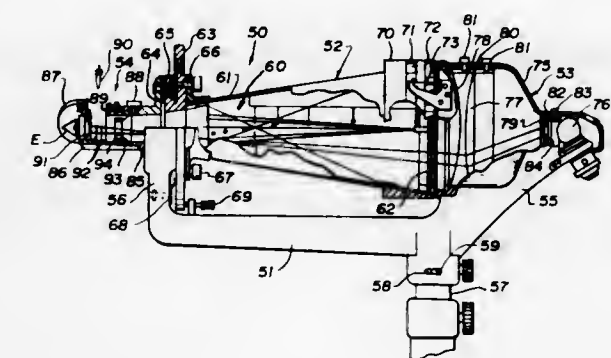
Int. Cl. A61b 3/02

U.S. Cl. 351—32

5 Claims

An instrument for eyesight-refraction testing, herein designated generically as an "Xactometer," employing optical

targets with clearly recognizable details when focused which are positioned singly or repeated, or partially repeated at transverse or lateral intervals of angles, and also at the same time are repeated or partially repeated at longitudinal, or sight-axial, intervals of distances relative to the examined eye. The target elements preferably are of increasing or decreasing lateral size directly proportioned to the distances, with the effect that all similar target elements at whenever distances subtend closely, or exactly the same visual angles and thus ap-



pear to the eye as of the same size and appear assembled adjacently in the same lateral plane. Such transverse angular positions are either optionally fixed or manually rotatable, and such longitudinal distances are similarly either fixed or shiftable optically by eye-lens add-power or other lens power focusable, for the purpose of locating positions and distances of best recognition or optimum resolution in retinal imaging. The recognizable distances indicate the desired corrective lens sphere-power and cylinder power; while the transverse angles indicate the desired corrective lens cylindrical-axis.

3,825,327

## SOUND MOTION PICTURE CAMERA

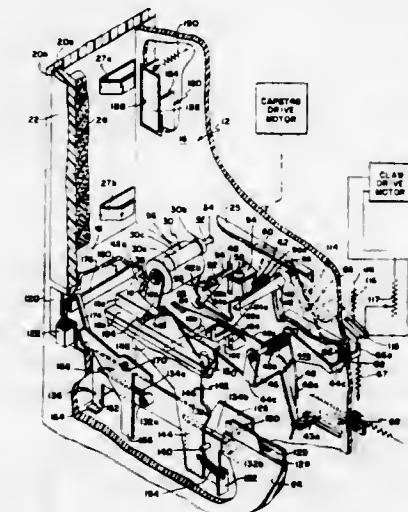
Gerald Julius Kosarko, Pavillion; Ronald Charles Holzhauser, Holley, and Edgar Samuel Marvin, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,588

Int. Cl. G03b 23/02

U.S. Cl. 352—29

23 Claims



A sound motion picture camera is adapted to receive a sound film cartridge to record both images and sound onto a film strip carried by the cartridge. The camera includes a sound transducer for recording sound, a pressure member for cooperating with the film to support the film closely adjacent to the sound transducer, guide means for guiding the film strip past the transducer, a capstan drive and a cooperating pressure roller for advancing the film strip as a sound sequence is being recorded, a cartridge ejecting member for at least par-



tially removing a film cartridge from the cartridge chamber of the camera, and a latching member for securing a door to the cartridge chamber. In the camera, the pressure member, the guide means, the pressure roller, the cartridge ejecting member and the latching member are selectively movable by a conditioning mechanism for permitting the cartridge and film strip to be readily inserted into the camera to permit recording of images and sound onto the film strip, or for ejecting the cartridge and the film strip from the cartridge chamber of the camera.

3,825,328

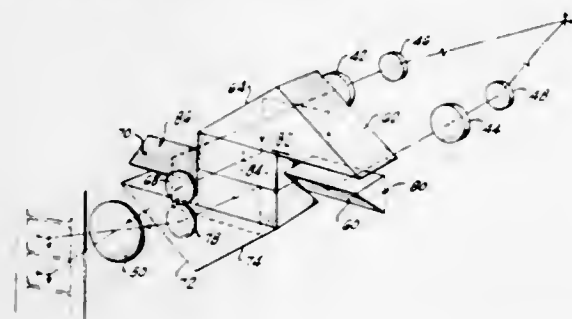
# OPTICAL SYSTEM FOR A STEREOSCOPIC MOTION PICTURE CAMERA

Winton C. Hoch, 1491 Stone Canyon Rd., Los Angeles, Calif. 90024

Filed Sept. 10, 1973, Ser. No. 396,110  
Int. Cl. G03b 35/02

U.S. Cl. 352-60

32 Claims



An optical system for making stereoscopic motion pictures which may be attached to a conventional motion picture camera of the type including a supply of film and a film drive mechanism for advancing the film past a picture aperture. The optical system makes it possible to produce simultaneously stereo pairs of adjacent, vertically spaced left and right images of the field of view one above the other on the film. The system includes laterally spaced left and right objective lenses forming left and right images of the field of view. Corresponding, image erecting systems provide folded optical paths to a single inverting relay lens which directs the focused, vertically aligned and spaced, left and right images on the film within the desired film area. The left and right image erecting systems cause an opposite reversal of image orientation to the image reversal caused by the relay lens and also bring the left and right images into vertically aligned and separated relation on the incident side of the relay lens, thus ensuring correct image orientation as well as vertical alignment and spacing of the left and right images on the film.

3,825,329

# MOTION PICTURE CAMERA HAVING MEANS FOR SIMULTANEOUSLY SELECTING THE FILM SPEED AND THE CORRESPONDING APERTURE SIZE

Frank-Armin Heiarich, and Hans-Friedrich Klefer, both of Stuttgart, Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Mar. 19, 1973, Ser. No. 342,812

Claims priority, application Germany, Mar. 22, 1972, 2213837

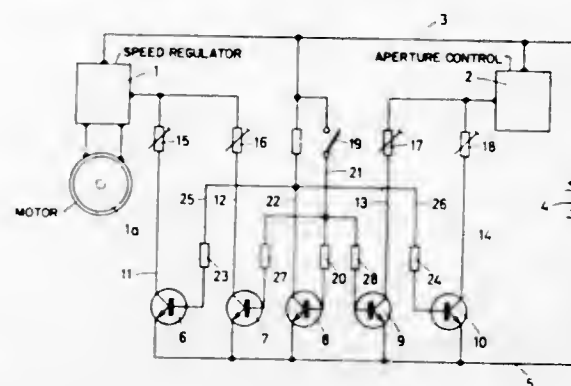
Int. Cl. G03b 7/08

U.S. Cl. 352-141

4 Claims

A motion picture camera is adapted to operate at a first and second film speed and requires a first and second aperture size at the first and second film speed, respectively. A speed regulator regulates the speed of the camera to the first and second speed, respectively, when connected to the battery through a first and second resistor, respectively. Aperture control means open the aperture to the aperture size corresponding to the first film speed when connected to the battery through a third

resistor and open the aperture to the second aperture size corresponding to the second film speed when connected to the source of electrical energy through a fourth resistor. First, second, third and fourth transistors connect the corresponding respective resistors to the battery when in a conductive state. A speed selector switch is externally operable to select the



first or second speed. Connected to the speed selector switch is a control transistor which is interconnected with the bases of the first, second, third and fourth transistors in such a way that the first and third resistor is connected to the battery when the speed selector switch is in the first position and that the second and fourth transistors are conductive when the speed selector switch is in the second position.

3,825,330

# MOTION PICTURE PROJECTOR DEVICE LOADED WITH A FILM CARTRIDGE

Kunlyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

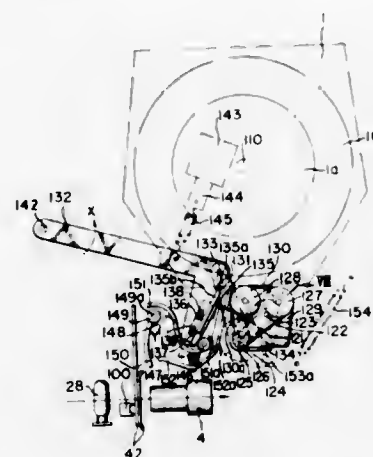
Filed Feb. 22, 1973, Ser. No. 334,898

Claims priority, application Japan, Feb. 22, 1972, 47-18347; Feb. 24, 1972, 47-19269

Int. Cl. G03b 1/56

U.S. Cl. 352-157

24 Claims



This specification discloses a motion picture projector loaded with a film cartridge supporting a film roll therein. The projector includes a stripper provided to make a resilient contact with said roll to strip a leader end portion off said film roll. The stripper has a strip passage surface for directing the stripped leader end portion from said film roll in a threading manner. A threading belt driven by three rollers is provided to make a pressure contact with said film roll to rotate the same in an unwinding direction. Two levers are provided to carry thereon said stripper and said threading rollers and belt, respectively. A connecting roller is further provided to transmit a drive to said threading rollers. The three levers together provide a linkage, which can be shifted to its operative position by actuating any one of the three levers.

3,825,331

# PROJECTION LAMP CARRIER

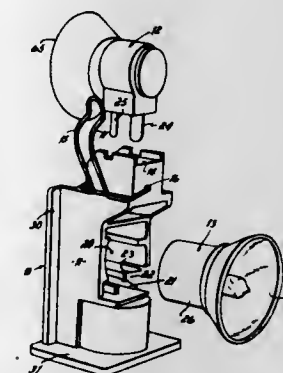
Alex J. Procop, and Ace Boultinghouse, both of Northridge, Calif., assignors to Target Systems Corporation, Chatsworth, Calif.

Filed July 19, 1973, Ser. No. 380,879

Int. Cl. G03b 21/00

U.S. Cl. 352-198

8 Claims



A removable projection lamp carrier operably positions a primary projection lamp as a source of light for a projector's projection path and stores a spare lamp in a compact inoperable position. The carrier is provided with an electrical socket for mounting the primary lamp, and with releasable connectors for providing current to the socket and the primary lamp from cooperating connectors in the projector when the carrier is in its operable position. The carrier has a non-electric socket for receiving a spare projection lamp in an inoperable position as a spare or replacement for the primary lamp. All electrical connections to the carrier are broken when it is removed from the projector for lamp replacement.

3,825,332

# AUDIOVISUAL APPARATUS

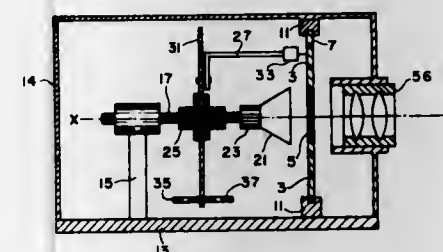
Panayotis C. Dimitracopoulos, P.O. Box 458, Outremont, Montreal 154, Quebec, Canada

Filed Nov. 6, 1972, Ser. No. 304,203

Int. Cl. G03b 31/06

U.S. Cl. 353-19

5 Claims



Audiovisual apparatus for use with an information tablet having an image record surrounded by a spiral information track, the audiovisual apparatus including a support member supporting the source, or the guiding elements, of a radiation beam directed onto the image to retrieve the imaging information contained therein, and a rotating transducer bearingly supported about this support member, the transducer employed to scan the information track.

924 O.G.-36

3,825,333

# SHROUD STRUCTURE FOR A MICROFILM READER

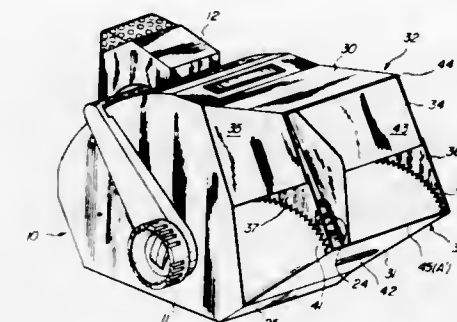
George J. Dali, Rochester, and William E. White, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1972, Ser. No. 223,941

Int. Cl. G03b 21/10; G03b 21/30, 21/58

8 Claims

1 Claim



A shroud structure for a microfilm reader comprises two movable members, each of which is pivotally mounted on the reader housing adjacent a respective opposite edge of the viewing opening. Each member is interconnected to the other so as to be movable as a unit between a first and second position. In the first position, the shroud members cover the viewing opening and in a second position they form an extension and provide a shroud opening that is of maximal size. Since the two members are interconnected and movable as a unit, the extension of the members provides an opening that increases to a maximum size in the second position. Any number of intermediate positions are possible depending on the amount or the distance the shroud members have been extended. Hence, in any position of the shroud members, the amount of ambient light incident on the screen can be controlled.

3,825,334

# FEEDING MECHANISM FOR SLIDE MAGAZINES OF PICTURE PROJECTORS

Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

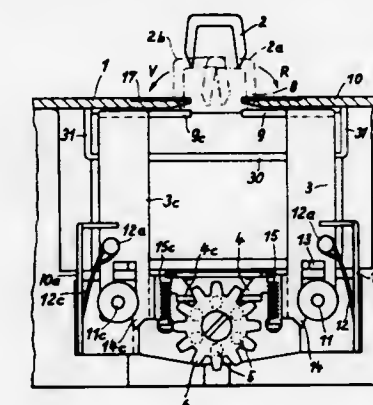
Filed Aug. 8, 1972, Ser. No. 278,765

Claims priority, application Germany, Aug. 13, 1971, 2140600

Int. Cl. G03b 23/04, 23/06

U.S. Cl. 353-103

7 Claims



Mechanism for feeding picture slide magazines of a photographic projector. The projector is provided with a guideway or track along which a bar-type slide magazine moves approximately horizontally parallel to the optical axis, and the projector has a claw mechanism for engaging a rack along the side of the bar-type magazine, to move it step by step so that one pic-



ture slide after another is brought into position to be shifted laterally from the magazine into alignment with the optical axis of the projector, for projection purposes. The present invention provides a housing for holding a slide magazine of circular or ring form, adapted to be placed in the same track in which a bar-type magazine may be mounted. A pinion for engaging a rack on the circular magazine is carried by the housing and is operated, through a slide, from the same feeding claw which is adapted to feed a magazine of the bar-type, when such a magazine is used.

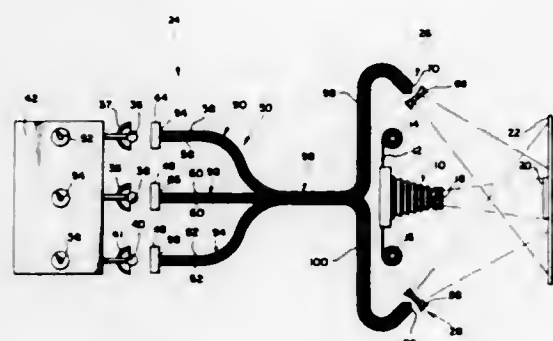
### 3,825,335 VARIABLE COLOR PHOTOGRAPHIC LIGHTING SYSTEM

Robert Reynolds, Yuma, Ariz., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 4, 1973, Ser. No. 320,950  
Int. Cl. G03b 27/76

U.S. Cl. 355-1

25 Claims



A variable color lighting system for illuminating a scene to be photographed. The system features one or more fiber optic light mixing devices which receive light from a plurality of different colored light sources and additively mix the light to form light of a composite color. By varying the intensity of the different colors of light, the color of the composite light output may be varied such that it is compatible with particular photosensitive materials being used in the photographic process.

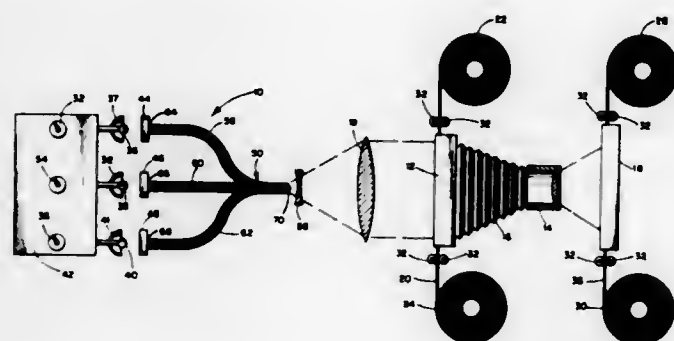
### 3,825,336 VARIABLE COLOR PHOTOGRAPHIC LIGHTING SOURCE

Robert Reynolds, Yuma, Ariz., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 4, 1973, Ser. No. 320,951  
Int. Cl. G03b 27/76

U.S. Cl. 355-1

29 Claims



A variable color light source which is especially well suited for use in a photographic printer or enlarger for balancing the color of the light source such that it is compatible with particular photosensitive materials. The variable color light

source features a fiber optic light mixing device for receiving different colored light, e.g., red, green and blue light, and combining the different colored light to form light of a composite color. By varying the intensity of the different colors of light, the composite color may be changed.

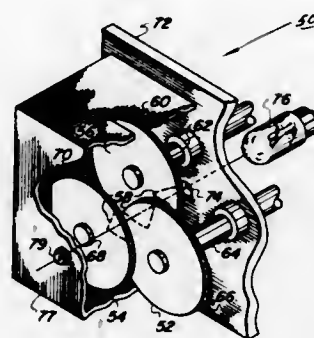
### 3,825,337 COLOR BALANCE DISPLAY

Frank L. Lucas, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1973, Ser. No. 322,655  
Int. Cl. G03g 15/22

U.S. Cl. 355-4

4 Claims



An apparatus in which the color relationship of a developability control system is displayed for indicating the balance thereof. The display apparatus is utilized in a multi-color electrophotographic printing machine and produces a visual indication of the color balance of copies being reproduced therein. A colored light ray is visible to the operator and functions as an indication of the color balance in the printing machine. When the colors of the copy are in balance, the operator will see a gray-black light. Adjustments are provided to vary the color balance; these adjustments, in turn, regulate the color of the light ray transmitted to the operator, thereby permitting the operator to visually note when the printing machine is producing copies having the requisite color balance.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

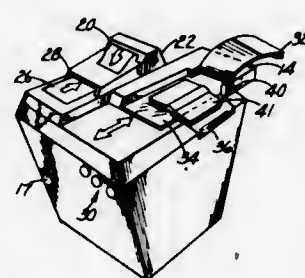
### 3,825,338 OPTICAL SYSTEM WITH SELECTABLE FEEDS

James A. Kollbas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Oct. 12, 1972, Ser. No. 297,138  
Int. Cl. G03b 27/10

U.S. Cl. 355-50

8 Claims



A duplicating machine which accepts original documents either in a flow-feed mode in which the documents move across the illumination station of an optical system in one direction only or in a platen-feed mode in which three-dimensional documents such as books are transported relative to the same illumination station in feed and return directions by a reciprocable carrier or platen. The mechanism for flow-feed is

also mounted on the carrier or platen. The optical system casts an image of a portion of the original document or all of the document on a photoconductive drum. By means of a novel drive system, movement of the documents is accurately synchronized with movement of the drum on which they are imaged, to produce high image resolution even when the dual feed mechanism is employed in a progressively scanning optical system.

### 3,825,339 SURFACE EXPOSURE DEVICE FOR COPYING APPARATUS

Masaya Ogawa, Toyokawa, Japan, assignor to Matsushita Seiko Company, Limited, Osaka City, Japan

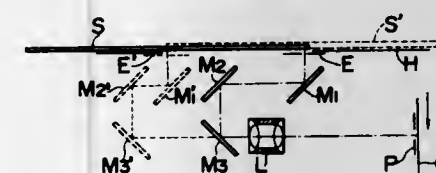
Filed Mar. 15, 1973, Ser. No. 341,782

Claims priority, application Japan, Mar. 29, 1972, 47-31389

Int. Cl. G03b 27/48, 27/50, 27/70

U.S. Cl. 355-51

5 Claims



A surface exposure device for use in a copying apparatus essentially comprising a supporting surface for supporting thereon an original from which a duplicate is desired, a lens assembly, a first carriage having therein a reflective mirror and a second carriage having therein at least one reflective mirror. The first and second carriages are conjointly displaceable in the same direction while the first carriage and the support surface undergo relative motion in opposite directions with respect to each other. Copying material on which the image of the original is to be reproduced is transferred at a velocity substantially equal to the relative velocity of movement of the supporting surface and the first carriage, the second carriage being moved at a velocity substantially equal to one-half of the velocity of the first carriage.

### 3,825,340 FREQUENCY MODULATION TELEMETRY SYSTEM

Hubert Debart, Meudon, France, assignor to Compagnie Generale d'Electricite, Paris, France

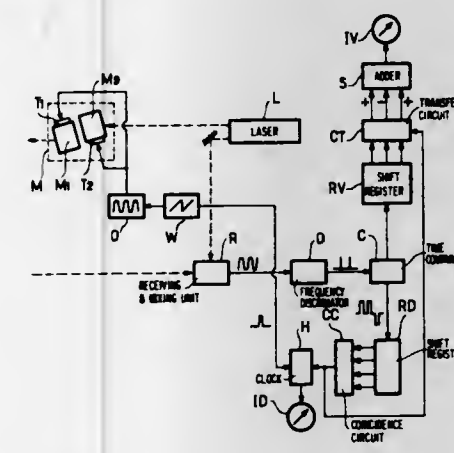
Filed Dec. 4, 1972, Ser. No. 311,614

Claims priority, application France, Dec. 3, 1971, 71.43502

Int. Cl. G01p 3/36

U.S. Cl. 356-5

5 Claims



A frequency modulation telemetry system in which the radiation sent out towards the target is that of a laser, frequency modulated according to a pseudo-random sequence of in-

creasing and decreasing ramps. The recognition of the sequence, on return, is effected through time intervals between the successive passes of the return frequency through a fixed reference frequency.

### 3,825,341 DOPPLER RADAR USING LASER

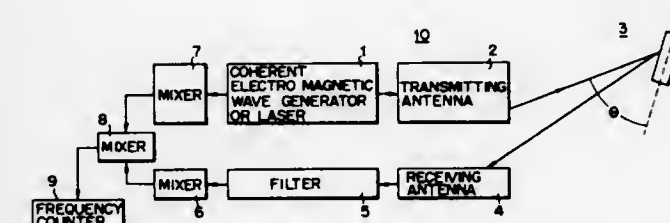
Kenya Goto, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 11, 1971, Ser. No. 152,386

Int. Cl. G01p 3/36

U.S. Cl. 356-28

9 Claims



A Doppler radar comprising a mode-locked laser oscillating in a single longitudinal mode which generates a laser beam including a plurality of electromagnetic waves of an equal frequency interval; a light transmitting telescope for directing said laser beam to a moving object; a light receiving telescope for receiving from the moving object a plurality of reflected waves subjected to Doppler shift; a photofilter for eliminating background noises from output beam of the light receiving telescope; a photodiode for mixing said plurality of waves and drawing out from the waves only the signal which has a frequency corresponding to the aforementioned equal frequency interval; a photomultiplier for mixing a plurality of reflected waves after their passage through the photofilter and drawing out from the reflected waves only the signal which has a frequency interval corresponding to the equal frequency interval of the transmitted waves; a circuit for mixing outputs from the photodiode and photomultiplier and a frequency counter for counting the frequency of the output signal from the mixing circuit to detect the relative speed of the moving object to that of the observing body.

### 3,825,342 COMPUTING TYPE OPTICAL ABSORPTION MIXTURE ANALYZER

Dietrich Werner Lubbers, Dortmund; Reinhard Wodick, Dortmund-Loh, and Dieter Piroth, Dortmund-Barup, all of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V., Gottingen, Germany

Filed May 8, 1972, Ser. No. 251,538

Claims priority, application Germany, May 7, 1971, 2122655

Int. Cl. G01n 33/16

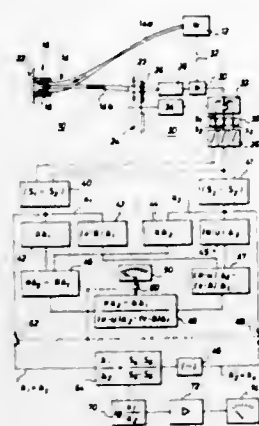
U.S. Cl. 356-41

9 Claims

The proportional concentration of a given substance in a mixture of substances, e.g. the specific oxyhaemoglobin con-



tent of blood, is determined by an apparatus which measures the absorption, by the mixture, of electromagnetic radiation,



as light, at three specific wavelength and calculates and indicates the desired concentration.

### 3,825,343 OPTICAL DEVICES

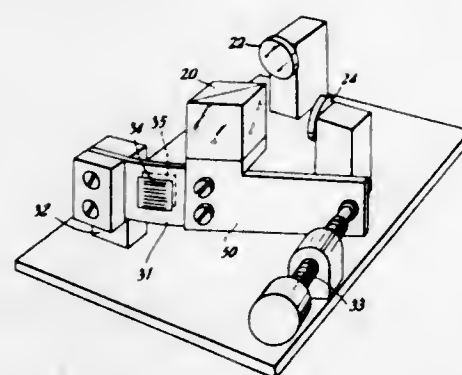
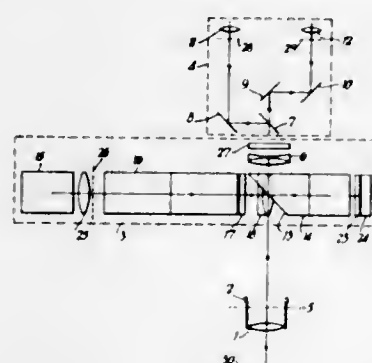
Derek Stanley Moore, York, England, assignor to Vickers Limited, London, England

Filed May 2, 1973, Ser. No. 356,332

Claims priority, application Great Britain, May 11, 1972, 22234/72

Int. Cl. G01b 11/00

U.S. Cl. 356—156



An optical device comprises an optical member carried at one end of a flexure spring of which an opposite end is secured to a firm support portion. A light beam incident on the optical member is deflected to an extent that depends on the degree of flexure of the flexure spring, and a strain gauge carried by the flexure spring provides an electrical measure of the said degree of flexure.

### 3,825,344 DEVICE FOR ANALYSING A SUBSTANCE BY ATOMIC ABSORPTION WITH BACKGROUND CORRECTION

Roger Bonne, Malakoff, France, assignor to Commissariat à l'Energie Atomique, Paris, France

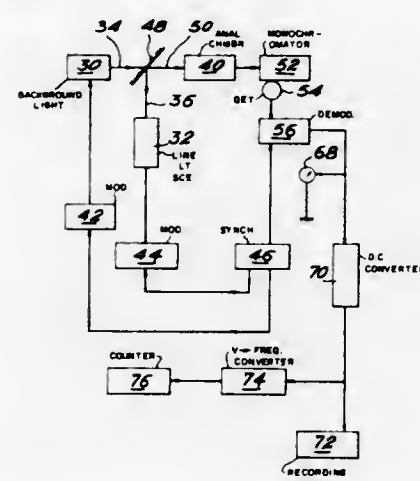
Filed Sept. 6, 1972, Ser. No. 286,844

Claims priority, application France, Sept. 14, 1971, 71.33035

Int. Cl. G01j 3/42

U.S. Cl. 356—85

5 Claims



The invention relates to a device for analysing a substance by atomic absorption with background correction in which the substance is vaporised in a chamber and light beams are transmitted through the vapour from two light sources, one of which has a band wavelength spectrum while the other has a line spectrum, one of the lines being centred at the atomic absorption wavelength. A monochromator is centred at the atomic absorption wavelength for alternately receiving the light beams and a photoelectric detector is disposed at the monochromator output for supplying electric signals. According to the invention electric modulators act on the electric supplies to the light sources for modulating the light beams substantially in the form of square waves of equal duration. The modulators are synchronised with one another and with comparison means which compares the electric signals supplied by the detector. A stationary semi-transparent mirror is disposed in the path of the two beams so that the beams follow the same path from the mirror to the monochromator.

### 3,825,345 METHOD OF AND APPARATUS FOR USE IN MEASURING THE PARTICLE SIZE DISTRIBUTION AND/OR THE CONCENTRATION OF PARTICLES IN SUSPENSION IN A GASEOUS DISPERSING MEDIUM

Gerhardt Lorenz, Göttingen, Germany, assignor to Sartorius-Membranfilter GmbH, Göttingen, Germany

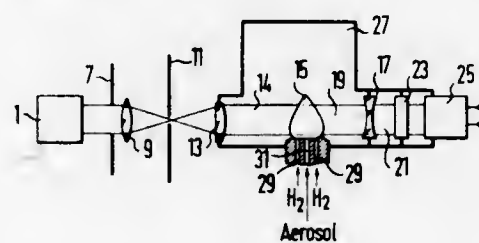
Filed Mar. 19, 1973, Ser. No. 342,477

Claims priority, application Germany, Mar. 22, 1972, 2213859

Int. Cl. G01j 3/30; G01n 15/02

U.S. Cl. 356—85

19 Claims



For measuring particle size distribution and/or particle concentration of particles in suspension in a gaseous dispersing

medium, particles are admitted singly and in succession to an evaporation zone of an atomic absorption spectrometer in which absorption and emission pulses modulate a pulsating light beam which activates a photo-multiplier, the signals from the photo-multiplier being fed to circuitry arranged to interpret the signals to provide an analysis of particle size distribution or concentration.

### 3,825,346 INTERFEROMETERS FOR FLUID FLOW MEASUREMENTS

Joseph Edward Rizzo, Hythe, Nr. Southampton, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

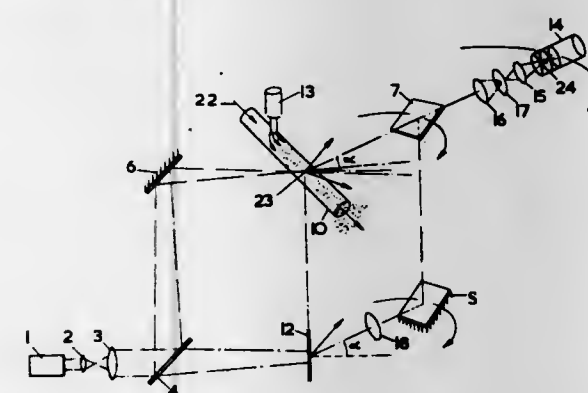
Filed Apr. 16, 1973, Ser. No. 351,759

Claims priority, application Great Britain, Apr. 17, 1972, 17562/72

Int. Cl. G01b 9/02

U.S. Cl. 356—106

4 Claims



An interferometer for detecting the velocity of small particles in a fluid includes relatively static means comprising a source of coherent radiation and a beam splitter means mounted in a fixed relationship for directing beams of coherent radiation from the source along two predetermined paths comprising a test path which will pass through the fluid under test and a reference path, and a scattering means mounted in the reference path for scattering the radiation in that path into a plurality of angles; and rotatable means, comprising a structure pivotably connected to said static means and rotatable about an axis which passes through the intersection of the reference path with the scattering means and through the intersection of the test path with the fluid under test, and optical components mounted on the said structure comprising recombination means for interferingly recombining radiation scattered into identical angles from both paths and thereby forming interference fringes which indicate the local velocity of the fluid under test.

### 3,825,347 APPARATUS FOR DETERMINING A SUBSTANCE BY AN OPTICAL RADIATION

Nils Kaiser, Ganting, Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.v., Göttingen, Germany

Filed Aug. 9, 1971, Ser. No. 170,207

Claims priority, application Germany, Aug. 7, 1970, 2039382; Sept. 14, 1970, 2045386; Nov. 25, 1970, 2058064

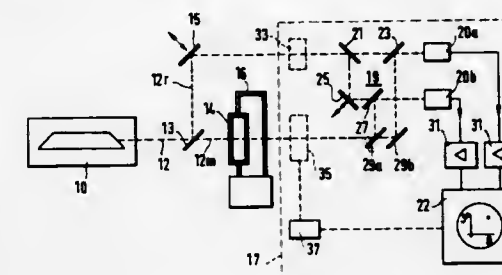
Int. Cl. G01b 9/02

U.S. Cl. 356—107

15 Claims

A laser produces a beam of optical radiation. The substance to be determined may be CO<sub>2</sub>, and in this case the laser is a CO<sub>2</sub>-laser. Alternatively, the laser may be a tunable laser, and the beam is split by a beam splitter into sample and reference beams, the sample beam being relatively modified by said substance. The modified beam and the reference beam are united and the united beam is sensed by a detector. The optical

lengths of the paths transversely by the reference and sample beams are exactly the same save the influence of said sub-



stance. A preferred sensing system indicates both the phase shift and attenuation of the sample beam by the substance to be determined.

### 3,825,348 PROCESS OF OPTICAL PATH MODULATION AND MODULATOR FOR IMPLEMENTATION OF THE SAME

Georges Nomaraki, Villon Bourg-la-Reine, and Gerard Roblin, Ivry, both of France, assignors to Etablissement Public: Agence Nationale De Valorisation De La Recherche Anvar, Neuilly S/Seine, France

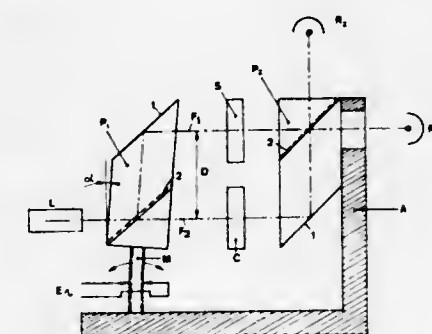
Filed Nov. 27, 1972, Ser. No. 309,797

Claims priority, application France, Dec. 3, 1971, 71.43510

Int. Cl. G01b 9/02

U.S. Cl. 356—107

11 Claims



The invention concerns a process and a device for optical path modulation.

The process lies in modulating the optical path difference between both waves of an interferometer by alternate variation of the relative inclination of two components of the interferometer due to the action of a modulator producing an alternate flexure, in creating a modulated optical phase variation causing a change in the modulated light flux and in using the signal provided by a photo-sensitive receiver submitted to this flux for measuring or detecting a phenomenon producing an optical phase difference submitted to the action of the optical path modulator.

The invention applies to metrology, ellipsometry, refractometry, polarimetry, etc.

### 3,825,349 POINT REFERENCE INTERFEROMETRY

Georges Nomaraki, Bourg-La-Reine, France, assignor to Etablissement Public: Agence Nationale de Valorisation de la Recherche, Neuilly S/Seine, France

No Drawing. Filed Nov. 27, 1972, Ser. No. 309,798

Claims priority, application France, Dec. 3, 1971, 71.43511

Int. Cl. G01b 9/02

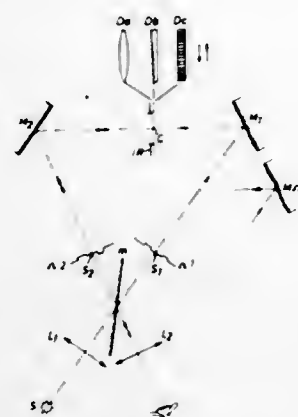
U.S. Cl. 356—107

22 Claims

The invention relates to improvements to point reference interferometry. These improvements are characterized by the fact that within an optical circuit derived from the Sagnac interferome-



ter and comprising a beam splitter M and a series of plane mirrors ( $M_1, M_2$ ) sending the beam coming from the beam splitter (M) back to the same beam splitter, an object having a phase  $\Omega$ , is placed inside the circuit so compared. A refracting or dif-



fracting transparent element causes an important change in the direction of the light rays traversing it at a point conjugated with itself or self-conjugated with respect to said beam splitter M.

The invention applies both to microscopy and macroscopy.

3,825,350

## RADIATION SENSING SYSTEM

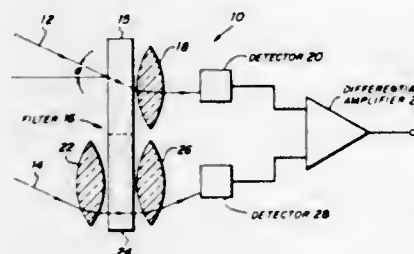
Donald W. Wilmet, Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Dec. 29, 1972, Ser. No. 319,429

Int. Cl. G01b 1/26

U.S. Cl. 356—138

5 Claims



A system for detecting and providing positional information on a source of monochromatic radiation at a given wavelength of interest. The system includes an angle sensitive detection subsystem, which varies its response as a function of angle of incidence of incident radiation, and an angle insensitive detection subsystem which has a uniform response for differing angles of incidence of incident radiation. The system utilizes a dielectric filter tuned to the given wavelength of interest which has the characteristic of varying its spectral filtering response as a function of the angle of incidence of radiation. In the angle insensitive subsystem an optical system gathers radiation from the field of view and passes it at a substantially perpendicular angle through a first portion of the dielectric filter for detection by a first detector. In the angle sensitive subsystem radiation from the entire field of view is directed through a second portion of the dielectric filter at varying angles of incidence depending upon the position of each source of radiation in the field of view for detection by a second detector. A differential amplifier compares the outputs of the two photodetectors. The magnitude of the difference between the two photodetector signals will vary monotonically as the source of radiation is positioned at angles further from a perpendicular to the dielectric filter, and accordingly the signal may be used for providing positional information on the source. Also, because of the characteristics of a dielectric filter, the first and second detectors will produce equal output

signals for broad frequency band sources of radiation and accordingly the output of the differential amplifier will be zero for those sources.

3,825,351

## AUTOMATIC SURFACE INSPECTION DEVICE FOR RUNNING OBJECT

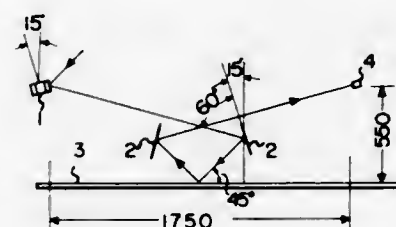
Takeo Seki; Shigenori Kawamura, both of Kokubunji; Itsuji Maeda, Akishima, and Akira Kaneko, Kokubunji, all of Japan, assignors to Hitachi Electronics Co., Ltd. and Nishin Steel Co., both of Tokyo, Japan

Filed Jan. 19, 1973, Ser. No. 325,054

Int. Cl. G01n 21/32

U.S. Cl. 356—200

5 Claims



A device for automatically detecting defects on the surface of a running flat object by optically scanning the surface and converting the presence of the defects into variations in electrical signals, characterized in that the configuration of an optical system associated with the device is adapted to be changed as desired without changing the characteristics of the optical system.

3,825,352

## AUTOMATICALLY ACTUATED LIGHT MEASURING SYSTEM

Naoyuki Uno, Iruma-gun, Saitama-ken, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

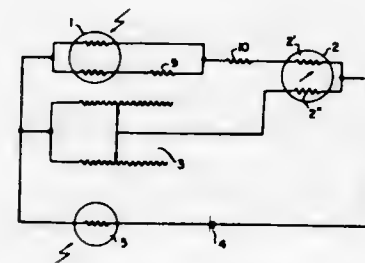
Filed May 27, 1969, Ser. No. 828,274

Claims priority, application Japan, June 5, 1968, 43-37980

Int. Cl. G01J 1/44

U.S. Cl. 356—226

7 Claims



An automatically energized light measuring system comprises a null type electrical measuring network such as a differential meter including a light measuring first photoconductor connected in series with one coil and a variable resistor connected in series with the other coil, or a bridge including a variable resistor in one leg and the first photoconductor in another leg. The electrical measuring network is connected through a second photoconductor to an energizing battery.

3,825,353

## MOUNTING LEADS AND METHOD OF FABRICATION

Alberto Loro, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

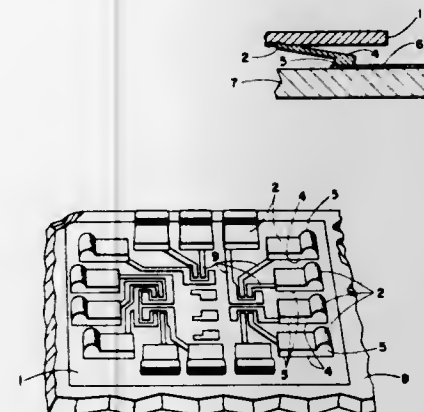
Filed July 12, 1972, Ser. No. 271,150

Claims priority, application Canada, June 6, 1972, 144,012

Int. Cl. H01L 5/00

U.S. Cl. 317—234 R

10 Claims



A beam terminal for a semiconductor chip which does not cantilever outwardly from the chip, and which extends no further than the boundary thereof. The beam terminal is adherent to the chip at one position, allowing the remainder thereof to flex with applied stress. The beam terminalized chip thus may be handled using economical mass production techniques.

3,825,354

## TOOTHBRUSH ADAPTER FOR AEROSOL CONTAINER

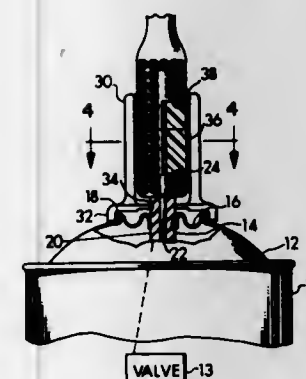
Theodore Rallis, Beacon Falls, Conn. 06403

Filed July 9, 1973, Ser. No. 377,828

Int. Cl. A46b 1/02

U.S. Cl. 401—119

5 Claims



A toothbrush has a hollow head into which head the user can inject toothpaste from an aerosol can. The aerosol can includes a valve in its upper portion which is spring loaded closed and adapted to be opened in response to pressure on a cylindrical plug extending upwardly through the top of the can. An adapter mounted on the aerosol can is adapted to receive the toothbrush so that it can be guided into a position which permits the user to push on the handle of the toothbrush to actuate the valve, and an injector tube also provided in the top of the aerosol can is received in an end opening associated with the hollow head of the toothbrush so that the user can grasp the aerosol can in one hand on the toothbrush in the other and thereby load his toothbrush in an efficient manner.

3,825,355

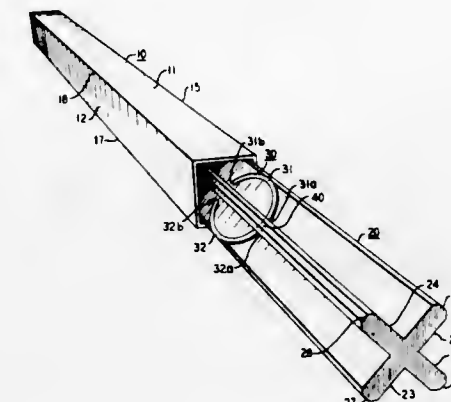
## INTERLOCKING JOINT

Frank Herbert Martin, Holmdel, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 2, 1973, Ser. No. 375,613

Int. Cl. F16b 1/00

12 Claims



An interlocking joint includes a hollow outer leg having three or more sidewalls which intersect to form at least three vertices, an inner leg member which includes at least three interconnected flanges each of which extend into one of the vertices, and securing means affixed to the inner leg that holds the legs in desired relative position by bearing on one or more sidewalls of the outer leg and thus urges certain of the flanges toward their corresponding vertices.

3,825,356

## TWO-PIECE SWAGE FITTINGS

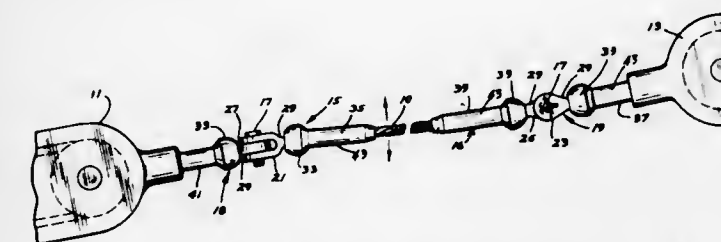
Edward J. Crook, Jr., Fort Wayne, Ind., assignor to American Holst & Derrick Company, St. Paul, Minn.

Filed July 14, 1972, Ser. No. 271,991

Int. Cl. F16g 1/102

U.S. Cl. 403—122

7 Claims



A two-piece swage socket is made up of interconnected shank and pin receiving sections. The shank section is made of steel having a spheroidized annealed microstructure. One end of this shank section is initially provided with an outwardly open, axially aligned, cylindrical cup portion, while the other end is constituted as an axially aligned, open, hollow cylinder adapted to be cold swaged upon a wire rope. The swage pin receiving section is made of steel having a substantially harder and stronger microstructure, and one end of it is constituted as a part spherical ball portion integrally connected through a narrowed neck either to a pin receiving clevis or tongue end piece at the other end. To make up the swage socket, the ball portion of the pin receiving section is inserted into the cup of the shank section and the outer end region of the cylindrical cup is cold formed onto the ball portion to provide a connection between the shank section and the pin receiving section such that these parts can be rotated and oscillated one with respect to the other.



3,825,357

## JOINT FOR AN ARTIFICIAL LIMB

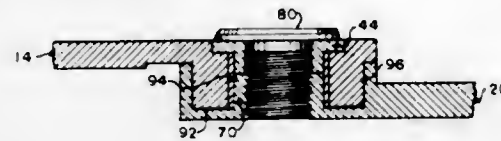
Edward W. Hilton, 2132 1st Ave., Seattle, Wash. 98121

Filed May 8, 1972, Ser. No. 251,217

Int. Cl. F16c 11/00

U.S. Cl. 403-161

4 Claims



A pivot joint between the overlapped ends of a pair of members, each end terminating in cylindrical end portion extending normal to the member and rotatably nested with the cylindrical end of the other rod and connected by a screw and sleeve unit secured for rotation with one of said rods.

3,825,358

## TOOL BAR CLAMP

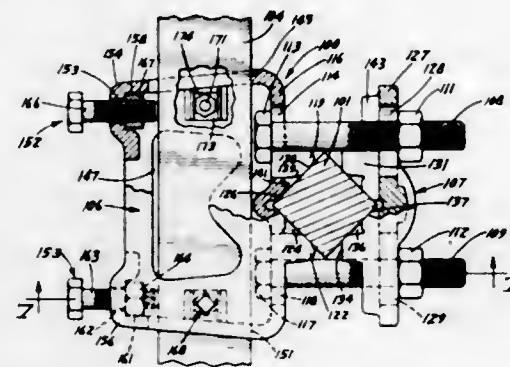
Fred W. Eisenhardt, and Hartley N. Ellingson, both of Fargo, N. Dak., assignors to Alloway Manufacturing, Inc., Fargo, N. Dak.

Continuation-in-part of Ser. No. 48,258, June 22, 1970, Pat. No. 3,642,333. This application Aug. 30, 1971, Ser. No. 176,169

Int. Cl. F16b 7/00

U.S. Cl. 403-188

23 Claims



A tool bar clamp for connecting a standard of an earth working tool holder to a support, as a tool bar of a cultivator. The clamp has a body with a passageway for receiving a portion of the standard. A first pair of nut and bolt assemblies, engageable with the forward edge of the standard, clamp the standard against the back of the body. A second pair of nut and bolt assemblies, mounted on the side of the body, clamp the side of the standard in the body to fix the lateral and perpendicular position of the standard in the clamp. The body is mounted on the support with a retainer and a pair of nut and bolt assemblies. The retainer and body have projections or legs that can accommodate tool bars having square, diamond and T shapes.

3,825,359

## RELEASABLE MOUNTING FOR CYLINDRICAL OBJECTS

Clyde E. Fulton, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 14, 1972, Ser. No. 272,056

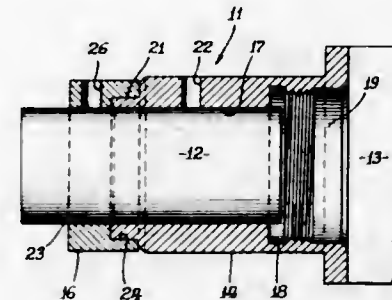
Int. Cl. F16b 2/18

U.S. Cl. 403-192

2 Claims

A compact economically manufactured mounting device provides for disengageably fastening cylindrical objects, such as electrical circuit elements or the like, to a support member. A tubular base is attachable to the support and has an internal

passage for receiving a portion of the cylindrical object to be mounted thereon. The end of the base into which the cylindrical object extends has an annular outer surface which is eccentric relative to the internal passage. A locking ring encircles another portion of the cylindrical object and is abutted



against the end of the base, the locking ring having an annular inner surface which is also eccentric relative to the passage through the ring and which is fitted against the eccentric outer surface of the base. Turning of the ring relative to the base then tightly clamps the base, locking ring and cylindrical object together.

3,825,360

## JOINT APPARATUS FOR SECTIONED SKIS OR THE LIKE

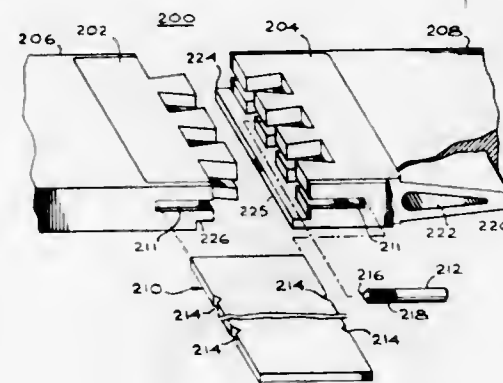
Thomas Patrick Galich, 33552 Palo Alto, Dana Point, Calif. 92629

Continuation-in-part of Ser. No. 167,610, July 30, 1971, abandoned. This application June 30, 1972, Ser. No. 267,923

Int. Cl. F16b 12/22

U.S. Cl. 403-294

14 Claims



An interconnecting joint for joining together adjacent ends of a pair of planar members such as portions to make up a ski. Key interlocks are formed at the ends of the members which are joined together for interlocking the members and preventing longitudinal separation thereof. Slotted portions are formed in the members for positioning an insert, with a portion of the insert mounted in each of the planar members and secured in place by easily removable retainers. The insert provides additional support for the joint and prevents undesired transverse flexing of the members at the joint. The joint provides a generally unitary structure having the same cross-sectional dimensions as each of the members at the joint with no protruding portions. Moreover, the joint allows ready separation of the planar members to permit packing of the members for transportation in a more compact array.

3,825,361

## ROAD PLANING MACHINES

Hubert Steiner, Stoke-On-Trent, England, assignor to H. Steiner Limited, Staffordshire, England

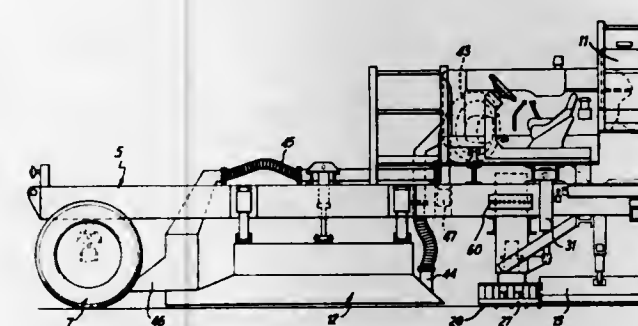
Filed July 21, 1972, Ser. No. 273,890

Claims priority, application Great Britain, July 23, 1971, 34591/71

Int. Cl. E01c 23/12

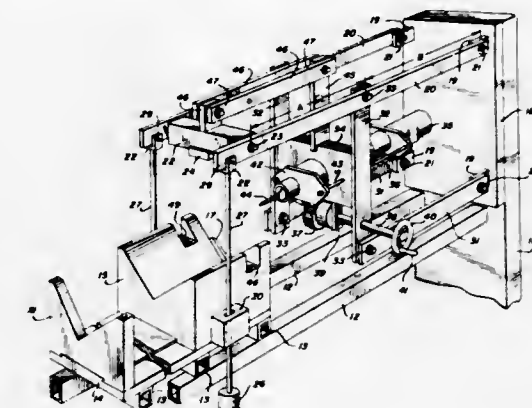
U.S. Cl. 404-90

23 Claims



A road planing machine having a cutter assembly and a collecting and elevating assembly, the cutter assembly comprising a series of side-by-side rotary cutter wheels arranged transversely of the direction of movement of the machine in use, the cutter wheels being interlocked for rotation in unison and each being driven by an individual hydraulic motor supplied from a common pressure source. The machine may include a heating unit mounted forwardly of the cutter assembly, the heating unit preferably being gas fired and the gas supply pipes for the heater and oil return pipes from the cutter motors effecting a heat exchange. Air may be drawn from the heater and passed over it to the front of the machine to be directed downwards on to the road to pre-heat the latter.

machining of the stock is disclosed. More particularly, the apparatus includes a linkage comprising a pair of horizontally displaced bars coupled to a substantially flat frame member so that each is pivotable in a vertical plane normal to the frame. A second, shorter pair of pivoted bars is similarly positioned directly below the first pair. The free-moving end of each short bar, in turn, is coupled to an intermediate point on the corresponding by a vertical bar so that the linkage forms a pair of parallelograms. A hold-down means, attached to the free-



moving ends of the longer outwardly extending bars, is positioned to contact the upper surface of the stock as it rests in a V-shaped stock support so that the stock is secured in position for drilling with its end surface parallel to the frame. A drill is mounted between the vertical bars so that it is normal to the end of the stock. Accordingly, when the holddown contacts the top surface of the stock, the drill is automatically aligned with the longitudinal axis of the stock so that a centering hole can be drilled.

3,825,362

## ARBOR FOR AN ANNULAR HOLE CUTTER

Everett D. Hougren, G-5072 Corunna Rd., Flushing, Mich. 48504

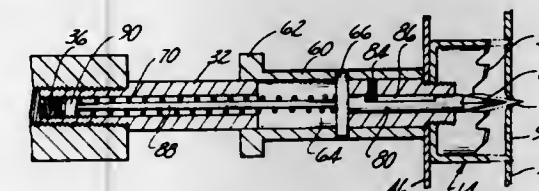
Filed Feb. 26, 1973, Ser. No. 335,826

Int. Cl. B23b 47/00, 51/04

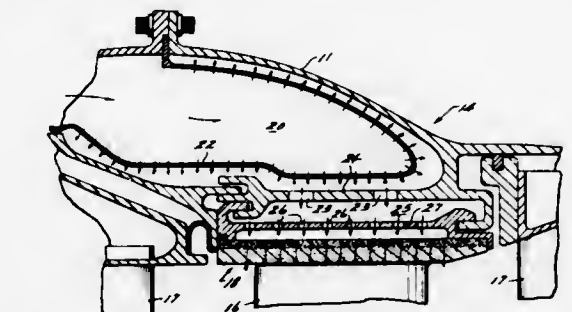
U.S. Cl. 408-68

7 Claims

U.S. Cl. 415-116



A cup-shaped annular cutter for forming circular holes in workpieces mounted on the end of an arbor, the arbor being provided with a center pilot member adapted for ejecting the center slug resulting from the opening cut by the cutter. The arbor preferably has a sleeve mounted for axial sliding movement on the shank of the arbor with a transverse pin on the sleeve extending through a slot in the arbor for engaging the inner end of the pilot member.



A turbine blade tip-sealing shroud between a rotating bladed turbine and the surrounding casing of a turbojet engine is formed of substantially cylindrical inner and outer layers of porous sintered metal or similar material. The porosity of the radially inner layer is greater than the porosity of the outer layer and is adapted to withstand frictional rubbing contact with the turbine. The outer layer of the shroud is impinged by cooling air for transpiration cooling of the shroud, the amount of cooling air passed therethrough being metered by the porosity of the outer layer. The relative porosities of the two layers enable the shroud to meter the flow of cooling air to maintain this flow in spite of abrasion of the inner layer and the constriction of the pores thereof by the rotating bladed turbine.

3,825,363

## CENTER DRILLING HOLD-DOWN DEVICE

Robert W. Lanman, Munster, Ind., assignor to Hadady Machining Co., Inc., Lansing, Ill.

Filed Dec. 21, 1972, Ser. No. 317,628

Int. Cl. B23b 45/14

U.S. Cl. 408-104

17 Claims

An apparatus for automatically aligning a hydraulic drill with the longitudinal axis of a piece of stock material so that a centering hole may be drilled therein to facilitate subsequent



3,825,365

## COOLED TURBINE ROTOR CYLINDER

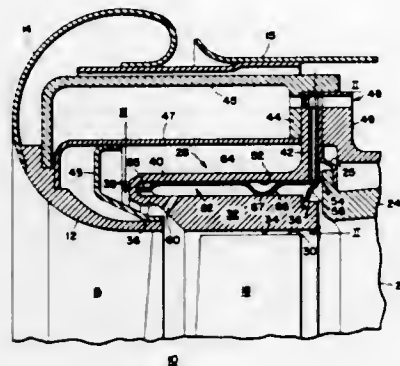
Yao Peng, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Feb. 5, 1973, Ser. No. 329,480

Int. Cl. F01d 5/08, 11/08, 25/26

U.S. Cl. 415-117

9 Claims



An air-cooled turbine rotor cylinder comprising an inner ring positioned adjacent the tips of a plurality of turbine blades attached to a turbine disc. An integral outer ring and an integral web form an annular space between the rings. Cooling air is supplied to the open end of the annular space and exits through ports upstream of the turbine blades to cool the inner ring. A baffle having a series of ribs is provided in the annular space and acts to provide a short path for cooling air at lower temperatures and a substantially longer flow path at higher temperatures. This acts to minimize the variation in radial thermal growth in the inner ring.

3,825,366

## ASSEMBLY FOR CENTRIFUGAL BLOWERS AND THE LIKE

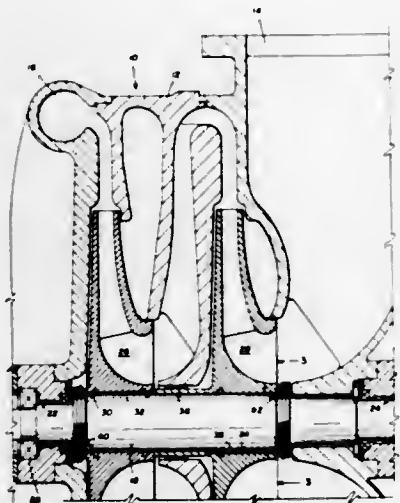
David Burton Herrick, Connersville, Ind., assignor to Dresser Industries Inc., Dallas, Tex.

Filed July 31, 1972, Ser. No. 276,807

Int. Cl. F04d 29/28, 17/00

U.S. Cl. 415-131

2 Claims



An improved rotor and shaft assembly for a centrifugal blower, compressor, or the like that includes a shaft constructed from a material having a first coefficient of thermal expansion and a rotor located on the shaft and constructed from a material having a second coefficient of thermal expansion that is greater than the first coefficient of thermal expansion. Abutments are provided on the shaft that engage the rotor hub to limit the thermal expansion of the rotor in the axial direction to the same expansion as that of the shaft and to convert any excess axial thermal expansion of the rotor into

an inwardly deformation of the hub, whereby, the hub more tightly engages the shaft. The arrangement permits the rotor to be slipped onto the shaft during assembly and to be slipped off the shaft during disassembly while at the same time providing for the operation of the blower or compressor at elevated temperatures without loosening of the rotor on the shaft.

3,825,367

## REVERSIBLE TURBINE WITH INLET AND BRAKE CONTROL SYSTEM

Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

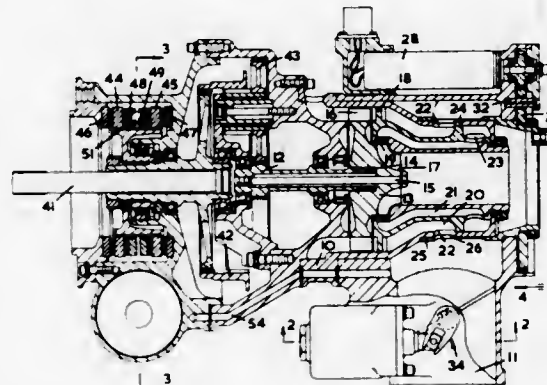
Filed Jan. 12, 1973, Ser. No. 323,236

Claims priority, application Great Britain, Jan. 12, 1972, 1404/72

Int. Cl. F01d 1/30, 17/00, 21/14

U.S. Cl. 415-153

18 Claims



A turbine includes a rotor having two sets of blades, gas flow through one blade set urging the rotor in the opposite direction to gas flow through the other blade set. A valve between the rotor and the turbine inlet enables gas flow to the blade sets to be selectively controlled, an increased flow to one of the sets being preceded by a decreased flow to the other set.

3,825,368

## DIAPHRAGM STRUCTURE FOR A MULTI-STAGE CENTRIFUGAL GAS COMPRESSOR

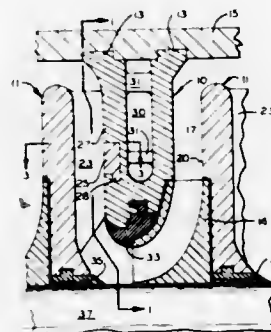
Herschel A. Benjamin, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,847

Int. Cl. F04d 29/44

U.S. Cl. 415-199 A

3 Claims



The diaphragm structure for multi-stage centrifugal compressors consists of two pieces cast separately. One piece is fixed at its periphery in the compressor casing in the conventional manner. The second piece is spaced in a direction axially of the compressor from the first piece to form in conjunction therewith a gas inlet passage terminating at the intake of the impeller. The second piece is spaced from the first piece by a plurality of radially disposed vanes formed integral with the second piece. The side surface of the first piece confront-

ing the second piece is formed with a recess. Said vanes are formed at their free edges with a circular rib disposed in the recess. The rib and recess are formed with integral interlocking means.

3,825,369

## LIGHTWEIGHT FAN

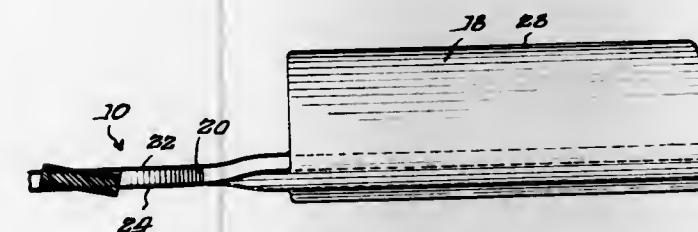
R. Richard Albertzart, Okemos, Mich., assignor to Hayes-Alblon Corporation, Jackson, Mich.

Filed Sept. 13, 1972, Ser. No. 288,762

Int. Cl. F04d 29/38

U.S. Cl. 416-229

3 Claims



A lightweight automotive fan having a plastic core and high strength metal sheets applied to the front and rear faces of the core.

3,825,370

## PITCH VARYING MECHANISM FOR VARIABLE PITCH FAN

David Roberts McMurtry, and Michael John Agg, both of Bristol, England, assignors to Rolls-Royce (1971) Limited, London, England

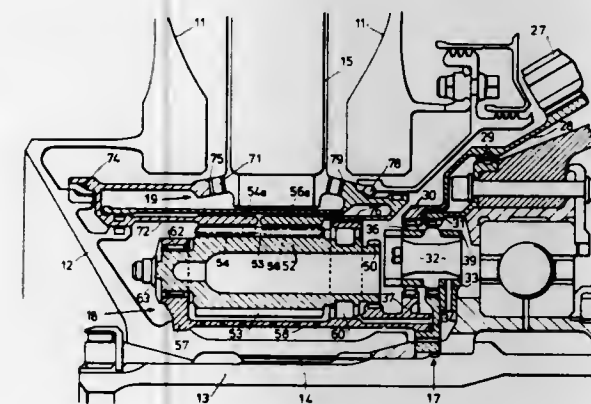
Filed Dec. 6, 1972, Ser. No. 312,754

Claims priority, application Great Britain, Dec. 11, 1971, 57658/71

Int. Cl. B64c 11/32

U.S. Cl. 416-160

7 Claims



The blades of a variable pitch fan of a gas turbine engine are rotated about their longitudinal axes as well as about the axis of the engine by a gear system which comprises a stationary actuator which initiates the pitch varying movement by producing a rotary output corresponding to the degree of pitch change required, an epicyclic differential gear driven by this output and the engine main shaft, and arranged to produce an output corresponding to the sum of the rotary output and the shaft rotational speed, and a pitch changing gear adapted to be driven by the output of the differential gear and to produce relative rotation of two annulus gears connected to rotate the fan blades about their own axes.

3,825,371

## FASTENING OF EROSION PROTECTIVE STRIPS TO AIRCRAFT PROFILES

Wolfgang Roder, Pinneberg; Wolfgang Volkner, Rellingen, and Dieter Rusch, Holstein, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 27, 1972, Ser. No. 301,678

Claims priority, application Germany, Oct. 27, 1971, 2153434

Int. Cl. B64c 11/20

U.S. Cl. 416-224

10 Claims



An elastic adhesive, which is hydrophobic, possesses a high breaking strength, a low modulus of elasticity, a high resistance to peeling and shear and good vibration characteristics is used to fasten protective strips to the profiled portions of an aircraft.

3,825,372

## COMPACT COMPRESSOR UNIT

Anders Lundberg, and Rolf Axelsson, both of Norrköping, Sweden, assignors to Stal Refrigeration AB, Vasteras, Sweden

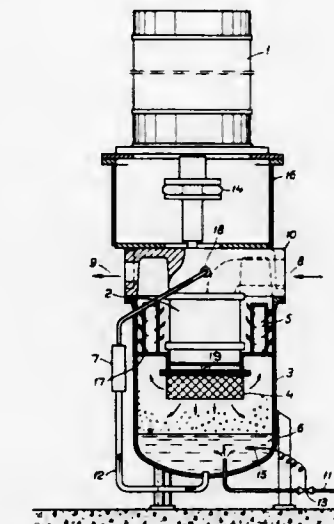
Filed Dec. 18, 1972, Ser. No. 316,291

Claims priority, application Sweden, Dec. 23, 1971, 16587/71

Int. Cl. B01d 45/00; F25b 43/02; F01c 21/04

U.S. Cl. 417-321

4 Claims



A refrigeration compressor unit comprising a compressor, a motor and an oil separating system, wherein the compressor is mounted within the oil separator housing, and the motor is mounted on the compressor.

3,825,373

## DISHWASHER ASSEMBLY

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 2, 1973, Ser. No. 320,617

Int. Cl. F04b 21/00

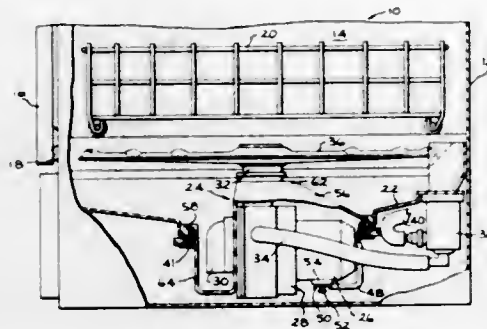
U.S. Cl. 417-360

9 Claims

A dishwashing machine is disclosed having an interior wash chamber and a unitized motor-pump assembly mounted in sealed relation in a bottom opening of the chamber whereby a portion of the assembly projects upwardly above the cham-



ber's bottom wall. The motor-pump assembly is designed to be installed in the machine by downward insertion through the wash chamber and into a suspended position within the opening provided therefor. The unitized motor-pump assembly includes a membrane-like flexible shroud that covers the assembly and has a circumferential edge adapted to serve as an



annular seal between the assembly and the annular chamber bottom wall lip defining the bottom wall opening. A means for compressibly sealing the motor-pump assembly to the bottom wall includes a clamping arrangement adapted to exert a radially inward clamping force that is translated vertically to draw the motor-pump assembly downwardly relative to the wash chamber bottom wall and tightly seal it therewith.

3,825,374

## AIR SUPPLY DEVICE

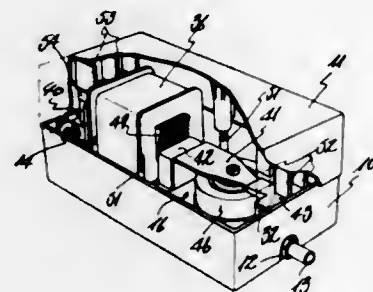
Ryozo Kondo, 19-5, Ikegami 1 Chome, Ohta-Ku, Tokyo, Japan

Filed Mar. 9, 1972, Ser. No. 233,092

Int. Cl. F04b 35/04, 43/00

U.S. Cl. 417-413

8 Claims



An air supply device for blowing air bubbles into an aquarium. An electro-magnet creating an alternating magnetic field to actuate a vibrating arm is provided with a core having concave poles, and the electromagnet and the vibrating arm which is disposed opposite to the concave poles are held by supporting members integrally molded with an upper and lower casing of the air supply devices.

3,825,375

## ROTARY DRIVING

Nicholas B. Deane, 1558 Massachusetts Ave., Cambridge, Mass. 02138

Filed Jan. 5, 1972, Ser. No. 215,544

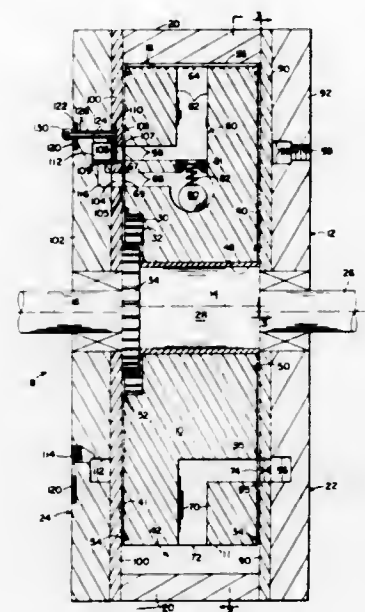
Int. Cl. F01c 1/02, 21/12; F04c 17/02

U.S. Cl. 418-61 A

32 Claims

A rotary device of the type comprising a housing defining a first trochoidal internal profile between a pair of end walls and a rotor rotatable within the housing defining at its periphery a second trochoidal surface, the housing profile and rotor sur-

face defining working chambers the volume of which expand and contract during relative rotation of the rotor and housing,



and the rotor and housing defining conduits and porting for introducing fluid into the working chambers through the rotor.

3,825,376

## VALVE ARRANGEMENT FOR FLUID PRESSURE MOTOR OR PUMP

Carsten Georg Otto Petersen, Høbe Buch, and Svend Giversen, Ulkebol, both of Denmark, assignors to Danfoos A/S, Nordberg, Denmark

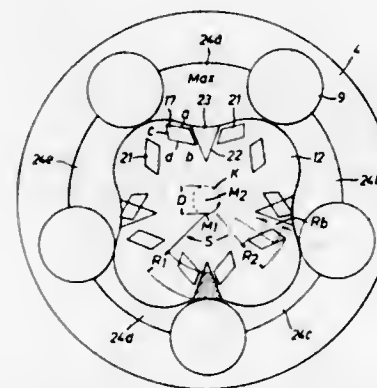
Filed Nov. 10, 1972, Ser. No. 305,599

Claims priority, application Germany, Nov. 10, 1971, 2155818

Int. Cl. F04c 1/06

U.S. Cl. 418-61 B

5 Claims



The invention relates to a gerotor type motor or pump in which the valving is between the gerotor star member and the adjacent casing wall. A separate valve member, as such, is not provided. The valving includes recesses formed in the star, each of which sequentially moves into fluid communication with inlet and outlet recesses formed in the casing wall. The star member has the usual combined rotary and orbital movements and the valve recesses are accordingly formed or shaped to accommodate this compound movement.

3,825,377

## GEAR PUMPS AND MOTORS

Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

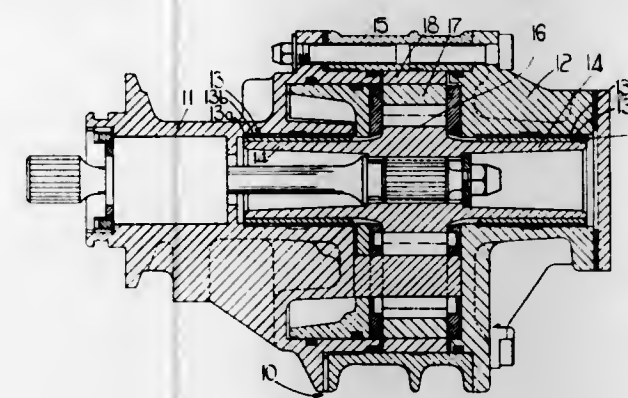
Filed Apr. 28, 1972, Ser. No. 248,381

Claims priority, application Great Britain, Apr. 28, 1971, 11774/71

Int. Cl. F01c 1/10; 21/00

U.S. Cl. 418-170

6 Claims



A gear type pump or motor has its gears supported in bearings mounted in bearing support portions of the housing with the whole of the pump interior containing fluid. The housing and gears are made of different materials e.g., titanium and steel respectively, so that the bearing clearance is reduced as the temperature rises to compensate for the reduced viscosity of the working fluid.

3,825,378

## MOLD APPARATUS

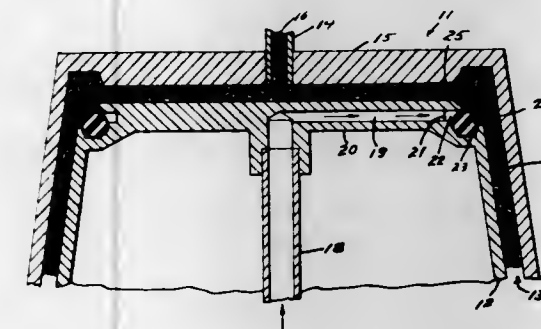
William A. Dart, Mason, and James R. Davis, Okemos, both of Mich., assignors to Dart Container Corporation, Mason, Mich.

Filed Apr. 13, 1973, Ser. No. 350,689

Int. Cl. B29d 27/00

U.S. Cl. 425-4 R

6 Claims



A mold apparatus having a core element provided with a plurality of spaced apart steam and air emitting ports which open into the mold cavity and which are circumferentially positioned within an annular groove provided in the upper portion of the core element. An elastic ring element positioned in the annular groove so as to normally cover the steam and air emitting ports. The elastic ring element being expandable to permit air or steam under pressure to flow from the ports into the mold cavity but normally closing against the ports to prevent the contents of the mold cavity from entering and clogging the steam and air emitting ports and the channels within the core element which lead thereto.

3,825,379

## MELT-BLOWING DIE USING CAPILLARY TUBES

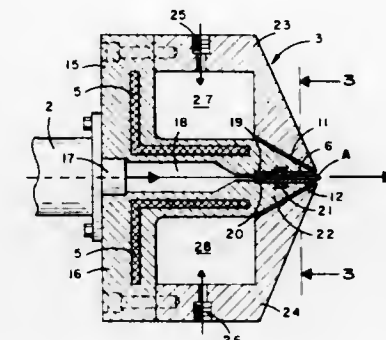
Dwight T. Lohkamp, and James P. Keller, both of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 10, 1972, Ser. No. 242,504

Int. Cl. D01d 3/00, 7/00

U.S. Cl. 425-72

16 Claims



A melt-blowing die which has capillary tubes rather than drilled orifices is more easily fabricated and operates more effectively. Preferably, one end of each capillary tube is machined so as to terminate in an apex having an included angle within the range of 30° to 90°. Or the tubes can have conical ends with the same angle. The inside diameter of these tubes range from 0.010 to 0.025 inch and they connect with a chamber in the die. Preferably the die is a two-piece assembly and is fabricated by bolting the two pieces and including the capillary tubes in a solder layer.

3,825,380

## MELT-BLOWING DIE FOR PRODUCING NONWOVEN MATS

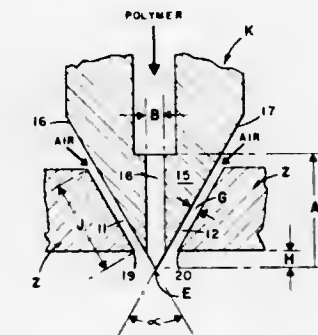
John W. Harding; James P. Keller, and Robert R. Buntin, all of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed July 7, 1972, Ser. No. 269,624

Int. Cl. B29f 3/04

U.S. Cl. 425-72

9 Claims



A die having a special nose configuration approximating a triangle in cross section is especially suitable for use in a melt-blowing process for making very fine fibers from thermoplastic materials. A plurality of orifices are located in an edge-apex formed at the juncture of two sides of said triangle. The included angle encompassing said edge is within the range of 30° to 90°. The essential feature of said edge is that there are essentially no dead spaces where polymer can collect during the melt-blowing process. Any point on the edge which is more than about 0.002 inches (2 mils) from where the sides make initial contact with said edge is considered to be a dead space. Another feature of the invention involves air slot adjustment means in combination with said die nose.



3,825,381

## APPARATUS FOR FORMING AIRLAID WEBS

Charles E. Dunning, Neenah, and Stanley R. Kellenberger, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 145,452, May 20, 1971, abandoned.

This application Aug. 1, 1973, Ser. No. 384,705

Int. Cl. B29c 13/00

U.S. Cl. 425-83

39 Claims



An apparatus for forming airlaid wood fiber webs at high speeds, which webs may be used for sanitary wipe and toweling applications, comprises a means for air laying a wood fiber continuum on to a foraminous carrier, a water spray for wetting the continuum, a transfer roll positioned to accept the wetted continuum surface to strip it from the carrier and a patterned roll with land areas and relieved areas on the roll surface and held in pressure engagement with the transfer roll to compress the continuum to form a closely spaced pattern of deep indentations or bonded zones with fluffy mounds of fibers therebetween.

3,825,382

## FILTER PRESS

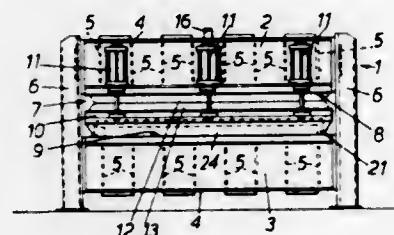
Maxwell Wingate Davidson, Edinburgh, England, assignor to Maxwell Davidson Limited, Edinburgh, Great Britain

Filed May 24, 1972, Ser. No. 256,248

Int. Cl. B29c 3/00

U.S. Cl. 425-84

21 Claims



A press for expressing liquids from solids or for forming moulded blocks comprises a frame including a facing pair of upper and lower platens, a filter cloth extending across the lower platen, and a fluid expansible bellows device located between the platens and serving to press material against the filter cloth. The bellows device is comprised by the novel arrangement of a first flexible diaphragm connected to the upper platen and forming a fluid chamber with the upper platen, and an inflatable bag member between said first flexible diaphragm and the lower platen.

The inflatable bag has an upper diaphragm wall back-to-back with said first diaphragm and a lower diaphragm wall for pressing material on the filter cloth, the inflatable bag and the fluid chamber being in fluid communication; and the bellows device includes an inlet for pressure fluid.

3,825,383

## APPARATUS FOR PRODUCING MULTILAMINATED FILM

John M. Hoagland, 284 Twin View Dr., Pleasant Hill, Calif. 94523; George M. Tokos, 7335 Hansen Dr., Dublin, Calif. 94566, and Edward G. Toan, 1152 Clarendon Cres., Oakland, Calif. 94610

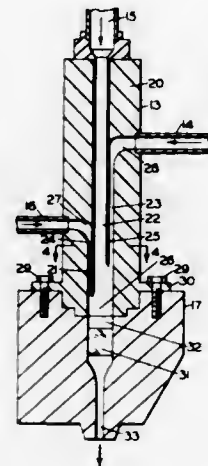
Continuation of Ser. No. 863,735, Aug. 12, 1969, abandoned, which is a division of Ser. No. 492,212, Oct. 1, 1965,

abandoned. This application Nov. 14, 1972, Ser. No. 306,282

Int. Cl. B29d 7/04

U.S. Cl. 425-131

4 Claims



An apparatus for producing multilaminated thermoplastic film and embodying means for forming a composite thermoplastic resin plug and enabling the composite resin plug to be expanded widthwise so as to produce in a die manifold of the apparatus a laterally expanded molten plastic resin stream substantially equal in width to that of a multilaminated thermoplastic film which is to be extruded through a long, narrow orifice of the die, there being a converging passageway in the die through which passageway the expanded molten plastic resin from the manifold can flow and meanwhile be compressionally convergently reduced in thickness leading toward the long, narrow orifice of the die thus to have the die issue a multilaminated thermoplastic film.

3,825,384

## HYDRAULIC DRIVE MEANS FOR THE MOLD CLOSING UNIT OF AN INJECTION MOLDING OR DIE CASTING MACHINE

Karl Hehl, Siedlung 183, D-7291 Lossburg/Wurtemberg, Germany

Filed Oct. 18, 1971, Ser. No. 189,976

Claims priority, application Germany, Oct. 17, 1970, 2051083; Feb. 6, 1971, 2105637

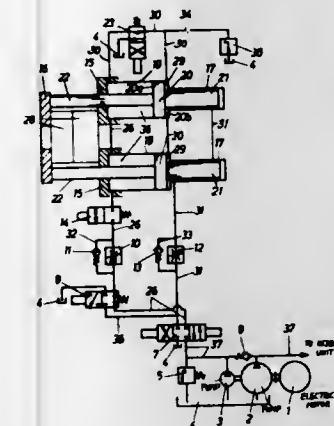
Int. Cl. B29l 1/06

U.S. Cl. 425-137

6 Claims

A hydraulic drive system for the mold closing unit of an injection molding or die casting machine in which drive cylinders are provided in circuit with a pump system which alternately provides pressure levels in at least a low pressure range and a high pressure range for the closing unit. In one embodiment, the pump system effects a closing stroke and an opening stroke of the mold by applying a pressure in the low pressure range, and retains the closed state of the mold by applying a pressure in the high pressure range. A slide valve and a pressure setting valve are connected in circuit with the drive cylinders and the pump, with the pressure setting valve opening at a preselected limit pressure which is lower than the low pressure range, while the slide valve is maintained in an open position during the latter portion of the closing stroke of the mold. In another embodiment, the pump system effects a

closing stroke and an opening stroke of the mold by applying a pressure in the low pressure range, and retains the closed state



of the mold by applying a pressure in the high pressure range with the pressure setting valve opening at a preselected limit pressure which lies slightly above the pressure ranges.

3,825,385

## SELF-CONTAINED DIE PROTECTING DEVICE

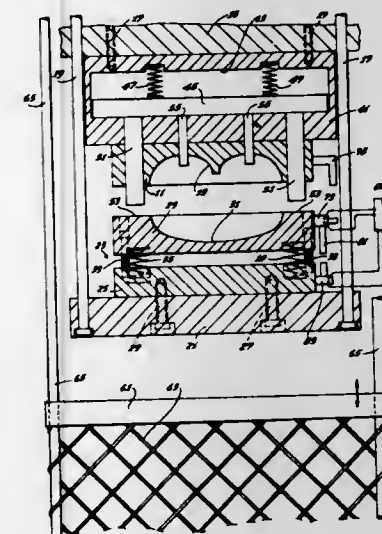
Peter Joseph Sesto, Redondo Beach, Calif., assignor to G & S Mold & Die, Inc., Hawthorne, Calif.

Filed Mar. 22, 1972, Ser. No. 237,160

Int. Cl. B28b 17/00

U.S. Cl. 425-137

12 Claims



A safety device for the protection of dies such as those used in injection molding operations. One of the die blanks is formed in two sections which are mounted for limited movement relative to one another and spring-biased apart which can be set to any degree of sensitivity by different spring tensions. The other die blank is provided with an ejector plate mounted in the rear portion thereof so that ejector pins normally extended into the mold cavity in order to eject finished products therefrom. The die blanks are mounted on press platens so that they may be moved relative to one another. When the die is closed, the ejector pins are forced out of the mold cavity. A pair of switches are attached to the die blanks in such a way that if any flashing or other foreign material should fail to be ejected from the mold cavity, should fall between the die blanks, or should get behind the ejector plate, the relative movement of the blanks will automatically be reversed before substantially any damage can occur to the die.

3,825,386

## PRESSING CONTROL DEVICE

Wolffert Bello; Wijnbre van der Meulen, and Pieter Halma, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

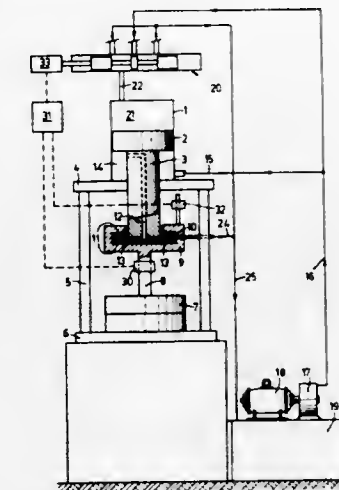
Filed Apr. 19, 1973, Ser. No. 352,585

Claims priority, application Netherlands, May 25, 1972, 7207024

Int. Cl. B29c 3/06

U.S. Cl. 425-150

2 Claims



A pressing device for the pressing of synthetic resin materials in a mould, comprising a hydraulic motor which is provided with a piston which is movable in a cylinder, a piston rod being connected to the said piston. Hydraulic pressing liquid can be supplied to the spaces on both sides of this piston by means of a servo valve. The piston rod is provided with a force detector and a displacement detector. The signals supplied by these detectors are compared with adjusted values. As long as the pressing force remains below the adjusted value, the control unit controls the servo valve such that the piston moves at an adjusted speed. When the adjusted pressing force is reached, the control unit controls the servo valve such that the piston rod does not exceed the adjusted pressing force.

3,825,387

## QUICK-CHANGE DIE AND ROLLER ASSEMBLY

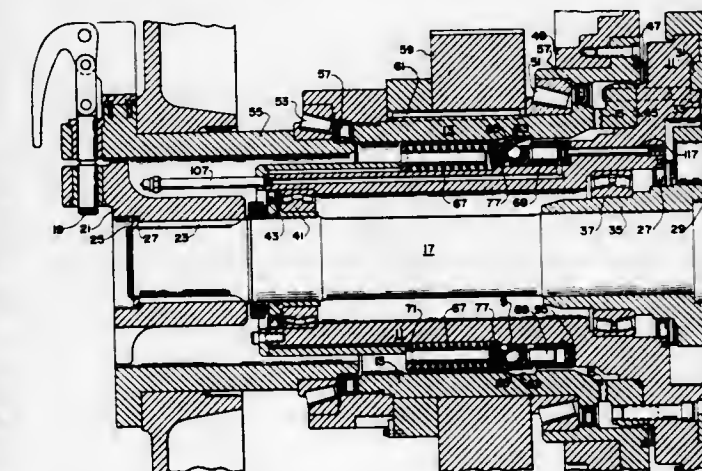
Robert W. Gilman, San Francisco, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 141,303, May 7, 1971, abandoned. This application Mar. 30, 1972, Ser. No. 239,555

Int. Cl. B29l 3/012

U.S. Cl. 425-182

12 Claims



A quick-change die and roller assembly for a pellet mill wherein the quill shaft supporting the die around the extrusion rollers is provided with a quick-release means which is biased by spring pressure to engage a groove to hold the quill shaft in the pellet mill.



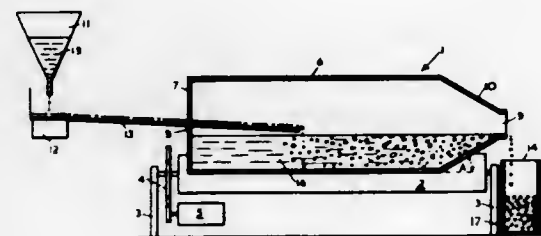
3,825,388

**APPARATUS FOR THE TREATMENT OF PIGMENTS**  
John James Hinley, Middlesbrough, and John Gibson, Stockton-on-Tees, both of England, assignors to British Titan Limited, Billingham, Teesside, England  
Filed Mar. 30, 1972, Ser. No. 239,521  
Claims priority, application Great Britain, Apr. 7, 1971, 9034/71

Int. Cl. B29b 1/03

U.S. Cl. 425-222

16 Claims



Apparatus for the pelletisation of inorganic pigment in which a vessel having a circular inner surface is rotatably mounted and has at one end an inlet for the pigment to be pelletised and at the other end an outlet for the pellets with at least a portion of the circular inner surface adjacent the outlet end at an angle to the axis of the vessel which is less than the angle of slip of pellets of the pigment on the material of construction of the inner surface.

3,825,389

**MOLDING HOLLOW ARTICLES**

Heinrich Pott, Hülchenbach-Dahlbruch, Germany, assignor to Siemag Siegener Maschinenbau G.m.b.H., Hülchenbach-Dahlbruch, Germany  
Filed June 26, 1972, Ser. No. 266,126  
Claims priority, application Germany, July 1, 1971, 2132674

Int. Cl. B29d 23/03

U.S. Cl. 425-324 B

15 Claims



Apparatus for forming a hollow body from thermoplastic material wherein a hollow pre-cast is formed around a blow rod and then blown in a mold, a neck being formed around the blow rod while the pre-cast is being formed.

3,825,390

**APPARATUS FOR EXTRUDING, EMBOSSING AND CURVING SIDING**

Peter F. Hellmayr, and Sol B. Kimbrell, both of McPherson, Kans., assignors to Certain-Teed Products Corporation, Ardmore, Pa.  
Division of Ser. No. 2,770, Jan. 14, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,804  
Int. Cl. B29c 24/00; B29f 3/00

U.S. Cl. 425-325

3 Claims



Siding formed of thermoplastic resin material and characterized by an embossed grain texture, and by low light reflection and high impact strength. Method and apparatus are provided incorporating various steps and devices for imparting a grain texture by embossing and for reducing the gloss and increasing the impact strength, notwithstanding the embossing.

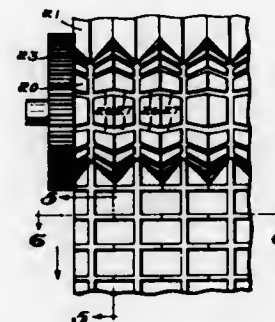
3,825,391

**DIE FOR EXTRUSION OF LATTICE STRUCTURES**

Richard P. Davis, Sanbornton, N.H. 03269  
Continuation of Ser. No. 115,405, Feb. 16, 1971, abandoned.  
This application Feb. 28, 1973, Ser. No. 336,613  
Int. Cl. B29c 15/00

U.S. Cl. 425-362

6 Claims



A die for extruding three dimensional lattice materials utilizing a roll of sawtooth configuration in its longitudinal direction, with grooves disposed in a pattern on the surfaces of the teeth. In one form of the die, the roll mates with a set of stationary teeth which closely engage the surfaces of the roll teeth so that material is extruded only when the grooves come into register with the stationary teeth. The bottom surfaces of the stationary teeth are flat, and are slightly spaced from a cylindrical roll. The resulting extrusion is a continuous solid sheet with an open three dimensional lattice structure on its upper surface. In another form of the die, the roll mates with a lower roll of similar configuration with another pattern of grooves on the surfaces of its teeth. The resulting extrusion is an entirely open three dimensional lattice.

3,825,392

**APPARATUS FOR FORMING PIPE COUPLING**

Elmer R. Ligon, and Norman D. Reed, both of Pittsburgh, Kans., assignors to W. S. Dickey Clay Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 14, 1972, Ser. No. 280,341  
Int. Cl. B29c 17/00; B29d 23/03

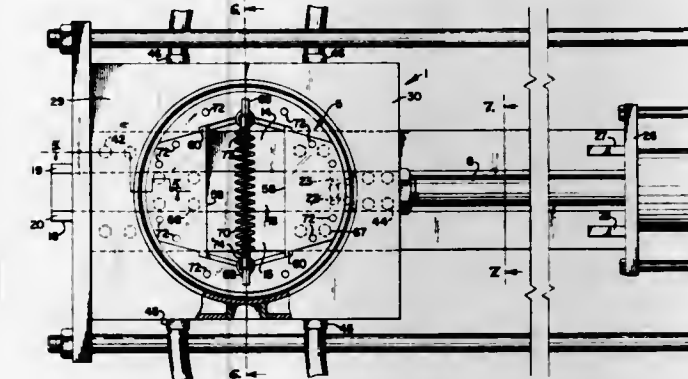
U.S. Cl. 425-387 R

9 Claims

An apparatus and method for molding a pipe coupling from tubular blanks or members of suitable synthetic resin wherein the apparatus comprises an outer jacket mounted on a sup-

porting frame and an inner mold member positioned within the outer jacket and having a plurality of sections each having an outer surface selectively movable toward and away from an inner surface of the outer jacket in response to operation of an extensible member. The outer jacket and each of the sections of the inner mold member have means for communicating a temperature controlling material into same. The molding

forming reinforcing elements for the concrete, insertion of the elements into the mold, pouring and vibrating the concrete



method is to heat a tubular member, insert same into the molding apparatus and move the parts to form the member to form the coupling which is then cooled to harden same and removed from the mold. When the resin member is in elongate form or pipe a cutting blade is mounted on the supporting frame and engageable with the tubular portion at a position to sever a molded pipe coupling of a desired length from the pipe section.

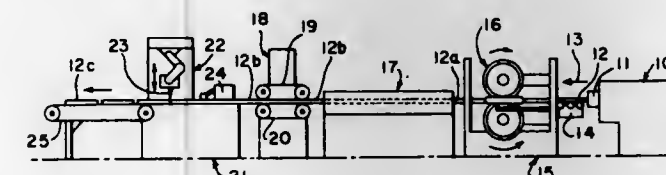
3,825,393

**APPARATUS FOR MANUFACTURING A FLUID DISPENSING NIPPLE CONSTRUCTION**

Charles W. Bltmer, and George F. Rixon, both of Box 149, Haddonfield, N.J. 08033  
Division of Ser. No. 235,748, March 17, 1972, abandoned.  
This application May 25, 1973, Ser. No. 363,972  
Int. Cl. B29c 3/02, 17/02

U.S. Cl. 425-392

6 Claims



A manufacturing apparatus wherein a conveyor longitudinally conveys tubing in a plastic state, a crimping means being located along the path of tubing movement for intermittent crimping of the tubing, and curing means along the path downstream of the crimping means.

3,825,394

**INSTALLATION FOR THE MANUFACTURE OF FINISHED CONCRETE COMPONENTS**

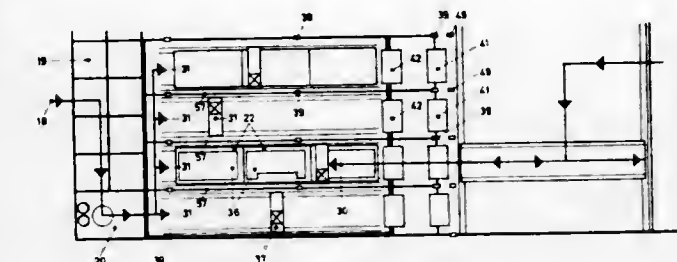
Fritz Pietrowiak, 800 Munich 60, Germany  
Filed Jan. 4, 1973, Ser. No. 320,940  
Claims priority, application Germany, Nov. 24, 1972, 2257768

Int. Cl. B28b 7/00

U.S. Cl. 425-404

15 Claims

Installation for the manufacture of finished concrete components including a transfer crane system interconnecting a plurality of operative work stations in a predetermined work flow path traversed by transport wagons; said work stations being adapted to provide in sequence, the forming of a concrete pouring mold, positioning the mold on a wagon,



into the mold, hardening the concrete, and finishing the concrete in a continuous operative work pattern.

3,825,395

**APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES**

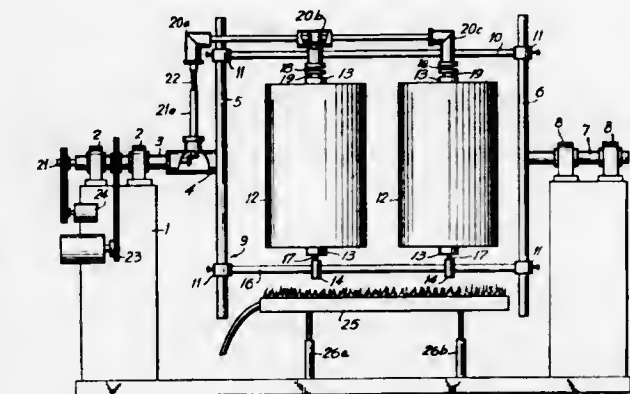
Stewart Pivar, Muttontown, Long Island, N.Y., assignor to Rototron Corporation, Farmingdale, N.Y.

Continuation of Ser. Nos. 103,893, Jan. 4, 1971, Pat. No. 3,676,037, and Ser. No. 724,803, April 29, 1968, abandoned.  
This application May 25, 1972, Ser. No. 256,695 The portion of the term of this patent subsequent to July 11, 1989, has been disclaimed.

Int. Cl. B29c 5/04

U.S. Cl. 425-435

1 Claim



Apparatus for molding hollow plastic articles in which a mold is simultaneously rotated about two mutually perpendicular axes, a source of heat being located at a position generally radially displaced relative to a circle described by the mold. The mold is supported in a frame which is of adjustable size, there being provided a telescopic drive for rotating the mold and which is extensible to accommodate adjustments in the frame.

3,825,396

**BLOW MOLD LATCHING MECHANISM INCLUDING A SAFETY FEATURE**

Robert F. Koutz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 7, 1973, Ser. No. 338,899

Int. Cl. B29c 1/16

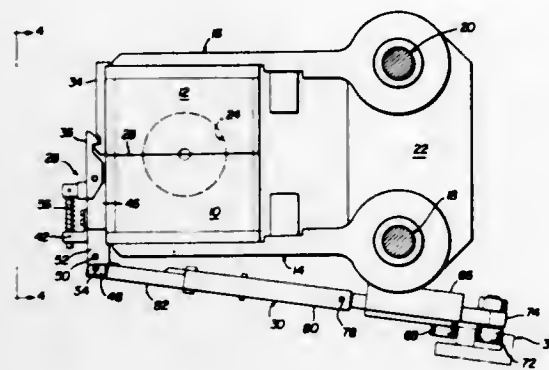
U.S. Cl. 425-450 C

7 Claims

A mechanism for latching together the mold halves of a blow molding machine at their parting line includes a safety feature which prevents application of the latching force to the mold halves if a foreign object prevents closing of the molds. The latch actuating system is particularly adapted for use in a blowing operation wherein the mold halves swing toward and away from each other and reciprocate along axes parallel with



the parison. The actuator comprises an elongated cam positioned to be engaged during the blowing cycle by a cam fol-



lower mounted on a latch actuating arm carried by one of the mold halves.

3,825,397

**CONTROL AND SECURITY DEVICE FOR BURNERS**  
Sture Ragnar Johansson, Varberg, and Hilding Ake Gerry Carlsson, Skallinge, both of Sweden, assignors to Monark-Crescent AB, Varberg, Sweden

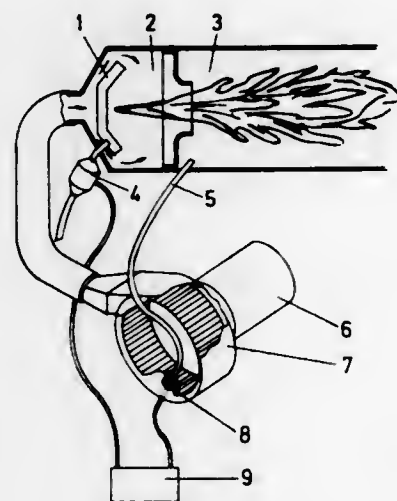
Filed May 21, 1973, Ser. No. 361,963

Claims priority, application Sweden, June 15, 1972, 7869/72

Int. Cl. F23n 5/08

U.S. Cl. 431-79

4 Claims



A burner convertible for use with different fuels has a flame sensing element with burner ports from different fuel chambers directed toward the flame sensing element.

3,825,400

**GAS FUEL BLOWPIPE FOR BURNING REACTION GAS MIXTURES**

Vitaly Fedorovich Popov, ulitsa Gogolya 4, kv. 13, Severodonsk Voroshilovgradskoi oblasti, U.S.S.R.

Filed Apr. 17, 1973, Ser. No. 352,029

Int. Cl. F23d 15/04

U.S. Cl. 431-160

2 Claims

A burner for a car heater comprises an impeller for the supply of combustion air, and further, measuring means for controlling the supply of fuel. The impeller is inserted between the flame developed in said burner and a signal detector. This detector receives light pulses of different frequencies from the flame through the rotating impeller different with the frequency depending upon the different rotational speeds of the impeller. These frequencies are transformed into signals, which are supplied to the measuring means for controlling the fuel supply to the burner in relation to the quantity of combustion air supplied. This means also that the supply of fuel is shut off if the rotation of the impeller stops or if the flame goes out.

A blowpipe for burning reaction gas mixtures separating in reactors and furnaces the fuel gas area from the burning area, comprises a burner and a partition installed in parallel to each other and interconnected by a shell forming therebetween a chamber for the oxidiser. The distribution tubes with the burning area, with some of the ends of the distribution tubes being fastened hermetically to the partition, and the other ends are located in the channels of the burner along the fit ensuring under the operating conditions their axial movement and heat

3,825,398

**PLURAL RATE BURNER WITH FLAME ENHANCEMENT**

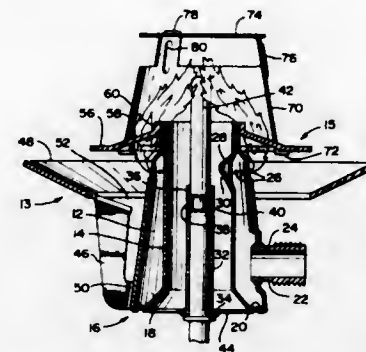
Jay R. Katchka, Cypress; Fred W. Hendrick, and Michael E. Egger, both of Long Beach, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed June 15, 1973, Ser. No. 370,494

Int. Cl. F23n 5/10

U.S. Cl. 431-80

8 Claims



A burner produces an outward extending flame at a high rate and an upward extending flame at a low rate. Facilities are provided for enhancing the entrainment of air in both the outward extending flame and the upward extending flame.

3,825,399

**CONVERTIBLE BURNER WITH HEATING OF FLAME SENSING ELEMENT**

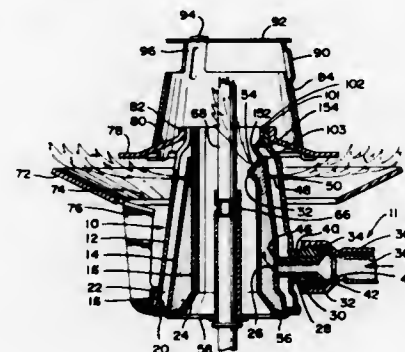
Theodore J. Dykzeul, Los Angeles, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 18, 1973, Ser. No. 371,017

Int. Cl. F23n 5/10

U.S. Cl. 431-80

6 Claims



A burner convertible for use with different fuels has a flame sensing element with burner ports from different fuel chambers directed toward the flame sensing element.

3,825,402

**GAS FUEL BLOWPIPE FOR BURNING REACTION GAS MIXTURES**

Vitaly Fedorovich Popov, ulitsa Gogolya 4, kv. 13, Severodonsk Voroshilovgradskoi oblasti, U.S.S.R.

Filed Apr. 17, 1973, Ser. No. 352,029

Int. Cl. F23d 15/04

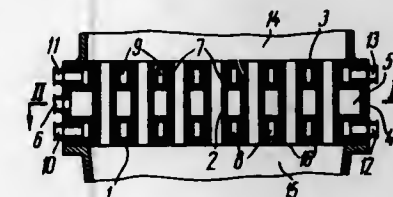
U.S. Cl. 431-160

2 Claims

A burner for a car heater comprises an impeller for the supply of combustion air, and further, measuring means for controlling the supply of fuel. The impeller is inserted between the flame developed in said burner and a signal detector. This detector receives light pulses of different frequencies from the flame through the rotating impeller different with the frequency depending upon the different rotational speeds of the impeller. These frequencies are transformed into signals, which are supplied to the measuring means for controlling the fuel supply to the burner in relation to the quantity of combustion air supplied. This means also that the supply of fuel is shut off if the rotation of the impeller stops or if the flame goes out.

A blowpipe for burning reaction gas mixtures separating in reactors and furnaces the fuel gas area from the burning area, comprises a burner and a partition installed in parallel to each other and interconnected by a shell forming therebetween a chamber for the oxidiser. The distribution tubes with the burning area, with some of the ends of the distribution tubes being fastened hermetically to the partition, and the other ends are located in the channels of the burner along the fit ensuring under the operating conditions their axial movement and heat

transfer to the burner. Formed on the walls of distribution port axes being angled upwardly to clear the top of a surrounding aeration pan. The fuel valve orifice is metered to inject gas into the mixing tube at velocities inverse to the flow rate to the burner.



for the oxidiser to the burning area. Cavities for a cooling liquid or refrigerant are formed in the burner and the partition.

3,825,401

**AUTOMATIC CIGARETTE LIGHTER MECHANISM**  
Pierre Chevallier, Sainte-Foy-Les-Lyon, France, assignor to Etablissements Genoud & Cie Societe Anonyme, Venissieux, France

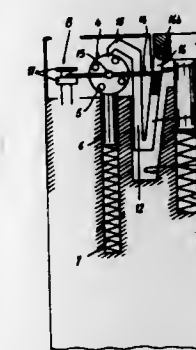
Filed Dec. 21, 1972, Ser. No. 317,255

Claims priority, application France, Jan. 6, 1972, 72.00867

Int. Cl. F23q 1/02

U.S. Cl. 431-274

2 Claims



In an automatic cigarette-lighter mechanism, the spring-urged control key of the push-button type has a V-shaped extension, one branch of the V being attached to the control key and the other forming the pawl for driving the ratchet associated with the flint wheel. Possibly, a notch is formed in the key at the beginning of said one branch for receiving one end of the lever controlling the burner valve, notably in case of a lighter operating on gaseous fuel, so that the upper and lower end of said notch control the opening and closing respectively of said valve.

3,825,402

**GAS BURNER**

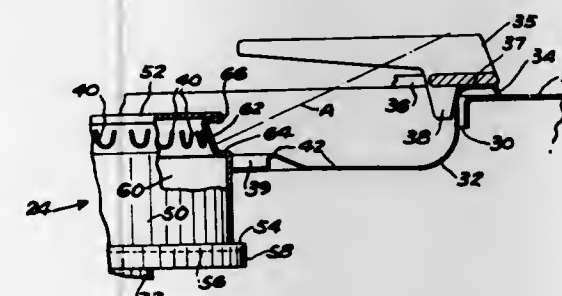
Donald E. Duperow, and William J. Ferlin, both of Detroit, Mich., assignors to Lincoln Brass Works, Inc., Detroit, Mich.

Filed Nov. 16, 1972, Ser. No. 307,078

Int. Cl. B05b 1/14

U.S. Cl. 239-568

13 Claims



Closed-center inverted cup type gas burner has noncircular, nonlinear slot-shaped burner ports with uniform widths, the

3,825,403

**BURNER PLATE FOR INFRARED RADIATOR**

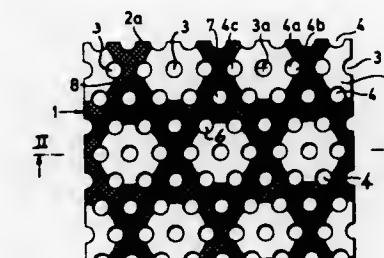
Herbert Gottschall, Leichlingen, Germany, assignor to Schwank GmbH, Cologne, Germany

Filed Dec. 20, 1972, Ser. No. 316,671

Int. Cl. B28b 1/48

U.S. Cl. 431-328

16 Claims



A burner plate which comprises depressions on the radiating side and combustion passages arranged parallel to each other for conveying the fuel-air mixture from the mixture side to the radiating side of the plate, in which at least one of the combustion passages is coaxially arranged at the bottom of the respective pertaining depression whereas the other combustion passages are distributed over the sides of the depressions and the plate surface between the sides of the depressions, the combustion passages being distributed over the depressions and the radiating surface in such a way that the flames being generated will so uniformly act upon the lateral surface of the depressions and the radiating surface of the plate therebetween that the temperature being generated in the depressions will substantially equal the temperature generated at the radiating surface between the lateral surfaces of the depressions.

3,825,404

**GAS BURNERS, ESPECIALLY FOR DOMESTIC APPLIANCES**

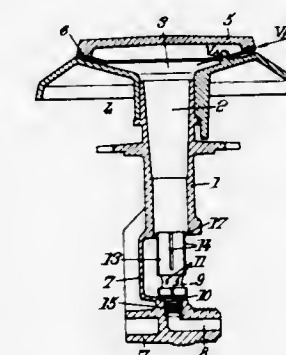
Jean Bernard De Gouville, Velgne Pres Montbazou, France, assignor to Etablissements Sourdillon, Matricage et Robinetterie de Precision, Velgne pres Montbazou, France

Filed Apr. 14, 1972, Ser. No. 244,042

Int. Cl. F23d 13/40

U.S. Cl. 431-354

12 Claims



The burner is supplied from at least one injector in which to ensure the correct air/gas mixture for the various flow-rates of gas, the injector delivering into at least two successive chambers. One chamber receives the gas at the outlet from the injector and is relatively small so that even at very small flow-rates the proportionality of the air/gas mixture is substantially maintained. This one chamber delivers into the following



chamber, which is provided with narrow longitudinal slots for introducing additional air suitable for the largest flow-rates.

3,825,405

### TEMPERATURE CONTROL SYSTEM FOR ROTARY KILNS

Yoshizo Suga, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

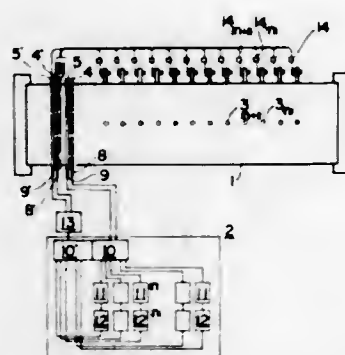
Filed Nov. 2, 1973, Ser. No. 412,478

Claims priority, application Japan, Nov. 20, 1972, 47-115700

Int. Cl. F27b 7/36; G05d 23/00

U.S. Cl. 432-36

6 Claims



In a rotary kiln of the type having a plurality of temperature control units, each control unit being adapted to control the opening of the damper for a shell fan in accordance with the output signal of a thermocouple, a temperature control system whereby one of a plurality of control elements constituting a stationary controller is coupled to the corresponding one of the temperature control units at a selected rotational angular position of the kiln to effect the desired temperature control, thereby sequentially selecting and actuating the temperature control units in accordance with the rotation of the kiln to control the distribution of temperature within the kiln.

3,825,406

### RADIATION-CONVECTION HEATING SYSTEM

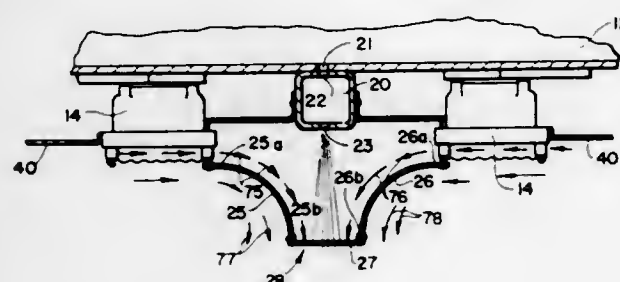
George E. Heath, Lyndhurst, Ohio, assignor to Infra-Ray Division Solaronics, Inc., Cleveland, Ohio

Filed Aug. 24, 1972, Ser. No. 283,512

Int. Cl. F23d 23/00

U.S. Cl. 432-175

23 Claims



Radiant heat sources are provided with aspiration devices for inducing air flow across the sources and directing it along paths paralleling the emission of radiant heat energy toward objects being heated. The heat sources are preferably arranged in pairs with an apertured compressed air header positioned between the sources of each pair to induce opposed air flow currents across the sources. Air deflector plates cooperate with the compressed air header to form an aspiration device which diverts the opposed air flow currents into a common flow of heated air directed toward the objects being radiantly heated by the sources.

3,825,407

### HEATER HOLDING BRACKET FOR A HEAT FIXER IN A COPYING MACHINE OR THE LIKE

Yasuhiro Fujite, Hitoshi Fujiwara, and Mitio Yamasawa, all of Yamasawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

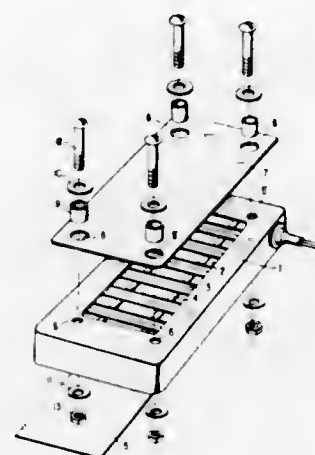
Filed Dec. 27, 1972, Ser. No. 319,063

Claims priority, application Japan, Dec. 27, 1971, 46-122575

Int. Cl. H05b 1/00; F27b 9/00

U.S. Cl. 432-227

7 Claims



Heating apparatus comprising at least one heating element for radiating heat to a material to be heated, bracket means for supporting the heating elements, the bracket means comprising a sufficiently large opening in the side thereof away from the material to be heated so that the amount of deformation of the bracket means is minimal upon heating by the heating element, the ratio of the area of the opening to the area of the side being 60-80 percent, a plate disposed over the opening and adjacent the heating element for reflecting radiant heat from the heating element to expedite the heating of the material to be heated and to lessen the amount of power consumed by the heating element, and means for loosely connecting the plate to the bracket means so that, upon heating by the heating element, the plate deforms independently of the bracket in spite of it being disposed adjacent the heating element.

3,825,408

### HOT AIR HEATER FOR CARTON SEALING MACHINE

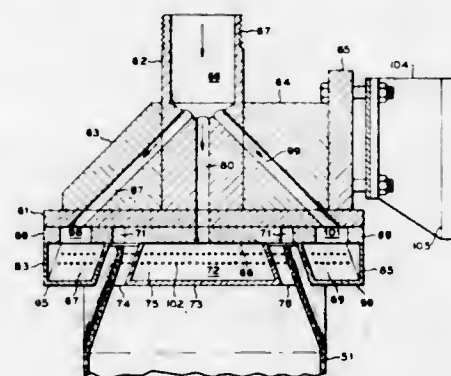
Silvio T. Farfaglia, Fulton, and Robert G. Halpin, Minnetonka, both of N.Y., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,024

Int. Cl. F23d 3/00

U.S. Cl. 432-230

10 Claims



In a machine for filling and sealing cartons such as the thermo-plastic coated paperboard milk cartons, the heater head for heating the upper portion of the carton prior to sealing comprises a first hot air plenum chamber which enters the

open end of the carton and has a continuous outer perforated wall facing the inner surface of the carton and a second hot air plenum chamber which surrounds the outside of the upper end of the carton and has a continuous inner perforated wall facing the outside surface of the carton. The outer wall of the first plenum chamber and the inner wall of the second plenum chamber form a continuous annular space for receiving the top marginal portion of a carton, with the perforations in both walls being spaced to provide heating of both the inner surface and the outer surface of the full extent of the top marginal portion of the carton. The outer wall of the first plenum chamber and the inner wall of the outer plenum chamber extend downwardly and outwardly away from the central vertical axis of the carton while the inner wall of the second plenum chamber extends downwardly and outwardly with respect to the central vertical axis of the carton.

3,825,409

### PANELIZED SUSPENDED FURNACE ROOF AND IMPROVED FEED HOLE

Levi S. Longenecker, 61 Mayfair Dr., Pittsburgh, Pa. 15228

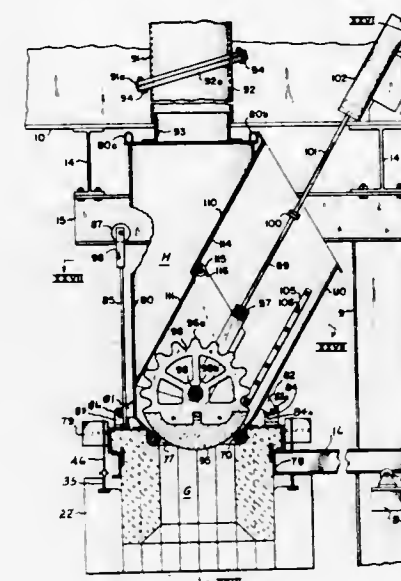
Filed Aug. 2, 1973, Ser. No. 385,083

Int. Cl. F23m 7/00

U.S. Cl. 432-250

27 Claims

A suspended furnace roof is disclosed having an overhead metal framework involving spaced-apart cross-extending girders and longitudinally extending spaced-apart beams that are adapted to extend between the girders and to be adjustably positioned in the spacing therebetween. A basically three-part hanger assembly is detachably suspended from the beam members and projects downwardly therefrom to detachably carry refractory tile members that may be assembled and shipped as a palletized group and, as such a group, mounted on such a hanger assembly at the construction site and while carried thereby, moved into a mounted position on an associated beam to close-off a portion of the furnace roof. A tertiary or uppermost hanger part of each assembly has a transverse yoke-like arm that at each of its ends has a flanged

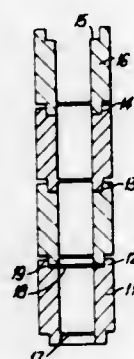


and sealing ring assembly, and as employed with an assembly of feed hole defining refractory blocks that are independently carried by a unitary metal frame. The block assembly is constructed to be moved as a truck unit on the unitary frame to one side of the furnace roof to facilitate construction, maintenance and repair work.

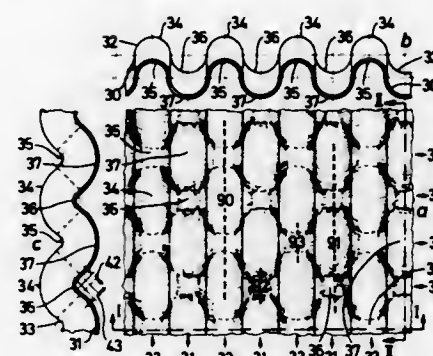


# CHEMICAL

**3,825,410**  
**PERFORMANCE OF ROUTINE CHEMICAL REACTIONS**  
**IN COMPARTMENTALIZED CONTAINERS**  
 Kenneth Dawson Bagshawe, 115 George St. Marble Arch, London W 1, England  
 Filed May 13, 1971, Ser. No. 143,134  
 Claims priority, application Great Britain, Dec. 29, 1970, 61627/70; May 13, 1970, 23262/70  
 Int. Cl. G01n 33/16  
 U.S. Cl. 23—230 R 25 Claims



longitudinally and transversely arcuately corrugated so that it can be cut longitudinally and transversely into pieces each of

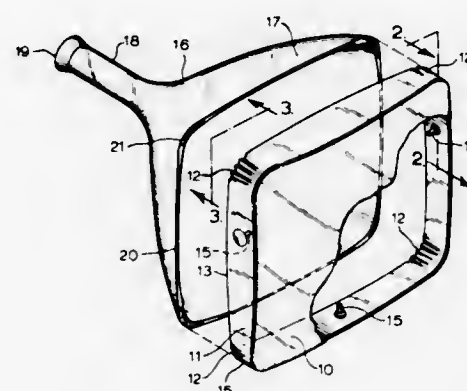


which constitutes a sheath in opened shape which can be turned into closed pipe bend shape.

## ERRATUM

For Class 29—190 see:  
 Patent No. 3,824,664

**3,825,413**  
**METHOD OF FORMING SHEET GLASS COLOR TUBE**  
**FACE PANEL WITH PLEATED SKIRT**  
 James W. Schwartz, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.  
 Filed Feb. 16, 1973, Ser. No. 226,880  
 Int. Cl. C03b 23/02  
 U.S. Cl. 65—61 4 Claims



A color television picture tube panel is fabricated of relatively thin sheet glass formed to define a substantially rectangular faceplate area surrounded by an upstanding flange having a fluted configuration over portions of its periphery. The end surface of the flange defines a seal edge for forming a glass-to-glass seal with a funnel having a seal edge of sufficient area to bridge the maximum peak to trough dimensions of the fluted portions. Methods of manufacturing such a panel are also described.

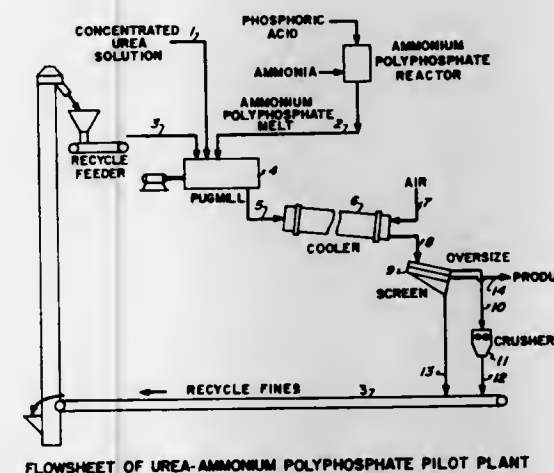
**3,825,412**  
**PRODUCTION OF PIPE BEND SHEATHS**  
 Gernot F. Mullender, S. Chone Aussicht 28, 6331 Stockhausen, Germany  
 Filed Feb. 9, 1972, Ser. No. 224,736  
 Claims priority, application Germany, Feb. 15, 1971, 2107068  
 Int. Cl. B32b 15/00  
 U.S. Cl. 29—180 SS 4 Claims  
 A corrugated plastic or metal foil sheet, for use as an intermediate product in the production of pipe bend sheaths, is

JULY 23, 1974

# CHEMICAL

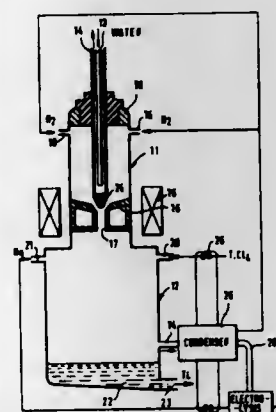
965

**3,825,414**  
**UREA-AMMONIUM POLYPHOSPHATE PRODUCTION**  
 Robert G. Lee, Florence, and Robert D. Mitchell, Sheffield, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.  
 Continuation-in-part of Ser. No. 202,836, Nov. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 130,236, April 1, 1971. This application Dec. 10, 1973, Ser. No. 423,419  
 Int. Cl. C05b 1/00  
 U.S. Cl. 71—29 1 Claim



Pugmill granulation process for the production of fertilizers containing urea and ammonium polyphosphate. Concentrated urea solution is sprayed onto recycled solids in the pugmill followed by molten ammonium polyphosphate. The melt is fed to the pugmill at a minimum of 12 inches downstream from the urea to prevent hydrolysis of the urea which results in foaming and gas evolution. The product from the pugmill is essentially anhydrous, and no further drying is required. Other fertilizer materials such as ammonium sulfate, potassium chloride, or micronutrient sources may be incorporated by adding them to the pugmill during granulation.

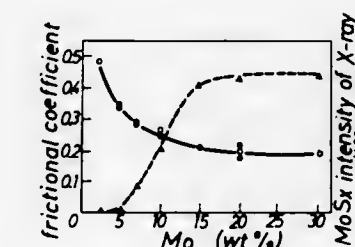
**3,825,415**  
**METHOD AND APPARATUS FOR THE PRODUCTION OF LIQUID TITANIUM FROM THE REACTION OF VAPORIZED TITANIUM TETRACHLORIDE AND A REDUCING METAL**  
 Philip Douglas Johnston, James Lawton, and Ian Mackison Parker, all of Chester, England, assignors to The Electricity Council, London, England  
 Filed July 21, 1972, Ser. No. 274,006  
 Claims priority, application Great Britain, July 28, 1971, 35535/71  
 Int. Cl. C22b 53/00  
 U.S. Cl. 75—84.5 17 Claims



Elemental titanium is produced by reducing titanium tetrachloride using an alkali or alkaline earth metal,

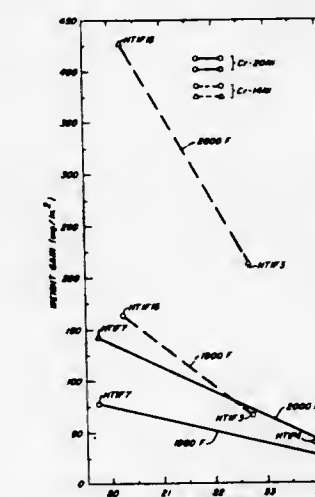
preferably sodium. The reaction is carried out in the vapour phase, a carrier gas, preferably hydrogen, being heated by an electric arc and injected into the reaction chamber to heat the sodium and titanium tetrachloride which are injected as liquids or vapours. The reaction is carried out at a temperature above the melting point of titanium, typically between 1,800° and 2,500°C, the titanium falling as a liquid to the bottom of the reaction chamber and the chloride of the reducing metal and other unwanted products being removed in vapour form. The chloride of the reducing metal is passed through a heat exchanger for heating material passing into the chamber and is electrolysed to provide the required alkali or alkaline earth metal.

**3,825,416**  
**SELF-LUBRICATING IRON BASE ALLOY**  
 Yoshiyuki Mizutani and Katutoshi Tozawa, Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho  
 Filed July 10, 1972, Ser. No. 270,398  
 Claims priority, application Japan, July 9, 1971, 46/51,259  
 Int. Cl. C22c 37/00, 39/00  
 U.S. Cl. 75—123 AA 3 Claims



A self-lubricating iron base alloy contains a total of from 5 to 30% of one or more metals selected from the group consisting of Ti, Zr, V, Nb, Ta, Mo and W, and 0.5 to 5% of either sulphur or selenium, the balance being essentially iron, and all contents being in weight percent. The alloy is abrasion resistant and can be used over a wide range of temperatures.

**3,825,417**  
**AUSTENITIC STAINLESS STEEL**  
 Thomas M. Costello and Jerome P. Brennanelli, Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.  
 Filed Apr. 21, 1972, Ser. No. 246,342  
 Int. Cl. C22c 39/20  
 U.S. Cl. 75—128 A 2 Claims



An austenitic stainless steel consisting essentially of, in weight percent, .20 max. carbon, 8 max. manganese, 1 to



4 silicon, 20 to 30 chromium, 6 to 18 nickel, .50 max. nitrogen, up to .02 boron, at least 0.03% of a strengthening element selected from the group consisting of columbium, zirconium and titanium each in an amount from 0 to .3% and the balance iron.

3,825,418

## ALLOYS FOR ISOLATION OF HYDROGEN

James J. Reilly, Bellport, and Richard H. Wiswall, Jr., Brookhaven, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Jan. 30, 1973, Ser. No. 327,897

Int. Cl. C22c 9/06, 19/00

U.S. Cl. 75—159

4 Claims

A group of alloys capable of reversible absorption of hydrogen in the presence of CO and CO<sub>2</sub> having the chemical formula of LaNi<sub>x</sub>Cu<sub>5-x</sub> where x is any number from above zero to less than five. Also disclosed are alloys of mischmetal with either nickel or copper. The hydrides are also described.

3,825,419

## BENEFICIATION OF TITANIFEROUS ORES

James H. Chen, Corpus Christi, Tex., assignor to Benlite Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 866,548, Oct. 15, 1969. This application July 19, 1971, Ser. No. 163,805

Int. Cl. C01g 23/04; C02b 3/00

U.S. Cl. 75—101

6 Claims

During the beneficiation of titaniferous iron ores by leaching thereof in a vessel with about 20% liquid hydrochloric acid, the required heat is supplied by introducing about 20% hydrochloric acid vapor into the vessel as the sole heat exchange medium.

3,825,420

## WROUGHT SUPERALLOYS

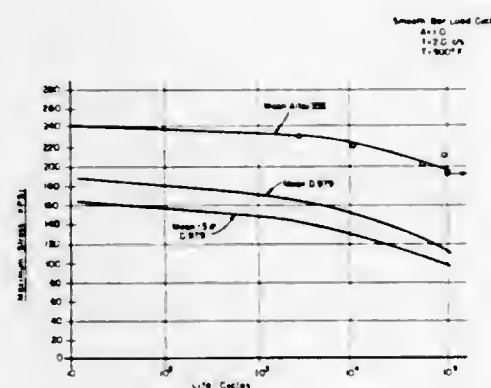
Bruce A. Ewing and Frank J. Rizzo, Jr., Shelton, Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Aug. 21, 1972, Ser. No. 282,510

Int. Cl. C22c 19/00

U.S. Cl. 75—171

9 Claims



Wrought superalloy compositions possessing high strength, corrosion resistance and utility at moderate tem-

peratures are produced by atomizing a melt of the desired composition and thereafter consolidating the powders by extrusion and pressforging.

3,825,421

## PROCESS FOR FORMING AN IMAGE ON INSULATIVE MATERIALS

Yasuo Tamai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 29, 1971, Ser. No. 193,890

Claims priority, application Japan, Oct. 29, 1970, 45/95,488

Int. Cl. G03g 13/22

U.S. Cl. 96—1 R

14 Claims

A process for forming an image on an insulative material comprising the steps of:

dispersing electroconductive powder on at least one surface of said insulative material and electrostatically charging the same no later than said dispersing to thereby form a layer of said electroconductive powder on said insulative material;  
dispersing photoconductive particles onto said layer of electroconductive powder and electrostatically charging the same no later than said dispersing to thereby form a layer of said photoconductive powder on said layer of electroconductive powder;  
subjecting the thus formed layer of photoconductive particles to imagewise exposure of the original image;  
removing said photoconductive particles in the exposed areas; and  
fixing the remaining photoconductive particles to thereby obtain an image on the surface of said insulative material.

3,825,422

## IMAGING PROCESS

Robert J. Gruber and Bernard Grushkin, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1972, Ser. No. 300,958

Int. Cl. G03c 5/06

U.S. Cl. 96—1 PE

8 Claims

Vanadyl and titanyl phthalocyanine compounds as electrically photosensitive pigments in photoelectrophoretic imaging.

3,825,423

## IMAGE TRANSFER PROCESS AND ALSO KNOWN AS D/2888

Elsie L. Menz, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Original application Dec. 24, 1969, Ser. No. 887,805, now Patent No. 3,658,519. Divided and this application Dec. 20, 1971, Ser. No. 210,284

Int. Cl. G03g 13/14

U.S. Cl. 96—1.4

16 Claims

A method of transferring dielectric imaging material containing a static charge from an electrically conductive image bearing surface to an image receiving surface by means of coulombic attraction and the rearrangement of electrical charges.

3,825,424

## PROCESS FOR TRANSPARENT PHOTOGRAPHIC IMAGES

Robert F. Gracia, Scituate, Richard A. Laughrey, Woburn, and Paul F. Tuohy, Quincy, Mass., assignors to Ittek Corporation, Lexington, Mass.

No Drawing. Application Oct. 1, 1969, Ser. No. 862,912, which is a continuation-in-part of application Ser. No. 744,631, July 15, 1968, both now abandoned. Divided and this application Aug. 7, 1972, Ser. No. 278,310

Int. Cl. G03c 5/24

U.S. Cl. 96—48 PD

21 Claims

This invention is concerned with a process of producing photographic images on a transparent substrate by photo-exposure of a photographic medium of which the photosensitive layer is removable followed by prolonged treatment of the exposed medium to form a metal image adherently bonded to the substrate and subsequent removal of the photosensitive layer to obtain the metal image on the substrate, as well as the products produced thereby.

3,825,425

## PROCESS FOR THE REGENERATION OF USED PHOTOGRAPHIC SILVER BLEACHING BATHS USING CHLOROUS ACID OR ITS WATER-SOLUBLE SALTS

Max Hellmann, Cologne, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,597

Claims priority, application Germany, Mar. 2, 1972, P 22 09 959.8

Int. Cl. G03c 5/26, 5/32

U.S. Cl. 96—60 R

11 Claims

A process for the regeneration of used photographic silver bleaching baths containing the iron-II-cyanide complex wherein the bath is treated with chlorous acid or a water soluble salt thereof at a pH of 5 to 8 optionally in the presence of a catalyst as herein defined.

3,825,426

## DEVELOPMENT OF EXPOSED PHOTOGRAPHIC SILVER HALIDE ELEMENTS

Robert Joseph Pollett, Vremde, Herman Adelbert Philippaerts, Edgemo, Antoon Leon Vandenberghe, Hove, and Jozef Frans Willems, Wilrijk, Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Nov. 3, 1972, Ser. No. 303,404

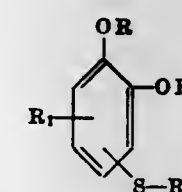
Claims priority, application Great Britain, Nov. 10, 1971, 52,290/71

Int. Cl. G03c 1/34, 1/78

U.S. Cl. 96—76 R

8 Claims

A photographic silver halide emulsion is described which comprises a compound of the formula:



wherein:

R is hydrogen, acyl, haloacyl or acyl carrying a quaternary ammonium group,

R<sub>1</sub> is hydrogen, alkyl, aryl, halogen or alkoxy, and R<sub>2</sub> is an aliphatic, aromatic or heterocyclic group.

The compounds are especially useful in Lippmann-emulsions to reduce distortions of image details, to enhance image sharpness and to reduce yellow staining upon reversal development.

3,825,427

## RECORDING MEMBER OF PHOTOCOLOR DEVELOPING AND ELIMINATING MATERIAL AND THE RECORDING METHOD

Eiichi Inoue, Isamu Shimizu, Hajime Kobayashi, and Ichiro Endo, Tokyo, Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Application Feb. 15, 1968, Ser. No. 705,758, which is a continuation-in-part of application Ser. No. 630,519, Apr. 13, 1967, both now abandoned. Divided and this application June 14, 1971, Ser. No. 153,037

Claims priority, application Japan, June 19, 1967, 42/39,203; Aug. 16, 1967, 42/52,859

Int. Cl. G03c 1/52

U.S. Cl. 96—90 PC

5 Claims

This invention provides a photocolour developing and eliminating composition, a recording member of monochrome or multicolor developing and eliminating composition, method for image forming, fixing, or restoring which is applicable to said recording members and usual recording members of photocolour developing and eliminating material, and method for projecting image on a screen of photocolour developing and eliminating material. A photocolour developing and eliminating composition comprises a photocolour developing and eliminating material and a stabilizer, which is either electron or proton donating or accepting material or solid matter, on which surface said material being dispersed and which inherently possesses acidic, basic, ionic, electric charge transferring or high surface energy property at the surface, and the stabilizer stabilizing the color-developed state continuously, restoring after fixing the color-developed state to the colorless state by the stimulus of radiation having another range of wave length and reproducing a stable color-development. The multicolor developing and eliminating composition comprises a film matter prepared by incorporating a photocolour developing and eliminating material to a transparent or translucent dispersion medium or the film attaching to a support such as paper and the like, and the recording member is wholly color-developed by irradiating it by a radiation having at least one range of wave-length such as light, heat and the like. Particularly, at least one dispersion medium is used to cover the whole visible light range in the colored state. And the color image recording method is very useful for the rapid, simple and much memorizing and recording in information industry such as communication, measurement documentation and display.

3,825,428

## UNSATURATED POLYESTER RESIN PHOTORESIST COMPOSITION

Edmund Benjamin Davidson, Yardley, Pa., assignor to RCA Corporation

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,263

Int. Cl. G03c 1/68, 1/70

U.S. Cl. 96—91 N

5 Claims

A photoresist composition comprising an unsaturated polyester resin such as an unsaturated alkyd resin polymer which has been reacted with an alkoxysilane and a free radical initiator, to increase its speed of response. A sensitizer is also preferably included in the composition.



3,825,429

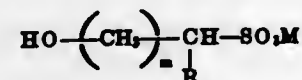
**FOGGED DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING AS STABILIZER A RESULFITE ADDITION PRODUCT OF AN ALDEHYDE**

Tetsuo Furuya, Minami-Ashigara, Yoshio Ibe and Hideo Kaniawa, Odawara, and Osakazu Sugino, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 6, 1972, Ser. No. 312,493  
Int. Cl. G03c 1/28, 1/34

U.S. Cl. 96—108

A direct positive light-sensitive silver halide photographic material is stabilized for storage by incorporating therein a polyamine, a salt of a metal more electropositive than silver and a compound of the formula



wherein  $m$  is 0 or an integer of 1 to 8, R is a hydrogen atom, or an alkyl group having up to 17 carbon atoms, or an aryl group and M is a cation.

3,825,430

**LIGHT-SENSITIVE COMPOSITION AND METHOD**  
Kurt A. Kurka, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,930  
Int. Cl. G03c 1/68

U.S. Cl. 96—115 R

Light-sensitive compositions are provided wherein a continuous phase comprises a light-sensitive organic material while a discontinuous phase comprises finely divided, rubbery, elastomeric, organic compound. The compositions can be cured to an insoluble, heat-resistant, flexible state. A method for covering or protecting printed circuitry using such compositions is also provided.

3,825,431

**PRINT PASTES**

Guenther Uhl, Worms, and Knut Oppenlander, Rolf Flkentscher, and Richard Mueller, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed Mar. 15, 1972, Ser. No. 234,991  
Int. Cl. C09d 11/00, 11/02, 11/16

U.S. Cl. 106—20

Print pastes based on oil-in-water emulsions which contain esterification products of oxyalkylated alcohols as defoamers in addition to auxiliaries conventionally used in print pastes.

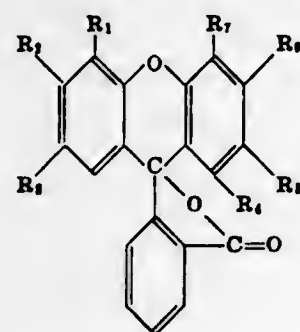
3,825,432

**HEAT SENSITIVE RECORDING MATERIAL**  
Kiyochi Futaki and Masaya Motoki, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan  
No Drawing. Filed Mar. 9, 1971, Ser. No. 122,521  
Claims priority, application Japan, Mar. 10, 1970, 45/19,758

Int. Cl. C09d 11/00; C09k 3/00

U.S. Cl. 106—21

A heat sensitive recording material containing at least one of lactone compounds having the general formula,



(wherein  $R_2$  is selected from the group consisting of hydrogen, a lower alkyl group of 1 to 5 carbon atoms, a lower alkoxy group of 1 to 5 carbon atoms, amino group, a lower alkyl amino group of 1 to 5 carbon atoms and benzyl amino group;  $R_1$  and  $R_3$  are selected from the group consisting of the same members as above defined on  $R_2$  except that benzyl amino group is excluded; at least one of  $R_1$  and  $R_2$  are selected from amino group, a lower alkyl amino group of 1 to 5 carbon atoms and benzyl amino group;  $R_4$  is selected from the group consisting of hydrogen, a lower alkyl group of 1 to 5 carbon atoms, a lower alkoxy group of 1 to 5 carbon atoms, halogenes, a lower alkyl amino group of 1 to 5 carbon atoms, benzyl amino group and aryl amino group; and  $R_5$ ,  $R_6$  and  $R_7$  are selected from the group consisting of the same members as above defined on  $R_5$  except that aryl amino group is excluded) and at least one phenol compounds.

3,825,433

**HYDRAULIC BINDER**

Alfred Schneider-Arnoldi, Krefeld, Hellmut Gäbler, Morlenbach, near Weinheim an der Bergstrasse, and Joachim Kandler, Lechenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Continuation of abandoned application Ser. No. 711,875, Mar. 11, 1968. This application Dec. 30, 1970, Ser. No. 102,944

Claims priority, application Germany, Mar. 22, 1967, K 61,792

Int. Cl. C04b 7/02, 7/14

U.S. Cl. 106—89

Production of a cement-based hydraulic binder containing from 10 to 80% by weight, preferably from 15 to 70% by weight slag ground to cement fineness and originating from the electrothermal production of phosphorus, and use of the hydraulic binder for making massive concrete.

3,825,434

**INTERNALLY COATED REACTION VESSEL AND PROCESS FOR COATING THE SAME**

Alan R. Berens, Hudson, and Thomas R. Paxton, Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,476

Int. Cl. B01j 1/20; B44d 1/14

U.S. Cl. 117—72

A reaction vessel having on the internal surfaces thereof an adhesive primer coating containing, for example, a phenolic resin, and an insolubilized hydrophilic film or coating over said primer coating containing, for example, a glyoxal cross-linked polyvinyl alcohol and the process for coating said internal surfaces whereby polymer build-up on said internal surfaces is substantially decreased.

3,825,435

**FLOCKING METHOD UTILIZING IN LINE MIXING OF ADHESIVE**

Howard D. Hunt, Calhoun, Ga., assignor to Crown Crafts, Inc., Calhoun, Ga.

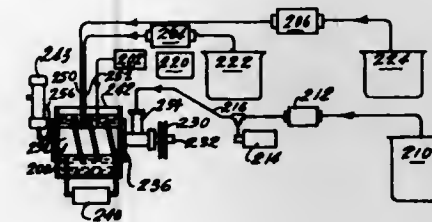
Filed Jan. 28, 1972, Ser. No. 221,607

Int. Cl. B05b 5/02, 7/26

U.S. Cl. 117—33

An improved method of preparing and directing a substrate material for electrostatic application of flocking members to an adhesive to produce a dense pile fabric such as a velvet fabric, a blanket fabric or a carpet fabric. A continuous substrate material is delivered from a roll around a heated drum to control moisture to an

adhesive applicator assembly which employs an improved system of delivering adhesive and controlling same on the substrate. The electrostatic grid system comprises high voltage (H.V.) plastic pipe electrodes arranged diagonally to the line of travel of the substrate and each pipe has an electrical conductor cable connected to it from a high voltage system. The diagonal arrangement of the grid system is within a grounded field of metal tubing which produces a weak electrostatic field above the H.V. electrodes and electrically removes any excess flocking material without damaging the flocking field.



The adhesive application rather than a solid film is a foam and the preparation of the adhesive rather than in large batch mixture is in small batches easily controlled as to delivery and formulation and mixing and foaming is in a foaming head and not in separate and additional operations. Chemical feed pumps and an adhesive feed pump deliver in a pre-controlled amount to a mixing and foaming head which is refrigerated and the adhesive mixture is filtered and delivered to the machine for application. The chemical pump is a Series 200 Chem-Tech International and the adhesive pump is a Moyno by Robbins and Meyers, Inc. A typical adhesive is "Rho-plex" E-358 from Rohm and Haas, Philadelphia, Pa.

3,825,436

**METHOD OF MAKING RARE EARTH OXYSULFIDE LUMINESCENT FILM**

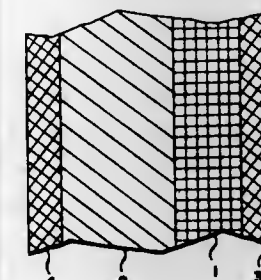
Robert A. Buchanan, Palo Alto, Ronald V. Alves, Saratoga, T. Grant Maple, Woodside, and Leon E. Sobon, Los Altos, Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Oct. 4, 1972, Ser. No. 294,902

Int. Cl. B44d 1/02; C03c 3/28; H01j 1/54

U.S. Cl. 117—33.5 R

2 Claims



This invention relates to high brightness, high contrast, high resolution rare earth crystalline luminescent films and processes for making such films. More particularly, the films are rare earth, crystalline oxysulfides of

lanthanum, gadolinium, yttrium and lutetium activated with trivalent rare earth ions having atomic numbers from 59 through 70.

3,825,437

**ADHESIVELY ERADICABLE TRANSFER MEDIUM**

Samuel Darrell Blair, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,543

Int. Cl. B41c 1/06

U.S. Cl. 117—36.1

4 Claims

A transfer medium or typewriter ribbon is disclosed, which is capable of being utilized to imprint a letter and if the letter is erroneous, which is susceptible of adhesive removal. The ribbon is made of a hard, film forming resin with selective modification of its properties through the addition of additives which embrittle the film and make the resin more adherent for the imaging surface while not penetrating into the fibers of the paper imaging surface, and attaching itself. As time passes there is an increased attachment to the paper fibers thereby rendering a more permanent image. The ribbon is formed from a solvent blend of relatively high proportions of toluene and correspondingly reduced isopropanol.

3,825,438

**MANUFACTURE OF PIGMENTS**

David William Pritchard, Teesside, and Thomas James Wiseman, Richmond, England, assignors to British Titan Limited, Billingham, Teesside, England

No Drawing. Filed Apr. 25, 1972, Ser. No. 247,337

Claims priority, application Great Britain, Apr. 28, 1971, 11,824/71

Int. Cl. B44d 1/02

U.S. Cl. 117—100 B

11 Claims

A process for coating titanium dioxide pigment with at least one hydrous oxide of a metal by mixing an aqueous dispersion of the pigment with at least one water-soluble hydrolysable compound of a metal and precipitating a hydrous oxide on to the pigment in the presence of an alcohol and/or a carboxylic acid, each of which contains at least two or more hydroxy groups.

3,825,439

**METHOD FOR FORMING AMORPHOUS SEMICONDUCTORS**

Paul A. Tick, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,218

Int. Cl. C23c 11/08, 13/04

U.S. Cl. 117—106 R

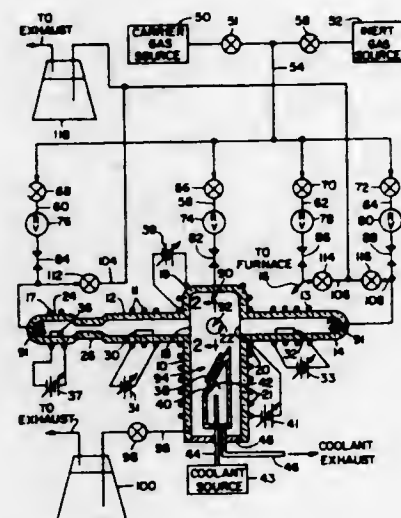
16 Claims

A method of forming a chalcogenide glass film which contains at least one of the chalcogens sulfur, selenium, and tellurium and at least one of the Group IV A elements germanium and silicon. The Group IV A element is heated to a temperature sufficient to cause it to react with chalcogen vapors. A carrier gas passes over a first heated chalcogen source to provide a first gas mixture which passes over the surface of the Group IV A element to form a second gas mixture containing chalcogen vapors and vapors of the products of reaction of the first chalcogen and the Group IV A element. In a similar manner, vapors from other chalcogen sources and vapors from



other sources of amorphous semiconductor components can be obtained by carrier gas streams. All of the vapors which are to form the film are mixed and transported over the surface of a substrate the temperature of which is maintained between 160° C. and 250° C., which is suf-

within the corrugations of the cardboard and impregnating material is introduced into the corrugations under the influence of the said vacuum. The impregnating material is introduced under conditions which may be varied with respect to composition, temperature, viscosity and other



ficient to cause the formation of a continuous homogeneous film thereon. This method provides accurate composition control and composition variations throughout the film. A gas flow reversal technique provides accurate thickness control.

3,825,440

## VAPOR DEPOSITION METHOD

Louis E. Branovich, Neptune, William B. F. Fitzpatrick, Wall, and Martin L. Long, Jr., West Belmar, N.J., assigns to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation-in-part of application Ser. No. 159,067, July 1, 1971, which is a continuation-in-part of application Ser. No. 821,466, May 2, 1969, both now abandoned. This application Apr. 3, 1973, Ser. No. 347,600

Int. Cl. C23c 11/14

U.S. Cl. 117-106 R

4 Claims

Isotropic boron nitride is vapor deposited onto a substrate by suspending the substrate in a hot reaction chamber the inner walls of which bear a deposit of anisotropic boron nitride, and adding either water or ammonium hydroxide to the reaction chamber while the temperature of the reaction chamber is maintained at about 850 degrees C. to about 1600 degrees C.

3,825,441

## METHOD FOR IMPREGNATING CORRUGATED CARDBOARD, AND RESULTANT PRODUCT

Werner Achermann and Franz Achermann, Zurich, Switzerland, assigns to Boise Cascade Corporation, Boise, Idaho

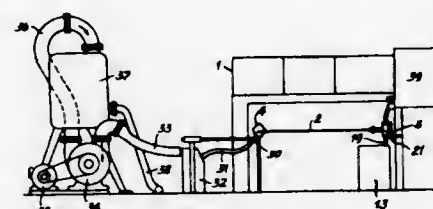
Original application Sept. 27, 1968, Ser. No. 763,268, now Patent No. 3,669,067. Divided and this application Mar. 3, 1972, Ser. No. 231,522

Int. Cl. B44d 1/02

U.S. Cl. 117-119

12 Claims

Method for impregnating corrugated cardboard during the manufacturing process forming the said corrugated cardboard, and resultant product. A vacuum is formed



variable process parameters. The apparatus of this invention includes a means for producing a suction on one edge of a corrugated cardboard while introducing impregnating material at the other edge of the corrugated cardboard as it passes through the impregnating apparatus.

3,825,442

## METHOD OF A SEMICONDUCTOR DEVICE WHEREIN FILM CRACKING IS PREVENTED BY FORMATION OF A GLASS LAYER

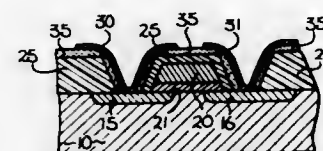
Gordon E. Moore, Los Altos Hills, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of abandoned application Ser. No. 4,841, Jan. 22, 1970. This application Sept. 27, 1972, Ser. No. 292,510

Int. Cl. H01l 7/34

U.S. Cl. 117-212

19 Claims



In the manufacture of a semiconductor device wherein a film is to be formed over portions of a first layer having abrupt surface contours, the improvement of forming a glass layer, having a melting point lower than that of said first layer, on the first layer and heating sufficiently to cause a plastic flow of the glass layer at the abrupt contour to round the edges and avoid cracking of the subsequently established film.

3,825,443

## COILED TUBE BLOWOUT PROCESS AND APPARATUS

Dennis E. Reilly, Bellefontaine Neighbors, Mo., assignor to Olin Corporation

Filed June 7, 1972, Ser. No. 260,405

Int. Cl. B08b 9/00

U.S. Cl. 134-24

17 Claims

A process and apparatus for removing the internal scarf from within a coil of welded tubing having a plurality of wraps which comprises filling the tubing with a substantially noncompressible liquid and applying a gas under pressure to force the liquid and scarf out of the

tubing. A plug is normally provided intermediate the gas and the liquid. The plug traverses the wraps of the tubing

by a primary alcohol. A preferred cell comprises a carbon cathode, a magnesium anode, and an aqueous electrolyte containing, in moles per liter, about 4 hydrochloric acid, 0.6 hydrogen peroxide, 1.2 magnesium chloride, 0.02 ferric chloride, and 0.02 cupric chloride.

3,825,446

## LEAD-ZINC PRIMARY BATTERY

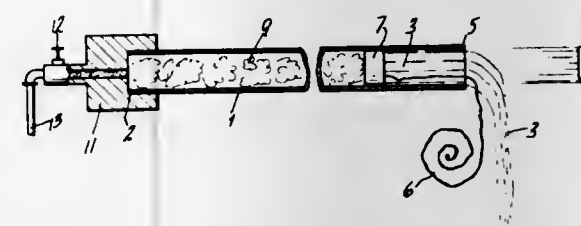
Atsutaka Oka, Takatsuki, Japan, assignor to Ynasa Battery Company Limited, Takatsuki, Japan

Filed Nov. 10, 1972, Ser. No. 305,540

Int. Cl. H01m 17/00

U.S. Cl. 136-114

6 Claims



to force the liquid and scarf out. A second plug may be provided at the outlet end of the tubing.

3,825,444

## DEVICE FOR SEPARATING ELECTROLYTE CARRIED BY HYDROGEN DURING RECHARGING OF A STORAGE BATTERY

Gilbert Martin, La Seyne-sur-Mer, France, assignor to Etat Francais, Delegation Ministerielle pour l'Armement, Paris, France

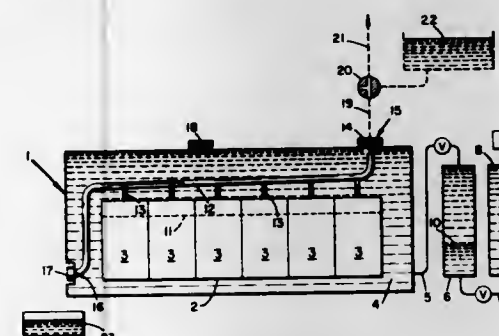
Filed July 28, 1972, Ser. No. 275,894

Claims priority, application France, July 30, 1971, 7128007

Int. Cl. H01m 1/02

U.S. Cl. 136-6 P

6 Claims



Apparatus for separating the electrolyte carried by hydrogen during recharging of a storage battery housed in an oil filled box, including a collector tube connected to each storage cell and having an outlet in the upper part of the box and an outlet in the lower part, an oil tank having its upper part connected to the lower part of the oil filled box, a water tank having its lower part connected to the lower part of the oil tank and its upper part communicating with the external environment and a three-way valve which alternately connects the upper end of the collector tube to atmosphere or to a dielectric reservoir.

3,825,445

## ELECTROCHEMICAL CELL WITH CATALYZED ACID PEROXIDE ELECTROLYTE

Richard W. MacCarthy, 35 Union Ave., Apt. 25, Campbell, Calif. 95008

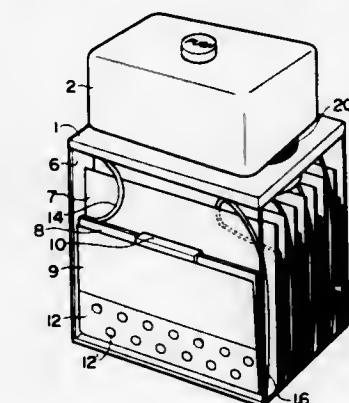
No Drawing. Filed Mar. 19, 1973, Ser. No. 342,867

Int. Cl. H01m 27/00

U.S. Cl. 136-83 R

14 Claims

A high energy density electrochemical cell or fuel cell having an anode containing lithium, calcium magnesium, zinc, or aluminum with an acid electrolytic fuel containing a peroxide catalyzed by a salt of one or more metals selected from iron, cobalt, nickel, and copper. The rate of reaction may be moderated by concentration of salts of one or more metals high in the electromotive series or



A primary battery of lead-zinc type comprising a battery main body and a container jointed together, said battery main body consisting of a plurality of cells holding a lead positive plate and zinc negative plate supported by an electrode holder and a heating material, said container holding sulfuric acid and push rod therein and having a spout sealed with a membrane. When the container is pressed with hand from its outside, the lower edge of the push rod breaks the sealed membrane, allowing sulfuric acid to pour into the battery main body to activate the battery. The primary battery of lead-zinc type according to this invention has better performance at low temperatures and is simple to make and low in price.

3,825,447

## BATTERY COVER

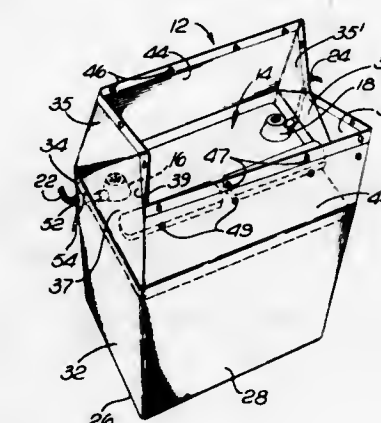
Ralph Kraals, 551 Evergreen Drive, Pasadena, Calif. 91105

Filed July 17, 1972, Ser. No. 272,616

Int. Cl. H01m 1/02

U.S. Cl. 136-166

6 Claims



A battery cover for preventing corrosive damage due to chemicals emanating from a battery. An enclosed



container is defined by side walls, a bottom wall and a top wall having closure means thereon. Openings in the container enable a cable to pass through the container and to electrically connect to the battery. Means are provided for tightly securing the container to the cables at the openings.

3,825,448

# PRODUCTION OF DUCTILE HIGH STRENGTH GALVANIZED STEEL

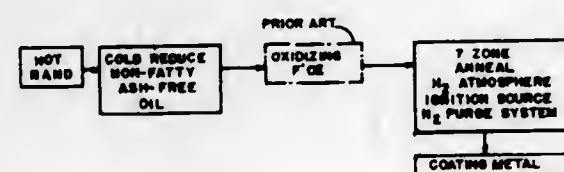
John E. Hartmann, Canfield, and Alfred F. La Camera and Peter B. Lake, Youngstown, Ohio, assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Oct. 26, 1972, Ser. No. 301,126

Int. Cl. C23c 1/02, 1/04, 1/08

U.S. Cl. 148—12.1

7 Claims



Advancing a strip of hot rolled low carbon steel, in the absence of an applied intermediate oxidizing treatment, through a continuous annealing furnace as it is received from a cold reduction mill with a film of rolling oil, having preferred characteristics, on its surface; heating the strip to an annealing temperature in the range of 900–1100° F. strip temperature (1100–1300° F. furnace temperature) in a protective atmosphere which is preferably of high hydrogen; subsequently, coating the annealed strip with molten metal, preferably galvanizing material.

3,825,449

# METHOD OF DEPOSITING EPITAXIAL LAYERS ON A SUBSTRATE FROM THE LIQUID PHASE

Donald Paul Marinelli, Trenton, N.J., and Thomas Edward Stockton, Cornwells Heights, Pa., assignors to RCA Corporation

Filed Aug. 31, 1973, Ser. No. 393,627

Int. Cl. H01l 7/38

U.S. Cl. 148—172

5 Claims

The surface of the substrate on which the epitaxial layer is to be deposited is coated along at least one edge portion with a strip of a non-reactive material. An epitaxial layer is then deposited on the substrate by conventional liquid phase techniques by moving the substrate through a suitable deposition solution with the substrate preferably oriented so as to make the strip-coated edge the leading edge.

3,825,450

# METHOD FOR FABRICATING POLYCRYSTALLINE STRUCTURES FOR INTEGRATED CIRCUITS

John A. Schoeff, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Original application Aug. 10, 1970, Ser. No. 62,437, now abandoned. Divided and this application May 1, 1972, Ser. No. 249,403

Int. Cl. B44d 1/18; H01l 7/36, 19/00

U.S. Cl. 148—175

1 Claim

An improved integrated circuit structure is shown having an integral polycrystalline silicon member. The doping of such polycrystalline silicon member controls the

usage of such member. When the poly silicon doping characteristics equal that of the layer of semiconductor material upon which it is deposited, it forms a good conductor and is usable as a contact. When the polycrystalline silicon doping characteristics are again the same as that of



the layer of semiconductor material upon which it is deposited but opposite that of the structure to be isolated, it forms a good isolation member. Various processes are shown for advantageously fashioning polycrystalline silicon structures.

3,825,451

# METHOD FOR FABRICATING POLYCRYSTALLINE STRUCTURES FOR INTEGRATED CIRCUITS

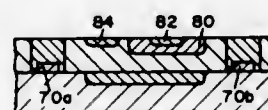
John A. Schoeff, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Original application Aug. 10, 1970, Ser. No. 62,437, now abandoned. Divided and this application May 1, 1972, Ser. No. 249,404

Int. Cl. B44d 1/18; H01l 7/36, 19/00

U.S. Cl. 148—175

1 Claim



An improved integrated circuit structure is shown having an integral polycrystalline silicon member. The doping of such polycrystalline silicon member controls the usage of such member. When the poly silicon doping characteristics equal that of the layer of semiconductor material upon which it is deposited, it forms a good conductor and is usable as a contact. When the polycrystalline silicon doping characteristics are again the same as that of the layer of semiconductor material upon which it is deposited but opposite that of the structure to be isolated, it forms a good isolation member. Various processes are shown for advantageously fashioning polycrystalline silicon structures.

3,825,452

# LIQUID EXPLOSIVE FOR WELL FRACTURING

Leonard N. Roberts, Scottsdale, Ariz., assignor to Talley-Frac Corporation, Pryor, Okla.

Original application Oct. 4, 1968, Ser. No. 765,113, now abandoned. Divided and this application Jan. 26, 1971, Ser. No. 109,774

Int. Cl. C06b 1/04

U.S. Cl. 149—38

12 Claims

A cap insensitive liquid explosive is described which is particularly useful for fracturing a formation containing a network of narrow fissures adjacent a well bore in order to bring in a well or to increase its productivity, which includes a nitroparaffin compound, preferably

3,825,454

# METHOD OF FORMING INTERCONNECTIONS

Akira Kikuchi, Takashi Agatsuma, and Akio Anzai, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

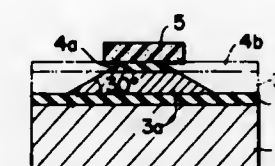
Filed Feb. 20, 1973, Ser. No. 333,983

Claims priority, application Japan, Feb. 18, 1972, 47/16,432

Int. Cl. C23f 1/02

U.S. Cl. 156—8

12 Claims



nitromethane, capable of dissolving substantial amounts of high explosive compounds, and one or more of certain high explosive compounds dissolved therein. The high explosive compounds are of a kind and are present in an amount capable of rendering the liquid explosive sufficiently diameter insensitive to permit propagation of an explosion throughout a substantial portion of such network of narrow fissures when the liquid explosive is placed therein or in such other environment as it is to be used. Preferred high explosives are RDX, HMX and mixtures thereof. TNT, PETN or any other high explosive organic nitro compound may be included in an amount sufficient to render the liquid explosive less sensitive to detonation, such that it is not cap detonable, at the same time enhancing its explosive power and reliability. For certain applications, ammonium nitrate may be added to achieve desired explosive effects, as well as finely divided reactive metal to increase the brisance of the explosive. A gelling agent such as nitrocellulose is included to maintain the resulting uniform dispersion for long periods of time. A method of pressure-transferring a liquid explosive into the well bore and pressuring it back into the productive formation is described in which the explosive is injected through a tube into the well bore directly adjacent the formation to be fractured, the tube having first been cleared of air, by placing the liquid explosive in one or more tanks connected to the injection tube at the well surface and which are subjected to air pressure to force the explosive into the well. Further, a well fracturing method which is self cleaning, rendering unnecessary the usual cleaning step which follows fracturing, is disclosed in which the well bore is restricted above the level of the explosion and is closed above the restriction with sand or the like such that sufficient back pressure is maintained in the well for satisfactory fracturing, while the resultant gases are subsequently vented through the restriction, blowing the sand or other ballast as well as the rubble generated by the explosion out of the well bore.

A method of forming interconnections, wherein unnecessary parts of a metal layer and a metal oxide film overlying the metal layer are etched using a mixed liquid etchant which consists of phosphoric acid, acetic acid, water, ammonium fluoride and nitric acid having a volumetric ratio of 76:15:5:2 to 6:3, whereby an interconnection portion with gently sloping corners is formed.

3,825,455

# METHOD OF PRODUCING INSULATED-GATE FIELD-EFFECT SEMICONDUCTOR DEVICE HAVING A CHANNEL STOPPER REGION

Sakari Takahashi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 17, 1972, Ser. No. 235,503

Claims priority, application Japan, Mar. 19, 1971, 46/15,179

Int. Cl. H01l 7/50

U.S. Cl. 156—11

6 Claims



3,825,453

# METHOD OF PREVENTING A CHEMICAL REACTION BETWEEN ALUMINUM AND SILICON DIOXIDE IN A SEMICONDUCTOR DEVICE

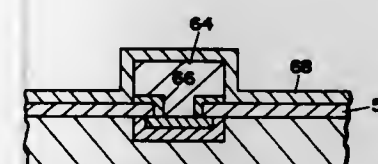
James R. Black and Robert J. Mattox, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of abandoned application Ser. No. 860,983, Sept. 25, 1969. This application Dec. 20, 1971, Ser. No. 210,132

Int. Cl. C23c 11/08, 13/02

U.S. Cl. 156—3

5 Claims



A method of preventing a chemical reaction in a semiconductor device between an aluminum film and a silicon dioxide substrate in contact therewith is disclosed. The method involves interposing a film of aluminum oxide between the aluminum film and the silicon dioxide substrate. A second step provides a layer of aluminum oxide on the silicon dioxide substrate adjacent the aluminum film.

A method of fabricating an insulated-gate field effect transistor including a channel stopper region is disclosed wherein an insulating film formed on the substrate serves as a mask during the formation of the channel stopper region.

3,825,456

# SPINNERETTE PLATES AND SPINNERETTE EMPLOYING SAME

William A. Weber and Edmund H. Wellech, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Original application Sept. 30, 1970, Ser. No. 76,796, now abandoned. Divided and this application Oct. 16, 1972, Ser. No. 297,979

Int. Cl. C03c 15/00

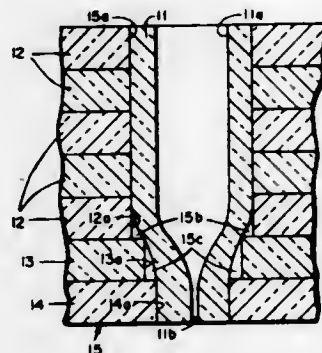
U.S. Cl. 156—15

4 Claims

Holes in a pattern desired for a spinnerette are etched through each of a plurality of flat and relatively thin disks



of a photosensitively opacifiable glass each having a peripheral configuration corresponding to that of a spinnerette or spinnerette plate to be formed from the disks. The etched holes in each of the disks are of the same size but differ in size from some of the disks to others thereof so that such disks can be stacked to subsequently form a homogenous body or spinnerette plate having holes extending therethrough and generally conforming to the outer configuration of each of a plurality of spinnerette capillary members which are formed of a thermally crystallizable glass and which are subsequently inserted



in the holes. The disks and capillary members are exposed to short wave radiations such as rays of ultraviolet light and the assembly, comprising the disks and spinnerette capillary members, are subsequently subjected to a heat and pressure cycle to fuse the disks to each other and to the capillary members and, simultaneously therewith, convert the assembly to a ceramic body to provide a ceramic spinnerette of a very strong, durable and corrosion resistant material, and embodying spinnerette capillaries having very smooth sidewalls extending through the spinnerette.

3,825,457

# METHOD OF MOULDING HOLLOW RUBBER ARTICLES

Eric Holroyd, High Legh Park, near Knutsford, Anthony G. Goodfellow, Maghull, near Liverpool, and James N. McGlashan, Winstanley, near Wigan, England, assignors to Dunlop Limited, Erdington, Birmingham, England

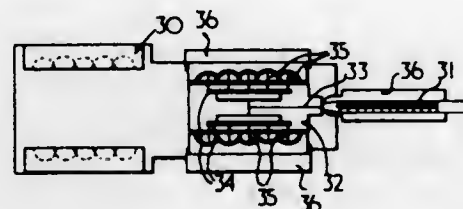
Filed Nov. 15, 1971, Ser. No. 198,812

Claims priority, application Great Britain, Nov. 23, 1970, 55,586/70

Int. Cl. B29c 1/00

U.S. Cl. 156—147

9 Claims



A method for moulding a hollow rubber article in which the article is formed as two separate halves of uncured

rubber, the halves having locking sprues to prevent their displacement, the mould is pressurized with gas and the halves are then brought together and joined and cured.

3,825,458

# METHOD OF MAKING HYDROGEL LAMINATES

Otto Wichterle and Karel Kliment, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

No Drawing. Original application Feb. 25, 1969, Ser. No. 888,202, now abandoned. Divided and this application Nov. 22, 1971, Ser. No. 201,235

Claims priority, application Czechoslovakia, Mar. 6, 1968, 1,767/68

Int. Cl. B29d 7/02

U.S. Cl. 156—242

13 Claims

A comparatively thick sheet of a spongy hydrogel, made e.g. by polymerizing ethylene glycol monomethacrylate in presence of less than 2 percent of a cross-linking agent and more than 60 percent of water, is laminated with a much thinner sheet of the same or similar, but homogeneous hydrogel, either from one side or from both sides. Alternatively, one external layer may be less hydrophilic or fully hydrophobic. The lamination is carried out so that the external thin layer is made on a glass or other smooth pad, either by polymerizing a cross-linked or linear polymer thereon, or by casting a thin layer of a dissolved linear polymer. Then a monomer mixture for spongy hydrogel is cast onto the first layer and polymerized. A sandwich structure is obtained if the monomer mixture for spongy hydrogel is cast between two pads provided with a thin homogeneous polymer layer. Hydrogel laminates and sandwich structures are useful e.g. for surgical and cosmetic purposes, for filtering liquids etc.

3,825,459

# METHOD OF MAKING FLEXIBLE MOLDING STRIP

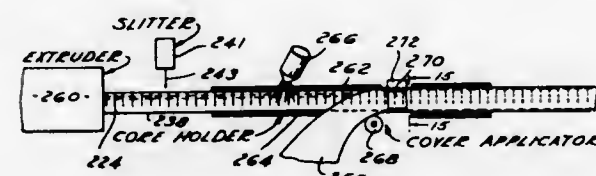
Alfred E. Taylor, Grosse Pointe, Mich.

Application Jan. 10, 1972, Ser. No. 216,409, now Patent No. 3,706,173, dated Dec. 19, 1972, which is a continuation-in-part of abandoned application Ser. No. 850,434, Aug. 15, 1969, Divided and this application Sept. 18, 1972, Ser. No. 290,156

Int. Cl. B32b 31/12

U.S. Cl. 156—244

5 Claims



A flexible molding strip including a non-metal channel-shaped core member having a plurality of transverse slots providing the requisite molding flexibility, and a stretchable cover enclosing the core member and concealing the slots. The core member includes opposed gripping flanges within the channel adapted to secure the molding, and the cover may be stretched over the core to prevent buckling when the molding is secured over a relatively sharp radius. The cover may also include a laterally extending flange or wing to conceal a joint or the like.

3,825,460

# THIN-WALLED CARBONACEOUS HONEYCOMB STRUCTURES AND PROCESS FOR MAKING SAME

Takayuki Yoshikawa and Eiichi Hisada, Nagoya, and Tooru Hujii, Yokkaichi, Japan, assignors to Nippon Toki Kabushiki Kaisha (Noritake Co., Ltd.), Nagoya-shi, Japan

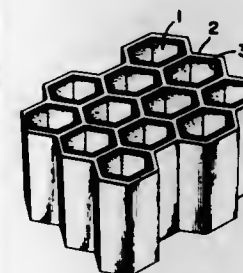
Filed Dec. 29, 1971, Ser. No. 213,425

Claims priority, application Japan, May 18, 1971, 46/33,519

Int. Cl. B29c 25/00; B32b 1/08

U.S. Cl. 156—296

10 Claims



A thin-walled carbonaceous honeycomb structure having a large surface to weight ratio and consisting of thin-walled carbonaceous cells; and a process for making the same. The process includes coating elongated tube or rod elements with a coating material capable of being carbonized, arranging the elongated elements so that they contact one another to form a honeycomb-like block, drying the coated elements so arranged, removing the elongated element substrates from the dried honeycomb-like block if the substrates, themselves, are not capable of being carbonized, and firing said honeycomb-like block to achieve the carbonaceous product.

3,825,461

# SPlicing HEAD ASSEMBLY

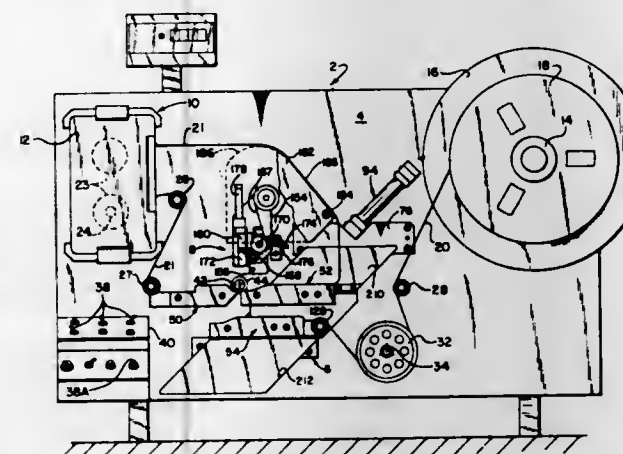
Robert H. Gorman, Hudson, Mass., assignor to King Instrument Corporation, Hudson, Mass.

Filed Jan. 29, 1973, Ser. No. 327,507

Int. Cl. B65h 69/02

U.S. Cl. 156—502

18 Claims



A splicing head assembly for use in a machine for splicing magnetic tape to a leader attracted to one of the hubs of a cassette, winding a selected amount of tape on that hub, and then attaching the trailing end of the tape to a

leader on the other hub of the cassette. The assembly comprises three splicing blocks or tape support elements each having a guideway for aligning tape to be spliced and suction means for holding a tape in position in the guideway. Two of the splicing blocks are spaced vertically and means are provided for producing relative movement between those blocks and the third block so that the guideway of the third block is aligned alternately with the guideways of the other two blocks.

3,825,462

# APPARATUS FOR COATING CHIPBOARD WITH A LAMINATED SHEET OR FOIL

Hubert Ettel, Teichhutte, Harz, Germany, assignor to Wilhelm Mende & Co.

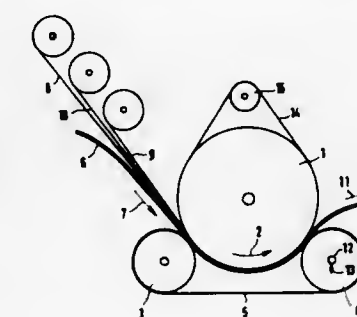
Filed Dec. 22, 1972, Ser. No. 317,681

Claims priority, application Germany, Jan. 12, 1972, P 22 01 302.1

Int. Cl. B32b 31/20; B31f 1/00

U.S. Cl. 156—582

6 Claims



A thermoplastic sheet is bonded to a thin chipboard by positioning the sheet and board on a continuously moving belt, heating the sheet and board to render the sheet plastic and pressing the sheet into intimate contact with the surface of the chipboard to bond the sheet thereto.

3,825,463

# SECTIONALIZED LAMINATE STRIP STRUCTURE

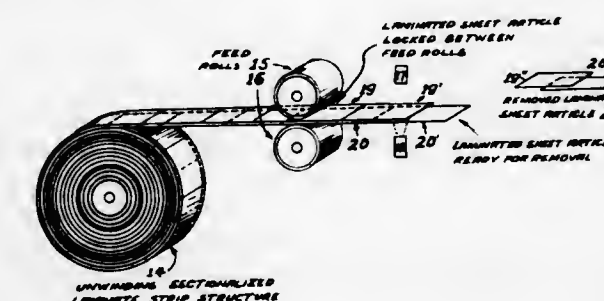
John A. Amann, 19 Alemeda Place, Mount Vernon, N.Y. 10552

Filed Apr. 30, 1973, Ser. No. 355,588

Int. Cl. B32b 7/06, 3/16

U.S. Cl. 161—36

10 Claims



The present invention relates to a process for continuously manufacturing a sectionalized laminate strip structure comprising a series of individually dispensable pressure-sensitive adhesive backed sheet articles, the resulting product, and improvements in the apparatus for dispensing same.



### 3,825,464 FLAME-RETARDANT CARPET AND METHOD OF PREPARING SAME

Richard P. Crowley, Harbor Towers II, Suite 24H,  
65 E. India Row, Boston, Mass. 02110  
No Drawing. Continuation-in-part of application Ser. No.  
25,275, Apr. 2, 1970, now Patent No. 3,694,873, dated  
Oct. 3, 1972, which is a continuation-in-part of applica-  
tion Ser. No. 872,498, Oct. 30, 1969, now Patent No.  
3,686,046, dated Aug. 22, 1972. This application July  
31, 1972, Ser. No. 276,527

Int. Cl. B32b 27/12, 27/18

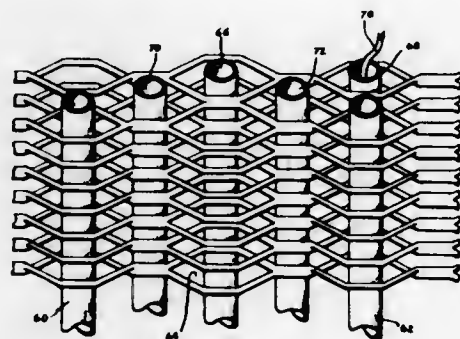
U.S. Cl. 161-67 22 Claims  
A flame-retardant carpet which comprises a solid poly-  
meric backing sheet, such as a flexible polyvinyl chloride  
or a nonwoven polypropylene sheet to which fibers have  
been secured to said backing sheet, the fibers providing  
a fiber face and the backing sheet containing a flame-  
retardant amount of an undecomposed blowing agent,  
such as azodicarbonamide, whereby on exposure of the  
carpet to open-flame or high temperatures, the blowing  
agent provides, such as by decomposition, a flame-re-  
tardant quantity of an inert gas.

### 3,825,465 THREE DIMENSIONAL RETICULATED STRUCTURE

Robert Stock, 12311 Buaro St.,  
Garden Grove, Calif. 92640  
Continuation-in-part of abandoned application Ser. No.  
62,337, Nov. 13, 1970. This application Mar. 24, 1972,  
Ser. No. 237,744

Int. Cl. B32b 13/02, 33/00

U.S. Cl. 161-112 10 Claims



A three dimensional, open mesh structure is described  
which is fabricated from sheet stock of metal, paper or  
the like. The sheet stock is slit in a predetermined pattern  
and then is expanded to form the structure. The struc-  
ture has a three dimensional shape with a reticulated  
pattern of apertures in planar surfaces transverse to the  
plane of the sheet material prior to its expansion. The  
structure is formed by a plurality of unbroken, continuous  
strips of material lying in a plurality of superimposed  
planes, each strip having a sinuous path departing in  
regular frequency to either side of a medial line with  
web sections lying on said medial line where each strip  
is in joined, unbroken attachment to immediately ad-  
jacent strips and with each pair of such adjacent strips  
defining said apertures. The structure is useful to form  
the core of a wall with elongated reinforcement members  
disposed perpendicular to the planar surfaces and ex-  
tending through superimposed apertures of the reticulated  
pattern. The wall comprises the aforementioned assembly  
of reinforcement members and three dimensional struc-  
ture with a plastic material such as plaster encasing the  
assembly.

### 3,825,466 METHODS OF PRODUCING FILMS COMPRISING SILICEOUS MATERIAL AND THE ARTICLE FORMED THEREBY

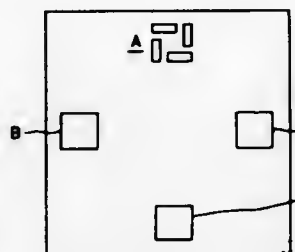
Barry Forester Martin and Edward David Roberts, Sal-  
fords, near Redhill, England, assignors to U.S. Phillips  
Corporation

Filed Mar. 13, 1972, Ser. No. 234,193

Claims priority, application Great Britain, Mar. 15, 1971,  
6,884/71

Int. Cl. C03c 15/00

U.S. Cl. 161-113 15 Claims



Method of producing an apertured siliceous film on  
a substrate comprising applying a layer of a polysiloxane  
mixture to the substrate, irradiating the layer with an  
electron beam in accordance with a desired pattern, etch-  
ing to the layer to remove the irradiated portions and  
heating the etched layer to decompose the organic ma-  
terial and leave an apertured siliceous film on the sub-  
strate.

### 3,825,467 PRESSURE-SENSITIVE RECORD SHEET MATERIAL

Paul S. Phillips, Jr., Dayton, Ohio, assignor to The  
National Cash Register Company, Dayton, Ohio

Filed Jan. 24, 1972, Ser. No. 220,002

Int. Cl. B32b 5/18

U.S. Cl. 161-159 2 Claims

A pressure-responsive record sheet material including a  
substrate sheet with a coating of pressure-releasable liquid  
droplets of marking material isolated by polymeric film  
material and releasable by marking pressures, wherein  
said droplets are protected from accidental release, as by  
scuffing and rolling pressures, by an over-sheet of thin,  
porous paper bonded adhesively to said coating.

### 3,825,468 SINTERED CERAMIC

Gerald E. Wojcik and William M. Lawson, Toledo, Ohio,  
assignors to Owens-Illinois, Inc.

No Drawing. Continuation of abandoned application Ser.  
No. 845,087, July 25, 1969, which is a division of applica-  
tion Ser. No. 594,408, Nov. 15, 1966, now Patent  
No. 3,486,872, dated Dec. 30, 1969. This application  
Aug. 25, 1971, Ser. No. 175,009

Int. Cl. B32b 3/26

U.S. Cl. 161-161 3 Claims

A crystallized sintered glass article having a non-porous  
surface and a method for forming the article. Crystalliz-  
able particulate glass that is crystallizable by *in situ* crys-  
tallization to a glass-ceramic is first arranged into a desired  
coherent but unfired shaped article. The article is then  
sintered to form a porous glass article which is then ther-  
mally crystallized at a temperature higher than that em-  
ployed to effect the sintering. A porous glass-ceramic is

### 3,825,472 METHOD OF PRODUCING L-LYSINE BY FERMENTATION

Koji Kubota and Yasuhiko Yoshihara, Kawasaki, Hayao  
Hirakawa, Yokohama, Hirotsuka Kamiyo, Kawasaki,  
Shigeki Nosaki, Isehara, Fumihiko Yoshinaga, Fuji-  
sawa, and Shinji Okumura and Hiroshi Okada, Tokyo,  
Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned applica-  
tion Ser. No. 353,635, Apr. 23, 1973. This application  
Oct. 2, 1973, Ser. No. 402,818

Claims priority, application Japan, Apr. 27, 1972,  
47/42,527; Aug. 18, 1972, 47/82,641; Sept. 19,  
1972, 47/94,030; Nov. 30, 1972, 47/120,247

Int. Cl. C12d 1/00

U.S. Cl. 195-29 9 Claims

Artificially induced mutants of *Brevibacterium lactofer-*  
*mentum*, *Corynebacterium glutamicum*, *Corynebacterium*  
*illium*, and *Corynebacterium acetoacidophilum* which re-  
sist feedback inhibition by S-(2-aminoethyl)-cysteine and  
require at least one supplemental nutrient which is  
herine, proline, alanine, nicotinamide, nicotinic acid,  
pantothenic acid, thiamine, guanidine, adenine, hypox-  
anthine, or vitamin B<sub>12</sub> produce L-lysine by fermentation  
of otherwise conventional culture media in higher yields  
than the parent strains lacking the nutrient requirement.

### 3,825,473 PRODUCTION OF CEPHALOSPORIN C

Francesco Gargiolo, Bologna, Italy, assignor to Alfa  
Farmaceutici, S.p.A., Bologna, Italy

No Drawing. Filed Aug. 4, 1972, Ser. No. 277,881

Claims priority, application Great Britain, Aug. 13, 1971,  
38,149/71

Int. Cl. C12d 9/22

U.S. Cl. 195-36 R 18 Claims

Cephalosporin C, which is useful as a starting ma-  
terial in the preparation of the semi-synthetic cephalo-  
sporin antibiotics, is produced by the aerobic cultivation  
of a novel microorganism, *Cephalosporium* Sp. strain  
F. 12 (ATCC 20339). The cultivation is performed in a  
nutrient medium containing assimilable sources of car-  
bon and nitrogen, one or more inorganic salts, and an  
organic source of sulfur. High yields of Cephalosporin  
C are obtained, with reduced yields of the undesirable  
by-product Cephalosporin N, by comparison with pre-  
viously used *Cephalosporium* strains.

### 3,825,474 PROTEUS RESISTANT AGAR CULTURE MEDIA

Patricia P. Cooper, Claymont, Del.

(1905 Fairfield Drive, Wilmington, Del. 19810)

No Drawing. Filed June 22, 1972, Ser. No. 265,324

Int. Cl. C12k 1/04

U.S. Cl. 195-103.5 R 3 Claims

The addition of penicillin G during the preparation  
of agar media results in *Proteus* resistant agar media  
which can be used in the isolation of gram-negative  
micro-organisms.

### 3,825,475 PROCESS AND DEVICE FOR PRODUCING MICROORGANISMIC MATTER

Alicia L. Compere-Whitney, Knoxville, Tenn., assignor to  
Imperatrix, Palo Alto, Calif.

Filed Sept. 25, 1972, Ser. No. 291,766

Int. Cl. C12b 1/00

U.S. Cl. 195-104 11 Claims

A substrate for rapidly growing a microorganism is  
disclosed. The substrate comprises a liquidophilic matrix

thus formed having dispersed throughout a multitude of  
crystals of a plurality of crystalline species having a plu-  
rality of different melting points. The porous glass-ceramic  
article is then heated at a still higher temperature suffi-  
cient to melt a portion but not all of the crystals and  
form a non-porous surface on the glass-ceramic.

3,825,469

### BORON CARBIDE FIBER PRODUCTION

James Economy, Eggertsville, and Vlado I. Matkovich,  
Williamsville, N.Y., assignors to The Carborundum  
Company, Niagara Falls, N.Y.

No Drawing. Original application Nov. 14, 1969, Ser. No.  
877,036, now Patent No. 3,725,533. Divided and this  
application July 3, 1972, Ser. No. 268,421

Int. Cl. C01b 31/36; D02g 3/02

U.S. Cl. 161-172 9 Claims

Boric oxide fibers having a maximum diameter of about  
10 microns are heated in an ammonia atmosphere to  
about 350-600° C. at a rate of temperature rise of up to  
about 5000° C./hr. to produce ammonia-treated fibers  
consisting essentially of B, N, O and H. The ammonia-  
treated fibers are heated in an amine atmosphere at about  
600-1000° C. to produce amine-treated fibers consisting  
essentially of B, C, N, O and H and containing at least  
about 15% C. The amine-treated fibers may be heated  
at about 2000-2350° C. in an inert atmosphere to pro-  
duce boron carbide fibers.

3,825,470

### ADHESIVELY ERADICABLE TRANSFER MEDIUM

Donald L. Elbert and Glen A. Waldrup, Lexington, Ky.,  
assignors to International Business Machines Corpora-  
tion, Armonk, N.Y.

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,696

Int. Cl. B32b 27/34; B41m 5/10

U.S. Cl. 161-227 10 Claims

A transfer medium or typewriter ribbon is disclosed,  
which is capable of being utilized to imprint a letter and  
if the letter is erroneous, which is susceptible of adhe-  
sive removal. The ribbon is made of a hard, film forming  
resin with selective modification of its properties through  
the addition of additives which embrittle the film and  
make the resin more adherent for the imaging surface  
while not penetrating into the fibers of the paper imag-  
ing surface, and attaching itself. As time passes there  
is an increased attachment to the paper fibers thereby  
rendering a more permanent image.

3,825,471

### KENAF CARDBOARD AND METHOD FOR PRODUCTION THEREOF

Yakov Iosifovich Fraiman, Kulbyshevskoe shosse 23,  
korpus 30, Tashkent, U.S.S.R.

No Drawing. Filed Nov. 13, 1972, Ser. No. 306,349

Claims priority, application U.S.S.R., Nov. 17, 1971,  
1715162

Int. Cl. D21h 5/12

U.S. Cl. 162-147 3 Claims

Cardboard for use in making roller discs for roller gins  
employed in cotton ginning, including shredded kenaf  
fibres, cotton rags, fibrous gin waste, and a binder which  
is a mixture of rosin and bitumen. The method for its  
production is characterized by the extent of shredding of  
the fibrous components and their subsequent mixing with  
the shredded kenaf fibres.



having a high surface area. The matrix is adapted to retain a volume of liquid. The surface area of the matrix is sufficiently high to provide a ratio of the surface area available as a substrate to the volume of retainable liquid of at least 10 meter<sup>2</sup>/liter. A process for producing a microorganism is also disclosed. The process comprises contacting a microorganism or its precursor in a suitable vessel with the high surface area liquidophilic matrix, sufficient liquid to wet the matrix, and essential nutrients, whereby desired products, often including additional microorganism, are produced.

3,825,476

# SAMPLER-CULTURE APPARATUS FOR THE DETECTION OF COLIFORM BACTERIAL IN POTABLE WATERS

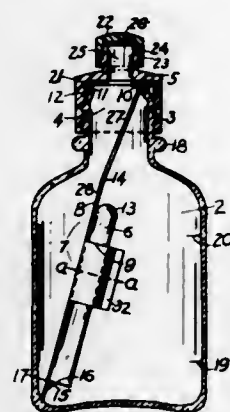
A. Adler Hirsch, 141 Norwood St.,  
Shreveport, La. 71105

Original application Nov. 17, 1971, Ser. No. 199,648, now Patent No. 3,708,040, dated Jan. 2, 1973. Divided and this application Oct. 2, 1972, Ser. No. 294,472

Int. Cl. C12k 1/10

U.S. Cl. 195—127

10 Claims



A go-no-go gage to determine directly whether bacterial quality of a drinking water sample meets the U.S. Public Health Service Standards in which all laboratory manipulations are eliminated from sampling to gas observation. The apparatus is creep-proof; it avoids exposures and the operations are precise. Gas from fermentation shows in a Durham vial held diagonally in a screw cap bottle by being clamped in a cage thereby eliminating all axial and lateral motion. A confirmatory Brilliant Green Bile broth tube is seeded by pressing into the screw cap and inverting, or by exchanging the auxiliary cap after inversion with a like size cap on the confirmatory vial thus obviating all extraneous utensils throughout the procedure.

3,825,477

# FLUIDIZED BED REACTOR

Joseph F. McMahon, Clinton, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed May 12, 1972, Ser. No. 252,891

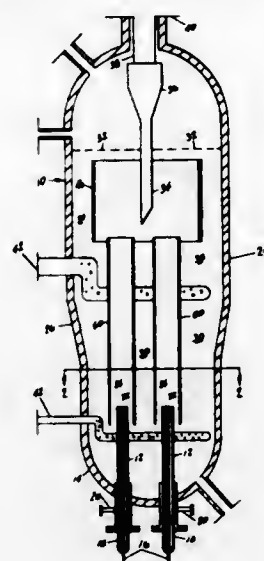
Int. Cl. C10g 7/00

U.S. Cl. 196—126

4 Claims

A fluidized bed reactor for producing a gas rich in

ethane and methane in which coking is inhibited and which operates at high efficiency. Oil and hydrogen are



reacted in the reactor which has means to insure thorough mixing of the oil with the coke particles.

## ERRATUM

For Class 202—176 see:  
Patent No. 3,825,491

3,825,478

# ELECTROLYTE AND METHOD FOR ELECTRO-DEPOSITING MICROPOROUS CHROMIUM-NICKEL COMPOSITE COATINGS

Richard J. Claus, Allen Park, Thaddeus W. Tomaszewski, Dearborn, and Henry Brown, Huntington Woods, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Filed Oct. 30, 1972, Ser. No. 302,170

Int. Cl. C23b 5/08, 5/50

U.S. Cl. 204—41

46 Claims

An aqueous nickel electroplating bath solution comprising nickel ions, a bath soluble nitrogen containing compound and a bath soluble metal salt which in the bath will produce a metal containing cation whose pH precipitation point is lower than that of the pH precipitation point of nickel in said bath.

3,825,479

# RADIATION CURABLE PRINTING INK COMPOSITIONS COMPRISING AN ISOCYANATE-MODIFIED POLYFUNCTIONAL ESTER AND A PHOTOINITIATOR

Daniel J. Carlick, Northbrook, Ill., Frank Marra, Wayne, N.J., and Gerhard E. Sprenger, North Stonington, Conn., assignors to Sun Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 282,320, Aug. 21, 1972, which is a continuation-in-part of application Ser. No. 82,516, Oct. 20, 1970, which in turn is a continuation-in-part of application Ser. No. 850,633, Aug. 15, 1969, all now abandoned. This application May 31, 1973, Ser. No. 365,712

The portion of the term of the patent subsequent to Sept. 18, 1990, has been disclaimed

Int. Cl. C08d 1/00; C08f 1/16

U.S. Cl. 204—159.23

10 Claims

A photopolymerizable printing ink comprises at least one isocyanate-modified polyfunctional ester having a hydroxyl value of about 15–70, at least one photoinitiator, and a colorant.

3,825,480

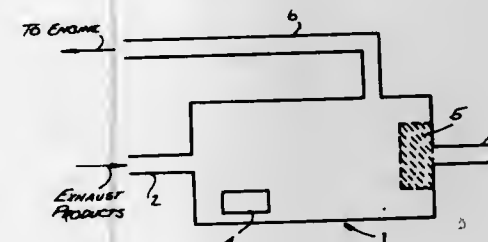
# SONIC ENERGY EXHAUST FILTER

Arnold H. Pelofsky, Monument, Colo. 80132; Dan T. Felix, Pebble Beach Drive, Woodmoor, Monument, Colo. 80132; and Gary N. Herbert, 905 W. Cheyenne Road, Colorado Springs, Colo. 80906  
Continuation-in-part of abandoned application Ser. No. 889,779, Dec. 11, 1969, which is a division of application Ser. No. 619,944, Mar. 2, 1967, now Patent No. 3,497,005. This application Dec. 8, 1971, Ser. No. 206,011

Int. Cl. B01J 1/12

U.S. Cl. 204—193

6 Claims



A process for rupturing molecular bonds in a material using sonic energy. The material is subjected to sonic energy, and in a modification of the process it may be contacted with a carrier agent prior to being subjected to the sonic energy.

3,825,481

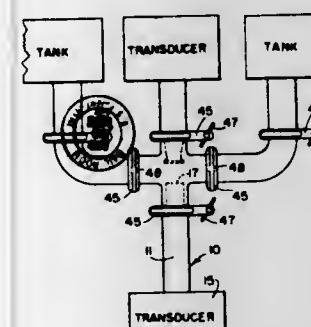
# FLUID FLOW SONIC ENERGY REACTOR

Michael C. Supitlov, St. Charles, Ill., assignor to Du Kane Corporation, St. Charles, Ill.  
Filed Apr. 30, 1973, Ser. No. 356,011

Int. Cl. B01k 1/00; A23i 3/30

U.S. Cl. 204—193

11 Claims



A sonic energy reactor for handling a stream of fluid consists of a horn having a length of an integral number of 1/2 wave lengths, said horn having a sonic input and a sonic output for longitudinal vibration. About a nodal region of the horn is an external, integral mounting flange. Associated with the horn is a fitting having at least three pipe stubs extending from the fitting body with the stub interiors communicating with a chamber within the fitting body for fluid flow between stubs. At least one of the stubs is sufficiently large to permit the horn portion between the horn output end and the mounting flange to be inserted into said one stub interior, the relative dimensions being such that the free end of such horn constituting the sonic energy output end reaches a desired location in the chamber in the fitting body interior. The free end of said one pipe stub is shaped to cooperate with the horn mounting flange and additional parts for providing a detachable coupling between the horn and fitting. This detachable coupling includes among other things a gasket of sonic energy insulating means such as rubber for inhibiting the

escape of sonic energy from the horn to the fitting and to contain the fluid. Sonic energy discharged at the output end of the horn is effective to act upon material flowing past the horn portion for sonic energy irradiation. The remaining stubs of the fitting are adapted to function as fluid flow inlets and outlets and if sufficient stubs are available, may accommodate additional horns for irradiation. All stubs are detachably coupled to fluid feed pipes or one or more ultra-sonic horns. Such a construction permits ready assembly and/or disassembly of all components constituting the reactor and horn assembly permitting cleaning, sterilization and visual examination for observing the amount of physical wear of said horn output end. By controlling the relative dimensions of a fitting pipe stub and horn, the relative disposition of the output end of a horn within a fitting chamber may be controlled for the purpose of subjecting fluid particles to compression, tension and/or shear, the latter depending upon the relative shapes of the surfaces of horn and fitting interiors. By selecting appropriate materials, usually metals such as stainless steel, titanium and utilizing standardized and accepted fittings available in the market, a sonic energy reaction device may be available for use in food treatment processes, cosmetics, drugs, corrosive chemicals and various other fields where standard or special fittings are available.

3,825,482

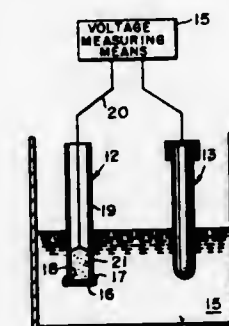
# ION-SELECTIVE ELECTRODES USING TUNGSTEN BRONZES AS ACTIVE ELEMENT

Margaret A. Wechter, Hammond, Ind., and Howard R. Shanks, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa  
Filed Feb. 16, 1972, Ser. No. 226,862

Int. Cl. G01n 27/46

U.S. Cl. 204—195 M

6 Claims



Tungsten bronzes, which are compounds having a general formula  $A_xWO_3$ , where  $x$  is any value between zero and one exclusive have been found to function as the active element in ion-selective electrodes. They have been found to be sensitive to mercury, silver and iron in solution.

3,825,483

# RED-OX POTENTIOMETER PROVIDED WITH A pH CORRECTION CIRCUIT

Toshihiko Nakamura, Yokohama, Japan, assignor to Nihon Filter Co., Ltd., Tokyo, Japan  
Filed Nov. 6, 1972, Ser. No. 303,788

Int. Cl. G01n 27/46

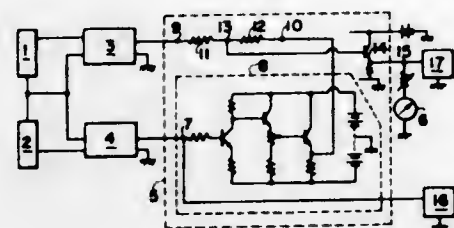
U.S. Cl. 204—195 R

2 Claims

A red-ox potentiometer which comprises a pH detecting part having a pH measuring electrode and a reference electrode, and a pH correction circuit having circuit constants selected according to the red-ox potential characteristics of a metallic ion containing solution to be tested, in addition to a red-ox potential detecting part having a red-ox electrode and a reference electrode, the



red-ox potential and the pH electromotive force of the solution tested are detected respectively by said red-ox detecting part and pH detecting part, the output voltage from said pH detecting part is combined in said pH correction circuit with the output voltage from said red-ox detecting part to compensate the variations of red-ox potential caused by the variations of pH value of the solution, thereby a resultant voltage which represent al-



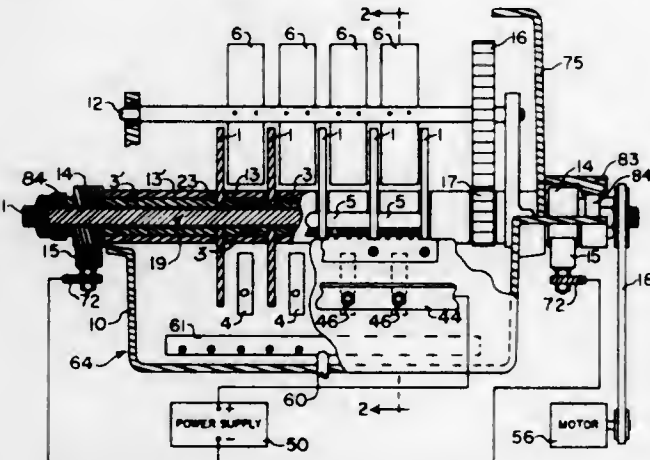
ways the red-ox potential corresponding to a predetermined pH value of the solution regardless of the variations of pH value of the solution is delivered from the output terminals of the pH correction circuit as a corrected output voltage of said circuit, and said corrected voltage is utilized for indicating the red-ox potential corresponding to said predetermined pH value of the solution or controlling the red-ox degree of the solution.

### 3,825,484 ELECTROLYTIC REGENERATOR FOR CHEMICAL ETCHANTS INCLUDING SCRAPER MEANS AND ROTATING CATHODES

Lewis N. Fronsman and Nathan F. Fronsman, both of 641 Ross Street, Costa Mesa, Calif. 92627  
Continuation-in-part of abandoned application Ser. No. 138,565, Apr. 29, 1971. This application Mar. 6, 1973, Ser. No. 338,923

Int. Cl. C23b 5/68  
U.S. Cl. 204—216

9 Claims



An electrolytic cell apparatus for the regeneration of chemical etchants, such as the ferric chloride solution used in the printed circuit industry. In regenerating such ferric chloride, metallic sponge copper is obtained as a by-product. The process becomes economic at high current densities, which are made practicable by novel structural features. The cathodes of the apparatus are stacked, spaced, slowly-rotating discs of, e.g., titanium. The anodes are stationary plates, preferably of a graphitic material, disposed between the disc cathodes. Mechanical wipers and collectors scrape the sponge copper from the disc

cathodes and dump it into a collection bin. The regenerator apparatus is preferably installed in connection with a conventional etching apparatus, the ferric chloride or other etchant being continuously circulated from etcher to regenerator, and back again. The market value of the recovered copper approximately equals the cost of the electric energy required for regeneration.

### 3,825,485 HYDROCRACKING EFFLUENT COOLING PRIOR TO HYDRODESULFURIZATION

William R. Coons, Jr., Groves, James H. Colvert, Houston, and Gerald V. Nelson, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 102,251, Dec. 28, 1970, now Patent No. 3,716,476. This application Sept. 7, 1972, Ser. No. 287,135. The portion of the term of the patent subsequent to Feb. 13, 1990, has been disclaimed  
Int. Cl. C10g 37/00

U.S. Cl. 208—97 9 Claims  
A residue-containing petroleum fraction, 50 percent boiling above 1,000° F., is hydrocracked and then hydrodesulfurized. During the onstream period, the conversion level of material boiling above 1,000° F. is maintained substantially constant while the sulfur content of the hydrocracked effluent increases. The sulfur content of a product fraction is maintained substantially constant by gradually increasing the hydrodesulfurization temperature. The effluent from the hydrocracking reaction is cooled by adding an aromatic-rich fraction and the cooled mixture is passed to the desulfurization reaction.

### 3,825,486 METHOD OF CONVERTING HYDROCARBONS WITH MANGANESE NODULE CATALYSTS

Joseph N. Mile, Trenton, N.J., assignor to Mobil Oil Corporation  
No Drawing. Application Apr. 24, 1970, Ser. No. 31,776, now Patent No. 3,676,369, which is a continuation-in-part of application Ser. No. 597,243, Nov. 28, 1966, now Patent No. 3,509,041. Divided and this application Apr. 17, 1972, Ser. No. 244,988

The portion of the term of the patent subsequent to Apr. 28, 1987, has been disclaimed  
Int. Cl. B01j 9/20; C10g 13/02, 5/72

U.S. Cl. 208—110 9 Claims  
This specification discloses the conversion of hydrocarbons employing a catalyst comprising a base-exchanged, calcined manganese silicate-containing mineral in the form of a manganese nodule, said mineral having hydrogen ions bonded thereto in an amount of at least 0.01 gram per 100 grams of said mineral.

### 3,825,487 METHOD FOR SIMULTANEOUSLY PRODUCING SYNTHETIC NATURAL GAS AND HIGH OCTANE REFORMATE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
No Drawing. Filed Sept. 5, 1972, Ser. No. 286,652  
Int. Cl. C10g 35/06

U.S. Cl. 208—139 11 Claims  
A synthetic natural gas stream and a high octane reformat stream are produced by contacting a hydrocarbon charge stock boiling in the gasoline range and hydrogen, at synthetic natural gas production conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. percent of a platinum group metal, about 1 to about 5 wt. percent nickel and about 0.01 to about 5 wt. percent of a Group IVA metal. Synthetic natural gas production conditions generally utilized include a temperature of about 900 to about 1200° F., a pressure of

about 0 to about 350 p.s.i.g., liquid hourly spaced velocity about 0.5 to about 3 hrs.<sup>-1</sup> and a mole ratio of hydrogen to hydrocarbon of about 1:1 to about 5:1.

### 3,825,488 PROCESS FOR HYDROREFINING A HYDRO-CARBON CHARGE STOCK

John G. Gatzis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 7, 1973, Ser. No. 358,198  
Int. Cl. C10g 23/06, 31/14

U.S. Cl. 208—212 6 Claims

This invention relates to a process for the hydrorefining of petroleum crude oils, heavy vacuum gas oils, heavy cycle stocks, crude oil residuum, topped crude oil, tar sand oil, shale oil, liquefied coal, etc. More specifically the present invention involves a process for hydrorefining heavy hydrocarbon charge stocks to effect the removal of nitrogen and sulfur therefrom, and is advantageous when employed for the destructive removal of organometallic contaminants and particularly the conversion of pentane-insoluble hydrocarbonaceous material.

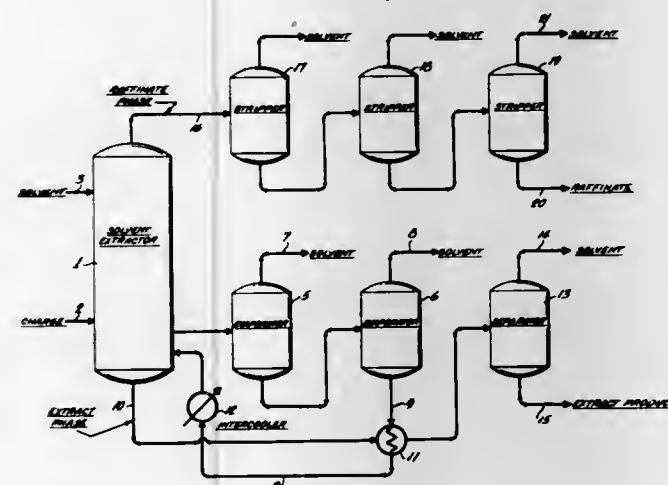
### 3,825,489 EXTRACTION PROCESS

Ib Steinmetz, Wilmington, Del., and William Wayne Wentzelm, Glen Mills, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 21, 1972, Ser. No. 308,377

Int. Cl. C10g 21/16 2 Claims

U.S. Cl. 208—327



A solvent extraction process, more particularly a furfural extraction process wherein a portion of the extract phase is withdrawn from the extraction zone, concentrated and cooled by evaporation of part of the solvent contained therein and by cooling means and returned to the extraction vessel, thereby enhancing the aromatic-paraffinic separation taking place therein.

### 3,825,490 MOLECULAR SIEVE SELECTIVE ADSORPTION PROCESS

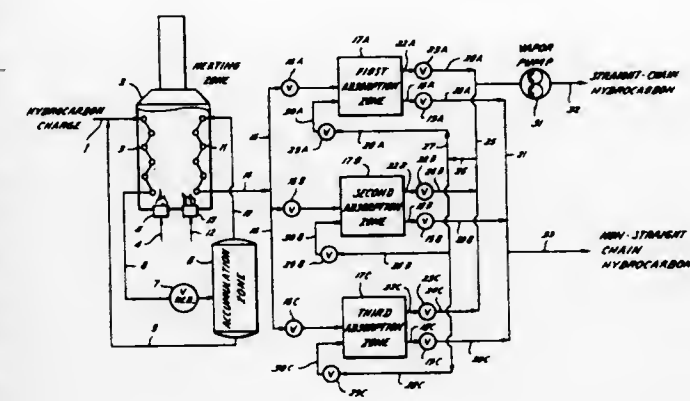
George W. Vachuda, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,947

Int. Cl. C07c 7/12 4 Claims

U.S. Cl. 208—310  
A molecular sieve selective adsorption process for separating non-straight chain hydrocarbons from a C<sub>5</sub>-C<sub>6</sub>

charge mixture of straight chain and non-straight chain hydrocarbons incorporating a charge vaporization system wherein liquid charge is partially vaporized in a first heating zone at an elevated pressure, wherein partially vapor-

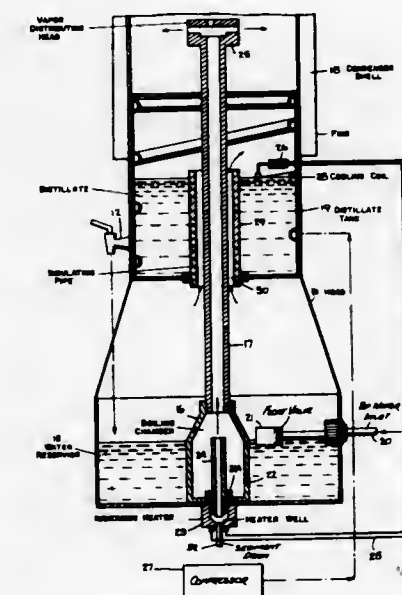


ized charge is totally vaporized by adiabatic expansion in an expansion zone exterior to the heating zone, and wherein the vaporized charge is superheated in a second heating zone prior to admission into an adsorption zone.

### 3,825,491 WATER DISTILLER AND COOLER UNIT

Gil C. Sanchez, 2915 Miles Ave., Bronx, N.Y. 10465  
Filed July 14, 1972, Ser. No. 271,732  
Int. Cl. B01d 3/00, 3/42

U.S. Cl. 202—176 9 Claims



A water distiller and cooler unit adapted to be coupled to a water line or other source yielding water of relatively poor quality, the unit producing a supply of chilled, distilled water of high purity and neutral taste. The unit is constituted by a water reservoir coupled to the water line and including a boiling chamber having a heater therein, the water being admitted into the chamber at a rate determined by the capacity of the heater to volatilize water. The steam generated in the boiling chamber is fed to a condenser shell mounted above a distillate tank which



is provided with a spigot, the distillate falling into the tank. The unit also includes a mechanical refrigerator system whose cooling coils are disposed partly in the condenser shell and partly in the distillate tank, the coils serving to promote condensation and to chill the resultant distillate.

3,825,492

**BLOOD PORT ASSEMBLY AND METHOD**

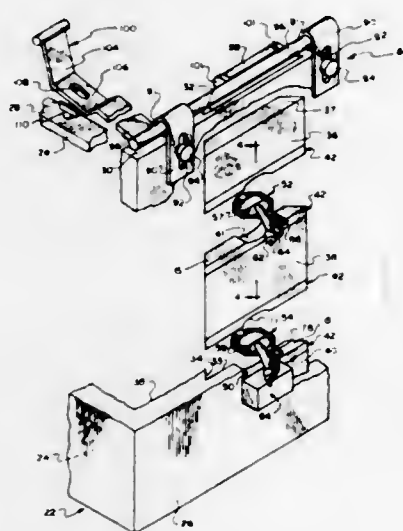
David L. Radford, Salt Lake City, Utah, assignor to Vital Assist, Inc., Salt Lake City, Utah

Continuation-in-part of application Ser. No. 106,184, Jan. 13, 1971, now Patent No. 3,723,305. This application Apr. 11, 1972, Ser. No. 243,016

Int. Cl. B01d 13/00

U.S. Cl. 210—22

16 Claims



An extracorporeal hemodialyzer includes at least one novel generally rigid blood port communicating a patient's blood into and out of a tubular membrane comprising part of the hemodialyzer. The blood port has a contoured exterior element which is inserted into the tubular membrane. A reference tab is formed on the blood port and is situated adjacent a fixed guide to establish a proper orientation for the blood port. A seal is formed between the membrane and the blood port when the blood port is inserted between correspondingly contoured sliding members which are thereafter urged tightly together. The sliding members may be set into a channel in the exterior wall of the hemodialyzer and urged upon the blood port by a lever-action clamp. An improved method of attaching the membrane to the blood port includes the steps of inserting the blood port into the tubular membrane so that a reference tab and coupling element are exposed and thereafter creating a fluid seal between the blood port and the membrane.

3,825,493

**PERITONEAL ARTIFICIAL KIDNEY**

Clinton E. Brown, Silver Spring, Md., and Moshe-Aharon Frommer, Rehovoth, Israel, assignors to Hydronautics, Incorporated, Laurel, Md.

Filed Sept. 29, 1972, Ser. No. 293,474

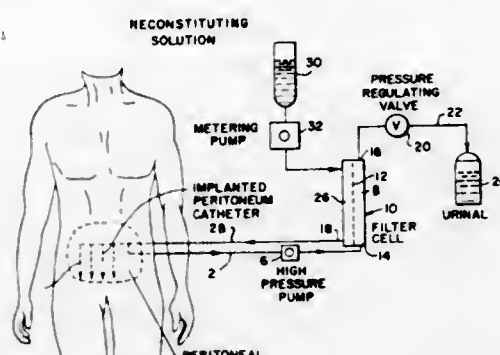
Int. Cl. B01d 31/00, 13/00

U.S. Cl. 210—23

7 Claims

A peritoneal artificial kidney in which a prepared solution is circulated through the peritoneal cavity and the

resulting peritoneal fluid containing unwanted toxic metabolites is withdrawn from the cavity and passed through filtration means that permits essentially only



passage of pure water while rejecting the metabolites. The filtered peritoneal fluid is then reconstituted with a controlled make-up solution for recycle to the peritoneal cavity and the rejected residue is discharged as waste.

3,825,494

**MINI SEWAGE TREATMENT SYSTEM**

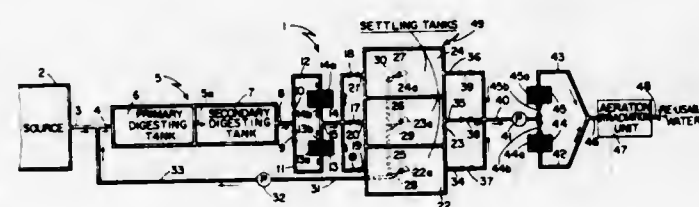
Donald H. Call, 39 Garth Road, West Roxbury, Mass. 02132; Elbridge L. Atwood, Lantern Lane, Abington, Mass. 02351; Joseph A. Cary, 134 Auburn St., Brockton, Mass. 02402; and James D. Surette, 105 Prospect St., Braintree, Mass. 02184

Filed Aug. 30, 1972, Ser. No. 284,726

Int. Cl. C02b 1/18, 3/00

U.S. Cl. 210—138

10 Claims



This invention pertains to an efficient ecological waste sewage system which eliminates the necessity of large leaching beds or seepage pits from cesspool digested sewage effluents. It consists of the system and the apparatus for effecting the disposal of such sewage waste by preliminary digesting the raw waste material, preferably in primary and secondary digesting steps, passing the resulting liquid with fine solids therein in sequence and in controlled consecutive order to a series of settling tanks, subjecting the liquid effluents therefrom to a simultaneous aeration-ultra violet ray sterilization treatment, and removing the water effluent therefrom as re-usable water. New and novel aeration-irradiation treatment units are disclosed which provide a novel, very efficient system for effecting the elimination of sewage waste in areas where sewers are not available or where land type and quality prevent the use of present day systems for the disposal of said wastes and producing useable water therefrom.

3,825,495

**LUBRICANT FOR CONTROLLED-SLIP DIFFERENTIAL**

Thomas D. Newingham, Brookville, and Alexander D. Recchuitte, Boothwyn, Pa., John Q. Griffith III, Claymont, Del., and Marcus W. Haseltine, Jr., Brookhaven, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Feb. 19, 1971, Ser. No. 116,985

Int. Cl. C10m 1/48, 1/38

U.S. Cl. 252—32.7 E

11 Claims

An improved method of lubrication of a controlled-slip differential comprises using a lubricant comprising (A) synthetic sulfurized oil consisting essentially of a sulfurized blend of lard oil and a C<sub>12</sub>-C<sub>24</sub> monoolefin and (B) a hydrocarbon base stock having a kinematic viscosity at 210° F. in the range of 1.5-200.0 cs. and containing a blend of at least one C<sub>13</sub>-C<sub>20</sub> naphthene and from 0.1-20 parts by weight, based on said naphthene of at least one member from at least one of the following groups (a), (b), (c) and (d):

- (a) a synthetic liquid C<sub>3</sub>-C<sub>4</sub> olefin homopolymer copolymer, or terpolymer;
- (b) a member from group (a) above which is at least partially hydrogenated;
- (c) a severely hydrorefined naphthenic lube containing less than 1% of gel aromatic hydrocarbons; and
- (d) a severely hydrorefined paraffinic lube containing less than 1% of gel aromatic hydrocarbons;

and wherein the amount of said b'end which is present in said base stock is sufficient to provide a greater coefficient of traction, measured at 600 ft./min., 200° F., 400,000 p.s.i., than would be provided by substitution of the same amount of ASTM Oil No. 3 for said blend in said base stock and wherein said lubricant contains 0.5-10 volumes of synthetic sulfurized oil for each 100 volumes of said base stock. The preferred lubricant also contains an extreme pressure additive (e.g. tricresyl phosphate) and an additive which lowers the static friction of the lubricant (e.g. a surface-active, organic phosphate ester of a linear aliphatic, ethoxylated alcohol).

3,825,496

**ORGANIC COMPOSITIONS CONTAINING SYNERGISTIC ANTIOXIDANT MIXTURES**

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed May 18, 1973, Ser. No. 361,725

Int. Cl. C10m 1/38

U.S. Cl. 252—48.2

18 Claims

Organic compositions, normally susceptible to oxidative deterioration, containing, in an amount sufficient to increase oxidation resistance, a synergistic mixture of 1-n-butoxy-1-(1-naphthoxy) ethane and a co-antioxidant selected from the group consisting of t-nonylpolsulfide, phenylthiobenzoquinone and dioctyldiphenylamine.

3,825,497

**HYDRAULIC FLUIDS**

Robert Alan Cameron Ker, London, England, assignor to Castrol Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 33,881, May 1, 1970. This application Apr. 28, 1972, Ser. No. 248,774

Int. Cl. C09k 3/00

U.S. Cl. 252—79

5 Claims

An improved hydraulic fluid is provided, which comprises a combination of two esters; one being a di (oxyalkene) or di (polyoxyalkene) ester of a dibasic carboxylic acid, e.g. in amounts of 30% to 60% by weight;

and the other being an ester of a diol, particularly a glycol, and a monobasic carboxylic acid, e.g. in amounts of 25% to 55% by weight.

3,825,498

**DISHWASHING DETERGENT COMPOSITION FOR USE IN DISHWASHING MACHINES**

Theodor Altenschopfer, Dusseldorf-Holkhausen, and Heilmold Batka, Dusseldorf-Reisholz, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Jan. 13, 1972, Ser. No. 217,649

Claims priority, application Germany, Jan. 14, 1971, P 21 01 508.7

Int. Cl. C11d 7/54

U.S. Cl. 252—99

18 Claims

A dishwashing detergent composition for use in dishwashing machines, said composition consisting essentially of (a) about 90%-5% by weight of a water soluble alkali silicate, and (b) about 5%-90% by weight of a polyhydroxycarboxylic acid containing carboxyl or carboxylate groups and hydroxyl groups, as well as specified polymer units. The composition can contain various other ingredients.

3,825,499

**FUELED MODERATOR COMPOSITION**

Peter D. Johnson, Chatsworth, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed July 7, 1959, Ser. No. 825,611

Int. Cl. G21c 21/00

U.S. Cl. 252—301.1 R

18 Claims

8. A method of preparing a UO<sub>2</sub>-BeO ceramic composition, which comprises forming an aqueous solution of beryllium and uranyl salts, the anion of said salts being selected from the group consisting of sulfate and nitrate, contacting the resulting solution with a solution of ammonium hydroxide, thereby coprecipitating beryllium and uranium hydrous oxides, separating the resulting precipitate from the resulting solution, calcining the resulting precipitate to yield a beryllium and uranium oxide composition, and then hot pressing the resulting oxide composition to yield a UO<sub>2</sub>-BeO ceramic body.

3,825,500

**NEODYMIUM GLASS LASER HAVING ROOM TEMPERATURE OUTPUT AT WAVELENGTHS SHORTER THAN 1060 NM**

Robert R. Shaw and Charles C. Robinson, Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Original application Mar. 10, 1971, Ser. No. 122,723, now Patent No. 3,714,059. Divided and this application Aug. 31, 1972, Ser. No. 285,262

Int. Cl. C03c 3/12, 3/28; C09k 1/04

U.S. Cl. 252—301.4 F

4 Claims

Laserable material doped with a quantity of neodymium ions in a low concentration which results in the glass exhibiting a ratio of fluorescent intensity peaked at 920 nanometers over the fluorescent intensity peaked at approximately 1060 nanometers of at least .4 as measured by a Cary Model 14 spectrophotometer. The glasses enable the generation of laser light in a waveband with an optical center at about 920 nanometers at room temperature (approximately 20° C.) when positioned in a laser cavity which is resonant at 920 nanometers. Four such laserable glasses are given below in weight percent:

CaO	68.9	69.1	52.4	51.6
Na <sub>2</sub> O	2.0	3.0	2.0	2.0
TiO <sub>2</sub>	29.1			
B <sub>2</sub> O <sub>3</sub>		27.9		35.4
GeO <sub>2</sub>			45.6	



3,825,501

**EXOTHERMIC REACTION PROCESS**

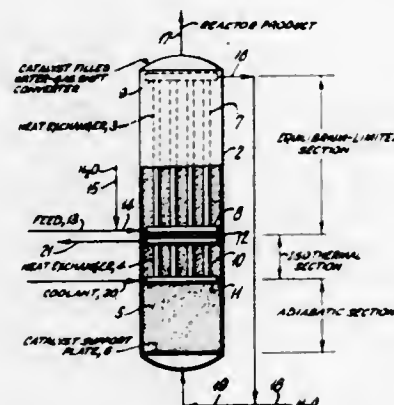
James R. Muenger, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 880,254, Nov. 26, 1969, now Patent No. 3,666,682. This application Dec. 17, 1971, Ser. No. 209,238  
The portion of the term of the patent subsequent to May 30, 1989, has been disclaimed

Int. Cl. C01b 2/06

U.S. Cl. 252-373

6 Claims



A stream of fluid reactants is passed through catalyst wherein the reactants undergo a temperature controlled exothermic reaction so as to produce maximum conversion. The temperature of the reacting stream is controlled by two separate streams of coolants which are separately passed through two separate heat exchangers embedded in said catalyst in concurrent flow and indirect heat exchange with the reacting stream. The first stream of coolant may be water or an organic liquid from an external source. The second stream of coolant is a portion of unreacted feedstream before it is introduced into the catalyst where it undergoes exothermic reaction as previously described.

3,825,502

**OLEFIN OXIDATION CATALYST**

Shigeo Takenaka, Hitoshi Shimizu, and Kenichiro Yamamoto, Takasaki, Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,558  
Claims priority, application Japan, May 26, 1971, 46/35,501

Int. Cl. B01j 11/06, 11/32

U.S. Cl. 252-456

5 Claims

The present invention relates to a novel catalyst corresponding to the empirical formula:



wherein Me represents at least one element selected from the group of tin, magnesium, chromium, zinc, manganese titanium and tungsten, H represents at least one element selected from the group of potassium, rubidium and cesium, and a, b, c, d, e, f, g and h are numbers of atoms of Ni, Co, Fe, Bi, Me, Mo, O and H respectively, if more than two elements are preferred in the case of Me and H, e and h mean the total numbers of those elements, with the proviso that when f is 12, a is 0 to 6, b is 0 to 20, c is 0.5 to 8, d is 0.1 to 7, e is less than 3.0 excluding zero, h is more than 0 and no more than 0.5, and g is a number which is determined by the valence requirements of Ni, Co, Fe, Bi, Me, H, and Mo. g is about 36 to 90. The catalyst of the invention is useful in oxidation of olefins, and in particular in the production of methacrolein or 1,3-butadiene and methacrolein simultaneously by the oxidation of olefin consisting of isobutylene or butene mixture containing isobutylene and n-butenes with molecular oxygen or air.

According to the present invention, the catalysts employed in a vapor phase oxidation increase the yield of methacrolein without excessive oxidation of olefins to undesired higher oxidation products of carbon such as carbon monoxide and carbon dioxide.

3,825,503

**HYDROGEN TRANSFER CATALYST**

Ralph E. Patrick, Flatwoods, and Ronald A. Kmecak and Stephen M. Kovach, Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Original application Oct. 22, 1968, Ser. No. 769,737, now Patent No. 3,686,340. Divided and this application June 15, 1972, Ser. No. 263,216

Int. Cl. B01j 11/08, 11/22

U.S. Cl. 252-462

3 Claims

A novel catalyst system including an active metal oxide selected from the group consisting of noble metals and nickel; a promoter selected from the group consisting of tin and lead; if desired, a second promoter selected from the group consisting of alkali metals, such as potassium, rubidium, cesium, etc., an alkaline earth metal, such as calcium, strontium, barium, etc., and a rare earth metal, such as cerium, thorium, etc.; and an inert oxide support, such as alumina. The subject catalysts are utilized in the hydrodealkylation of alkyl aromatics, etc., in the dehydrogenation of paraffins and the like, and in the dehydrogenation-desulfurization of sulfur- and nitrogen-contaminated hydrocarbon materials.

3,825,504

**HYDROCARBON HYDROPROCESSING CATALYST**

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,450

Int. Cl. B01j 11/06, 11/08, 11/32

U.S. Cl. 252-464

7 Claims

A hydroprocessing catalyst of an alumina-containing carrier material, a nickel component and a Group V-B metallic component. The catalyst is prepared by coextrusion which inhibits the formation of nickel aluminate to the extent that less than about 0.1% thereof appears in the final catalytic composite.

3,825,505

**HYDROCARBON HYDROPROCESSING CATALYST**

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,844

Int. Cl. B01j 11/08, 11/22

U.S. Cl. 252-466 J

3 Claims

A hydroprocessing catalyst of an alumina-containing carrier material, a nickel component and an iron component. The catalyst is prepared by coextrusion which inhibits the formation of nickel aluminate to the extent that less than about 0.1% thereof appears in the final catalytic composite.

3,825,506

**METHOD OF PREPARATION OF A POROUS THERMOSETTING RESIN**

Edward W. Carter, Kennesaw, Ga., assignor to Glasrock Products, Inc., Atlanta, Ga.

Continuation-in-part of abandoned application Ser. No. 221,028, Jan. 26, 1972. This application Apr. 13, 1973, Ser. No. 350,960

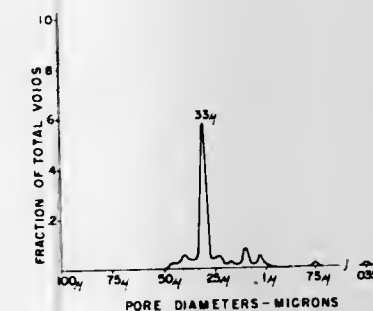
Int. Cl. C08g 53/08

U.S. Cl. 260-2.5 L

21 Claims

Porous open-cell thermosetting resin and process for preparing same. The process involves the initial formation of an emulsion having a liquid resin blend as the continu-

ous phase and a hardener solution or dispersion as the discontinuous phase. The resin blend phase initially contains an amount of hardener less than that required for a stoichiometric cure of the resin. The hardener solution or dispersion initially contains an additional amount of hardener to supplement the blend and cure the resin. The liquid of the non-resin phase is selected to be substantially a non-solvent with respect to the resin. As the polymerization of the emulsion proceeds hardener is leached out of the solution phase which is the discontinuous phase,



resulting in a phase inversion after partial gelation with the non-resin liquid solution phase becoming the continuous phase and the non-gelled resin blend becoming the discontinuous phase. After polymerization is completed and the resin solidified, the liquid of the non-resin phase is removed by extraction or evaporation. The result is a resin having a network of interconnected pores. An important aspect of the invention is that it permits control of the pore size of the product.

3,825,507

**LEUCAURAMINE DERIVATIVES**

Violet Boyd, Ronald Arthur Evans, Kenneth Anthony Holt, and Andrew Hunter Morris Renfrew, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

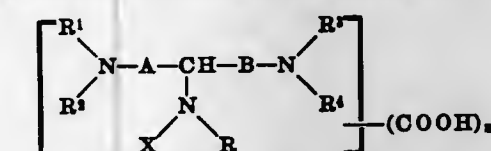
No Drawing. Filed Sept. 1, 1971, Ser. No. 177,109  
Claims priority, application Great Britain, Sept. 4, 1970, 42,533/70; Dec. 16, 1970, 59,715/70; July 26, 1971, 34,955/71

Int. Cl. C07c 101/42

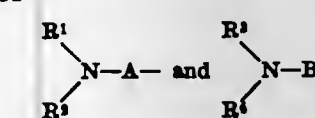
U.S. Cl. 260-518 R

1 Claim

A leucauramine compound of the general formula:



wherein A and B each independently represents an optionally substituted 1,4-arylene residue; R represents hydrogen, hydroxyl, alkoxy or an optionally substituted amino, alkyl, aralkyl or cycloalkyl radical; X represents hydrogen or an optionally substituted hydrocarbon radical which may contain one or more hetero atoms, or R and X together with the attached nitrogen atom form an optionally substituted heterocyclic ring; each of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> independently represents hydrogen or an optionally substituted alkyl, aralkyl, cycloalkyl or aryl radical or forms part of a divalent organic chain which together with the attached nitrogen atom constitutes a heterocyclic ring and n has a value of 1, 2 or 3 provided that when R is hydrogen and each of



is 4-dimethylaminophenyl, X is not 2- or 4-carboxyphenyl. The compounds are suitable for use in the production of clean-to-handle carbon papers useful in a spirit-reproducing process.

3,825,508

**PRODUCTION OF POLYAMIDE FROM METHYL SUBSTITUTED PHTHALIC ACID BY MELT POLYMERIZATION IN THE PRESENCE OF REDUCING PHOSPHORUS ACID COMPOUND**

Takao Ashida and Osamu Kurihara, Iwakuni, Kiyoshi Nawata and Takanori Shinoki, Tokyo, and Yutaka Fujita, Gentaro Yamashita, and Noritsugu Saiki, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed May 4, 1972, Ser. No. 250,244

Int. Cl. C08g 20/20

U.S. Cl. 260-78 R

6 Claims

A melt-polymerized polyamide composition derived from 85 to 100 mol percent in total of a diamine and a methyl-substituted phthalic acid selected from the group consisting of methylterephthalic acid and methylisophthalic acid, 15 to 0 mol percent of a comonomer selected from the group consisting of dicarboxylic acids other than the methyl-substituted phthalic acid, aminocarboxylic acids and lactams thereof, and a reducing phosphorus acid compound.

3,825,509

**INITIATOR EMULSION FOR OLEFINIC POLYMERIZATION REACTIONS**

Richard K. Miller, Long Beach, Calif., assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Nov. 13, 1972, Ser. No. 305,855

Int. Cl. C08f 3/30, 15/02, 15/06

U.S. Cl. 260-86.3

7 Claims

A free-radical initiator emulsion for use in olefinic polymerization reactions comprising an emulsion of said initiator in a water solution of polyoxyethylene sorbitan monolaurate and polyvinyl alcohol and the process of producing polymers employing said emulsion.

3,825,510

**METHOD FOR CROSS-LINKING COPOLYMERS OF TETRAFLUOROETHYLENE AND PROPYLENE**

Takashi Yamamoto and Katsuo Uchijima, Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,613

Claims priority, application Japan, Dec. 30, 1970, 46/122,837

Int. Cl. C08f 27/00

U.S. Cl. 260-87.5 B

12 Claims

A cross-linked copolymer of tetrafluoroethylene and propylene is produced by heating a copolymer of tetrafluoroethylene and propylene in the presence of an organic di-peroxy compound as cross-linking agent.

3,825,511

**ELECTROCONDUCTIVE RESINS AND PROCESS OF PREPARATION**

Albert H. Markhart, Wilbraham, and James O. Santer, East Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 15, 1972, Ser. No. 253,016

Int. Cl. C08f 15/02, 3/32

U.S. Cl. 260-87.5 R

12 Claims

Electroconductive cationic resins prepared by the reaction of a 1,4-dihaloalkene-2 compound and a di(tertiary



amine). The resins are quaternary ammonium compounds. They may be prepared in aqueous medium. They have utility in providing electroconductivity to sheet materials used in electrographic printing.

3,825,512

# PROCESS FOR POLYMERIZING VINYL CHLORIDE USING A REFLUX CONDENSER

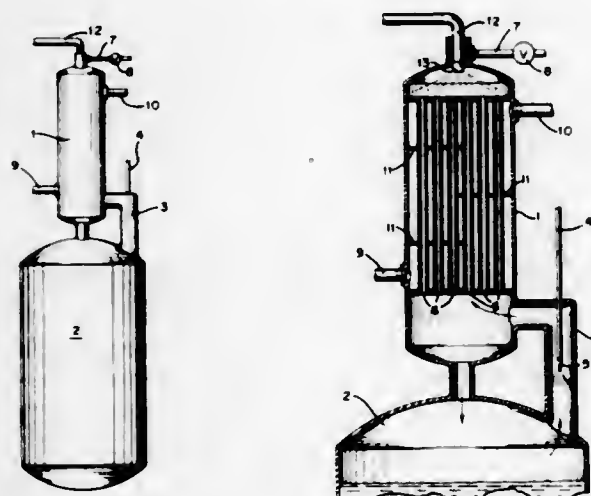
William M. Retter, Mendham, James E. Cooper, Dover, and Krishnakant K. Sheth, West Caldwell, N.J., assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan, and Universal PVC Resins, Inc., Painesville, Ohio, fractional part interest to each

Continuation-in-part of abandoned application Ser. No. 222,975, Feb. 2, 1972. This application Sept. 11, 1972, Ser. No. 288,176

Int. Cl. C08f 1/11

U.S. Cl. 260—92.8 W

11 Claims



This invention provides an improved process for polymerizing vinyl chloride in an aqueous medium using a reflux condenser. The improvement comprises (1) during the condensation period spraying a coating of water on the inner surfaces of the condenser to inhibit the formation thereon of polymerized vinyl chloride particles, and (2) spraying water in the path of and in a direction counter-current to the flow of vinyl chloride vapor as it progresses from the reactor to within the condenser thereby to assist in condensing the vinyl chloride for return to the reactor. The spray may include a defoamer to reduce the tendency of carryover of polymer into the condenser tubes.

3,825,513

# EMULSION BASES AND EMULSIONS

Fritz S. Rostler, Berkeley, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation-in-part of applications Ser. No. 690,572, Dec. 14, 1967, now abandoned, Ser. No. 773,186, Nov. 4, 1968, and Ser. No. 714,424, Mar. 20, 1968, now Patent No. 3,577,250. This application Feb. 18, 1971, Ser. No. 116,685

Int. Cl. C08f 45/52; E01c 7/36

U.S. Cl. 260—28.5 AS

7 Claims

Emulsions suitable for the bonding of aggregates containing as their non-aqueous oil phase either a solution of a poly(styrene)-poly(diene)-poly(styrene) block copolymer in which the solvent may be a petroleum oil substantially of the composition of ASTM Extender Oils 101 or 102 diluted with a volatile solvent, or an asphalt solution, and also mixtures of such emulsions containing the two phases.

3,825,514

# FILM FORMING HYDROPHILIC AMIDE POLYMER COMPOSITIONS

Raymond L. Drury, Jr., James W. Hines, and Charles S. Nevin, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,587

Int. Cl. C08f 29/46, 45/67

U.S. Cl. 260—29.6 TA

31 Claims

Hydrophilic amide polymers are obtained by interpolymerizing monomers of an ethylenically unsaturated monocarboxylic acid, ethylenically unsaturated hard monomers of the lower alkyl esters of an acrylic acid and a soft alkyl ester of an alpha, beta-ethylenically unsaturated carboxylic acid and acylating with hydrophilic amines. The polymerized monomeric units are sufficient to provide an average polymer Tg ranging from about 35° to about 45° C. and a weight average molecular size ( $\bar{M}_w$ ) of about 500 to 5,000.

3,825,515

# PROCESS FOR IMPROVING THE PROPERTY PROFILE OF RUBBER-POLYMER SYSTEMS

Howard Robert Lucas, Danbury, and Robert Nils Olsen, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 13, 1973, Ser. No. 369,662

Int. Cl. C08f 45/40

U.S. Cl. 260—31.8 M

11 Claims

The incorporation of a dialkyl phthalate into rubber-polymer composition components before the blending, devolatilization and extrusion thereof has been found to improve the property profile of the resultant systems.

3,825,516

# GLASS FIBER-REINFORCED, TEREPHTHALIC ACID-CONTAINING POLYAMIDE MOLDING COMPOUNDS

Johannes Schneider and Wolfgang Pungs, Troisdorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Nov. 29, 1972, Ser. No. 310,493

Claims priority, application Germany, Dec. 14, 1971, P 21 61 908.9

Int. Cl. C08g 51/10

U.S. Cl. 260—37 N

10 Claims

A method for incorporating glass particles into an amorphous polyamide containing terephthalic acid radicals and a polymer selected from the group consisting of 2,2,4-trimethylhexamethylene diamine and 2,4,4-trimethylhexamethylene diamine which process comprises introducing said polyamide and said glass particles into a zone and kneading them together, preferably by employing a screw extruder such as a double screw extruder until the glass particles are intimately incorporated within and distributed throughout said polyamide.

3,825,517

# THERMOSETTING POLYESTER MOLDING COMPOSITIONS AND METHOD OF PREPARATION

Bartholomew M. Ficarra, Upper Saddle River, N.J., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed May 23, 1972, Ser. No. 256,848

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

23 Claims

Polymerizable, thermosetting polyester molding compositions may be prepared by blending together (1) an

unsaturated polyester resin and, as the sole crosslinking agent (II) a vinyl ester prepared from an epoxy resin having a melt point up to 100° C. and a vinyl acid, and (III) a polymerization initiator and passing said blend through a plastics extruder at a temperature below the decomposition temperature of the polymerization initiator and pelletizing the product. These solid precatylyzed molding compositions may then be molded into thermoset articles exhibiting high heat distortion and excellent mechanical properties.

3,825,518

# DENTAL FILLING MATERIALS

John Foster, Sheerness, and Richard John Walker, Harpenden, England, assignors to The Amalgamated Dental Company Limited, London, England

No Drawing. Filed Mar. 14, 1973, Ser. No. 341,106

Claims priority, application Great Britain, Mar. 15, 1972, 12,134/72

Int. Cl. A61k 5/00; C08f 45/04

U.S. Cl. 260—42.52

6 Claims

A composite dental filling material comprises a mixture of a finely divided, inert inorganic filler and the reaction product of an organic diisocyanate, preferably an aliphatic diisocyanate, and a hydroxyalkyl acrylate or methacrylate. The filling material may also contain one or more other ethylenically unsaturated monomer especially polyunsaturated cross-linking monomers. Further the filling material may also contain a catalyst and an activator and the invention also provides a two-part package for the preparation of such a material comprising two parts which together, contain monomer (namely the reaction product of the organic diisocyanate and the hydroxyalkyl acrylate or methacrylate, optionally together with other ethylenically unsaturated monomers), inert filler, catalyst and activator; neither of the parts of the package containing both catalyst and activator.

3,825,519

# MOLDING COMPOSITION CONTAINING POLYETHYLENE AND CEMENT

Naohiro Murayama and Makoto Fukuda, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,838

Claims priority, application Japan, Aug. 12, 1971, 46/60,635

Int. Cl. C08f 45/04

U.S. Cl. 260—42.13

8 Claims

A molding composition containing polyethylene and a cement selected from the group: portland cements, alumina cements, magnesia cements, and silica cements. Preparation is by adding the cement to a polyethylene melt and kneading or by mixing the cement with a polyethylene powder and kneading at a temperature above the melting point of the polyethylene.

3,825,520

# SMOKE-RETARDANT STYRENE POLYMER COMPOSITIONS CONTAINING A METAL PHTHALOCYANINE

Leo P. Parts, Dayton, and John T. Miller, Jr., West Carrollton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,963

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 R

1 Claim

Smoke-retardant polymer compositions comprising a styrene polymer and at least a sufficient amount of an

iron, copper, manganese, vanadyl or cobalt phthalocyanine to reduce smoking.

3,825,521

# MANGANESE AMINE CHELATE CATALYZED AROMATIC POLYETHER FORMATION

Shinichi Izawa, Tokyo, Kazuhiko Harada, Kanagawa, Ken Mizushiro and Miyoko Ishihara, Tokyo, and Atsuo Nakanishi, Kanagawa, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

No Drawing. Filed July 25, 1972, Ser. No. 275,102

Claims priority, application Japan, July 31, 1971, 46/57,139, 46/57,140; Aug. 14, 1971, 46/61,419

Int. Cl. C08g 23/18

U.S. Cl. 260—47 ET

28 Claims

Aromatic polyethers e.g. poly(2,6-dimethylphenylene-1,4-ether) which are useful as engineering polymers are produced in pure state by oxidative polymerization of a 2,6-disubstituted phenol at 0–100° C. in the presence of a chelate type catalyst comprising at least one of divalent manganese salts and at least one selected amino compound.

3,825,522

# PROCESS FOR THE PREPARATION OF SELF-EXTINGUISHING EPOXY RESINS

Silvio Vargin, Sesto San Giovanni, and Mario Pitzalis, Arcore, Italy, assignors to Società Italiana Resine S.I.R. S.p.A., Milan, Italy

No Drawing. Filed Dec. 11, 1972, Ser. No. 313,904

Claims priority, application Italy, Dec. 27, 1971, 32,946/71

Int. Cl. C08g 30/04

U.S. Cl. 260—47 EP

12 Claims

Solid and self-extinguishing epoxy resins having high epoxy equivalent values and which produce solutions having low viscosity levels, are prepared by a process which consists essentially in reacting bisphenol A with an intermediate epoxy product obtained by dehydrochlorinating the products of reaction between epichlorohydrin and hydroxylated derivatives of halogenated diphenyls or diphenyl methanes.

3,825,523

# POLYMER COMPOSITION STABILIZED AGAINST OXIDATION AND LIGHT

Tadao Iwata, Motoyasu Yasawa, and Juntaro Sasaki, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

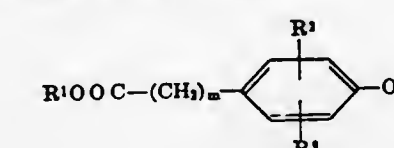
No Drawing. Filed Apr. 19, 1971, Ser. No. 135,374

Int. Cl. C08f 27/00, 27/06, 27/12

U.S. Cl. 260—47 UP

6 Claims

An olefin polymer composition stabilized against oxidation and light is prepared by reacting a copolymer of an olefin and an ethylenically unsaturated alcohol with a phenol derivative of the formula



and/or an organo-sulfur compound of the formula



The composition is used as such or as blend with an olefin polymer.



3,825,524

**PROCESS FOR POLYMERIZATION OF OLEFINS AND CATALYSTS THEREFOR**

Shigeru Wada, Otake, Hidesaburo Oi, Yamaguchi, Norio Matsuzawa, and Hiroshi Nishimura, Otake, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,442  
Claims priority, application Japan, Oct. 2, 1970, 45/85,932

Int. Cl. B01j 11/84; C08f 1/56, 3/10

U.S. Cl. 260—93.5 S

10 Claims

A process for the polymerization of olefins which comprises polymerizing or copolymerizing olefins in the presence of a catalyst consisting essentially of:

(A) a titanium trichloride composition obtained by extracting a crude titanium trichloride composition including an aluminum-containing inorganic substance, such crude titanium trichloride composition being prepared by reducing titanium tetrachloride with an organoaluminum chloride expressed by the following formula.



wherein R is an alkyl group of 1-6 carbon atoms or an aryl group, and n is a positive number greater than 0 (zero) but smaller than 3,

with a mixed solvent composed of (i) a main solvent selected from the group consisting of saturated aliphatic hydrocarbons, aromatic hydrocarbons, halogenated aromatic hydrocarbons, trichloroethylene and carbon disulfide and (ii) an auxiliary solvent selected from the group consisting of oxygen-containing organic compounds, nitrogen-containing organic compounds, silicon-containing organic compounds and thioethers, and separating the titanium trichloride composition from the extract; and

(B) an organoaluminum compound.

3,825,525

**ALLERGENS REACTED WITH CARBODIIMIDES**

Noel Austin Mullan and Brian George Overell, Dorking, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Original application July 30, 1970, Ser. No. 59,745. Divided and this application July 20, 1973, Ser. No. 381,172

Claims priority, application Great Britain, Aug. 6, 1969, 39,289/69; May 15, 1970, 23,621/70; May 16, 1970, 23,853/70

Int. Cl. A61k 23/00; C07g 7/00

U.S. Cl. 260—112 R

21 Claims

Desensitizing or immunizing agents are provided for treating hypersensitive or allergic conditions. Modified allergenic material is prepared comprising an allergenic protein or glycoprotein crosslinked intermolecularly or intramolecularly with an inorganic cyanate. The modified material has reduced allergenicity relative to the uncross-linked allergen and has the ability to produce antibodies having cross-specificity for the uncrosslinked allergenic protein or glycoprotein.

3,825,526

**METHOD FOR FRACTIONATION**

Kaj G. Fors, Vesakkotie 6B, Helsinki 63, Finland, and Ilpo M. J. Pirhonen, Rintatie B21, Mankkaa, Finland

Filed Aug. 13, 1971, Ser. No. 171,704

Claims priority, application Finland, Aug. 14, 1970, 2,238/70

Int. Cl. C07g 1/00

U.S. Cl. 260—124 R

12 Claims

The present invention relates to a method for the fractionation of lignosulphonic acids by extraction with amine-alcohol wherein butanol and dodecylamine are preferred.

3,825,527

**AZO DYE OF A 3-AMINOPHTHALIMIDE AND CONTAINING CARBAMOYL MOIETIES**

Guenter Rulder, Frankenthal, and Peter Dimroth, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

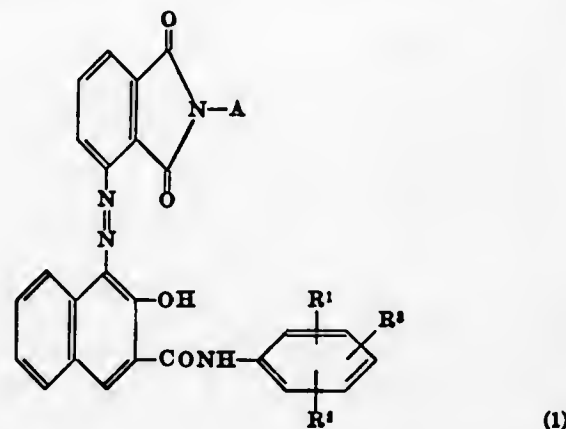
No Drawing. Filed Dec. 2, 1971, Ser. No. 204,315

Int. Cl. C09b 29/00, 29/20; D06p 1/44

U.S. Cl. 260—152

3 Claims

This invention is directed to monoazo pigments of the formula of



in which R<sup>1</sup> denotes carbamoyl among other possible constituents; R<sup>2</sup> and R<sup>3</sup> denote hydrogen or chlorine among other possible constituents; and A denotes phenyl among other constituents. The pigments generally have red shades and are eminently suitable for example for coloring lacquers, resins and printing inks.

3,825,528

**CRYSTALLINE KANAMYCIN TETRA-HYDROCHLORIDE**

John Edward Vogan and Edmund Stanley Granatek, Syracuse, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,686

Int. Cl. C07c 12/18

U.S. Cl. 260—210 K

1 Claim

The specification discloses the preparation of crystalline forms of the mono-, di-, tri-, and tetrahydrochloride salts of kanamycin and therapeutic composition thereof.

3,825,529

**α-PHOSPHONOACETYL PENICILLINS**

Joseph Edward Dolfini, North Brunswick, N.J., and Hermann Breuer, Burgweinting, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

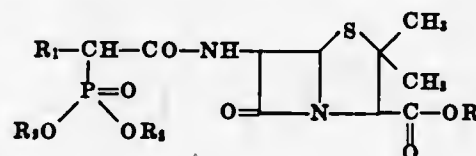
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,730

Int. Cl. C07d 99/16

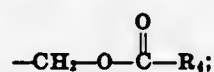
U.S. Cl. 260—239.1

11 Claims

α-Phosphonoacetylpenicillins of the general formula



wherein R is hydrogen, lower alkyl, aralkyl, a salt forming ion or the group



R<sub>1</sub> is hydrogen, lower alkyl, aralkyl, aryl or a heterocyclic group; R<sub>2</sub> and R<sub>3</sub> each is hydrogen, a salt forming ion, lower alkyl, aryl or aralkyl; and R<sub>4</sub> is lower alkyl, aryl or aralkyl, are useful as anti-bacterial agents.

3,825,530

**PROCESS FOR PREPARING α-AMINO-CYCLO-HEXADIENYLALKYLENE PENICILLINS**

Manmohan S. Atwal, Somerset, and Eugene R. Shipkowski, Freehold, N.J., assignors to E. R. Squibb & Sons Inc., Princeton, N.J.

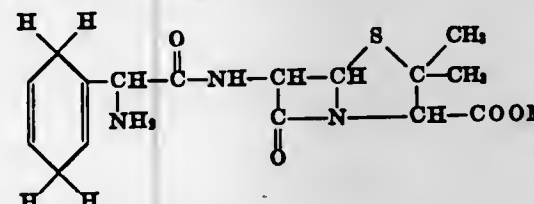
No Drawing. Continuation-in-part of abandoned application Ser. No. 23,505, Mar. 27, 1970. This application Nov. 18, 1971, Ser. No. 200,147

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

7 Claims

The present invention is directed to a method for preparing α-amino-cyclohexadienylalkylene penicillin compounds of the formula



wherein M is an alkali metal, an ammonium ion, or a substituted ammonium ion.

These compounds may be prepared by reacting α-amino-cyclohexadienylmethylene penicillin, hereafter referred to as epicillin, with an alkali metal alkanoate or ammonium alkanoate, or by reacting epicillin with an alkali metal hydroxide or ammonium hydroxide, or by reacting epicillin with an alkali metal alkoxide or ammonium alkoxide, or by reacting epicillin with an amine salt. The reaction to form the alkali metal salt takes place in the presence of sufficient water to form the monohydrate of epicillin without substantially exceeding this amount of water.

3,825,531

**PROCESS FOR PRODUCING PENICILLIN DERIVATIVES**

Toshiyasu Ishimaru, Suita, and Yutaka Kodama, Toyama, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed June 28, 1972, Ser. No. 267,081

Claims priority, application Japan, July 8, 1971, 46/50,446

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

5 Claims

Penicillin or penicillin sulfoxide esters are prepared in an industrially advantageous manner, by reacting an N,N-disubstituted-acid amide with a chloroformate, and then reacting the imino ether salt thus obtained with the salt of a penicillin or a penicillin sulfoxide.

3,825,532

**PROCESS FOR THE PREPARATION OF OMEGA LAURINOLACTAME**

Rene Kern, Savigny-sur-Orge, Claude Poulain, Orsay, and Francois Tock, Palaiseau, France, assignors to Societe Anonyme dite: Aquitaine Total Organico, Courbevois, France

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,327

Claims priority, application France, Oct. 28, 1970, 7038817

Int. Cl. C07d 41/00

U.S. Cl. 260—239.3 A

4 Claims

A process for rearranging cyclododecanoneoxime into pure cyclododecalactame, characterized by the fact that

the oxime, converted into oxime chlorhydrate, is made into a solution with a selective solvent, in the presence of a small quantity of catalyst, chosen from the group of acid halides and oxyhalides, and then heated to a temperature of between 65 and 110° C. for one to two hours, the resulting hydrochloric acid is drawn off by means of a flow of gas while maintaining the reflux temperature of the solvent, the reaction mixture is washed while hot with an alkaline aqueous solution, the organic phase containing the lactame is washed in hot water until it becomes neutral, and the lactame is recovered by crystallization or distillation of the solvent.

The quantity of catalyst used ranges from 0.5 to 5%, and preferably 1 to 2%, of the weight of oxime.

The solvent is preferably selected from alkanes, cycloalkanes, substituted alkane and cycloalkane derivatives, and halogenated alkane and cycloalkane derivatives.

3,825,533

**N-CARBOXYMETHYL - N - SUBSTITUTED GLYCINATE ESTERS OF 3-HYDROXY-1,4-BENZODIAZEPIN-2-ONES**

Abraham Nudelman, Bala Cynwyd, and Ronald J. McCauley, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

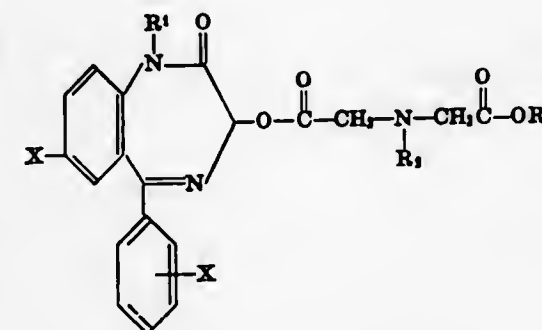
No Drawing. Filed Mar. 20, 1972, Ser. No. 236,174

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D

4 Claims

This invention is directed toward novel central nervous system depressants of the formula:



wherein

R<sup>1</sup> is a member selected from the group consisting of the hydrogen, lower alkyl, benzyl and lower alkoxyalkyl radicals;

R<sup>2</sup> is a member selected from the group consisting of the lower alkyl, phenyl and benzyl radicals;

R<sup>3</sup> is a member selected from the group consisting of hydrogen, an alkali metal cation, an alkaline earth metal cation, the ammonium cation, a tri(lower)alkyl ammonium cation, the pyridinium ion, a lower alkyl radical and an aralkyl radical of 7 to 9 carbon atoms;

X is a member selected from the group consisting of the halo, cyano, trifluoromethyl, nitro and lower alkylthio radicals;

Y is a member selected from the group consisting of the hydrogen, halo, trifluoromethyl, nitro and lower alkylthio radicals; and the pharmaceutically acceptable N-acid addition salts thereof. This invention also provides methods for the preparation of the central nervous system depressant compounds and their administration as well as the compositions for administration which contain the active compounds of this invention.



3,825,534

**STYRYL COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE**

Kurt Weber, Basel, and Christian Laethi, Muenchenstein, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed July 19, 1971, Ser. No. 164,051

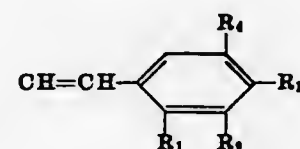
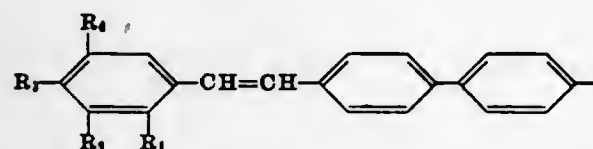
Claims priority, application Switzerland, July 23, 1970, 11,171/70

Int. Cl. C09b 23/00

U.S. Cl. 260—240 CA

5 Claims

The invention provides new fluorescent compounds of the formula



wherein either

- (a) one, two or three of the symbols  $R_1$ ,  $R_2$ ,  $R_3$ , or  $R_4$  represent halogen atoms of the group fluorine, chlorine or bromine, whilst the remainder of these symbols denote hydrogen, or
- (b) one or two of the symbols  $R_1$ ,  $R_2$ ,  $R_3$ , or  $R_4$  represent a halogen atom of the group fluorine, chlorine or bromine, whilst another of the symbols  $R_1$ ,  $R_2$ ,  $R_3$ , or  $R_4$  denotes an alkyl group with 1 to 4 carbon atoms or an alkoxy group with 1 to 4 carbon atoms, or two of the symbols mentioned together represent a methylene dioxy group, and the remaining symbols denote hydrogen.

The defined compounds are valuable optical brightening agents especially for polyamides polyvinyl chloride and polystyrene.

3,825,535

**HYDRAZINES, HYDRAZIDES AND HYDRAZONES OF ISOXAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS**

Theodor Denzel, Nuremberg, and Hans Hoeck, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

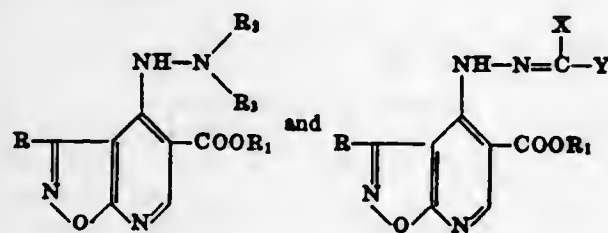
No Drawing. Original application Mar. 29, 1971, Ser. No. 129,200, now Patent No. 3,736,325, dated May 29, 1973. Divided and this application Mar. 5, 1973, Ser. No. 337,811

Int. Cl. C07d 39/00

U.S. Cl. 260—240 G

8 Claims

New hydrazines, hydrazides and hydrazones of isoxazolo-pyridine carboxylic acids and esters having the general formulas



and salts thereof, are useful as central nervous system depressants and also increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,825,536

**BIS-CEPHALOSPORINS**

Donald J. Perrella, Princeton Junction, and Joseph E. Dolfini, Princeton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,442

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

11 Claims

Derivatives of difunctional compounds such as dicarboxylic acid, diisocyanates or diisothiocyanates wherein each functional group is reacted with 7-aminocephalosporanic acid or 7-aminodesacetoxycephalosporanic acid possess antibacterial activity.

3,825,537

**1-THIAZOLIN-2-YL (OR THIAZIN-2-YL)-2-AMINO BENZIMIDAZOLES AND DERIVATIVES THEREOF**

Radiger D. Haugwitz, Highland Park, and Venkatachala Lakshmi Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

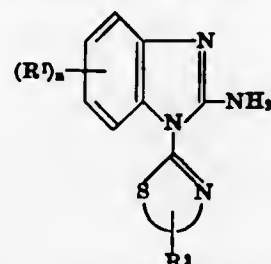
No Drawing. Filed Feb. 28, 1972, Ser. No. 230,122

Int. Cl. C07d 91/24, 93/06, 99/10

U.S. Cl. 260—243 R

12 Claims

Thiazoliny and thiazinyl derivatives of 2-aminobenzimidazoles are provided having the structure



wherein  $R^1$ ,  $R^2$  and  $n$  are defined hereinafter, and which are useful as antiinflammatory agents and disinfectants and as intermediates in the preparation of anthelmintic agents.

3,825,538

**OXAZINES AND MONO(SECONDARY AMINO-METHYL)HYDROQUINONES AND PROCESS FOR THEIR PREPARATION**

Delbert Daniel Reynolds and Bernard Calvin Cosar, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 15, 1970, Ser. No. 37,907

Int. Cl. C07d 87/14

U.S. Cl. 260—244 R

6 Claims

A process, including the step of reacting a bis(alkoxy-methyl)amine with a phenol, hydroquinone or other hydroxy substituted aromatic compound, for the preparation of benzoxazines is taught. A method is disclosed for the preparation of mono(secondary-aminomethyl)hydroquinone developing agents which includes the step of refluxing or heating benzoxazines in the presence of a strong acid. Hydroquinones are employed as photographic developing agents and/or photographic developing precursors.

**3,825,539  
4H[1]BENZOPYRANO[3,4-d]ISOXAZOLE DERIVATIVES**

Jules Freedman, Thienerville, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 670,772, Sept. 26, 1967, now Patent No. 3,553,228, and Ser. No. 67,603, Aug. 27, 1970, now Patent No. 3,692,796. This application Sept. 11, 1972, Ser. No. 288,117

Int. Cl. C07d 85/22

U.S. Cl. 260—247.5 R

1 Claim

The compounds are 4H[1]benzopyrano[3,4-d]isoxazole derivatives substituted in the 3-position which are useful as pharmaceutical agents, especially anti-inflammatory agents. They are also useful in preparing structurally related pharmaceutical compounds of known utility. In addition, they are useful as intermediates in the preparation of wood preservatives, mothproofing agents and pickling inhibitors.

3,825,540

**3-(MORPHOLINOETHOXY)PYRIDAZINES**

Henri Laborit, 78 Rue de la Convention,

Paris 15, France

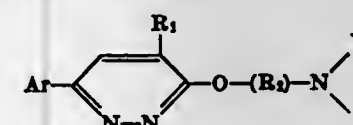
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,363  
Claims priority, application Great Britain, Nov. 1, 1968, 51,873/68

Int. Cl. C07d 87/40

U.S. Cl. 260—247.5 R

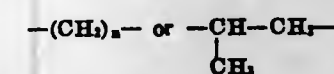
2 Claims

There is described new chemical compounds of the general formula:



where:

$R_1$  is a lower alkyl substituent particularly methyl;  
 $R_2$  is



$n$  is 2, 3 or 4;

Ar is halogen or a lower alkoxy substituent particularly methoxy or a cycle particularly phenyl, naphthyl, thienyl; Y and Z represent lower alkyl group functions, these groups being able to be cyclized so as to form with the atom of nitrogen, a heterocyclic radical such as morpholinyl-, methylpiperazinyl, and non-toxic acid salts thereof, the said compounds having psychotropic activity in the fields of analgesia and anti-neurotic and anti-anxiety treatment of mammals including man.

3,825,541

**(±)-9-[β-(3-AMINO-2-α-HYDROXY)CYCLO-PENTYL]-6-SUBSTITUTED-PURINES AND DERIVATIVES THEREOF**

Robert Vince, St. Paul, Minn., assignor to The Regents of the University of Minnesota

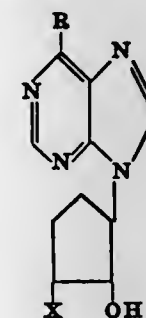
Filed Jan. 26, 1972, Ser. No. 220,890

Int. Cl. C07d 57/38

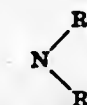
U.S. Cl. 260—253

4 Claims

A new class of chemical compounds, (±)-9-[β-(3-α-amino-2-α-hydroxy)cyclopentyl]-6-substituted-purines having the general formula:



wherein R is a substituent selected from the group consisting of hydroxyl, mercapto, methyl mercapto, halogen (chlorine, bromine, fluorine and iodine) and substituted amino:



wherein R' and R'' may be the same or different substituents and are selected from the group consisting of hydrogen, methyl, ethyl, propyl and phenyl; X is an amino radical or amino acid; and acid salt derivatives of the same, such as acetic, hydrochloric, sulfuric, etc.; and the method of preparation thereof. The intermediate (±)-9-[β-(3-α-amino-2-α-hydroxy)cyclopentyl]-6-dimethylaminopurine, or any of its corresponding 6-substituted derivatives, leads to the preparation of two diastereoisomers when condensed with the appropriately blocked L-amino acid. The separation of these diastereoisomers results in the isolation of antimicrobial and antitumor agents.

3,825,542

**2-HETERO SUBSTITUTED 4(3H)-QUINAZOLINONES**

Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Oct. 12, 1972, Ser. No. 297,154

Int. Cl. C07d 51/42

U.S. Cl. 260—256.5 R

8 Claims

2-Hetero substituted 6-sulfamoyl-7-substituted-4(3H)-quinazolinone products are described. The products are prepared by conventional methods employing the appropriate anthranilamide and the hetero carboxylic acid halide. The products are xanthine oxidase inhibitors.

3,825,543

**N-ACYLATED TETRAAZA-BICYCLO-NONAN-DIONES AND COMPOSITIONS FOR ACTIVATING OXYGEN**

Dieter Kuhlmann, Monheim, and Helmut Bloching, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

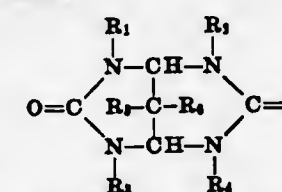
No Drawing. Filed Mar. 15, 1972, Ser. No. 235,032

Int. Cl. C07d 51/46

U.S. Cl. 260—256.4 F

15 Claims

N-acylated 2,4,6,8-tetraaza-bicyclo-(3,3,1)-nonan-3,7-diones of the formula



wherein at least two of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are acyls of organic carboxylic acids having 2 to 10 carbon atoms and the remainder of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are members selected from the group consisting of hydrogen and said acyl of organic carboxylic acids having 2 to 10 carbon atoms, and  $R_5$  and  $R_6$  are members selected from the group consisting of hydrogen and methyl, as well as the method of producing the same and compositions containing the same for activation of percompounds in aqueous solutions at temperatures below 70° C.

3,825,544

**7 PIPERAZINOFUORANS**

Mutsuo Terayama and Kenji Yamamoto, Osaka, Japan, assignors to Yamamoto Kagaku Gosei Kabushiki Kaisha

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,432

Claims priority, application Japan, Dec. 15, 1970, 45/112,052

Int. Cl. C07d 51/70

U.S. Cl. 260—268 PC

5 Claims

An excellent pressure sensitive copying sheet is provided by applying as a color former certain encapsulated



fluoran compounds, i.e. fluoran compounds linking in the 7-position with at least one of the two nitrogen atoms in a piperazine ring and having a dialkylamino group in the 3-position to either a single sheet or to the upper leaf of a pressure sensitive paper. The color former is soluble in aromatic solvents and also has excellent light fastness.

3,825,545

**ALKYLATION OF HETEROCYCLIC COMPOUNDS**  
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,034

Int. Cl. C07d 33/30

U.S. Cl. 260—283 R 11 Claims

It is disclosed that heterocyclic compounds can be alkylated with an alcohol or an amine as the alkylating agent in the presence of a Group VIII noble metal catalyst which is complexed with a biphilic ligand. The alkyl heterocyclics are useful as solvents for terpenes or resins or as intermediates in the manufacture of dyes. The process offers an advantage in the alkylation of the heterocyclic nitrogen compounds since catalysts conventionally used for aromatic alkylation such as Friedel-Crafts catalysts, hydrofluoric acid or sulfuric acid are not entirely suitable since they are reactive with the nitrogen of the heterocyclic reactant. A typical reaction comprises the alkylation of quinoline with an alcohol or amine in the presence of a ruthenium-biphilic ligand complex as the catalyst. Mild conditions can be employed for this alkylation, including temperatures from 30° to 300° C. and pressures from 1 to about 1000 atmospheres, sufficient to maintain a liquid phase under the alkylation conditions. Preferably the alkylation is performed at neutral to alkaline conditions.

3,825,546

**SILICON AND GERMANIUM SUBSTITUTED AZASPIRANES**

Leonard M. Rice, Columbia, Md., assignor to Geschickter Fund for Medical Research, Washington, D.C.

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,816

Int. Cl. C07d 29/28

U.S. Cl. 260—293.66 15 Claims

Novel azaspiranes containing silicon or germanium in a ring, their acid addition and bis-quaternary salts as well as intermediate azaspiroindones. The azaspiranes are particularly useful for their ganglionic blocking activities.

3,825,547

**N-ALKENYL AND N-ALKYNYL THIOAMIDES**  
Bernard Loev, Broomall, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed May 22, 1972, Ser. No. 255,828

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 E 3 Claims

The compounds are N-alkenyl and N-alkynyl thioamides for example N-allyl and N-propargyl 2-(2-pyridyl) thioacetamide, which are inhibitors of gastric acid secretion.

3,825,548

**BIS-p-DITHIINO(2,3-b:2',3'-e)PYRIDINE-2,3,7,8,10 PENTACARBONITRILE**

Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 7, 1971, Ser. No. 104,799, now Patent No. 3,761,475, dated Sept. 25, 1973. Divided and this application Feb. 20, 1973, Ser. No. 333,943

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 B 1 Claim

Novel polycyanodithiino aromatic N-heterocyclic compounds are prepared. These are useful as fungicides and bactericides.

3,825,549  
**CERTAIN DIHYDROPYRIDO[2,1-b][1,3]BENZODIAZEPINES AND BENZODIAZOCINES**

Harry Louis Yale, New Brunswick, and Ramesh B. Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 299,986, Oct. 24, 1972. This application Mar. 8, 1973, Ser. No. 339,258

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 B

Compounds of the formula

3 Claims

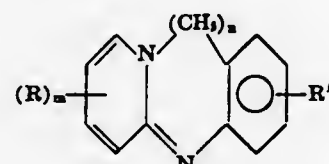


exhibit central nervous system stimulating properties and act as muscle relaxants.

3,825,550

**MANUFACTURE OF N-ARYLTHIAZOLE-2-SULFENAMIDE**

Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,082, Dec. 14, 1970. This application Feb. 22, 1973, Ser. No. 334,539

Int. Cl. C07d 91/44

U.S. Cl. 260—302 S

8 Claims

N-arylthiazole-2-sulfenamides are prepared by reacting at a reflux temperature in a solvent a thiazolesulfenamide which is unsubstituted or alkyl-substituted in the amide moiety with an arylamine and continuously removing the ammonia or amine which is evolved during the reaction by utilizing a solid absorbent.

3,825,551

**CERTAIN 3-HALO-1,2,4-THIADIAZOLES AND SYNTHESIS**

Lawrence S. Wittenbrook and Richard J. Timmons, Marysville, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

No Drawing. Application Feb. 28, 1969, Ser. No. 803,411, now Patent No. 3,736,328, which is a continuation-in-part of abandoned application Ser. No. 578,991, Sept. 13, 1966. Divided and this application Apr. 6, 1972, Ser. No. 241,846

Int. Cl. C07d 91/60

U.S. Cl. 260—302 SD

7 Claims

Novel 3-(halogen)-5-(organothio)-, (sulfinyl)-, and (sulfonyl)-1,2,4-thiadiazoles and their production and use.

3,825,552

**THIAZOLE CARBAMATE PESTICIDES**

John H. Davies, Boughton, and Royston H. Davis, Rainham, England, assignors to Shell Oil Company, New York, N.Y.

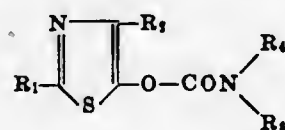
No Drawing. Filed Jan. 31, 1972, Ser. No. 222,370  
Claims priority, application Great Britain, Feb. 10, 1971, 4,374/71

Int. Cl. C07d 91/32

U.S. Cl. 260—302 R

3 Claims

Thiazole carbamate derivatives of the formula



where R<sub>1</sub> is alkyl, alkylthio, alkoxy, or aryl; R<sub>2</sub> is hydrogen, alkyl optionally substituted by alkylthio or alkylene-

dioxy, alkylthio optionally substituted by cyano, alkoxy, or aryl; and R<sub>3</sub> and R<sub>4</sub> are hydrogen or alkyl, are useful as pesticides, particularly as insecticides and acaricides.

3,825,553

**CERTAIN 5-ARYLTHIAZOLIDINES**

Julius Diamond, Lafayette Hill, and Norman J. Santora, Roslyn, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Original application May 5, 1970, Ser. No. 34,870. Divided and this application Mar. 10, 1972, Ser. No. 233,705

Int. Cl. C07d 91/16

U.S. Cl. 260—306.7

5 Claims

Certain substituted  $\alpha$ -halo and  $\alpha$ -mercaptophenylacetic acids and substituted phenylacetic acids having in  $\alpha$ -position a sulfur-containing group, a cyano group, or an amino group, their substantially non-toxic esters, salts, and acid amides as well as 5-phenyl substituted 2-imino-4-oxothiazolidines and 5-phenyl substituted 2,4-dioxothiazolidines have a high anti-inflammatory, analgesic, and antipyretic activity, low toxicity, and/or a favorable therapeutic index with minor or no side-effects. Preferred compounds of this invention are  $\alpha$ ,m-dichloro-p-cyclohexyl-phenylacetic acids and its esters and salts.

3,825,554

**METHOD FOR PREPARING CYCLIC NITRILE CARBONATES**

Emmett H. Burk, Jr., Glenwood, and Karl E. Fuger, Harvey, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

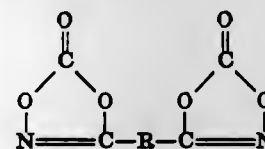
No Drawing. Filed June 13, 1969, Ser. No. 833,195

Int. Cl. C07d 85/06

U.S. Cl. 260—307 A

13 Claims

A method for the preparation of cyclic nitrile carbonates having the formula:



wherein R is hydrocarbon of 4 to about 12, or to about 20, carbon atoms by the reaction of an hydroxamic acid with phosgene is disclosed. The method of this invention employs a dual solvent system comprising a combination of alkaline aqueous and organic solvents to provide high yields of a relatively pure product.

3,825,555

**3-SUBSTITUTED 4-ALKANOYL OXAZASPIRO INSECT REPELLENTS**

Thomas A. Lajiness, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

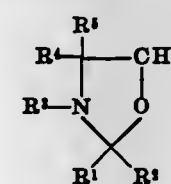
No Drawing. Original application Mar. 16, 1970, Ser. No. 20,097, now Patent No. 3,707,541. Divided and this application May 22, 1972, Ser. No. 255,893

Int. Cl. C07d 85/26

U.S. Cl. 260—307 F

3 Claims

A compound of the formula



wherein R<sup>1</sup> and R<sup>2</sup> taken together are alkylene having from four to six carbon atoms, R<sup>3</sup> is an alkanoyl, R<sup>4</sup> is an alkyl group having less than four carbon atoms, and R<sup>5</sup> is hydrogen or an alkyl group having less than four carbon atoms.

3,825,556

**N<sup>1</sup>-(SUBSTITUTED ETHYL)INDAZOLES**

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

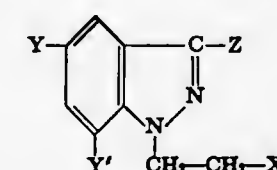
No Drawing. Continuation-in-part of applications Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, and Ser. No. 141,999, May 10, 1971, now Patent No. 3,741,979. This application Feb. 7, 1972, Ser. No. 224,294

Int. Cl. C07d 49/18

U.S. Cl. 260—310 C

1 Claim

Compounds that have the structural formula



wherein X represents halogen, —SCN, —OR, or —N=R'; Y and Y' each represents hydrogen, halogen, lower alkyl, nitro, amino acylamino, aroylamino, (halobenzylidene) amino, or —N=R'; Z represents hydrogen, halogen, acylamino, or —N=R'; R represents hydrogen, alkyl having 1 to 12 carbon atoms, haloalkyl having 1 to 4 carbon atoms, phenyl, or substituted phenyl wherein the substituent is halogen, hydroxyl, alkyl, or nitro; and R' represents an alkylene group having from 1 to 8 carbon atoms, can be used to control the growth of a variety of plant and animal pests. Illustrative of these compounds is N<sup>1</sup>-(2-hydroxyethyl)-5-nitroindazole.

3,825,557

**O-(1-SUBSTITUTED - 3-METHYL-4-CHLORO-PYRAZOLO)-THIONOPHOSPHORIC (PHOSPHONIC) ACID ESTERS**

Hellmut Hoffmann, Wuppertal-Elberfeld, and Wolfgang Behrenz and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Filed June 23, 1972, Ser. No. 265,844

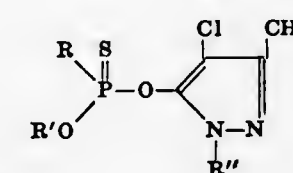
Claims priority, application Germany, July 2, 1971, P 21 32 938.4

Int. Cl. C07f 9/16, 9/40

U.S. Cl. 260—310 R

7 Claims

O-(1-substituted - 3-methyl - 4-chloro-pyrazolo)-thionophosphoric (phosphonic) acid esters of the formula



in which

R is an alkyl or alkoxy radical of 1 to 6 carbon atoms, R' is alkyl of 1 to 6 carbon atoms, and R'' is alkyl or cyanoalkyl wherein the alkyl radical has 1 to 6 carbon atoms, or phenyl,

which possess insecticidal and acaricidal properties.



3,825,558

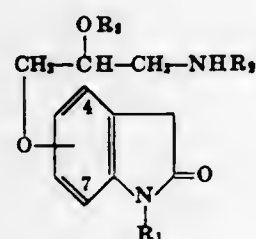
**SUBSTITUTED AMINOPROPOXY-2-INDOLINONES**

Fritz Seemann, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland  
No Drawing. Filed June 19, 1972, Ser. No. 263,768  
Claims priority, application Switzerland, June 24, 1971, 9,247/71, 9,248/71, 9,251/71  
Int. Cl. C07d 27/40

U.S. Cl. 260—325

19 Claims

The present invention concerns novel heterocyclic compounds of the formula:



wherein

R<sub>1</sub> is hydrogen or alkyl,

R<sub>2</sub> is a substituted or unsubstituted aromatic or aliphatic hydrocarbon and

R<sub>3</sub> is hydrogen or a carbonyl substituent and the side chain is in the 4 or 7 position of the oxindole nucleus.

The compounds possess pharmacological properties.

3,825,559

**OPTICAL RESOLUTION OF DL-TRYPTOPHAN**

Hideo Tazuke, Toshio Kitahara, and Hiroo Kageyama, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan  
No Drawing. Filed Sept. 10, 1971, Ser. No. 179,587  
Claims priority, application Japan, Sept. 12, 1970, 45/80,177  
Int. Cl. C07d 27/60

U.S. Cl. 260—326.14 T

1 Claim

DL-tryptophan hydrohalide is resolved into its optically active enantiomorphs by forming a free hydrogen halide containing saturated or supersaturated solution of said DL-tryptophan hydrohalide, and contacting said solution with crystals of one of said enantiomorphs.

3,825,560

**N-MONOACYL DERIVATIVES OF ARGININE**

Tadaomi Saito, 890 Fukaya-cho, Totsuka-ku, Yokohama-shi; Masahiro Takehara, 1060 Ogura, Kawasaki-shi; Kazuhiko Yamada, 22-22, 3-chome, Fujigaoka, Fujisawa-shi; and Ryonosuke Yoshida, 1265-11 Kajiwara, Kamakura-shi, all of Kanagawa-ken, Japan; and Yukiko Sasaki, 28-6, 3-chome, Minami-cho, Kokubunji-shi, Tokyo, Japan  
Continuation-in-part of abandoned application Ser. No. 99,768, Dec. 21, 1970. This application June 28, 1971, Ser. No. 157,584  
Claims priority, application Japan, Dec. 30, 1969, 45/1,750  
Int. Cl. C07d 27/08

U.S. Cl. 260—326.45

6 Claims

The lower alkyl or benzyl esters and amides of the N-monoacyl derivatives of the basic amino acids ( $\alpha$ ,  $\gamma$ -diaminobutyric acid, ornithine, citrulline, lysine, arginine, and histidine) and their N-methyl and N-benzyl derivatives in which acyl is the acyl radical of an aliphatic monocarboxylic acid having 6 to 20 carbon atoms have bacteriostatic effects of the order of magnitude of that of hexachlorophene. They may be used as antibial agents in the form of their water soluble salts with hydrochloric acid, pyrrolidone carboxylic acid, and other inorganic and organic acids.

3,825,561

**FLUORAN COMPOUNDS**

Takashi Akamatsu, Ashiya, Kolchi Koga, Toyonaka, Mitsuru Kondo, Kawanishi, Makoto Miyake, Nishino-miya, and Hiroshi Iwasaki, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Higashi-ku, Osaka, and Paper Manufacturing Co., Ltd., Chuo-ku, Tokyo, Japan  
No Drawing. Filed Oct. 8, 1971, Ser. No. 187,919  
Claims priority, application Japan, Oct. 12, 1970, 45/90,181; Nov. 11, 1970, 45/99,663; Dec. 25, 1970, 45/129,020; Dec. 26, 1970, 45/130,393; Dec. 29, 1970, 46/124,393; Apr. 15, 1971, 46/24371  
Int. Cl. C07d 7/42

U.S. Cl. 260—335

7 Claims

Novel fluoran derivatives such as, for example, 2-diethylamino-6-diethylaminofluoran, 2,2'-iminobis(6-diethylaminofluoran), 2-[bis(p-chlorobenzyl)amino]-6-dimethylaminofluoran, 2-(o-chlorobenzylamino)-6-diethylaminofluoran, and 2-(N-phenyl-N-allylamino-6-dimethylaminofluoran). These fluoran derivatives are useful as a coloring material for record material systems, such as pressure-sensitive copying paper or heat-sensitive copying paper, wherein colored images formed by an electron-donor-acceptor color-forming reaction between coloring material and acidic material.

3,825,562

**PROCESS FOR RECOVERING 2,2,4-TRIMETHYL-4-(4-HYDROXYPHENYL) CHROMAN**

Donald B. G. Jacques, New Harmony, Ind., assignor to General Electric Company  
No Drawing. Filed July 18, 1972, Ser. No. 272,799  
Int. Cl. C07d 7/32

U.S. Cl. 260—345.2

4 Claims

A process for recovering pure 2,2,4-trimethyl-4-(4-hydroxyphenyl) chroman from the by-products of reaction of acetone and phenol to prepare 2,2-bis(4-hydroxyphenyl) propane which process consists of treating the by-product stream with an aqueous caustic solution of at least 2N to dissolve the byproducts and then adjusting the pH to at least 10.0 in order to precipitate 2,2,4-trimethyl-4-(4-hydroxyphenyl) chroman.

3,825,563

**PRODUCTION OF STABLE, NONHYDROUS, HOMOGENEOUS, IN NATURAL AND MINERAL OILS SOLUBLE VITAMIN-E-ACTIVE CREAM-BASE-CO-ESTERS OF THE MINERAL-OIL-INSOLUBLE d-ALPHA-TOCOPHERYL-ACID-SUCCINATE WITH ANHYDROUS OILS**

Gerhard W. Ahrens, 1781 E. 15th St., Brooklyn, N.Y.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 862,927, Oct. 1, 1969. This application Apr. 13, 1971, Ser. No. 133,757  
Int. Cl. C07d 7/22

U.S. Cl. 260—345.5

4 Claims

The invention concerns a method for preparing stable, nonhydroous homogeneous, in natural and mineral oils soluble Vitamin-E-active cream-base-co-esters of the mineral-oil-insoluble d-alpha-tocopheryl-acid-succinate with anhydrous oils by the direct esterification reaction between the said d-alpha-tocopheryl-acid-succinate and the anhydrous oils or, in a modification thereof, by the said direct esterification reaction between the d-alpha-tocopheryl-acid-succinate, magnesium stearate as a partial substituent for the expensive d-alpha-tocopheryl-acid-succinate and the anhydrous oils, carried to completion by the application of gradually increasing reaction temperatures to the reaction mixture consisting of the said d-alpha-tocopheryl-acid-succinate, with or without its partial substituent magnesium stearate, and the anhydrous oils lacking both in practical water absorption capacities and therefore facilitating water formed in the reaction to

vaporize as the esterification reaction goes to completion forming thereby the stable, nonhydroous, homogeneous and in natural and mineral oils soluble Vitamin-E-active cream-base-co-esters of d-alpha-tocopheryl-acid-succinate with anhydrous oils as are excellently suited for versatile additions of Vitamin-E-active potencies to a wide variety of topical natural as well as mineral oil base preparations for the ready introduction therein of a wide range of Vitamin E potencies from as low as 25 I.U. to as much as about 726 I.U. Vitamin E, without requiring the use of emulsifying agents, or which may be used as is in their creamy cream-base-co-ester form, per se.

3,825,564

**ANTHRAQUINONE SULFONIC ACIDS**

Wolfgang Schoenauer, Riehen, Switzerland, and Roland Wald, Pfetterhouse, France, assignors to Sandoz Ltd., Basel, Switzerland  
No Drawing. Filed Aug. 3, 1971, Ser. No. 175,784  
Claims priority, application Switzerland, Aug. 12, 1970, 12,093/70; Nov. 13, 1970, 16,797/70  
Int. Cl. C09b 1/30, 1/34

U.S. Cl. 260—372

19 Claims

Anthraquinones bearing in the 1 and 4 positions secondary amino groups and in the 6 position an aminocarbonyl group and containing at least one SO<sub>3</sub>H group give brilliant dyeings and prints of green to blue shades and of good fastness.

3,825,565

**3 $\alpha$ -HYDROXY- $\Delta^4$ -STEROIDS OF THE PREGNANE SERIES AND ESTERS THEREOF**

Gordon Ian Gregory, Buckinghamshire, and Niall Galbraith Weir, London, England, assignors to Glaxo Laboratories Limited, Middlesex, England  
No Drawing. Filed Nov. 2, 1971, Ser. No. 194,918  
Int. Cl. C07c 169/32

U.S. Cl. 260—397.4

10 Claims

3 $\alpha$ -Hydroxy- $\Delta^4$ -steroids and 3 $\alpha$ -esters thereof having an acetyl group in the  $\beta$ -configuration and a hydrogen atom in the  $\alpha$ -configuration at the 17-position and either two hydrogen atoms or a keto group at the 11-position. The disclosed compounds with carriers or excipients to provide compositions having marked anaesthetic properties.

3,825,566

**A-NOR-3-THIA CORTICOIDS**

Christopher M. Cimarusti, Hamilton, Frederick F. Glaruso, Belle Mead, and Seymour D. Levine, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.  
No Drawing. Filed Feb. 15, 1973, Ser. No. 332,984  
Int. Cl. A61k 27/00; C07d 63/04

U.S. Cl. 260—332.3 P

18 Claims

Novel A-nor-3-thia steroids, having utility as anti-inflammatory agents, are disclosed.

3,825,567

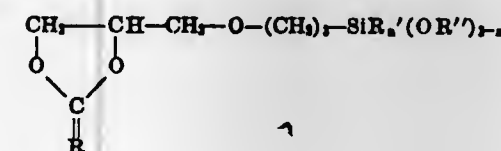
**SILICEOUS DIOXOLANE DERIVATIVES**

Hans-Joachim Kotzsch, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, Baden, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany  
No Drawing. Filed Nov. 29, 1972, Ser. No. 310,495  
Claims priority, application Germany, Dec. 3, 1971, P 21 59 991.7  
Int. Cl. C07d 13/04

U.S. Cl. 260—340.2

3 Claims

Glycidylxypropylalkoxysilanes are produced by thermal treatment of novel siliceous dioxolane derivatives of the formula:



wherein a is 0 or 1 and R represents an oxygen radical or two hydrogen atoms and R' and R'' each represents an alkyl radical, wherein the R''s can be the same or different. The glycidyl products are useful as adhesives.

3,825,568

**PRODUCTION OF ANHYDROUS 1,4-DIOXANE**

Hans-Georg Schecker, 28 Berner Weg; Waldemar Koehler, 7 An der Froschlache; and Bruno Sander, 10 Moerikestrasse, all of 6700 Ludwigshafen, Germany  
No Drawing. Filed June 27, 1972, Ser. No. 266,607  
Int. Cl. C07d 15/00

U.S. Cl. 260—340.6

6 Claims

A process for the production of the valuable solvent 1,4-dioxane by dimerization of ethylene oxide in the presence of SiF<sub>4</sub> or BF<sub>3</sub> or of the addition compound formed from BF<sub>3</sub> and 1,4-dioxane as a catalyst, wherein the catalyst is mixed with ethylene oxide present in the liquid phase at a temperature of from -50° C. to 0° C. and the mixture is then kept for another one hour to ten hours at a temperature of from -25° to +10° C. To complete the reaction, the reaction mixture may then be kept for up to three hours at a temperature of from +10° to +40° C. In this process pure 1,4-dioxane is obtained in a high space-time yield and in yields of more than 80% of theory.

3,825,569

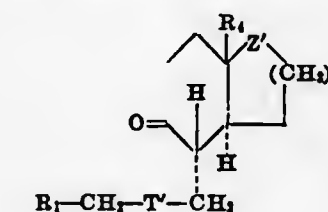
**SYNTHESIS OF TRICYCLIC CARBOCYCLIC COMPOUNDS AND INTERMEDIATES THEREFOR**

Zoltan George Hajos, Upper Montclair, and Eugene Paul Oliveto, Glen Ridge, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
No Drawing. Application Dec. 23, 1968, Ser. No. 786,445, now Patent No. 3,644,429, which is a continuation-in-part of application Ser. No. 687,463, Dec. 4, 1967, which is a continuation-in-part of application Ser. No. 544,677, May 25, 1966, which in turn is a continuation-in-part of application Ser. No. 495,672, Oct. 13, 1965, the latter three all now abandoned. Divided and this application Sept. 13, 1971, Ser. No. 180,115  
Int. Cl. C07d 13/04

U.S. Cl. 260—340.9

18 Claims

Methods for the preparation of 2,3,3a,4,5,7,8,9,9a,9b,10-decahydro-3 $\beta$ -primary lower alkyl-7-oxo-1H-benz[e]indenes and 4,4a,4b,5,6,7,8,9,10-decahydro-8a $\beta$ -primary lower alkyl-3H-phenanthren-2-ones by cyclizing compounds of the formula



wherein R<sub>1</sub> is hydrogen or lower alkyl; Z' is carbonyl or CH(OR<sub>2</sub>); R<sub>2</sub> is hydrogen, lower alkyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxy-benzoyl, trifluoroacetyl or camphorsulfonyl; T' is -C(X')=CH-, -C(OR<sub>3</sub>)=CH- or -Q'-CH<sub>2</sub>-; R<sub>3</sub> is lower alkyl; X' is bromine, chlorine or iodine; Q' is carbonyl, lower alkylene dioxy-methylene, di-(lower alkoxy)-methylene or hydroxy-methylene, R<sub>4</sub> is lower primary alkyl and m is an integer having a value of 1 or 2.

The compounds of this series are useful as intermediates in the synthesis of known steroids which are pharmacologically active as fertility control agents.



**3,825,570**  
**PROCESS FOR THE PREPARATION OF**  
 **$\epsilon$ -CAPROLACTONE**

Yutaka Fujita, Tatsuyuki Naruchi, Yutaka Honda, Kenji Ishimaru, and Etsuhiko Yoshimoto, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Nov. 2, 1971, Ser. No. 195,032  
Int. Cl. C07d 9/00

U.S. Cl. 260—343 15 Claims

A process for the preparation of  $\epsilon$ -caprolactone which comprises heating at least one amide selected from the group consisting of  $\epsilon$ -hydroxycaproamide and amides of low polymerization products of  $\epsilon$ -hydroxycaproic acid, in the presence of an alcoholic compound containing at least one free alcoholic hydroxyl group in its molecule, in an amount such that, when one  $\epsilon$ -hydroxycaproic acid unit of the formula  $\{O-(CH_2)_5CO\}$  contained in the amide is calculated as one molecule of  $\epsilon$ -hydroxycaproic acid, the total number of free alcoholic hydroxyl groups present in the reaction system exceeds the total number of carboxyl groups present in the reaction system, under such temperature and pressure conditions to allow distillation of  $\epsilon$ -caprolactone.

**3,825,571**  
**MYCOPHENOLIC ACID DERIVATIVES**

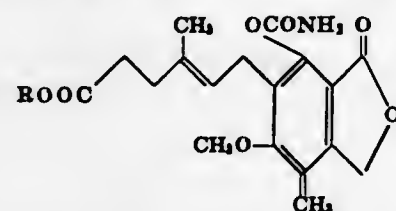
Takao Mori, Tokyo, Sakae Takaku, Ageo, Seikichi Suzuki, Tokyo, and Minoru Tsuda, Shiki, Japan, assignors to Chugai Seryaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 28, 1972, Ser. No. 275,901  
Claims priority, application Japan, July 31, 1971, 46/57,141, 46/57,142

Int. Cl. C07d 5/34

U.S. Cl. 260—343.3 6 Claims

Mycophenolic acid derivatives represented by the formula



wherein R is lower alkyl or lower alkenyl, which are useful as an anti-cancer or anti-tumor agent and a process for the production thereof are disclosed.

**3,825,572**  
**EPIMERIC MIXTURES OF THE LACTONE 3,6-DI-**  
**HYDRO-4,5-DIMETHYL-5-PHENYL- $\alpha$ -PYRONE**

John J. van Venrooy, Media, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 258,282, May 31, 1972, now Patent No. 3,761,530. This application Dec. 26, 1972, Ser. No. 318,359

Int. Cl. C07d 7/16

U.S. Cl. 260—343.5 8 Claims

Epimeric mixtures of the novel lactone 3,6-dihydro-4,5-dimethyl-5-phenyl- $\alpha$ -pyrone may be prepared by reacting hydratropaldehyde with acetaldehyde or crotonaldehyde. These compounds are useful in V.I. stabilizers in lube oils, and as monomers in the preparation of polyesters. Under certain conditions a by-product comprising a novel linear condensation product, identified as an unsaturated aromatic aldehyde, is also formed. The relative proportions of the novel lactone and unsaturated aromatic aldehydes that are formed may be controlled by varying the ratio of hydratropaldehyde to acetaldehyde. The use of crotonaldehyde instead of acetaldehyde results in the formation of the novel lactone alone.

**3,825,573**  
**PURIFICATION OF  $\alpha,\alpha$ -DISUBSTITUTED-**  
 **$\beta$ -PROPIOLACTONES**

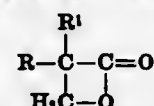
William A. Ames, Longview, and James J. Ward, Henderson, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,906

Int. Cl. C07d 3/00

U.S. Cl. 260—343.9 10 Claims

Polymerization grade  $\alpha,\alpha$ -disubstituted- $\beta$ -propiolactone monomer having the general formula



wherein R and R<sup>1</sup> are selected from the group consisting of straight- or branched-chain alkyl groups of from 1 to 10 carbon atoms, substituted of unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R<sup>1</sup> join to form a ring of from 6 to 10 carbon atoms, is effectively obtained from impure monomer containing residual manufacturing impurities by treating the impure lactone monomer with an aluminum alkyl of the formula AlR<sub>3</sub>, wherein R<sup>3</sup> is a lower alkyl group of from 1 to 8 carbon atoms, and subsequently distilling the purified monomer from the resultant solution at reduced pressure. The procedure yields a very pure polymerization grade  $\alpha,\alpha$ -disubstituted- $\beta$ -propiolactone monomer which has a low polymerization index and from which a polymer having a high inherent viscosity can be formed.

**3,825,574**  
**PROCESS FOR PREPARING SUBSTITUTED**  
**CHROMONE-3-CARBONITRILES, CARBOX-**  
**AMIDES AND CARBOXYLIC ACIDS**

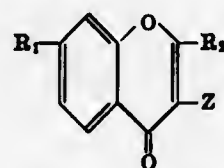
Richard E. Brown, Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,586

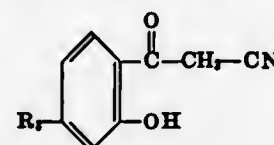
Int. Cl. C07d 7/34

U.S. Cl. 260—345.2 6 Claims

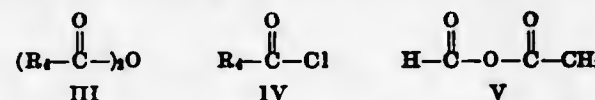
This invention relates to a novel process for preparing chromones of the formula I:



wherein R<sub>1</sub> represents hydroxy, lower alkoxy, or acyloxy; R<sub>2</sub> represents hydrogen, lower alkyl, fluorinated lower alkyl, alkoxy, carbonyl, carboxy, or lower alkyl carboxylic acid; Z represents cyano, carbamoyl, or carboxy; and R<sub>2</sub> and Z together form a substituted pyrrole ring, by treating a substituted benzoylacetone of the formula II:



wherein R<sub>2</sub> represents hydroxy or lower alkoxy, with an acid derivative having the formula III, IV, or V:



wherein R<sub>4</sub> represents lower alkyl, fluorinated lower alkyl, alkoxy, carbonyl or, together with the



of formula III, forms an up to 5 carbon atom cyclic anhydride, in the presence of a base, to effect acylation and ring closure, and obtain a substituted 3-cyanochromone derivative which may be hydrolyzed with a mineral acid to provide the corresponding substituted chromone-3-carboxamide or the corresponding substituted chromone-3-carboxylic acid. The compounds prepared by the process of this invention are useful as anti-allergic agents.

**3,825,575**  
**PERFLUOROALKYLALKYLMONOCARBOXYLIC**  
**ACID ESTERS**

Horst Jaeger, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,445  
Claims priority, application Switzerland, Feb. 9, 1970, 1,825/70

Int. Cl. C07c 69/62; D06m 13/20

U.S. Cl. 260—408 11 Claims

Perfluoroalkylalkylmonocarboxylic acid esters are provided which are derived from acyclic aliphatic epoxides. These esters contain at least one perfluoroalkyl radical with 4 to 14 carbon atoms which is bonded over an alkylene group with 1 to 10 carbon atoms to a carboxyl group, which in turn is bonded in an ester-like manner to an acyclic radical. This radical contains in the 2-position to the ester bridge an optionally etherified or esterified hydroxyl group; said radical is bonded via an ester, ether or carbamate bridge to an alkenyl group with 2 to 3 carbon atoms which is optionally linked via a second ester, ether or carbamate bridge to an acyclic radical which in turn may be bonded via an ester bridge and an alkylene group to a perfluoroalkyl radical.

The perfluoroalkylalkylmonocarboxylic acid esters and also their homopolymers or their copolymers with other polymerizable products are used to achieve oleophobic furnishes on porous or non-porous substrates, especially on fibrous materials, such as textiles and papers.

**3,825,576**  
**ALKYL ESTERS OF 2-(LOWER ALKYL)-3-(LOWER**  
**ALKYL) - 4 - ARYL-3. OR 4 - CYCLOHEXENE-**  
**CARBINOLS**

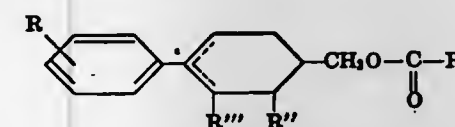
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Original application May 14, 1968, Ser. No. 728,900, now Patent No. 3,557,129. Divided and this application Sept. 14, 1970, Ser. No. 72,220

Int. Cl. A61k 27/00; C07c 69/74, 69/76

U.S. Cl. 260—410.5 14 Claims

Compounds of the general formula



are disclosed wherein —R is selected from the group consisting of hydrogen, hydroxy, lower alkoxy of up to 8 carbon atoms, lower alkyl of up to 8 carbon atoms, and lower alkyl anilino of up to 4 carbon atoms; —R' is selected from the group consisting of alkyl and alkenyl of up to 20 carbon atoms, cycloalkyl lower alkyl of up to 3 carbon atoms in the alkyl portion, adamantyl, pyridyl, furyl, lower alkyl carboxylic acids and their alkali metal salts, esters and carbamates; and R'' and R''' are selected from the group consisting of lower alkyl of up to 3 carbon atoms. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

**3,825,577**  
**METHOD OF PREPARING POLYFLUORINATED**  
**SULPHONIC ACID AND DERIVATIVES**

Jean-Pierre Lala, La Mulatiere, and Louis Foulletier, Oullins, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

No Drawing. Original application Aug. 18, 1969, Ser. No. 851,081. Divided and this application May 14, 1971, Ser. No. 143,589

Claims priority, application France, Aug. 21, 1968, 163,587

Int. Cl. C07f 7/24

U.S. Cl. 260—435 R 5 Claims

New products and compositions of matter complying with the general formula:



wherein: C<sub>n</sub>F<sub>2n+1</sub> represents a straight or ramified branched perfluorinated chain; n represents a whole number between 1 and 20, b is a whole number between 2 and 20, preferably equal to 2 or 4, Z represents a chlorine, bromine or an oxygen atom (when Z is a chlorine or a bromine atom, M is nothing and d is equal to 1), when Z is an oxygen atom: M is a hydrogen atom in which case, d is equal to 1, M is a metal of the Groups I<sub>A</sub>, II<sub>A</sub>, I<sub>B</sub>, II<sub>B</sub>, VIII of the periodic table, the ammonium radical, the aluminum or the lead radical, and in which case d represents the valence of this metal and methods for preparing new products as illustrated by the following representative reactions.

**3,825,578**  
**WATER REPELLENT COMPOSITION OF**  
**ORGANOSILICON COMPLEX**

Otto J. Maltenieks, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

No Drawing. Filed July 27, 1973, Ser. No. 383,058

Int. Cl. C07d 7/18

U.S. Cl. 260—448.8 R 3 Claims

A water repellent composition of methyloctadecyldichlorosilane partially hydrolyzed with isopropanol is disclosed which is useful as a water repellent coating material for both transparent and non-transparent surfaces but has special utility when employed on non-optical surfaces. The useful lifetime of a water repellent coating made with this composition permits its use as a semi-permanent coating for such surfaces.

**3,825,579**  
**N-PHENYLTHIOCARBAMOYLTHIO-**  
**HYDROXIMATE PESTICIDES**

Keimei Fujimoto, Kobe, Masachika Hirano, Mino, and Hisami Takeda and Shigehiro Ooba, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

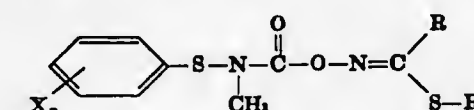
No Drawing. Filed Sept. 21, 1971, Ser. No. 182,537

Claims priority, application Japan, Sept. 24, 1970, 45/84,376

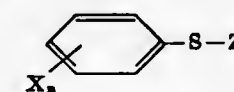
Int. Cl. C07c 119/00

U.S. Cl. 260—453 R 7 Claims

A carbamate compound of the formula:

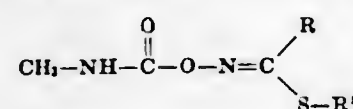


wherein X is hydrogen, lower alkyl, lower alkoxy, nitro or halogen, R and R' are each lower alkyl and n is an integer of 1 to 5, which is useful as an insecticide, a nematocide and an acaricide with less toxicity to warm-blooded animals and can be prepared by reacting a benzenesulfonyl halide of the formula:





wherein X and n are each as defined above and Z is halogen with an N-methylcarbamic ester of the formula:



wherein R and R' are each as defined above in an inert solvent in the presence of a base at a temperature of -10 to 50° C.

3,825,580

#### HEAT-RESISTANT ADHESIVE COMPOSITIONS CONTAINING RADICAL POLYMERIZABLE ALPHA-CYANOACRYLATES

Hirofumi Kato, Isao Tsuzi, Kishiro Azuma, and Hide-maro Tatemichi, Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan  
No Drawing. Original application Aug. 16, 1971, Ser. No. 172,282, now abandoned. Divided and this application Dec. 13, 1972, Ser. No. 314,507

Claims priority, application Japan, Aug. 18, 1970, 45/71,737

Int. Cl. C07c 121/18

U.S. Cl. 260-465.4

1 Claim

A heat-resistant adhesive composition comprising a radical polymerizable  $\alpha$ -cyanoacrylate represented by the formula,



wherein R is an alkenyl, alkynyl, alkenyloxyalkyl or cycloalkenyl group, and at least 0.1% by weight based on the weight of the composition of a radical initiator. The said adhesive composition is not only instantaneously adhesive at room temperature but also has a sufficiently practical bonding strength even at such a high temperature as 150° C. or above.

3,825,581

#### PRODUCTION OF MONOCHLOROACETONITRILE

Walter A. Gay and David F. Gavin, Cheshire, Conn., assignors to Olin Corporation

No Drawing. Filed Feb. 12, 1973, Ser. No. 332,045

Int. Cl. C07c 121/02

U.S. Cl. 260-465.7

9 Claims

A process is provided for producing monochloroacetonitrile by liquid phase chlorination of acetonitrile. Acetonitrile is chlorinated at a temperature in the range of 30-50° C. in a reaction mixture containing at least 18% by weight trichloroacetonitrile, the latter being formed in situ or added as an ingredient in a starting reaction mixture. Following chlorination, the reaction mixture is neutralized at a temperature of not more than 70° C. Monochloroacetonitrile is then separated from the reaction mixture by distillation or other suitable means.

3,825,582

#### SIDE CHAIN HALOGENATED ALKYL PHENYL CARBAMATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Application Nov. 7, 1968, Ser. No. 816,426, now Patent No. 3,651,129, which is a division of application Ser. No. 305,509, Aug. 29, 1963, now Patent No. 3,420,868. Divided and this application June 14, 1971, Ser. No. 153,050

Int. Cl. C07c 125/06

U.S. Cl. 260-471 C

7 Claims

Alkyl phenyl carbamates containing a halogenated side chain are useful as pesticides. Such products, for example,  $\alpha,\alpha'$ -dichloro-3,5-xylene N-methyl carbamate are prepared by reacting the corresponding haloformates with an alkylamine.

#### 3,825,583 ESTER OF 3-HYDROXY- $\alpha$ -(METHYLAMINO)METHYL]BENZYL ALCOHOL

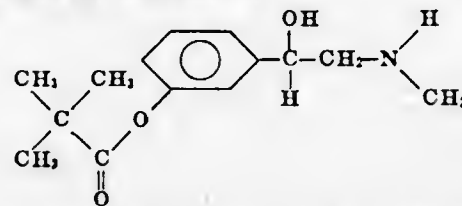
Anwar A. Hussain and James E. Truelove, Lawrence, Kans., assignors to Interx Corporation, Lawrence, Kans.  
No Drawing. Filed Apr. 26, 1973, Ser. No. 354,540

Int. Cl. C07c 69/24

U.S. Cl. 260-479 R

2 Claims

A novel ester of the formula:



and the non-toxic pharmaceutically acceptable acid addition salts thereof. The compound evidences increased stability and lipoidal solubility and is extremely valuable in the treatment of conditions responsive to sympathomimetic agents and especially in the management of asthma, nasal congestion, and, as a decongestant, vasoconstrictor, mydriatic agent and anti-glaucomatous agent in the practice of ophthalmology.

3,825,584

#### 4-HEXENOIC COMPOUNDS

Hiroshi Morimoto, Nishinomiya, Masazumi Watanabe, Takatsuki, and Isuke Imada, Ibaraki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan  
No Drawing. Original application Feb. 8, 1971, Ser. No. 113,773, now Patent No. 3,728,362, dated Apr. 17, 1973. Divided and this application Oct. 5, 1972, Ser. No. 295,098

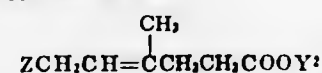
Claims priority, application Japan, Feb. 7, 1970, 45/10,846; Feb. 11, 1970, 45/11,616

Int. Cl. C07c 69/66

U.S. Cl. 260-484 R

3 Claims

Compounds of the formula



wherein Z is hydroxy, acetoxy or halogen and Y<sup>2</sup> is hydrogen or a lower alkyl group, which are useful in preparing quinones having strong anti-inflammatory activity.

3,825,585

#### N-CYCLOALKYL HYDROXAMIC ACIDS

Cecil C. Chappelow, Jr., and James F. Engel, Kansas City, Mo., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

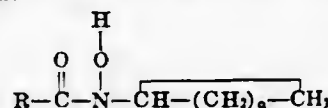
No Drawing. Filed June 3, 1971, Ser. No. 149,750

Int. Cl. C07c 103/30; C07f 9/00

U.S. Cl. 260-500.5 H

7 Claims

A new class of compounds useful, for example, as metal extractants, is provided. The compounds are hydroxamic acids, with N-cycloalkyl groups and represented by the general formula:



wherein n is an integer of from 3 to 6, inclusive, and R is a hydrocarbon radical containing from 1 to 20 carbon atoms.

3,825,586

#### PROCESS FOR ENRICHING TRANS-TRANS SALTS OF BIS(4-AMINOCYCLOHEXYL)METHANE AND 1,12-DODECANEDIOIC ACID

Klaus Friedrich Traumann, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,930

Int. Cl. C07c 87/14

U.S. Cl. 260-501.2

3 Claims

A salt of bis(4-aminocyclohexyl)methane and 1,12-dodecanedioic acid can be enriched in trans-trans isomer

content by preparing the salt in and precipitating from methanol.

3,825,587

#### SUBSTITUTED PHENYLACETIC ACID COMPOUNDS

Julius Diamond, Lafayette Hill, and Norman J. Santora, Roslyn, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Original application May 5, 1970, Ser. No. 34,870. Divided and this application Mar. 10, 1972, Ser. No. 233,704

Int. Cl. C07c 63/00

U.S. Cl. 260-501.16

2 Claims

Alpha, alpha'-di-(m-chloro-p-cyclohexylphenyl)-alpha, alpha'-dithiodiacetic acid and its diethylammonium salt are disclosed and have a high anti-inflammatory, analgesic, and antipyretic activity, low toxicity, and/or a favorable therapeutic index with minor or no side-effects.

3,825,588

#### UNSATURATED ZWITTERIONIC SURFACE ACTIVE COMPOUNDS

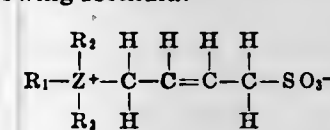
Melvin A. Barbera, Mount Healthy, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Original application Mar. 31, 1970, Ser. No. 24,330, now Patent No. 3,668,240. Divided and this application Apr. 28, 1972, Ser. No. 248,765

Int. Cl. C07c 143/16

U.S. Cl. 260-513 R

2 Claims

Zwitterionic surface active compounds are provided having the following formula:



wherein R<sub>1</sub> represents an unsaturated or saturated aliphatic group having 6 to 24 carbon atoms, R<sub>2</sub> and R<sub>3</sub> each represent an alkyl group having 1 to 6 carbon atoms, and Z represents nitrogen or phosphorus.

These compounds have valuable surface active properties that make them especially useful as detergent compounds.

3,825,589

#### PRODUCTION OF 2-BUTYL-N,N'-DIPHENYL-MALONOMONOHYDRAZIDE

Kurt Klemm, Allensbach, and Erhard Langenscheid, Constance, Germany, assignors to BYK-Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany  
No Drawing. Filed Nov. 1, 1971, Ser. No. 194,536

Int. Cl. C07c 103/34

U.S. Cl. 260-518 R

19 Claims

Phenylbutazone is hydrolyzed in admixture with 1 to 10 equivalents of a water-soluble alkali metal salt and 10 to 100 moles of water per mole of phenylbutazone. Resulting 2-butyl-N,N'-diphenylmalonomonohydrazide is then separated from the hydrolysis product.

3,825,590

#### HYDROXY-HYDROXYMETHYL-SUBSTITUTED PHENYLALANINE DERIVATIVES

John T. Suh, Mequon, and Richard A. Schnettler, Brown Deer, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,558

Int. Cl. C07c 101/72

U.S. Cl. 260-519

3 Claims

The compounds are hydroxy-hydroxymethyl-substituted phenylalanines which are useful as antihypertensive agents and chelating agents for heavy metal ions. A species disclosed is 3-hydroxymethyl tyrosine.

#### 3,825,591 ORALLY APPLICABLE CONTRAST AGENTS FOR CHOLECYSTOGRAPHY

Ernst Felder and Davide Pitre, Milan, Italy, assignors to Bracco Industria Chimica Societa per Azioni, Milan, Italy

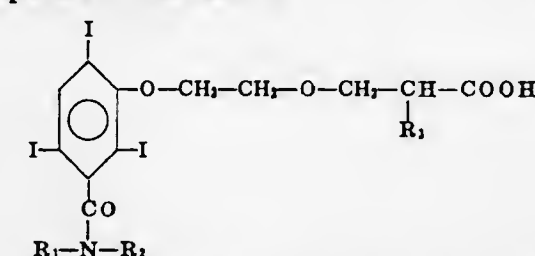
No Drawing. Filed June 1, 1972, Ser. No. 258,777  
Claims priority, application Switzerland, June 23, 1971, 9,147/71

Int. Cl. C07c 101/72

U.S. Cl. 260-519

4 Claims

Compounds of the formula



wherein R<sub>1</sub> is methyl or ethyl when R<sub>2</sub> is hydrogen, or R<sub>1</sub> and R<sub>2</sub> jointly are ethyleneoxyethylene, and R<sub>3</sub> is methyl or ethyl, and their physiologically tolerated alkali metal, alkaline earth metal, and alkanolamine salts produce superior X-ray images of the gall bladder and of the bile ducts after oral ingestion and are well tolerated and quickly eliminated in effective doses.

3,825,592

#### PHENOLIC AMINOPOLYCARBOXYLIC CHELANTS

Avis L. McCrary and David A. Wilson, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

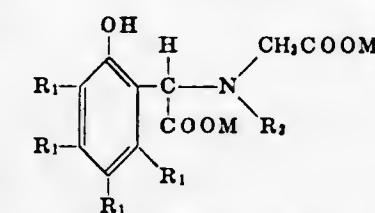
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,894

Int. Cl. C07c 101/72

U.S. Cl. 260-519

3 Claims

New phenolic aminopolycarboxylic chelants of the formula



wherein M represents hydrogen or alkali metal ion, R<sub>1</sub> represents hydrogen, alkyl, SO<sub>3</sub>(M), or halogen, and R<sub>2</sub> represents hydrogen or (-CH<sub>2</sub>-COO(M)), have been prepared which are useful in the correction of iron deficiencies in plants and in removal of iron scale.

3,825,593

#### CARBOXYLATION OF PHENOLS

William H. Meek, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

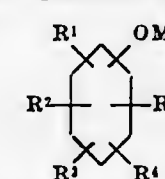
No Drawing. Continuation-in-part of application Ser. No. 712,933, Mar. 14, 1968, which is a continuation-in-part of application Ser. No. 629,094, Apr. 7, 1967, both now abandoned. This application Aug. 29, 1969, Ser. No. 854,269

Int. Cl. C07c 65/04

U.S. Cl. 260-521 C

5 Claims

Substituted aromatic phenates of the formula:



wherein the groups represented by R's are selected from hydrogen, halogen, alkyl, alkylthio, alkoxy, dialkylamino, benzyl and alpha-methylbenzyl and wherein two of said R's can be taken together to form a naphthyl or quinoline ring, providing that not more than four R's are hydrogen; and M is a metal, preferably an alkali metal, are carbox-



ylated by reaction with carbon dioxide in good yield in the presence of an aliphatic N,N-dimethylamide having from 3 to 10 carbon atoms and preferably in the presence of an excess of metal alkoxide based on the carbon dioxide. Preferably amides are dimethylformamide and dimethylacetamide.

3,825,594

**BIS(TRIFLUOROMETHYL)BENZAMIDES**

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 4,397, Jan. 20, 1970. This application June 24, 1971, Ser. No. 156,459

Int. Cl. C07c 103/22

U.S. Cl. 260—558 R 23 Claims  
Bis(trifluoromethyl)benzamides and bis(trifluoromethyl)-N-substituted benzamides, e.g., 2,4-bis(trifluoromethyl)benzamide, are prepared from bis(trifluoromethyl)benzoic acids and are useful as central nervous system depressants and coadjuvants.

3,825,595

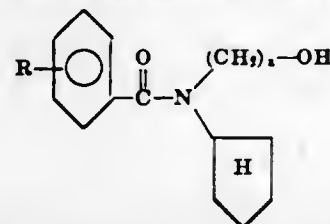
**N-CYCLOPENTYL-N-2-HYDROXYALKYL-RING-SUBSTITUTED BENZAMIDES**

William D. Roll, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 123,842, Mar. 12, 1971. This application May 15, 1972, Ser. No. 253,520

Int. Cl. C07c 103/22

U.S. Cl. 260—558 R 8 Claims  
Simultaneously acting central nervous system (CNS) depressants and blood pressure depressors of the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and halogen radicals; and wherein x is a whole number from one to three.

3,825,596

**PROCESS FOR PREPARATION OF N,N-DIALKYL TOLUAMIDE**

Taketosi Naito, Kawasaki, and Masatomo Ito, Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 23, 1972, Ser. No. 256,116

Int. Cl. C07c 103/22

U.S. Cl. 260—558 R 3 Claims  
N,N-Dialkyl-m(or p)-toluamide can be produced by reacting m(or p)-tolunitrile with di- or trialkylamine and water in the liquid phase. Remarkably superior results can be obtained by using specific compounds as catalysts and/or removing ammonia formed during the reaction from the system.

3,825,597

**THIOPSEUDOURONIUM COMPOUNDS**

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Original application May 10, 1971, Ser. No. 142,038. Divided and this application Dec. 26, 1972, Ser. No. 318,148

Int. Cl. C07c 123/00

U.S. Cl. 260—564 E 17 Claims  
Novel thiopseudouronium compounds have been prepared. Compounds of this invention possess useful gastric anti-secretory, spasmolytic and anti-ulcerogenic properties. A method of treating gastrointestinal hyperacidity and ulceration has also been disclosed.

**3,825,598  
PROCESS FOR THE PRODUCTION OF POLYAMINES**

Willi Eiffer, Schildgen, and Josef Finkel, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 21, 1972, Ser. No. 265,054  
Claims priority, application Germany, July 7, 1971, P 21 33 870.5

Int. Cl. C07c 85/08

U.S. Cl. 260—570 D 7 Claims  
A continuous process for the production of diamine-rich mixtures of polyamines of the polyamino-polyarylpolyethylene type obtained by condensing aromatic amines with formaldehyde or formaldehyde precursors.

3,825,599

**PERFLUOROMETHYLPROPIONYLKETENE**

David C. England, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 28, 1972, Ser. No. 267,126

Int. Cl. C07c 49/22

U.S. Cl. 260—585.5 4 Claims  
2-(Trifluoromethyl)perfluoropentene-2 reacts with an alkali metal lower alkoxide to give cis- and trans-alkyl-2-(trifluoromethyl)-1,1,4,4,5,5,5-heptafluoro-3-alkoxy-pent-2-enyl ether which is then reacted with sulfur trioxide to give perfluoromethyl propionylketene. On contacting perfluoromethylpropionylketene with an alkali metal fluoride in a polar solvent between room temperature and 150° C., three products are obtained, the proportions varying with the conditions. With a catalytic amount of alkali metal fluoride or silver oxide the product is mainly a dimer below 60° C. Above 60° C. a pyranopyran-2,5-dione is formed. If an equi-molar amount of alkali metal fluoride is employed the product is a metal derivative of pyran-4-one.

Perfluoromethylpropionylketene and the above derivatives are all useful as waterproofing agents for textiles and paper.

Also disclosed is a method of separating perfluoromethylpropionylketene from by-product alkyl sulfonates by contacting the mixed vapors with an alkali metal fluoride at 250° C. to 700° C.

3,825,600

**PROCESS FOR THE PREPARATION OF UNSATURATED CARBONYL COMPOUNDS**

Takashi Ohara and Michio Ueshima, Nishinomiya, and Isao Yanagisawa, Ikeda, Osaka, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

No Drawing. Filed May 25, 1971, Ser. No. 146,848

Int. Cl. C07c 45/02

U.S. Cl. 260—604 R 4 Claims  
A process for the preparation of unsaturated carbonyl compounds which comprises catalytically by oxidizing an olefin selected from the group consisting of propylene and isobutylene in the vapor phase in the presence of catalytic oxide in which the atomic ratio among the constituent metallic elements, Co:Fe:Bi:W:Mo:Si:Z is within the range of 2.0–20.0:0.1–10.0:0.1–10.0:5–10.0:2.0–11.5:0.5–15.0:0.005–1.0, with the proviso that W plus Mo equals 12.0, and Z stands for an alkali metal.

3,825,601

**HYDROFORMYLATION OF INTERNAL OLEFINS**

Leonard E. Rennick, Philadelphia, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,804

Int. Cl. C07c 45/08

U.S. Cl. 260—604 HF 6 Claims  
Hydroformylation of internal olefins, as opposed to terminal olefins, to produce linear aldehydes in improved

yields, is achieved by the addition of a sulfonic acid-type ion exchange resin to catalysts of the formula



where Ph is phenyl.

3,825,602

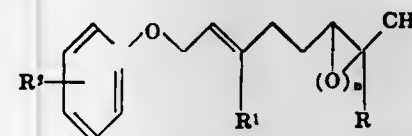
**CERTAIN GERANYL PHENYL ETHERS AND THEIR EPOXIDES AND THEIR USE IN CONTROLLING INSECTS**

Ferenc M. Pallos, Pleasant Hill, Hualin Lee, Palo Alto, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Sept. 8, 1969, Ser. No. 856,140, which is a continuation-in-part of abandoned application Ser. No. 815,229, Apr. 10, 1969. Divided and this application Feb. 7, 1972, Ser. No. 224,263

Int. Cl. C07c 43/20, 149/00

U.S. Cl. 260—609 R 20 Claims  
Compounds having the formula



in which R and R<sup>1</sup> are independently methyl or ethyl; n is the integer zero or one; R<sup>2</sup> is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, halogen, nitro, lower alkylthio, or certain heterocyclic radicals; the use of these compounds in controlling insects; and a method of preparing certain intermediates which are useful in preparing certain of the compounds.

3,825,603

**PREPARATION OF ETHERS**

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,351

Int. Cl. C07c 41/06

U.S. Cl. 260—612 D 9 Claims  
Symmetrical and unsymmetrical ethers may be prepared by the addition of an olefin to an alcohol in the presence of a catalyst comprising a vanadium-containing compound at reaction conditions which include a temperature in the range of from about 50° to about 300° C. and a pressure in the range of from about atmospheric to about 100 atmospheres.

3,825,604

**PROCESS FOR PREPARING CATECHOL AND HYDROQUINONE**

Katsuto Matsuzawa, Akira Matsumura, and Iwao Takagishi, Tokyo, and Kenji Yoshida, Kawasaki, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,214

Claims priority, application Japan, Dec. 30, 1970, 46/125,873

Int. Cl. C07c 37/00

U.S. Cl. 260—621 G 11 Claims  
Catechol and hydroquinone can be advantageously manufactured on an industrial scale by oxidizing phenol with hydrogen peroxide, wherein the concentration of phenol feed is adjusted to above 10%, by weight, based on the total weight of feed, in the presence of an iron catalyst compound wherein the concentration of iron compound is adjusted to below 1 mole percent based on the phenol.

3,825,605

**OXIDATION OF ISOPARAFFINS TO TERTIARY ALCOHOLS**

Byron E. Johnston, Califon, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,429

Int. Cl. C07c 27/12, 31/12

U.S. Cl. 260—632 C 7 Claims  
A process for effecting the liquid phase oxidation of an isoparaffin, such as isobutane, to the corresponding tertiary alcohol. The reaction is conducted in the presence of a catalyst having the following formula:



wherein M is cobalt or chromium, M' is selected from the group consisting of cobalt, manganese, iron, chromium and aluminum, M'' is molybdenum or tungsten, w represents the number of oxygen atoms and m and n represents the charge on the anion and cation respectively from which the catalyst is derived and will be described hereinafter. These catalysts may be employed with a suitable support such as alumina.

3,825,606

**FLUOROCYCLOPROPANES AS INHALATION ANESTHETICS**

Gerald J. O'Neill, Arlington, Charles W. Simon, Bedford, and Charles A. Billings, Concord, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Filed June 2, 1972, Ser. No. 258,957

Int. Cl. C07c 23/04

U.S. Cl. 260—648 F 1 Claim  
New compounds 1-chloro-1,2,2-trifluorocyclopropane and 1-bromo-2,2-difluorocyclopropane have been found useful as general inhalation anesthetics.

3,825,607

**SYNTHESIS OF 1-BROMO-TRANS-3, TRANS-5-HEPTADIENE**

Charles E. Descoins and Clive A. Henrick, Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,512

Int. Cl. C07c 21/14

U.S. Cl. 260—654 R 1 Claim  
1-Halo-3,5-heptadiene, prepared by the action of aqueous hydrohalic acid on 1-cyclopropyl-2-buten-1-ol which may be prepared by a Grignard reaction between crotonaldehyde and cyclopropyl magnesium halide or between cyclopropyl cyanide and 1-propynyl magnesium halide. It is useful in preparing 8,10-dodecadienol, a known codling moth sex attractant.

3,825,608

**STABILIZED HALOGENATED HYDROCARBONS**

Kestutis A. Keblys, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,439

Int. Cl. C07c 17/40

U.S. Cl. 260—652.5 R 3 Claims  
Polybrominated hydrocarbons are stabilized by orthoesters such as orthoformates, orthoacetates, orthothioformates and orthothioacetates. For example, acetylene tetrabromide is stabilized with triethyl orthoformate and triethyl orthoacetate.

3,825,609

**MANUFACTURE OF 1,1,1-TRICHLOROETHANE**

Alastair Campbell and Allan Thoburn, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 28, 1970, Ser. No. 75,838

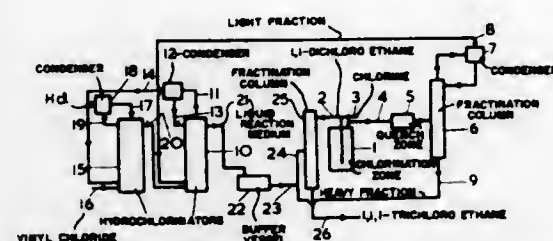
Claims priority, application Great Britain, Oct. 15, 1969, 50,715/69

Int. Cl. C07c 17/00

U.S. Cl. 260—658 R 4 Claims  
In the manufacture of 1,1,1-trichloroethane by the chlorination of 1,1-dichloroethane, a light fraction from



the chlorinator exit gases comprising vinyl chloride, vinylidene chloride and hydrogen chloride is passed to a hydrochlorination zone and a vinyl chloride feedstock is hydrochlorinated in a separate hydrochlorination zone.



The interlocking steps have the advantage that the two reactions can be effectively controlled and there is practically complete consumption of byproducts of the reaction to give desired products.

### 3,825,610 SELECTIVE HYDROGENATION OF NAPHTHALENES

Ryuichi Sonoda and Tadayuki Ohmae, Niihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan  
No Drawing. Filed June 19, 1972, Ser. No. 264,086  
Claims priority, application Japan, June 19, 1971, 46/44,098  
Int. Cl. C07c 5/10

U.S. Cl. 260—667

5 Claims

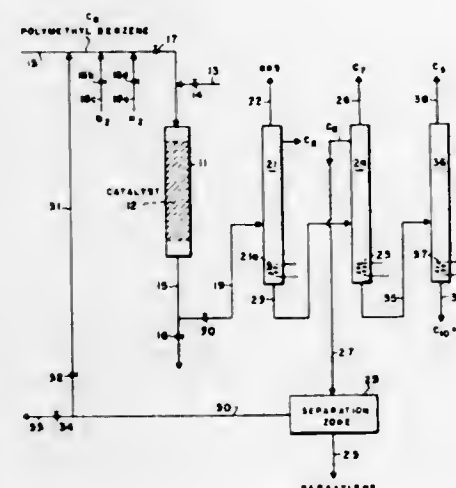
An improved process for the selective hydrogenation of alkylnaphthalenes or naphthalene to alkylnaphthalene or tetrahydronaphthalene comprising using a fixed bed of a hydrosulfurization catalyst, and an organic compound as a diluent which is quite soluble in the alkylnaphthalenes and naphthalene and is volatile under the hydrogenation reaction conditions is disclosed.

3,825,611  
ISOMERIZATION OF POLYMETHYLBENZENES  
Edward F. Wadley and Robert D. Wesselhoft, Baytown, Tex., and Glen P. Hamner, Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 16, 1970, Ser. No. 98,522  
Int. Cl. C07c 5/24, 15/08

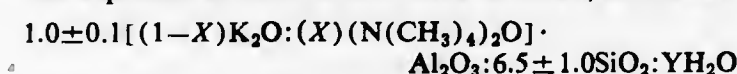
U.S. Cl. 260—668 A

16 Claims



Non-equilibrium mixtures of polymethylbenzenes such as ortho-, meta-, and paraxylene, ethylbenzene, the tri-

methylbenzenes and the tetramethylbenzenes, and the like are isomerized by contacting them in the vapor phase with a catalyst comprising a noble metal on a crystalline aluminosilicate base such as  $H_2CaK_2Na_2Al_2Si_6O_{17} \cdot 5H_2O$ , or the synthetic crystalline aluminosilicate having a composition expressed in terms of mol ratios of oxides, as follows:



wherein X has a value of from about 0.001 to about 0.2, and Y has a value from 0 to about 10, said zeolite base being in the form of the corresponding hydrogen zeolite which is impregnated or exchanged with a sufficient amount of an aqueous solution of specific noble metal isomerization component to form a catalyst on drying.

3,825,612  
DEHYDROGENATION WITH A MULTI-COMPONENT CATALYST  
Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
No Drawing. Application Oct. 16, 1970, Ser. No. 81,512, which is a continuation-in-part of application Ser. No. 15,960, Mar. 2, 1970, both now abandoned. Divided and this application Nov. 3, 1972, Ser. No. 303,470  
Int. Cl. C07c 5/24

U.S. Cl. 260—668 D

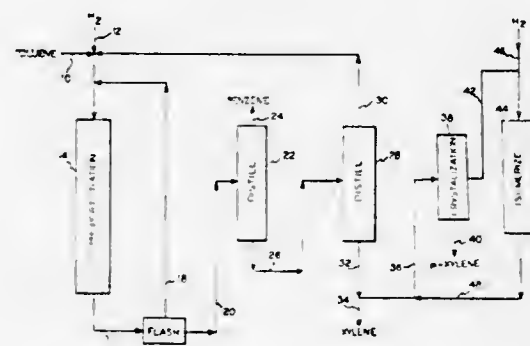
23 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a nickel component, a Group IVA metallic component and an alkali or alkaline earth component with a porous carrier material. A specific example of the disclosed dehydrogenation method is a method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon at dehydrogenation conditions with a catalyst comprising a combination of a platinum component, a nickel component, a germanium component and an alkali or alkaline earth component with an alumina carrier material. The amounts of the catalytically active components contained in this last composite are, on an elemental basis, 0.01 to 2 wt. percent platinum, 0.01 to 5 wt. percent nickel, 0.01 to 5 wt. percent germanium and 0.1 to 5 wt. percent of the alkali or alkaline earth metal.

3,825,613  
ALKYL TRANSFER OF ALKYL AROMATICS WITH CHROMIUM OR VANADIUM AND MANGANESE AND TIN METALS ON MORDENITE  
Ronald A. Kmecak and Stephen M. Kovach, Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.  
Filed Apr. 10, 1972, Ser. No. 242,758  
Int. Cl. C07c 3/62

U.S. Cl. 260—672 T

10 Claims



Alkyl transfer, such as disproportionation, of alkyl aromatics is accomplished by contacting an alkyl aromatic feed material with a catalyst comprising chromium or

vanadium and promoter consisting of a mixture of tin and manganese all supported on a synthetic mordenite.

### 3,825,614 RECOVERY OF META-XYLENE BY SELECTIVE CRYSTALLIZATION

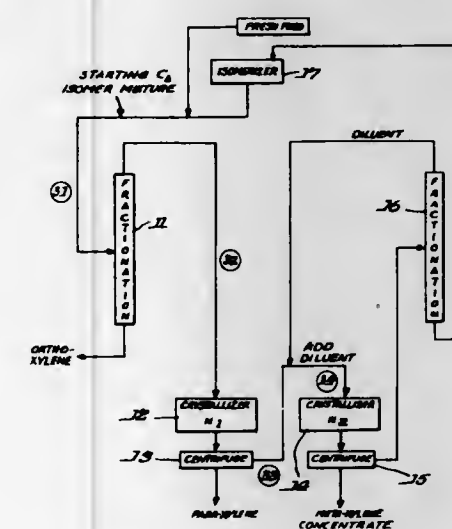
Alan G. Bemis, John K. Darin, and Melvern C. Hoff, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 11, 1972, Ser. No. 279,854

Int. Cl. C07c 7/14

U.S. Cl. 260—674 A

22 Claims



A process is provided for selectively separating meta-xylene from a mixture of  $C_8$  isomers by establishing a unique set of process conditions in which para-xylene is crystallized at an unexpectedly low rate relative to the rate at which metaxylene is crystallized. By preparing a mixture of  $C_8$  isomers containing: (1) a substantially eutectic mixture of meta- and para-xylene, (2) an adjusted ortho-xylene concentration to a level below the eutectic ratio of ortho- and meta-xylene, and (3) an adjusted para-xylene concentration of about 10 mole percent or less para-xylene in the mixture, and by cooling this mixture at a temperature and for a time sufficiently short to provide a slurry of crystals enriched in meta-xylene relative to the ratio of meta- and para-xylene normally obtained in crystallization to thermodynamic equilibrium, the recovery of high purity meta-xylene can be effected.

3,825,615  
ETHYLENE OLIGOMERIZATION PROCESS  
Eugene F. Lutz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 24, 1973, Ser. No. 400,486

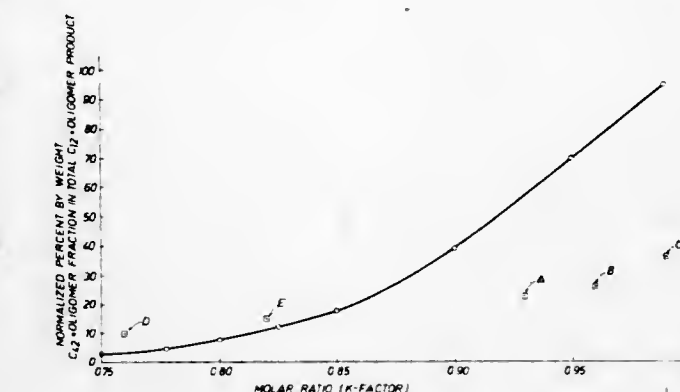
Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

9 Claims

A process is described for oligomerizing ethylene to a mixture of higher, linear, alpha-olefins having a molecular weight distribution which differs substantially from the geometric distribution pattern conventionally obtained in that the product is made up in large proportion of oligomers in the intermediate or  $C_{12}$  to  $C_{42}$  carbon number range while the relative quantity of higher oligomers of more than 42 carbon atoms is substantially reduced. This process comprises reacting ethylene in a solvent selected from the class consisting of alpha, omegaalkandiol of

4 to 7 carbon atoms and alkylene carbonates of 3 to 7 carbon atoms in the presence of a catalyst composition produced by contacting in the presence of ethylene (1)



a simple divalent nickel salt, (2) a boron hydride reducing agent and (3) dicyclohexylphosphinopropionic and/or an alkali metal salt thereof.

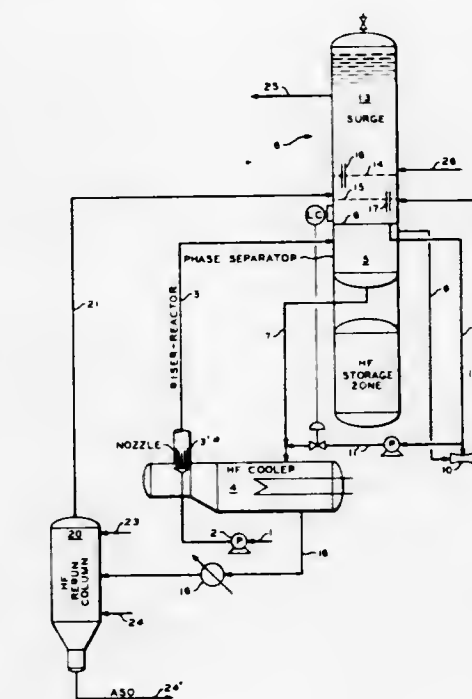
3,825,616  
TREATING ALKYLATE-CONTAINING HYDRO-CARBON WITH HF IN A UNITARY VESSEL  
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 3, 1971, Ser. No. 177,586

Int. Cl. C07c 3/54

U.S. Cl. 260—683.48

6 Claims



Upon separation of an alkylation effluent from an isoparaffin-olefin hydrogen fluoride alkylation into a hydrocarbon phase and an acid phase, the hydrocarbon phase, containing organic fluorides, is contacted with relatively pure HF resulting from a rerun or purification of HF in the presence of isoparaffin which acts to convert and, therefore, to reduce organic fluoride content of the HF being rerun. Additional rerun HF substantially free from or having a considerably reduced organic fluoride content can be used to further reduce organic fluoride in said hydrocarbon phase.



### 3,825,617 METHOD FOR STARTING UP AN ALKYLATION SYSTEM

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 117,158, Feb. 19, 1971. This application Mar. 16, 1973, Ser. No. 342,107

Int. Cl. C07c 3/54

U.S. Cl. 260—683.48 4 Claims  
A process for starting up an isobutane-olefin alkylation unit to produce an alkylation reaction product from isobutane and a C<sub>3</sub>—C<sub>5</sub> olefin using hydrogen fluoride catalyst. The alkylation reactor, settler, and isobutane stripper are dried by recycling isobutane therethrough at the rate used during alkylation operations. Circulation of fresh, substantially pure hydrogen fluoride through the reactor and settler is then started, the isobutane recycle rate to the reactor is reduced to a low level, olefin feed is charged to the reactor, and the reactor temperature is maintained at about 115° F. to 200° F. for about 0.1 hour to about 48 hours. During this period of high temperature, low isobutane recycle operation, the hydrogen fluoride is diluted to about 90 weight percent purity with soluble organic compounds. The reactor temperature is then reduced to about 50° F. to about 110° F., the isobutane recycle rate is increased to the original level, and normal alkylation operations are commenced.

### 3,825,618 CURABLE ORGANOPOLYSILOXANES

Anthony Enrico Pepe, Sylvania, Ohio, assignor to Stauffer Chemical Company  
No Drawing. Continuation of abandoned application Ser. No. 780,290, Nov. 29, 1968. This application Dec. 10, 1970, Ser. No. 97,021

Int. Cl. C08g 47/00

U.S. Cl. 260—827 19 Claims  
A curable organopolysiloxane composition comprising a hydroxyl-terminated organopolysiloxane, an organometallic catalyst, and a curing agent consisting of polyfunctional silanes or siloxanes having a terminal group selected from the class consisting of an oxirane, cyano radical, and a carboxyl radical and, if desired, polyalkoxysilanes or polyalkoxysiloxanes. These organopolysiloxane compositions will result in a cured silicone rubber having improved elongation, tear strength, and reduced durometer.

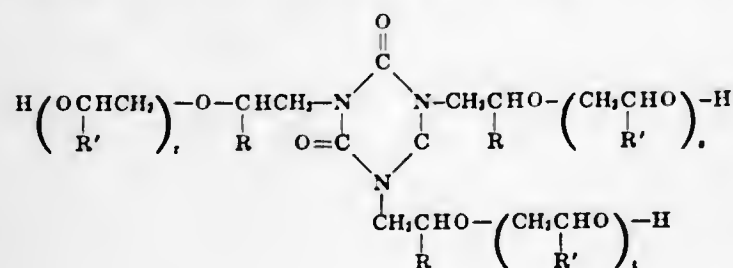
### 3,825,619 ANTISTATIC FIBER CONTAINING HIGH MOLECULAR WEIGHT TRIS(B-HYDROXYALKYL)-ISOCYANURATE-ALKYLENE OXIDE ADDUCTS

Gene C. Weedon, 5431 Lingle Lane, Richmond, Va. 23234, and Edwin D. Little, 505 Pitney Place, Convent Station, N.J. 07961

No Drawing. Continuation-in-part of application Ser. No. 80,488, Oct. 13, 1970, which is a continuation-in-part of application Ser. No. 873,689, Nov. 3, 1969, both now abandoned, and a division of application Ser. No. 215,974, Jan. 3, 1972, now Patent No. 3,741,966. This application Mar. 5, 1973, Ser. No. 337,778

Int. Cl. C08g 41/04

U.S. Cl. 260—857 5 Claims  
It has been found that an antistatic fiber of polyamide or polyester can be prepared by uniformly dispersing in the polymer between about 1 percent and about 10 percent of a compound represented by the formula



wherein R and R' are independently at each occurrence hydrogen, methyl or ethyl and r, s, and t are integers from 31 to about 200. Preferably, the compound is a block copolymer of ethylene oxide, propylene oxide and tris(B-hydroxyethyl)isocyanurate having a molecular weight greater than 9,000, with the ethylene oxide moiety making up 10 to 95 percent of the molecular weight of the compound.

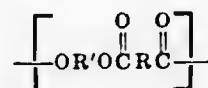
### 3,825,620 ABA BLOCK POLYMERS OF POLYESTER AND POLYETHERS

Joseph Victor Koleske, Rene Marie-Joseph Roberts, and Frank Paul Del Giudice, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 30, 1970, Ser. No. 102,924, now Patent No. 3,725,352, dated Apr. 3, 1973. Divided and this application Oct. 17, 1972, Ser. No. 298,378

Int. Cl. C08g 39/10

U.S. Cl. 260—873 3 Claims  
The invention relates to novel, solid, substantially water-insoluble ABA block polymers in which the A blocks comprise recurring linear units of the formula



wherein the substituents R and R' are divalent aliphatic groups and in which the B block comprises recurring oxy-alkylene units. The block polymers have utility as plasticizers for polyvinyl chloride resins and as dye assists for polypropylene fiber.

### 3,825,621 METHOD OF GRAFT POLYMERIZATION AND POLYMERS PRODUCED THEREBY

Emory A. Ford, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,758

Int. Cl. C08f 15/00

U.S. Cl. 260—878 R 10 Claims  
A rubber modified polymer blend is prepared from a relatively small particle elastomer which is agglomerated to a particle size of about 0.2 to 1.0 micron by admixture with a more hydrophilic polymer at a pH of about 3.0 to 10.5. Following agglomeration, the latex is admixed with a vinylidene monomer formulation and grafting conditions are established to produce polymerization of the vinylidene formulation and grafting of at least a portion of the polymer being formed onto the agglomerated elastomer. The elastomer should have a glass transition temperature below 100° Centigrade and the agglomeration takes place at a temperature of 0° to 100° Centigrade and above the glass transition temperature of the elastomer.

### 3,825,622 IMPACT MODIFIED BLENDS OF VINYL CHLORIDE POLYMERS, LACTONE GRAFT COPOLYMERS AND STYRENE-DIENE-STYRENE BLOCK COPOLYMERS

Lloyd M. Robeson, Lebanon, and Louis A. Pilato, Bound Brook, N.J., and Robert E. Godlewski, Mahopac, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 20, 1972, Ser. No. 307,843

Int. Cl. C08f 15/00, 19/00

U.S. Cl. 260—876 B 7 Claims  
Vinyl chloride polymer compositions having a Masland cold crack test value of about -30° C. have been provided by combining lactone graft copolymers together with a styrene-diene-styrene block copolymer.

### 3,825,623 PROCESS FOR PREPARING BLOCK COPOLYMERS OF ALPHA METHYL STYRENE AND CONJUGATED DIOLEFINS

Ronald Turner La Flair, Sarnia, Ontario, Canada, assignor to Polysar Limited, Sarnia, Ontario, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 713,301, Mar. 15, 1968. This application May 7, 1971, Ser. No. 141,395

Claims priority, application Canada, Apr. 1, 1967, 486,797; Jan. 25, 1968, 10,718

Int. Cl. C08f 19/00, 19/06, 19/08

U.S. Cl. 260—879 8 Claims  
Improved thermoplastic rubbery block copolymers have terminal blocks of polyalpha-methylstyrene and at least one non-terminal block of an elastomeric polymer, such as butadiene or isoprene.

### 3,825,624 WATER-SOLUBLE SIZING AGENT

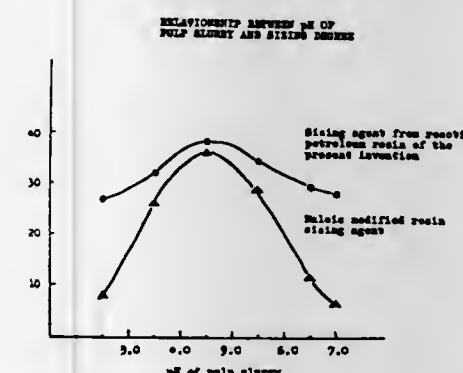
Kakichi Hirai, Ninomiya-machi, Hideo Hayashi, Yokohama, and Yoichi Hiratsuka, Kawasaki, Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 681,195, Nov. 7, 1967, which is a continuation-in-part of application Ser. No. 281,448, May 10, 1963, both now abandoned. This application Jan. 21, 1972, Ser. No. 219,646

Claims priority, application Japan, May 23, 1962, 37/20,378

Int. Cl. C08f 19/00

U.S. Cl. 260—879 2 Claims



A water-soluble sizing agent obtained by reacting the resin with unsaturated carboxylic acid; said resin being prepared by polymerizing hydrocarbon mixture of a thermally cracked petroleum oil fraction having an unsaturated aromatic hydrocarbon content in the range of 15 to 80% by weight and conjugated diolefin content in the range of 20 to 85% by weight in the presence of boron trifluoride catalyst.

### 3,825,625 PROCESS FOR PRODUCING HIGH IMPACT RESISTANCE RESINS

Teizo Kudo, Ohimachi, and Saizo Ikeda, Yuzo Sonoyama, and Motoharu Kotani, Sakai, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Dec. 27, 1971, Ser. No. 212,616

Claims priority, application Japan, Dec. 30, 1970, 46/122,234

Int. Cl. C08f 1/04, 1/11, 19/08

U.S. Cl. 260—880 R 6 Claims  
Pearl-like spherical thermoplastic resin beads having a high impact resistance and of a controlled relatively small particle size are made by subjecting a mixture or a solution of a rubber elastomer in an aromatic monoalkenyl monomer or a mixture of an aromatic monoalkenyl monomer and a copolymerizable monovinyl monomer to a bulk-suspension two stage polymerization process. A predetermined amount of a metallic soap or an alkylene bis fatty acid amide is added to the mixture or solution before the start of the bulk polymerization in an amount within the range of 0.001 to 0.5% by weight.

### 3,825,626 ETHYLENE POLYMER COMPOSITION HAVING ENHANCED PHOTODEGRADABILITY

Michael Calvin McGaugh, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 6, 1971, Ser. No. 160,139

Int. Cl. C08f 15/04

U.S. Cl. 260—897 A 5 Claims  
Photodegradability of ethylene polymer containing a photosensitizing material is enhanced by incorporating therein a minor amount of polypropylene. The resultant photodegradable blends are useful as molding or extrusion compositions for the production of disposable plastic articles, e.g., wrappings, containers, etc., which degrade rapidly when exposed to sunlight and other ultraviolet light sources.

### 3,825,627 ETHYLENE POLYMER COMPOSITION HAVING ENHANCED PHOTODEGRADABILITY

Michael C. McGaugh, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 160,139, July 6, 1971. This application May 30, 1972, Ser. No. 257,831

Int. Cl. C08f 15/04

U.S. Cl. 260—897 A 14 Claims  
Photodegradability of ethylene polymer containing a photosensitizing material such as tris(N,N-di-n-butylthiocarbamato)iron (III) is enhanced by incorporating therein a minor amount of polypropylene. The resultant photodegradable blends are useful as molding or extrusion compositions for the production of disposable plastic articles, e.g., wrappings, containers, etc., which degrade rapidly when exposed to sunlight and other ultraviolet light sources.

### 3,825,628 PASTES CONTAINING ACID, AMINES AND PHOSPHORIC ACID ESTERS

Gerhard Mietens, Effern, Gerd Kohler, Junkersdorf, Hans Haas, Knapsack, and Hilmar Roszinski, Huth-Kendenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,523

Claims priority, application Germany, Mar. 21, 1970, P 20 13 627.0

Int. Cl. C07f 9/02

U.S. Cl. 260—920 7 Claims  
Pastes containing acids and long-chain amines in combination with between 0.1 and 25 weight percent of one or more phosphoric acid esters, based on the paste, and process for making such pastes.

### 3,825,629 BENZENE PHOSPHONATES

Kurt Hofer, Munchenstein, Basel-Land, and Guenther Tscheulin, Riehen, Basel-Stadt, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,079

Claims priority, application Switzerland, Oct. 22, 1970, 15,605/70; June 30, 1971, 9,597/71

Int. Cl. C07d 105/04; C07f 9/46

U.S. Cl. 260—932 10 Claims  
The purpose of the invention are new benzene phosphonic acid compounds in which two to four benzene nuclei are bound together and which contain one to three phosphorus atoms. The new compounds are free acids, their salts with inorganic cations, their esters, thioesters or amides. The invention concerns also the manufacture of these benzene phosphonic acid compounds and their use for the stabilization of organic materials.



3,825,630

## PHOSPHONATE CARBAMATES

Stephen B. Sello, Cedar Grove, and Bernard J. Gaj, Montclair, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Original application June 18, 1971, Ser. No. 154,690, now Patent No. 3,758,554. Divided and this application Apr. 30, 1973, Ser. No. 355,837

Int. Cl. C07f 9/40

U.S. Cl. 260—938

3 Claims

This invention relates to phosphorus-containing carbamates having at least one N-methylol or N-alkoxymethyl group. These compounds can be used to impart durable flame-retardant properties to cellulose-containing substrates.

3,825,631

ACETYL-BUTYL-CIS-1-PROPENYL PHOSPHONATE  
Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application May 15, 1968, Ser. No. 729,388, now Patent No. 3,625,982. Divided and this application Dec. 1, 1970, Ser. No. 94,176

Int. Cl. A01n 9/36; C07f 9/40

U.S. Cl. 260—941

1 Claim

A new class of *cis*-1-propenyl-phosphinite derivatives are disclosed. These products are useful as intermediates in the preparation of (+) and (−) (*cis*-1,2-epoxypropyl)phosphonic acids which have utility as antibiotics.

3,825,632

## PHOSPHORUS-CONTAINING AMIDINES

Ferenc M. Pallos, Pleasant Hill, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

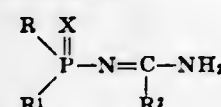
No Drawing. Original application Dec. 15, 1969, Ser. No. 885,263, now Patent No. 3,734,980. Divided and this application July 24, 1972, Ser. No. 274,553

Int. Cl. C07f 9/24, 9/36, 9/44

U.S. Cl. 260—944

3 Claims

Compounds of the formula:



in which R is lower alkyl or lower alkoxy; R<sup>1</sup> is lower alkoxy or lower alkylthio; R<sup>2</sup> is hydrogen, lower alkyl, phenyl; mono or di-substituted phenyl; and X is oxygen when R<sup>1</sup> is lower alkylthio and sulfur when R<sup>1</sup> is lower alkoxy as insecticides and acaricides, and a process for preparing the compounds above having X be oxygen.

3,825,633

## PHOSPHORODITHIOLATES

Hiroshi Tsuchiya, Ashiya, Kunko Mukai, Nishinomiya, Akio Kimura, Takarazuka, Keimei Fujimoto, Kyoto, Toshiaki Ozaki and Sigeo Yamamoto, Toyonaka, Yoshitoki Okuno, Nishinomiya, Taizo Ogawa, Minoo, Toshiyuki Wakatsuki, Kyoto, and Yoshihiko Nishizawa, Nara, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Application Aug. 5, 1970, Ser. No. 61,468, now Patent No. 3,725,546, which is a continuation-in-part of abandoned application Ser. No. 690,725, Dec. 15, 1967. Divided and this application Nov. 21, 1972, Ser. No. 308,585

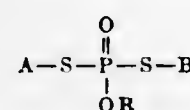
Claims priority, application Japan, Dec. 20, 1966, 41/83,746; Feb. 18, 1967, 42/10,576; Mar. 10, 1967, 42/15,087

Int. Cl. A01n 9/36; C07f 9/16

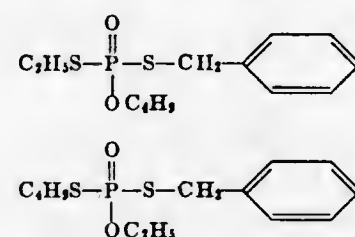
U.S. Cl. 260—956

1 Claim

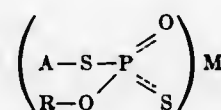
Method for controlling insects and fungi, in which the insects and fungi are contacted with a phosphorodithiolate of the formula,



wherein R is a lower alkyl; A is a lower alkyl, etc.; and B is phenylalkyl, etc. Two typical examples of the phosphorodithiolates are shown by the formula



The compounds can be prepared by condensing a dithioate of the formula,



wherein A and R are as mentioned above M is an alkali metal or ammonium group, with a halide of the formula,

B·Hal

wherein B is as mentioned above and Hal is halogen.

3,825,634

## N-ARALKANOYL AND N-ARALKENOYL DERIVATIVES OF O,S-DIHYDROCARBYLPHOSPHOROAMIDODITHIOLATES AND S,S-DIHYDROCARBYLPHOSPHOROAMIDODITHIOLATES

Philip S. Magee, Ignatio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 13,846, Feb. 24, 1970, now Patent No. 3,716,600, which is a continuation-in-part of abandoned application Ser. No. 810,383, Mar. 25, 1969. This application Dec. 21, 1972, Ser. No. 317,476

Int. Cl. A01n 9/36; C07f 9/24

U.S. Cl. 260—956

6 Claims

N-aralkanoyl and N-aralkenoyl derivatives of O,S-dihydrocarbyl phosphoroamidodithiols and O,S-dihydrocarbylphosphoroamidodithiols have a high degree of insecticidal activity with relatively low mammalian toxicity.

3,825,635

## 2-CHLOROETHANE-(THIONO)-PHOSPHONIC ACID AMIDO ESTERS

Wolfgang Hofer, Wuppertal-Vohwinkel, Reinhard Schliebs, Cologne, Robert Schmidt, Leverkusen, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

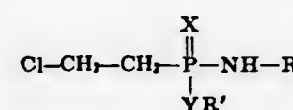
No Drawing. Filed Mar. 1, 1971, Ser. No. 119,912  
Claims priority, application Germany, Mar. 4, 1970, P 20 10 119.3

Int. Cl. C07f 9/40, 9/42, 9/44

U.S. Cl. 260—959

17 Claims

Certain novel 2-chloroethane-(thiono)-phosphonic acid amido compounds of the formula



in which

X and Y, which may be the same or different, are oxygen or sulfur,

R is hydrogen or alkyl, and

R' is alkyl, or, if R is hydrogen or Y is sulfur,

R' may additionally be phenyl which may be substituted by hydroxy, (lower) alkyl, halogen or nitro.

possess marked plant growth regulant properties, e.g., selective herbicidal activity, growth promoting and growth altering properties.

3,825,636

## O-ETHYL S-PROPYL-DITHIOPHOSPHORIC ACID PHENYL OR NAPHTHYL ESTERS

Shigeo Kishino, Tokyo, Akio Kudamatsu, Kanagawa-ken, Iwao Takase, Tokyo, Kozo Shiokawa, Kanagawa-ken, and Shin-ichi Yamaguchi, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,087

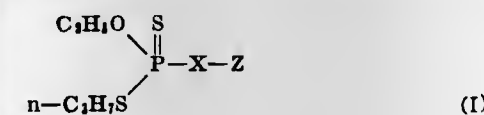
Claims priority, application Japan, Mar. 13, 1970, 45/20,845

Int. Cl. A01n 9/36; C07f 9/18

U.S. Cl. 260—964

7 Claims

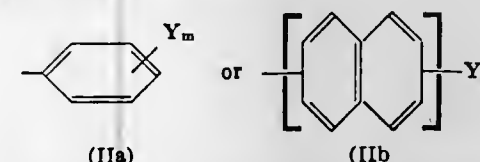
O-ethyl-S-n-propyl-dithiophosphoric acid phenyl or naphthyl esters, i.e. O-ethyl-S-n-propyl-O- or S-optional substituted phenyl or naphthyl-phosphorothionothiol or dithiolates, of the formula



in which

X is an oxygen or sulfur atom, and

Z is a group of the formula



Y is a halogen atom or a lower alkyl, lower alkoxy, lower alkylmercapto, lower alkylsulfinyl, nitro, cyano or phenyl group, and m is 0, 1, 2 or 3,

which possess insecticidal, acaricidal and nematocidal properties.

3,825,637

## INJECTION MOLDING OF FOAM CORED SANDWICH STRUCTURES

Maurice Henry Robin, Alderley Edge, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 93,917, Nov. 30, 1970, now Patent No. 3,767,742, which is a continuation of abandoned application Ser. No. 747,328, July 24, 1968. This application May 3, 1971, Ser. No. 139,776

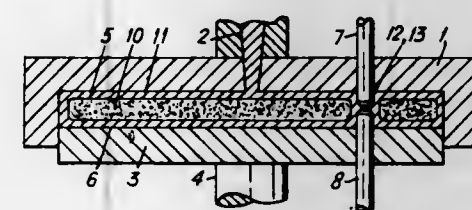
Claims priority, application Great Britain, July 26, 1967, 34,400/67; Apr. 30, 1968, 20,470/68

The portion of the term of the patent subsequent to Oct. 23, 1990, has been disclaimed

Int. Cl. B29d 9/00, 27/00; B32b 7/02

U.S. Cl. 264—55

11 Claims



Injection molded solid skinned foam core sandwich structures are made using an enlargeable mold. During the molding operation, thin, non-foamed portions, such as hinges, or areas which can subsequently be removed to provide orifices in the molding, are made after the mold cavity has been filled with the foamable composition by

effecting relative movement between a tool defining the non-foamed portion and one of the opposed surfaces of the mold.

3,825,638

## METHOD FOR PRODUCING COLD BOUND AGGLOMERATES FROM PARTICULATE MINERAL CONCENTRATES

Per Gudmar Kihlstedt, Bromma, Sweden, assignor to AB Cold-Bound Pellets, Djursholm, Sweden

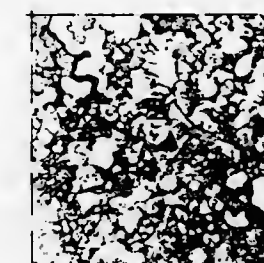
Filed Oct. 14, 1971, Ser. No. 189,080

Claims priority, application Sweden, Oct. 19, 1970, 14,096/70

Int. Cl. C04b

U.S. Cl. 264—63

17 Claims



A method for producing cold bound agglomerates from particulate iron oxide containing mineral concentrates using a steam hardenable binder. The binder is ground down together with iron oxide material at a high energy input to produce a fine grain additive material. The additive material is then mixed with the mineral concentrates and agglomerates are formed from the mixture and steam hardened.

3,825,639

## METHOD OF ENCAPSULATING ELECTRICAL EQUIPMENT

Edward G. Bulin, Reedsburgh, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

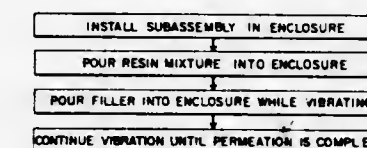
Continuation-in-part of application Ser. No. 223,178, Feb. 3, 1972. This application Aug. 30, 1972, Ser. No. 284,772

The portion of the term of the patent subsequent to Mar. 5, 1991, has been disclaimed

Int. Cl. B29c 6/02

U.S. Cl. 264—72

6 Claims



A method of encapsulating electrical equipment comprises the steps of (a) placing the electrical equipment into an enclosure or casing, (b) pouring a resin-catalyst mixture into the enclosure, (c) pouring a filler into the enclosure while vibrating the enclosure at a frequency that is continually maintained at substantially the resonant frequency of the enclosure, the equipment, the resin-catalyst mixture and the portion of the filler added to the enclosure, and (d) continuing the vibration of the enclosure at the resonant frequency of the enclosure, the equipment, the resin-catalyst mixture and the filler until the resin-catalyst mixture has substantially permeated the filler.



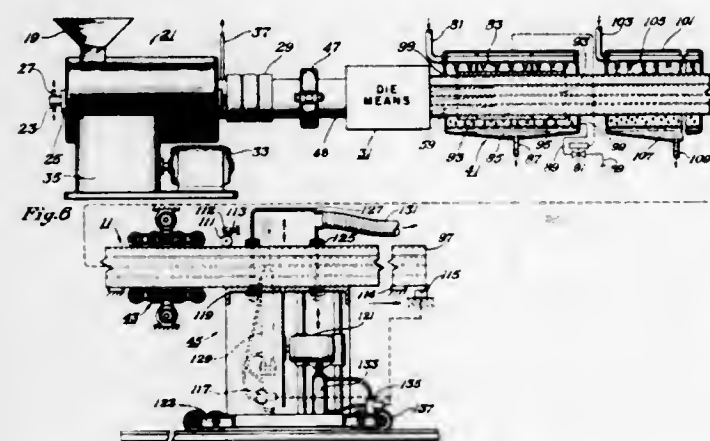
### 3,825,640 PROCESS FOR MANUFACTURING A POROUS, SOLID, ARTICLE

Theodore Maieron, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio  
No Drawing. Filed Apr. 27, 1972, Ser. No. 248,157  
Int. Cl. B29c 1/14

**U.S. Cl. 264—87 2 Claims**  
A process for manufacturing an article is disclosed wherein the article includes the features of a solid and a liquid and is also porous and, therefore, relatively lightweight. The article comprises a mass of substantially spherical, liquid-containing, microcapsules adhered together at capsule-to-capsule points of contact by dot amounts of cured adhesive material such that intercapsule voids are maintained to provide porosity. One embodiment of the process includes steps of filling a mold with the microcapsules and introducing and withdrawing a liquid, curable, adhesive material to leave only a residual amount of the curable adhesive material at capsule-to-capsule points of contact.

### 3,825,641 METHOD OF FORMING MULTIPLE PASSAGEWAY PLASTIC CONDUIT

Louis H. Barnett, 3631 Encanto Drive,  
Fort Worth, Tex. 76109  
Original application June 4, 1971, Ser. No. 149,910, now abandoned. Divided and this application July 20, 1972, Ser. No. 273,359  
Int. Cl. B29c 17/07, 25/00; B29d 23/04  
**U.S. Cl. 264—89 6 Claims**



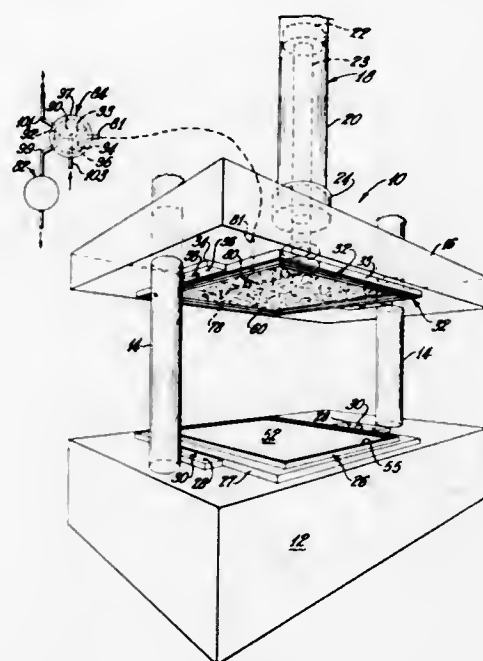
Method for forming conduit having a plurality of longitudinally extending passageways disposed adjacent each other within an exterior wall, the passageways having at least a portion of their interior walls in common with adjacent passageways. The conduit is continuously extruded and sized in a vacuum chamber. Cooling stinger means extending from the die are used to support the conduit until cooled to a non-pliable state. Cooling fluid may be applied interiorly along the passageways so as to effect vertically decreasing pressures within the passageways for further supporting the interior walls thereof.

### 3,825,642 METHOD FOR PRODUCING A FILM-FACED PRODUCT

Jared R. Kies, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation  
Filed Nov. 3, 1971, Ser. No. 195,246  
Int. Cl. B29c 17/04; B29j 5/04  
**U.S. Cl. 264—90 8 Claims**

Method of molding a film-faced product. The method involves placing a body or mass of compressible material such as a body or mass of mineral fibers impregnated with a binder in a contoured molding

matrix with a self-supporting resinous film disposed on a major surface of the body or mass, applying reduced pressure to force the film into intimate contiguous engagement with a contoured matrix, compressing the body

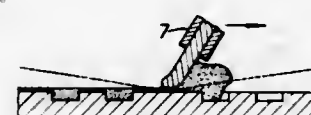


or mass of material in the molding facility, and setting the binder in the molded product. The film facing of the product is adhered to the compressed mass or body and shaped to a high fidelity of configuration of the molding matrix.

### 3,825,643 PRODUCTION OF SHAPED ARTICLES

Edward Francis Herbert Benjamin Hillier, Cheltenham, and Anthony Roger Holmes, Haslemere, England, assignors to Dowty Seals Limited, Tewkesbury, Gloucestershire, England

Filed Apr. 30, 1971, Ser. No. 138,872  
Claims priority, application Great Britain, May 20, 1970, 24,317/70  
Int. Cl. B29b 7/00; B29d 7/02  
**U.S. Cl. 264—161 4 Claims**



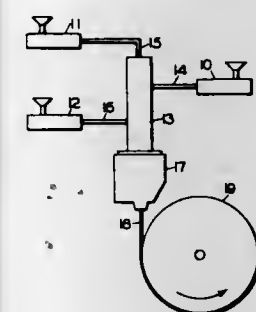
A method for the production of a shaped article using an open mould in which an article-shaping cavity in the mould is filled with a pasty material includes distributing pasty material, over a part at least of the surface of the mould adjacent to and from which the cavity extends, by pressing a foraminous material against the said part of the surface and then removing the foraminous material, enabling the pasty material on the surface to flow to form a thin layer which is joined to the material in the cavity and which has a sufficient strength after setting to allow the article to be pulled from the cavity by pulling the layer, setting the pasty material, and removing the article from the cavity by pulling the layer of material on the surface, to which the article is attached, away from the surface.

### 3,825,644 PROCESS FOR PRODUCING MULTILAMINATE FILM

John M. Hoagland, Pleasant Hill, George M. Tokos, Dublin, and Edward G. Tonn, Oakland, Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation of application Ser. No. 862,126, Aug. 11, 1969, which is a division of application Ser. No. 492,212, Oct. 1, 1965, both now abandoned. This application Jan. 27, 1972, Ser. No. 221,405

Int. Cl. B29f 3/10; B32b 31/00  
**U.S. Cl. 264—171 4 Claims**

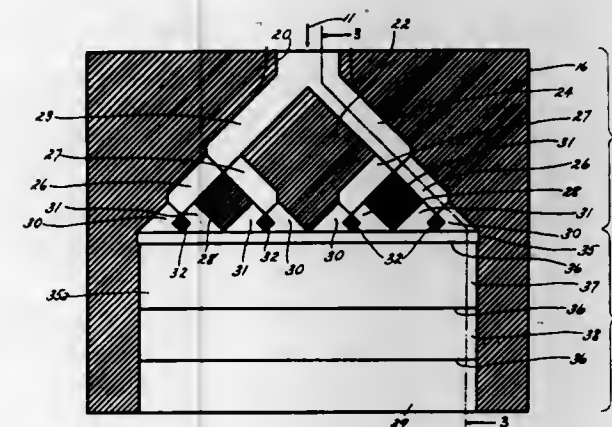


A process for producing multilaminate film by forming a composite resin plug, laterally expanding the composite resin plug widthwise so as to produce a laterally expanded molten plastic resin stream substantially equal in width to that of a multilaminate thermoplastic film which is to be extruded through a long, narrow orifice of a die, and laminarily flowing the expanded molten plastic resin laminate to the long, narrow orifice and meanwhile compressionally convergently reducing the laterally expanded plastic resin stream in thickness to the long, narrow orifice, and extruding the thermoplastic film through the long, narrow orifice.

### 3,825,645 EXTRUSION METHOD AND APPARATUS

Andre Barthelemy Marie Fayet, Puy de Dome, France, assignor to Tri-Cology, Inc., Manhasset, N.Y.

Filed May 10, 1972, Ser. No. 251,972  
Claims priority, application France, May 10, 1971, 7116828  
Int. Cl. B29f 3/00  
**U.S. Cl. 264—177 10 Claims**



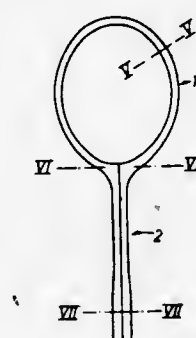
A method and apparatus for extruding thermoplastic material containing a substantial quantity of an inert substance. The material is directed through a multiplicity of diagonal channels in an extrusion head in accordance with a method and apparatus for extruding thermoplastic material containing a substantial quantity of an inert substance.

a triangular distribution such that each particle of material travels a uniform distance in a uniform length of time. The forces acting on each particle at a given distance along its flow path are the same, and the material is subjected to compression as it moves through the head with the result that there is provided an extremely even distribution of the inert substance within the finished product.

### 3,825,646 PROCESS FOR THE MANUFACTURING OF RACKETS FOR TENNIS AND OTHER SIMILAR GAMES

Roger Edmond Delmotte, Mourcourt, Belgium, assignor to Societe Anonyme les Usines de Callenelle en Abrege Saluc, Callenelle, Belgium

Filed Apr. 14, 1972, Ser. No. 244,043  
Int. Cl. B29c 1/08; B29d 9/00  
**U.S. Cl. 264—257 2 Claims**

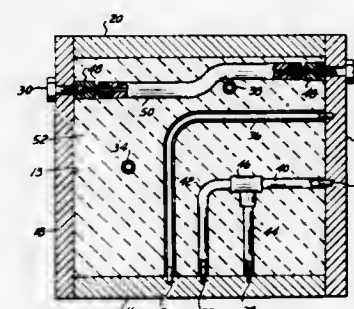


On a core which is stretched in a straight line and has a length corresponding to the periphery of a racket, including the parts of the handle, reinforcing tapes are wound where necessary a fibre material parallel to the core. The core is bent so as to impart to it the form of a racket blank. The materials applied onto the core are impregnated with pre-polymerized synthetic material, either before or after the bending. The blank is placed in a mould so as to give the racket the final shape and to bring about the final polymerization of the pre-polymerized material.

### 3,825,647 METHOD OF MAKING BLOCK MANIFOLD FOR FLUID CONTROL SYSTEMS

Jerry Kirsch, 36 Beacon Hill, Grosse Pointe Farms, Mich. 48236  
Original application Nov. 19, 1970, Ser. No. 91,077, now Patent No. 3,683,960. Divided and this application Oct. 28, 1971, Ser. No. 193,707

Int. Cl. B29d 3/00  
**U.S. Cl. 264—277 2 Claims**



A mold is prepared with separable side and top walls having plugs, pipe couplings or barbed tube connectors seated in the walls thereof. The ends of tubes, preferably



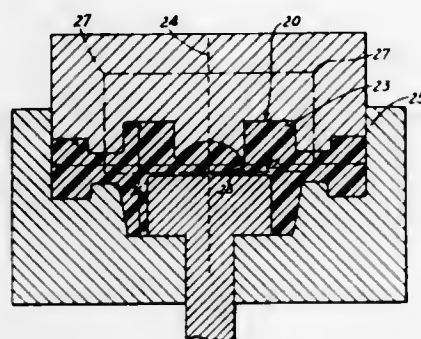
of flexible plastic material, are slipped over the ends of these plugs, pipe couplings or barbed tube connectors within the mold cavity. A protective coating or "release coating" is placed on the inner surface of the mold to prevent adhesion of plastic to the mold walls, whereupon synthetic plastic, preferably transparent, in a fluid state is poured into the mold cavity—preferably the two epoxy resin fluids which, when combined and allowed to set produce a solid transparent epoxy resin body. The synthetic plastic material in which the tubes are thus embedded is permitted to solidify, after which the walls of the mold are withdrawn, leaving the preferably transparent synthetic plastic block with the ends of the tubes or the couplings attached thereto exposed at the sides of the block. The couplings connected to such tubes may optionally be embedded in the plastic body. The various conduits of a fluid system as well as valves may then be connected to the tubes or mounted on and secured to the block in communication with the ports provided by the exposed open ends of certain of the tubes, thereby compressing into a very small space tube circuits which would otherwise occupy a much larger space. Changes in the circuit are easily made by shifting the external circuit tubes between different sets of connections, couplings or ports.

3,825,648

**FORGING OF RIGID CRYSTALLINE PLASTICS**  
Kishor M. Kulkarni, Clarendon Hills, Ill., assignor to ITT Research Institute, Chicago, Ill.  
Filed July 6, 1972, Ser. No. 269,383  
Int. Cl. B29c 1/14

U.S. Cl. 264—322

4 Claims



A method for defect-free forging of rigid crystalline plastics such as acetal plastics, in which a workpiece blank of preselected volume and temperature is placed between the dies of a die cavity at a preselected temperature, the dies are positioned to contact the blank and subsequently closed at a speed between 0.5 and 10 inches per minute, the die cavity is opened, and the forged article is removed.

3,825,649

**PROCESS FOR SEPARATION OF PROTACTINIUM, THORIUM AND URANIUM FROM NEUTRON-IRRADIATED THORIUM**

Alan T. Gresky, Jouko E. Savolainen, and William T. McDuffee, Jr., Oak Ridge, and Russell P. Wischow, Nashville, Tenn., assignors to the United States Atomic Energy Commission

Filed Aug. 7, 1956, Ser. No. 602,686

Int. Cl. C01g 56/00; C22b 61/04

U.S. Cl. 423—4

21 Claims

Protactinium, uranium and thorium are separated from an aqueous nitric acid solution of neutron-irradiated thorium containing these elements and fission products by

contacting, under net nitrate deficient conditions, the acid solution with an organic solution of a trialkyl phosphate in an inert organic diluent, thereby preferentially extracting uranium and thorium into the organic phase while confining protactinium and fission products to the aqueous phase. After scrubbing the organic phase with an aqueous solution of an inorganic nitrate salt to remove small amounts of protactinium and fission products, the two phases are separated and thorium and uranium are separately recovered from the organic phase.

3,825,650

**DECONTAMINATING URANIUM BY REACTION WITH  $\text{ClF}_3$  AND HF AND VOLATIZING THE  $\text{UF}_6$  PRODUCT**

Robert A. Gustison, Knoxville, Harvey A. Bernhardt, Oak Ridge, Eugene J. Barber, Kingston, and Samuel T. Benton, Oak Ridge, Tenn., assignors to the United States Atomic Energy Commission

No Drawing. Filed June 18, 1954, Ser. No. 437,903

Int. Cl. C22b 61/04; C01g 43/06

U.S. Cl. 423—19

6 Claims

1. A fluorination process for the recovery and decontamination of uranium values from extraneous impurities which comprises dissolving said uranium in a reaction zone with a liquid fluorination solution comprising chlorine trifluoride and hydrogen fluoride maintained at a  $\text{ClF}_3$ -HF mole ratio of approximately 0.1–2.0 and at least approximately 0.1 mole  $\text{UF}_6$  mole HF in excess of the HF requirements of the HF- $2\text{ClF}_3$  azeotrope, fractionally distilling the resulting reaction mixture and separately recovering the resulting  $\text{UF}_6$  product and the fraction of said reaction mixture relatively lower boiling than said  $\text{UF}_6$  and returning said low boiling fraction to said reaction zone for the further dissolution of uranium.

3,825,651

**RECOVERY OF GOLD FROM ORES**

Harold J. Helmen, Reno, and Judith A. Eisele, Verdi, Nev., and Dennis D. Fischer, Mitchell, S. Dak., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,198

Int. Cl. C01g 7/00; C22b 11/06

U.S. Cl. 423—44

9 Claims

Gold is recovered from its ores by treating the ores at elevated temperature with gaseous chlorine in the presence of metallic iron, a sulfide of iron, aluminum sulfide or gallium sulfide to form a volatile complex of the formula  $\text{AuMeCl}_6$ , where Me is iron, aluminum or gallium.

3,825,652

**PRODUCTION OF MANGANESE (II) SALT SOLUTIONS**

Eberhard Preisler, Hurth-Knapsack, Kurt Grapentin, Cologne-Zollstock, Ernst Harmsen, Erftstadt-Lechenich, and Heinz Harnisch, Lovenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Nov. 23, 1971, Ser. No. 201,318

Claims priority, application Germany, Nov. 25, 1970, P 20 57 939.9

Int. Cl. C01g 45/00, 45/10

U.S. Cl. 423—50

8 Claims

Production of manganese (II) salt solutions having minor proportions of heavy metal contaminants therein by introducing one or more commercial manganese (II) compounds or ores into a mineral acid solution, precipitating the heavy metals by means of a sulfide compound, and isolating the resulting precipitate. More particularly, the commercial manganese (II) compounds or ores are introduced into the mineral acid solution and, while omitting filtration, the heavy metal sulfides are precipi-

tated at a pH-value of between 3.5 and 8.2 and the precipitated sulfides are isolated together with the vein ore of the commercial manganese (II) compounds or ores, in a single step operation.

3,825,653

**PROCESS FOR PREPARING SINTERABLE ALUMINUM TITANATE POWDER**

Walter K. Duerksen, Norris, and Cressie E. Holcombe, Jr., and Margaret K. Morrow, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Sept. 11, 1972, Ser. No. 288,228

Int. Cl. C01g 23/00

U.S. Cl. 423—598

3 Claims

Sinterable aluminum titanate powder is prepared by coprecipitating halide or alkoxide compounds of aluminum and titanium as a hydroxide. The resulting hydrated aluminum titanium hydroxide is dried and then calcined in air to form the powder. Slip casting or isostatic pressing techniques together with sintering may be employed to prepare products of aluminum titanate.

3,825,654

**PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN THE EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES**

Tadeusz P. Kobylinski, Cheswick, and Brian W. Taylor, Richland Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,170

Int. Cl. B01d 53/34

U.S. Cl. 423—213.7

20 Claims

A method is proposed for the reduction of nitrogen oxides in exhaust gases from internal combustion engines to form nitrogen as substantially the only nitrogen-containing compound. The method comprises contacting an exhaust gas from an internal combustion engine at an elevated temperature in a first zone in a reducing atmosphere with a catalyst, such as platinum, that will convert the nitrogen oxides to a product comprising ammonia and thereafter contacting the resultant gaseous mixture at an elevated temperature in a second zone in a reducing atmosphere with ruthenium or rhodium to convert the ammonia to nitrogen.

3,825,655

**PRODUCTION OF HYDROGEN FLUORIDE AND METAL SULFATES**

Eduard Eipeltauer, Ma-Enzersdorf-Suedstadt, and Hans-Dietrich Lauss, Thennig, Austria, and Bernhard Spreckelmeyer, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 14, 1972, Ser. No. 271,895

Claims priority, application Germany, July 29, 1971, P 21 38 015.4

Int. Cl. C01b 7/22; C01f 11/46

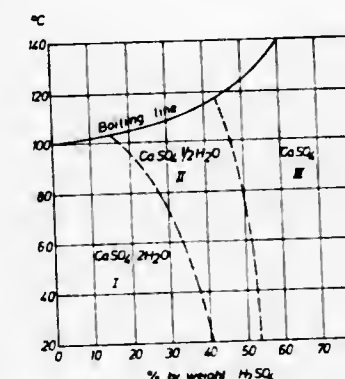
U.S. Cl. 423—485

13 Claims

In the production of hydrogen fluoride and a metal sulfate by the reaction of a metal fluoride with sulfuric acid in an aqueous suspension at an elevated temperature up to about 350° C., the improvement which comprises

- in a first stage contacting the metal fluoride with about 1.2 to 11 times the stoichiometric amount of about 20 to 100% sulfuric acid at an elevated temperature up to about 300° C., and separating hydrogen fluoride formed, and
- passing the reaction mass to a second stage, separating the liquid phase in said second stage, and recycling the liquid to said first stage. Advantageously the reaction is completed in a third stage at 50 to 350° C. carried out on the solid residue from the

second stage, liquid from the second stage being recycled to the first stage. To supply some of the heat of reaction, the sulfuric acid may be formed in situ from sulfur trioxide and/or oxides or hydroxides of alkali or alkaline earth metals may be added. Such additives, or others such as potassium or iron sulfate,



will also affect the grain size and shape of the metal sulfate produced by the primary reaction. When the metal fluoride is calcium fluoride, the extent of hydration of the calcium sulfate product can be predetermined by following the reaction conditions set out in FIG. 1.

3,825,656

**PROCESS FOR PREPARING HEXAGONAL SYSTEM PRISMATIC CALCIUM SULFITE**

Keiichi Murakami, Sendai, Hiroshi Hoshi, Narashino, Michio Hirakawa, Ichikawa, and Rinnosuke Susuki, Tokyo, Japan, assignors to Lion Fat and Oil Company, Ltd., Tokyo, Japan

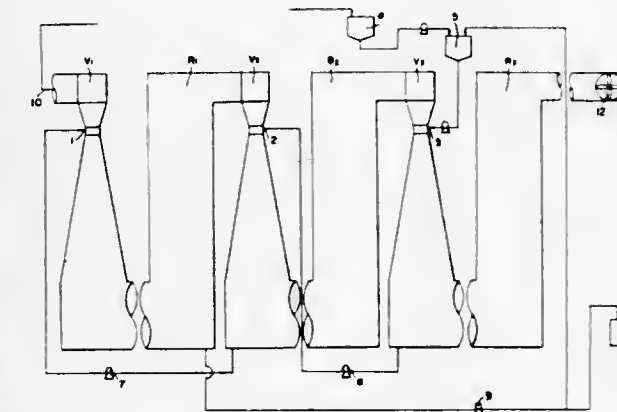
Filed Dec. 16, 1971, Ser. No. 208,602

Claims priority, application Japan, Dec. 26, 1970, 45/129,628

Int. Cl. C01f 11/48

U.S. Cl. 423—512

8 Claims



Hexagonal system prismatic calcium sulfite, which is useful as a filler for thermoplastic resins, is prepared by contacting an  $\text{SO}_2$ -containing gas with a suspension of calcium hydroxide, precipitated calcium carbonate, or mixtures thereof wherein the  $\text{SO}_2$ -containing gas is passed continuously through a plurality of contact zones in which the first of said zones has a temperature of 50°–100° C. and a pH of 3–6 and each succeeding contact zone has a temperature of 50°–100° C. and a pH of higher than 6,



while simultaneously passing the suspension through said plurality of contact zones counter-currently to the direction of the flow of the SO<sub>2</sub>-containing gas.

### 3,825,657 PROCESS FOR THE CRACKING OF SULFURIC ACID

Ernst Jenniges, Cologne-Hohenberg, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co., K.G., Cologne, Germany

Filed July 29, 1971, Ser. No. 167,231

Claims priority, application Germany, July 29, 1970, P 20 37 619.6

Int. Cl. C01b 17/58

U.S. Cl. 423—540

9 Claims

In the cracking of waste sulfuric acid to produce SO<sub>2</sub>-containing gases devoid of impurities deleterious to SO<sub>2</sub> conversion, the waste acid containing about 30–60% by weight H<sub>2</sub>SO<sub>4</sub> is concentrated to about 60–75% by weight H<sub>2</sub>SO<sub>4</sub> prior to cracking, the latter step being improved from the standpoint of energy consumption by passing the cracking gases having a temperature of about 1000° C. in direct contact with the 30–60% by weight acid to evaporate water therefrom.

The cracking gases are then cooled to condense out water and impurities. Organic impurities are scrubbed out of the resultant gas with H<sub>2</sub>SO<sub>4</sub>, the latter, when loaded with impurities being passed to the cracking stage. Residual SO<sub>2</sub> contained in the condensed out water is entrained by an air stream, and the resultant SO<sub>2</sub> plus air is used as combustion air in the cracking stage.

### 3,825,658 PROCESS FOR THE PREPARATION OF CYANOGEN CHLORIDE

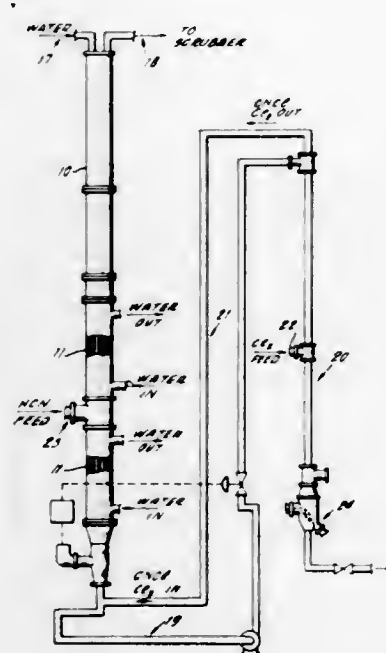
Robert John Eckert, Jr., and Roy Joseph Laran, Mobile, Ala., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Continuation-in-part of abandoned application Ser. No. 862,214, Sept. 30, 1969. This application Jan. 5, 1972, Ser. No. 215,645

Int. Cl. C01b 21/18

U.S. Cl. 423—383

2 Claims



An improved process is provided in the manufacture of cyanogen chloride involving the reaction of hydrogen cyanide and chlorine wherein the removal of cyanogen chloride is effected in the presence of about 1 to 3% hydrogen cyanide and at least 14% hydrogen chloride.

This level of hydrogen cyanide minimizes or eliminates the formation of the undesirable nitrogen trichloride by-product.

### 3,825,659 METHOD OF PREPARING SODIUM-ALUMINUM FLUORIDE

Maurice Clark Harrison and Donald Otis Vancil, Longview, Wash., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Application June 7, 1972, Ser. No. 260,588, now Patent No. 3,755,532, which is a division of application Ser. No. 62,129, Aug. 7, 1970, now Patent No. 3,704,092. Divided and this application Jan. 17, 1972, Ser. No. 324,384

Int. Cl. C08f 7/00, 7/54

U.S. Cl. 423—465

1 Claim

A sodium fluoride-aluminum fluoride double salt is prepared by admixing a solution of NaF having a pH between about 7.0 and about 7.5, and a solution of AlF<sub>3</sub> having a pH between about 2.7 and about 3.0, so that the resulting reaction goes to completion at a pH between about 3.0 and about 6.8, at a temperature between about 145° F. and about 185° F.

### 3,825,660 ANTIBIOTIC NO. 156 AND PROCESS FOR PRODUCING THE SAME

Isao Takeda, Tokyo, Masayuki Mizuno, Saitama, Toshiaki Sugawara and Yukiji Shimojima, Tokyo, and Sadayuki Horiguchi, Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 6, 1971, Ser. No. 186,976

Claims priority, application Japan, Nov. 5, 1970, 45/96,847, 45/96,848

Int. Cl. A61k 21/00

U.S. Cl. 424—119

7 Claims

An antibiotic named as antibiotic No. 156 which having an elementary analysis of C, 55.07%, H, 7.82%, N, 6.33% and O, 29.92%, an optical rotation of (α)<sub>D</sub><sup>18</sup> of +4.3° in aqueous n-butanol, a melting point of 210° C. or more, a molecular weight of 890, and the infrared and ultra-violet absorption spectra shown in the accompanying FIGS. 1 and 2, respectively.

This antibiotic is useful for controlling rice blast disease, and is prepared by aerobically culturing *Streptomyces 156* (NRRL 5319) in a liquid medium containing a carbon source, a nitrogen source and inorganic salts, and may be isolated from both mycelium and culture filtrate.

### 3,825,661 INSECT CONTROL EMPLOYING COMPOUNDS HAVING JUVENILE HORMONE-LIKE ACTIVITY

Thomas L. Emmick, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

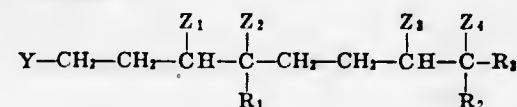
No Drawing. Continuation-in-part of application Ser. No. 877,019, Nov. 14, 1969, which is a continuation-in-part of application Ser. No. 787,281, Dec. 26, 1968, both now abandoned. This application Oct. 8, 1971, Ser. No. 187,890

Int. Cl. A01n 9/28

U.S. Cl. 424—278

6 Claims

Insect populations are controlled by treating an immature form of the insect with a compound possessing juvenile hormone-like activity. Such a compound is one having the formula



wherein Y is thienyl, phenyl or substituted phenyl. For example, 9-(3,4-methylenedioxyphenyl)-2,6-dimethyl-2,6-nonadiene exhibits very good activity. Many of the compounds described are novel.

### 3,825,662 METHOD FOR COMBATING CERTAIN FOLIAR DISEASES OF PLANTS

Roger Paul Cahoy, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

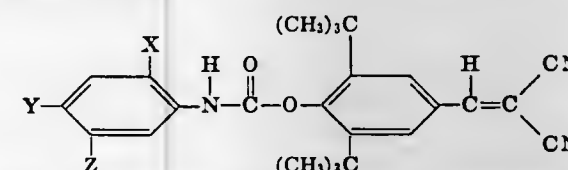
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,395

Int. Cl. A01n 9/20

U.S. Cl. 424—300

2 Claims

Fungus and bacterial foliar diseases of plants are combated by applying to the plants an effective but substantially non-phytotoxic amount of a compound having the structural formula



in which X is selected from the group consisting of hydrogen and chloro and nitro substituents,

Y is selected from the group consisting of hydrogen and chloro and fluoro substituents, and

Z is selected from the group consisting of hydrogen and chloro substituents, at least one of X, Y and Z being hydrogen.

### 3,825,663 METHOD OF COMBATING INSECT PESTS WITH PHENYLCARBAMYOXYDITERT-BUTYL- BENZYLIDENEMALONONITRILES

John Sanjean, Leawood, and Roger P. Cahoy, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 70,529, Sept. 8, 1970, now Patent No. 3,694,483. This application Mar. 20, 1972, Ser. No. 236,341

Int. Cl. A01n 9/20

U.S. Cl. 424—300

7 Claims

N-benzoylcarbamyloxy-, chlorophenylcarbamyloxy- and bromophenylcarbamyloxy - 3,5 - ditert-butylbenzylidenemalononitriles are useful in combating a variety of agricultural mites and insect pests, including tobacco budworm, Southern army worm, fall army worm, 2-spotted mite and European corn borer. Particularly useful against tobacco budworm are the 4 - bromo - 3 - chlorophenyl-

carbamyloxy- and the 2,4 - dichlorophenylcarbamyloxy compounds. For control of European corn borer the N-benzoylcarbamyloxy-, 4 - bromo - 3 - chlorophenylcarbamyloxy- and the 2,4-dichlorophenylcarbamyloxy- compounds are particularly useful. For control of fall army worm the N-benzoylcarbamyloxy- compound is preferred.

### 3,825,664 METHOD FOR TREATING BACTERIAL TOXINS

Guy Hagemann, Nogent sur Marne, and Francois Clemence, Rosny-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,516

Claims priority, application France, Jan. 13, 1970, 7001040

Int. Cl. A61k 27/00

U.S. Cl. 424—316

5 Claims

Compositions for treating microbic infections having as the active ingredient racemic or optically active isomers of N-succinyl-glutamic acid and its non-toxic, pharmaceutically acceptable salts with mineral or organic bases and a method of combatting infections in warm-blooded animals.

### 3,825,665 BENZENESULFONYL UREAS AND THEIR USE IN TREATING DIABETES

Helmut Weber, Frankfurt am Main, Walter Aumüller, Kelkheim, Taunus, Rudi Weyer, Frankfurt am Main, Karl Muth, Kelkheim, Taunus, and Felix Helmut Schmidt, Mannheim-Neustadt, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Nov. 7, 1967, Ser. No. 681,116, now abandoned. Divided and this application Jan. 29, 1971, Ser. No. 111,090

Claims priority, application Germany, Nov. 29, 1966, F 50,793

Int. Cl. A61k 27/00

U.S. Cl. 424—322

8 Claims

N-[4 - (β - benzamido-ethyl) - benzenesulfonyl] - N'-(endoalkylenecyclohexyl- or cyclohexenyl)-ureas being substituted at the benzamido group and having hypoglycemic activity and useful for preparing pharmaceutical compositions and used in a method for lowering blood sugar level in the treatment of diabetes mellitus.

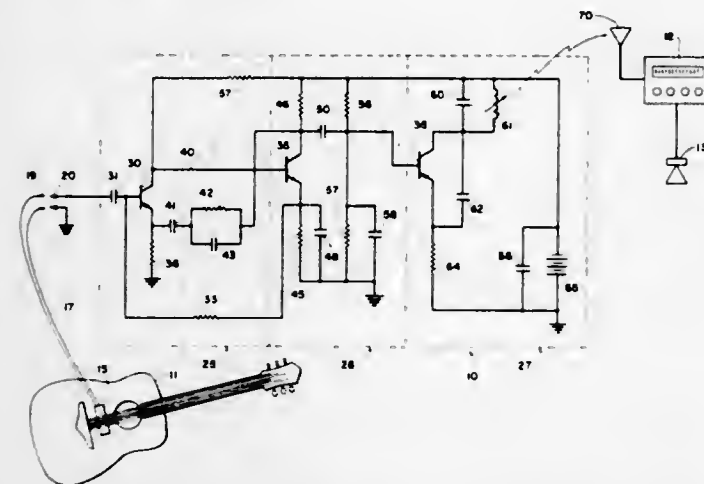


# ELECTRICAL

**3,825,666**  
**APPARATUS FOR TRANSMITTING THE OUTPUT OF A MUSICAL INSTRUMENT FOR AMPLIFICATION**  
 H. Dane Jagers, Ozark, Ark., assignor to Lectrasearch Corporation, Tulsa, Okla.

Filed July 30, 1973, Ser. No. 383,529  
 Int. Cl. G10h 1/00  
 U.S. Cl. 84-1.01

1 Claim

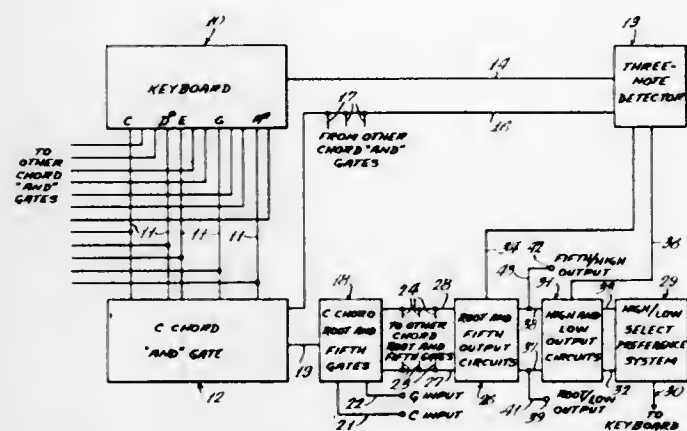


Apparatus for generating a signal from an electrical instrument includes two transistor amplifiers adapted to receive electrical signals from a transducer in the vicinity of the vibrations from the instrument. The amplified signal is applied to an oscillator which includes a radiating element to frequency modulate the oscillator signal with the amplified signal. The oscillator signal is radiated, detected, amplified, and reproduced by a nearby fm radio.

**3,825,667**  
**ALTERNATE HIGH-LOW AND ROOT-FIFTH SELECTION SYSTEM FOR ELECTRICAL MUSICAL INSTRUMENTS**  
 Ray B. Schrecongost, Park Ridge, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed Feb. 15, 1973, Ser. No. 332,642  
 Int. Cl. G10h 1/00  
 U.S. Cl. 84-1.01

10 Claims



A note selection system for a keyboard type electrical musical instrument which supplies to output leads the note signals corresponding to the highest and lowest notes of a group of notes played, or, in the alternative, the note signals corresponding to the musical root and fifth notes of certain three-note chords whenever only the three notes comprising each of these particular chords are played. The disclosed embodiment responds to playing any of four three-note chords in each of the 12 musical keys to supply the corresponding root and fifth

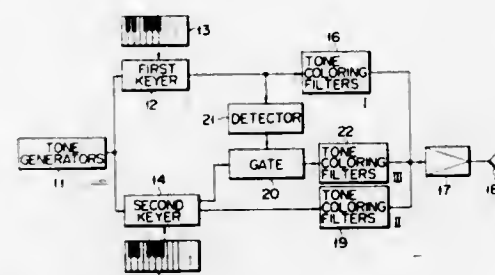
note signals of these chords; if any other three-note chords, or other than three notes are played, the system supplies the highest and lowest note signals of the group of notes played.

**3,825,668**  
**ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF PROVIDING A THIRD TYPE OF MUSICAL TONES BY OPERATION OF TWO KEYBOARDS IN ADDITION TO THE ORDINARY MELODY AND CHORD TONES**  
 Shlmaji Okamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed May 29, 1973, Ser. No. 364,257  
 Claims priority, application Japan; May 30, 1972, 47-53551; May 30, 1972, 47-53552; May 30, 1972, 47-53553; May 30, 1972, 47-53554

Int. Cl. G10h 1/02  
 U.S. Cl. 84-1.17

16 Claims

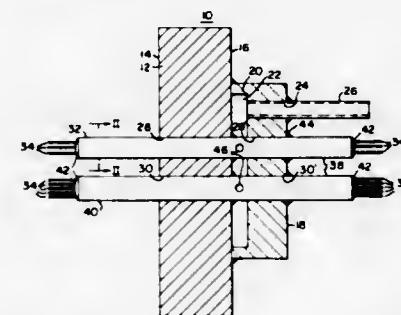


In an electronic musical instrument equipped with a first keyboard for melody performance and a second keyboard for chord performance, operation of the first keyboard is detected directly or indirectly by a detector to produce a control or detection signal. Tone signals derived from the tone generators by operation of the second keyboard are branched to a gate which is enabled by the control signal so as to cause operation of both first and second keyboards to attain the production of a third type of musical tones in addition to the ordinary melody and chord tones. Output tone signals from the gate may be supplied with a sustaining or percussive envelope and modulated in amplitude or frequency.

**3,825,669**  
**HIGH TEMPERATURE, HIGH PRESSURE ELECTRICAL PENETRATION ASSEMBLY**  
 Renzo L. Korner, Horseheads; Ralph J. White, Montour Falls; Robert A. Shaffer, and George R. Turner, both of Elmira, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 29, 1973, Ser. No. 364,452  
 Int. Cl. H01b 17/26; G21c 13/02  
 U.S. Cl. 174-11 R

8 Claims



An electrical penetration assembly for high temperature, high pressure applications, such as for bringing electrical con-

JULY 23, 1974

ELECTRICAL

1015

ductors through a nuclear reactor primary vessel or containment vessel. The electrical conductors are disposed within refractory oxide which has a gas impervious outer sheath thereabout. A seal is provided between the electrical conductors and the outer sheath at spaced positions. The sheathed conductor is passed through aligned apertures in headers which permit easy connection and sealing of the assembly to an exit port of the vessel. The outer sheaths are sealed to each header. The headers are spaced apart to provide a chamber therebetween, and an aperture is provided through the sheath within the chamber to permit leak detection.

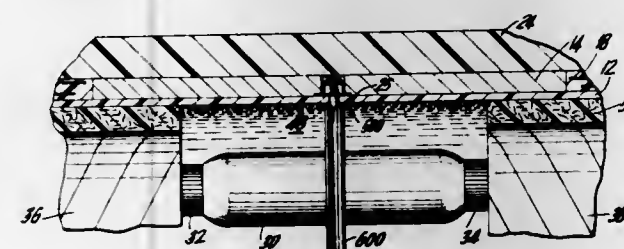
**3,825,670**  
**CONNECTOR FOR USE IN CAPACITIVE GRADED SPLICES**

Carlos Katz, Spring Valley; Felipe Garcia, and Elsayed Aliam, both of New City, all of N.Y., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 7, 1973, Ser. No. 413,706  
 Int. Cl. H02g 15/08

U.S. Cl. 174-73 R

4 Claims



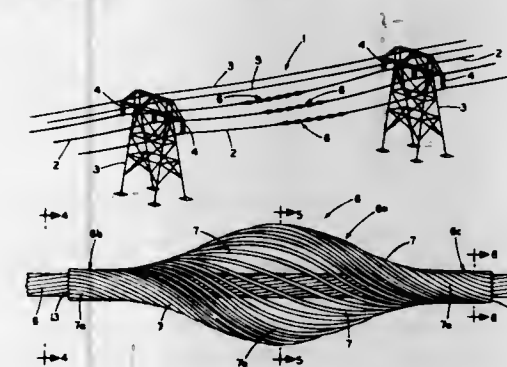
Electrostatic connector means, for joining the central conductor connector in a cable splice with an equipotential ring surrounding a non-conducting supporting sleeve, including an annular conductive member attached to the conductor connector and spring biased plungers connected to the ring and extending inwardly through apertures in the sleeve into contact with the annular conductive member.

**3,825,671**  
**TRANSMISSION LINE AUDIBLE NOISE AND CORONA REDUCING DEVICE**  
 William C. Pokorny, 522 Pershing Ave. S.E., North Canton, Ohio 44720

Filed Aug. 6, 1973, Ser. No. 386,216  
 Int. Cl. H02g 7/00

U.S. Cl. 174-40 R

8 Claims



A device for attachment to EHV and UHV transmission line conductors to reduce audible noise and other corona effects. A plurality of metallic rods each having a preformed shape are mounted on a conductor and form one or more cage-like generally elliptical structures. Each rod end portion has a helical shape, and the end portions of a complement of said rods form a cylindrical configuration having an inner diameter generally equal to the outer diameter of the conductor. The rod end portions have sufficient resiliency to wrap about and

grip the conductor, eliminating the need of clamps, etc. to retain the elliptical cages thereon. The cages effectively increase the conductor diameter, modify the electrical field pattern about the conductor, and reduce the surface gradient to reduce audible noise and other corona effects.

**3,825,672**  
**DEVICE EMITTING OR RECEIVING ELECTRICAL SIGNALS RESULTING FROM THE MOVEMENT OF A VEHICLE ALONG THE DEVICE**

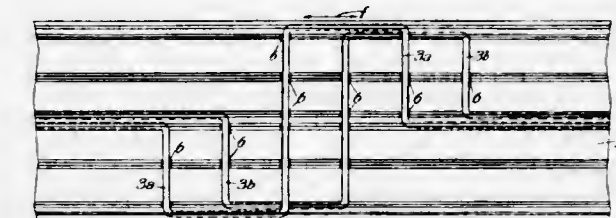
Jean-Pierre Malon, 32, Domaine de Chateau-Gaillard, 94-Maisons Alfort, and Joseph Andre Loreau, 49, rue ARCEL Bourbarlas, 94-Alfortville,, France

Filed May 13, 1971, Ser. No. 143,164  
 Claims priority, application France, May 13, 1970, 70.17502

Int. Cl. B611 1/02

U.S. Cl. 174-97

6 Claims



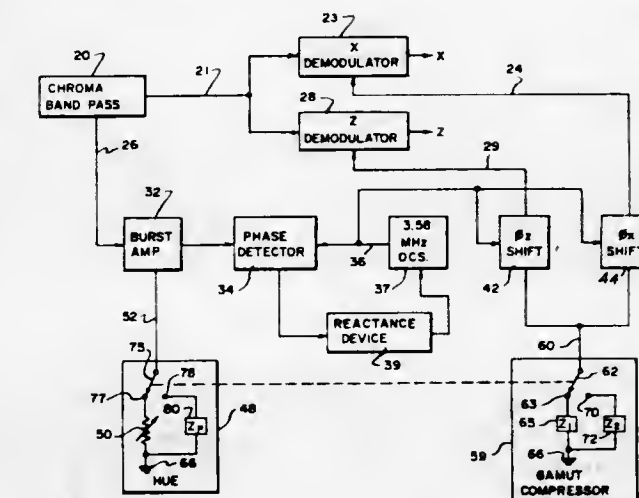
The device includes cables along the path of a vehicle to transmit signals to this vehicle or receive them by induction. These cables are fixed on a band of flexible and elastic material. The cables can thus be fixed to the band in the factory and the positioning of the band with its cables in place can be effected by unwinding from a spool and fixing the band on a support by means of clamps. The device is particularly useful for automatic piloting of metropolitan trains.

**3,825,673**  
**COLOR GAMUT COMPRESSOR**  
 John H. Furrey, Schaumburg, and George C. Le Crenn, Palatine, all of Ill., assignors to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 4, 1971, Ser. No. 120,962  
 Int. Cl. H04n 9/38

U.S. Cl. 178-5.4 HE

13 Claims



A gamut compressor circuit in the chroma channel of a color television receiver selectively changes the effective angle between the demodulation axes of a two axis demodulation system to visually minimize hue errors in the orange (flesh tone) and cyan regions. Apparatus is also provided to substitute a reference hue control when the gamut compressor circuit is in use.



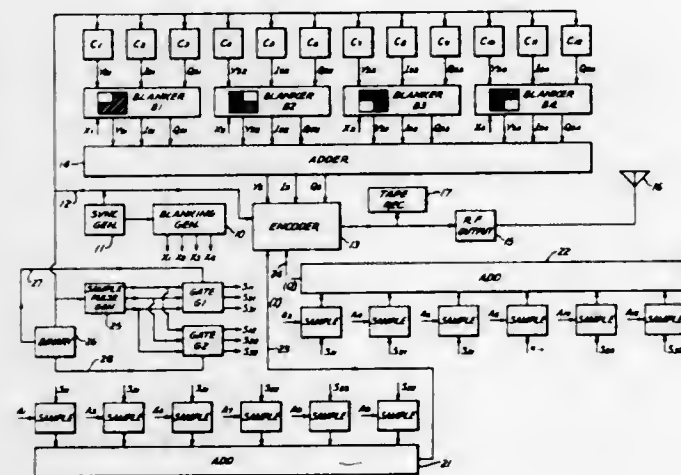
3,825,674

**EDUCATIONAL TV BRANCHING SYSTEM**

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed May 25, 1973, Ser. No. 364,164  
Int. Cl. H04n 7/08

U.S. Cl. 178-5.6

19 Claims



A closed circuit or conventional TV broadcast system features the transmitting and receiving of 12 separate pictures and including 12 audio channels on a single television carrier signal such that one of three different pictures appear in each quadrant of the television receiving tube, and including in the receiver, two detectors each preceded by band-pass filters for preventing cross-modulation of the video signals. The system further includes means for blanking out all but one quadrant and for centering and expanding that quadrant to occupy a full television raster.

Twelve TV cameras have their video output signals arranged in four groups of three signals. A blanker for each group blanks out all but one quadrant so that three video signals are provided for this quadrant. Blankers for the other groups of video signals operate in a similar manner with respect to the remaining three quadrants. By adding together one video signal from each group there results three composite signals. Each composite signal represents an assembly of four pictures each occupying one quadrant of the TV raster. The composite signals are connected to the Y, I and Q inputs of a modified encoder for transmission on a single TV carrier signal.

Twelve audio channels are arranged in two groups of six signal inputs. One group of six signals is inserted in a video signal line during a guard-band blank period as three bursts of amplitude and phase modulated subcarriers. A guard-band blank period is provided in the next video line for transmission of the other set of six audio signals in a similar manner.

3,825,675

**SYSTEM FOR CONTROLLING FILM MOTION**

Robert S. Bradford, Woodland Hills; Harvey J. Richardson, Ventura; Richard F. Dubbe, and Richard D. Ebbinga, both of Camarillo, all of Calif., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.  
Continuation of Ser. No. 19,614, March 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 829,666, June 2, 1969, abandoned. This application May 8, 1972, Ser. No. 251,219

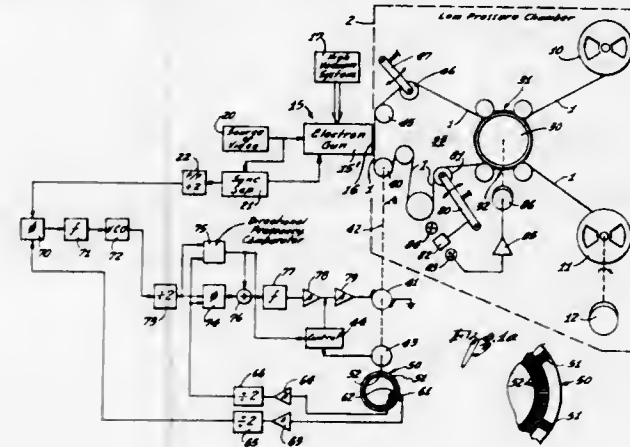
Int. Cl. G11b 7/08, 15/54; H04n 5/86

U.S. Cl. 178-6.7 A

34 Claims

Photographic film is reeled and a loop thereof is included between the payout reel and the takeup reel. A capstan en-

gages the film in the loop and controls movement of the film past a beam recorder in accordance with the sprocket holes in the film. The capstan is controlled to cause the beam to record equispaced lines and sequential video frames are particularly positioned relative to the sprocket holes in the film. In one embodiment of the invention the loop is isolated by a sprocket wheel and a sprocket capstan engages the film in the loop. The speed of the sprocket wheel is controlled so that loop



branches between it and the capstan have constant length to thereby indirectly couple the wheel and the capstan. A high inertia idler near the recording area suppresses high frequency vibrations in the film. In a second embodiment of the invention the smooth capstan is used in place of the sprocket and capstan. In a third embodiment of the invention, a pair of compliance arms are used to control servoing of the payout and takeup reels and a smooth capstan engages the film in the loop.

3,825,676

**SURVEILLANCE SYSTEM**

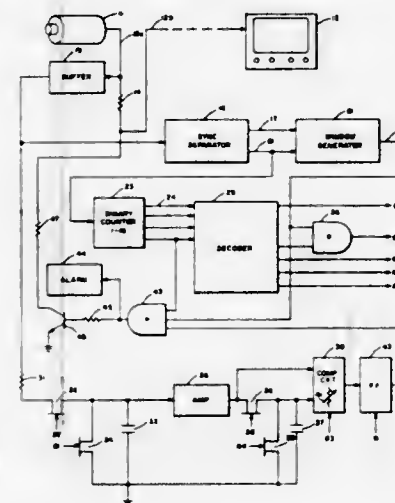
Paul S. Ramsden, Jr., Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 7, 1972, Ser. No. 269,663

Int. Cl. H04n 7/18

U.S. Cl. 178-6.8

5 Claims



A surveillance system using a closed circuit television installation is described in which a single integrating circuit is used to obtain two distinct measurements of the average value of the video signal pertaining to a preselected portion of the scene being viewed. The first measurement is made during one or more successive fields and this measurement is stored. The integrating circuit is then reset to zero and a second measurement made during a like number of subsequent fields. The measurement just made is then compared with the stored mea-

3,825,677

**TELEVISION SCAN CONVERTER BANDWIDTH REDUCTION DEVICE**

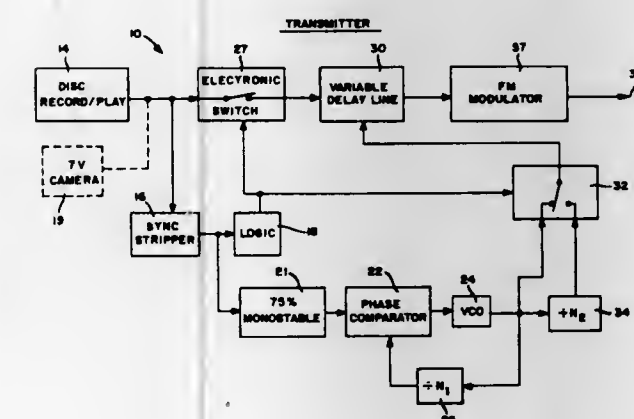
Vincent D. Kasprzak, Auburn, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 283,806, Aug. 25, 1972. This application Mar. 7, 1973, Ser. No. 338,667

Int. Cl. H04n 7/12

U.S. Cl. 178-6.8

8 Claims



A television signal is transmitted over a narrow bandwidth transmission line or recorded over a narrow bandwidth recording device by scan converting the television signal a line at a time from a disc magnetic recorder. Each line of the video signal is loaded at high frequency into a variable delay line or storage element whose electrical length exactly equals a television line; the delay line is then switched to operate at a longer electrical length to convert the television line into a narrow bandwidth signal. Playback is accomplished by loading the low frequency signal into a variable delay line and then operating the delay line at the original, high frequency rate to unload the scan line into a disc magnetic recorder at the original high bandwidth. The video signal is reassembled a line at a time onto the receiver disc magnetic recorder for playing back the original video frame at the original high frequency and bandwidth.

3,825,678

**PHOTOGRAPHIC IMAGE PICK-UP CODING SYSTEM**

Hirooyoshi Tsuchiya; Yukifumi Tsuda; Heijiro Hayami, and Hiroaki Kotera, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 5, 1972, Ser. No. 295,555

Claims priority, application Japan, Oct. 7, 1971, 46-79203

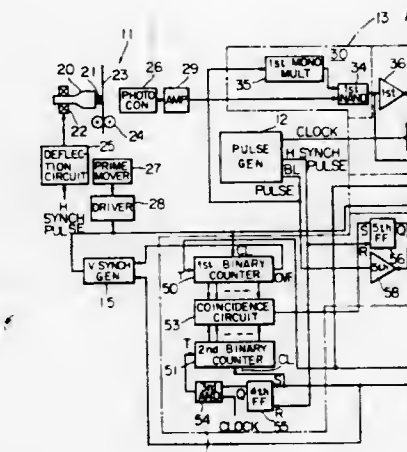
Int. Cl. H04n 5/36, 7/12

U.S. Cl. 178-7.1

1 Claim

A photographic image pick-up and coding system of run-length type, comprising a pulse generator for producing clock pulse, horizontal synchronizing pulse and horizontal pulse signals, a facsimile signal generator for repeatedly producing a facsimile signal representing photographic information on a horizontal line until energized by a coding completion signal, a run-length gate for passing therethrough the clock pulse signal during a time duration when a run-length gate pulse signal lasts, a run-length controller for producing the run-length gate

signal by using the facsimile, clock pulse and blanking pulse signals, a coder for coding the clock pulse signal passed



through the run-length gate, and a modulator for modulating the coded clock pulse signal by a suitable carrier wave.

3,825,679

**FILM SCANNER**

Greg Farrell, Sydney, New South Wales, Australia; Akira Tsuji; Dojun Hasimoto, both of Tokyo, Japan; Nobuhisa Koto, and Nobutake Hirai, both of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

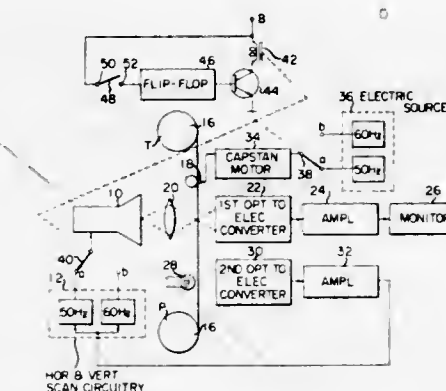
Filed Mar. 5, 1973, Ser. No. 338,182

Claims priority, application Japan, May 8, 1972, 47-45676; Sept. 18, 1972, 47-108231

Int. Cl. H04n 5/36

U.S. Cl. 178-7.2

5 Claims



The disclosed system includes a flying-spot scanner tube selectively operative with frame frequencies of 50 and 60 hertz, and a capstan for driving a record film at the synchronous speed of an associated synchronous motor selectively supplied with 50 and 60 hertz power. Only those record films having 50 frames recorded with video information per second are provided on the leader with an aluminum piece. Upon reproducing one of these films the aluminum piece contacts a guide roller which causes the system to switch to the 50 frame mode of operation. At the end of the rewinding of the reproduced film, the aluminum piece again contacts the guide roller to return the system to the normal mode of operation in which record films with 60 frames per second can be reproduced.



3,825,680

## RECEIVER FOR VIDEO SIGNALS

Leonardus Adrianus Johannes Verhoeven, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

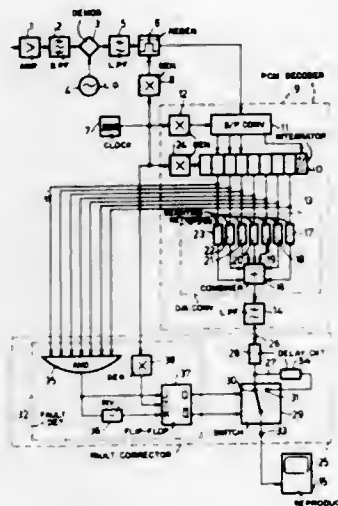
Filed Jan. 23, 1973, Ser. No. 326,040

Claims priority, application Netherlands, Feb. 3, 1972, 7201391

Int. Cl. H04n 1/38

U.S. Cl. 178-7.3 R

10 Claims



A receiver for video signals which are transmitted, for example, by differential pulse code modulation and in which for the recovery of the analog video signal the demodulator is provided with an integrator whose time constant is many times the line period. The output of this integrator is coupled to a fault corrector provided with a fault detector, which fault corrector upon the command of the fault detector replaces a perturbed image line to be applied to the display arrangement by an unperturbed image line which has already been displayed or is still to be displayed.

3,825,681

## DATA TERMINAL WITH DUAL THREE-STATION PRINTING

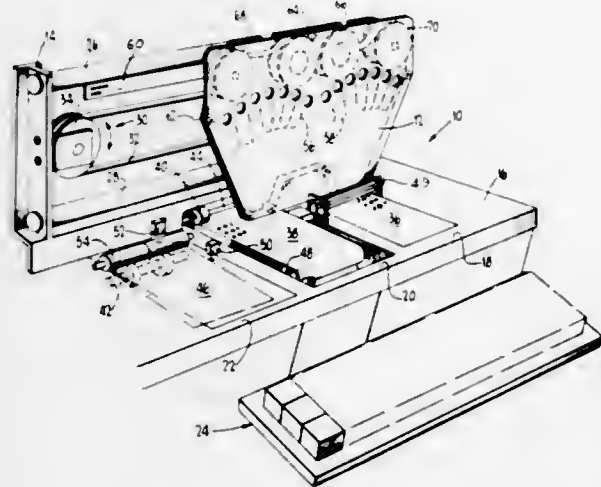
Howard R. Cederberg, Alamo, and Charles W. Wiedeman, Castro Valley, both of Calif., assignors to The Slinger Company, New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,176

Int. Cl. H041 21/00

U.S. Cl. 178-23 R

6 Claims



A data terminal having a dual printing system for printing data in one, or two adjacent stations concurrently, of a three-station data terminal.

3,825,682

## BALANCED LINE DRIVER, LINE RECEIVER SYSTEM

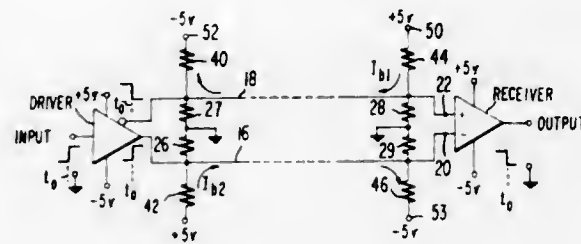
Paul Creighton Phillips, Medford Lakes, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed June 27, 1973, Ser. No. 374,139

Int. Cl. H041 11/08

U.S. Cl. 178-69 G

6 Claims



The problem dealt with here is that of preventing erratic behavior of a line receiver when an open occurs in the balanced transmission line feeding the receiver, or when the power supply for the line driver goes off. In the present circuit, bias currents are applied to the transmission line in such a way that the potentials due to these currents are the same on both conductors of the line. A resistor network, responsive to the interruption in bias current flow through one or both conductors or to a change in the path taken by such current flow, places the input circuit of the receiver at a voltage indicative of a given binary value.

3,825,683

## LINE VARIATION COMPENSATION SYSTEM FOR SYNCHRONIZED PCM DIGITAL SWITCHING

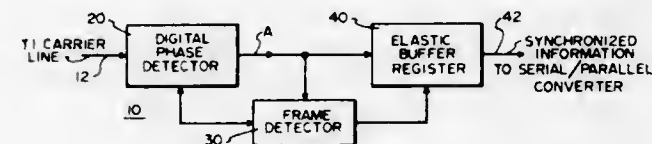
Satyan G. Pitroda, Villa Park, and Bernard J. Rekiere, Addison, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 10, 1972, Ser. No. 305,634

Int. Cl. H041 7/00

U.S. Cl. 178-69.5 R

11 Claims



A line synchronizer system including a digital phase detector subsystem, a frame detector subsystem and an elastic buffer register store subsystem is used within a digital PCM switching exchange to correct for timing or phase errors caused by cable temperature fluctuations and cumulative phase jitter. The line synchronizer system is utilized to correct for phase deviations of less than one bit position within the phase detector subsystem and provides for a predetermined number of bit position corrections within the elastic buffer register store subsystem. All timing corrections are bi-directional and are made during the framing bit which does not contain real information so hence that there is no loss of real information during a subsequent digital switching process. The line synchronizer system is described in connection with a frequency synchronized digital transmission loop using the master-slave synchronization method.

3,825,684

## VARIABLE MATRIX DECODER FOR USE IN 4-2-4 MATRIX PLAYBACK SYSTEM

Ryosuke Ito, and Susumu Takahashi, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

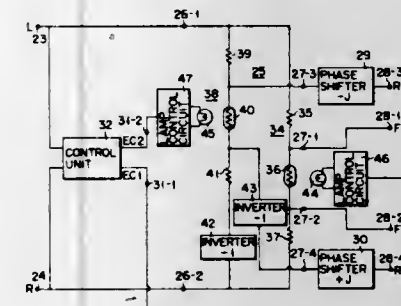
Filed Oct. 19, 1972, Ser. No. 298,933

Claims priority, application Japan, Oct. 25, 1971, 46-84484; Oct. 30, 1971, 46-86521; Nov. 4, 1971, 46-87832; Nov. 10, 1971, 46-89678; Dec. 29, 1971, 46-2145; Mar. 23, 1972, 47-29332; Apr. 17, 1972, 47-38407

Int. Cl. H04r 5/00

U.S. Cl. 179-1 GQ

34 Claims



A decoder for use in a four channel playback system includes a control unit and a variable matrix. The control unit produces first and second control outputs which vary in opposite directions in accordance with the phase relationship between two channel signals. The variable matrix includes a first variable matrix circuit for producing two outputs related to the front channels and having matrix coefficients controlled by the first control output from the control unit and a second variable matrix circuit for producing two outputs related to the rear channels and having matrix coefficients controlled by the second control output from the control unit. The control outputs are used to improve the separation between front channels and to degrade the separation between rear channels, and vice versa, thereby enhancing the sense of presence of listeners in a reproduced sound field. The present invention discloses another decoder which comprises a first control unit for front-rear control and a second control unit for left-right control whereby front-left and right channels and rear-left and right channels are independently controlled.

3,825,685

## HELIUM ENVIRONMENT VOCODER

Donald Anthony Acott Roworth, Sawbridgeworth, England, assignor to International Standard Corporation, New York, N.Y.

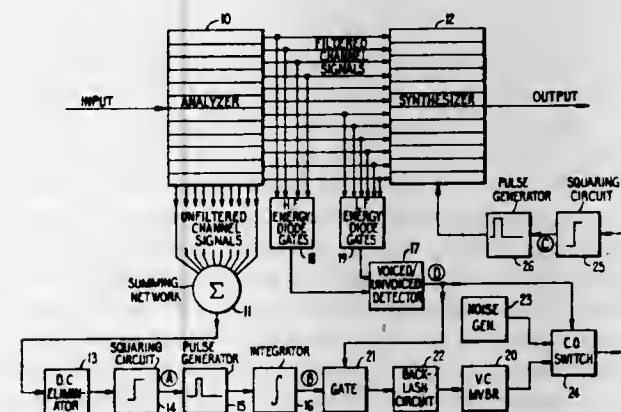
Filed May 5, 1972, Ser. No. 250,534

Claims priority, application Great Britain, June 10, 1971, 19957/71

Int. Cl. G101 1/00

U.S. Cl. 179-1 SA

13 Claims



There is disclosed herein a vocoder system having a multichannel speech analyzer, a multichannel speech synthesizer

and an excitation system for extracting time-varying characteristics of the excitation function of the input speech signal and reproducing this function for the excitation of the synthesizer. The excitation system includes a speech extractor, a voiced/unvoiced detector, a pitch generator, a noise generator, a voiced/unvoiced switch and an output pulse generator. The pitch extractor operates on the short term envelope of the speech and is derived from a signal which is the sum of the signals of all analyzer channels. Constant width pulses are generated and integrated to form a varying d.c. signal proportional to the frequency of the extracted pitch. During voiced speech a multivibrator controlled by the d.c. signal produces the input to the output pulse generator. The output pulse generator produces an output pulse train of constant energy and is applied for excitation of the synthesizer channels. During unvoiced speech the noise generator drives the output pulse generator.

3,825,686

## TELEPHONE HANDSET VIBRATOR

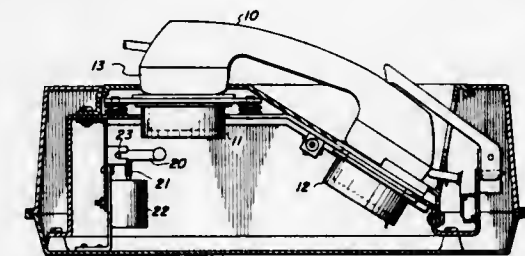
Hans Peter Kramell, Perry, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1973, Ser. No. 342,639

Int. Cl. H04m 1/64

U.S. Cl. 179-1 C

3 Claims



Apparatus for loosening the carbon which becomes packed in the transmitter of a telephone handset remaining at rest in an acoustic coupler for extended periods of time. A weighted arm is thrown against the coupler boot by a solenoid push rod.

3,825,687

## CODING MEANS FOR TELEPHONE ANSWERING DEVICE

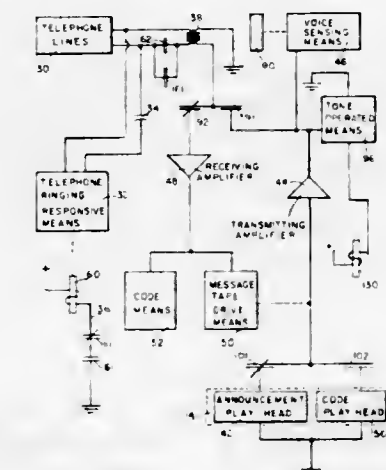
Herbert H. Waldman, Brooklyn, N.Y., assignor to Electrospace Corporation, North Bergen, N.J.

Filed June 16, 1972, Ser. No. 263,412

Int. Cl. H04m 11/00

U.S. Cl. 179-6

12 Claims



A coding device for energizing a desired article comprising a stepping member associated with manually movable switching members of a code selection portion of the coding device for determining a code sequence of a sound and silent



periods or intervals. A sound sensing portion activates a switch element of the code selection portion when a sound is transmitted thereto, so that the switch element is in a cooperating relationship with one of the switching members when a proper code is received, to provide connection with a closable element. A tone operated portion closes the closable element upon transmission of a tone to complete a circuit only after a proper code has been received. Each completion of the circuit activates the stepping member to move, in sequence after each proper code, until a position for closing another circuit which energizes the desired article is obtained. Preferably, the coding device is for a telephone answering device and is used to activate a play back switching member of a conventional message tape drive apparatus to rewind and play back a recorded message.

3,825,688

### TELEPHONE ANSWERING APPARATUS WITH SYSTEM FAILURE DETECTION MEANS

Arno Ritze, Munich, Germany, assignor to Compur-Werk Gesellschaft mit beschränkter Haftung & Co., München, Germany

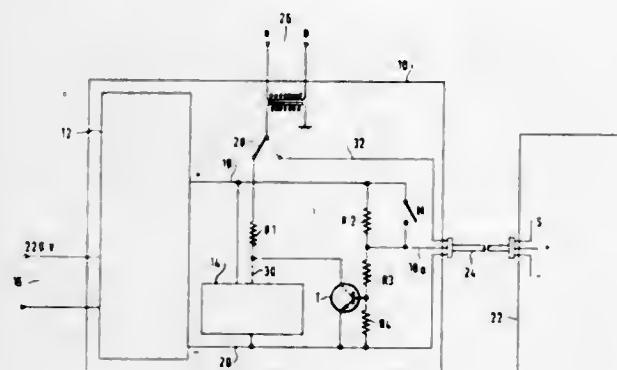
Filed Dec. 6, 1972, Ser. No. 312,786

Claims priority, application Germany, Dec. 10, 1971, 2161530

Int. Cl. H04m 11/10

U.S. Cl. 179-6 R

7 Claims



Telephone answering apparatus having a recording appliance connectable with the answering apparatus, and receiving its service voltage from the answering apparatus. The circuitry within the answering apparatus is such that if the recording appliance is not properly and effectively connected to the telephone answering apparatus, the answering apparatus is rendered ineffective to answer an incoming call. This is accomplished by an electronic switch in the telephone answering apparatus (the switch preferably being in the form of a transistor) responsive to variations in the resistance conditions of the circuit, the arrangement being such that when the recording appliance is properly connected and operative, the telephone answering apparatus is operatively connected to the incoming telephone line, but when the recording appliance is not properly connected and functioning, the connection between the call circuit and the incoming telephone line is ineffective. This is accomplished by the circuitry of the present invention even though the wiring connection between the telephone answering apparatus and the recording appliance may be of very simple form, such as a three wire cable.

3,825,689

### MESSAGE METERING AND STORAGE SYSTEM

James R. Baichtal, and John C. McDonald, both of Los Altos, Calif., assignors to Vidor Corporation, Mountain View, Calif.

Filed Jan. 5, 1973, Ser. No. 321,275

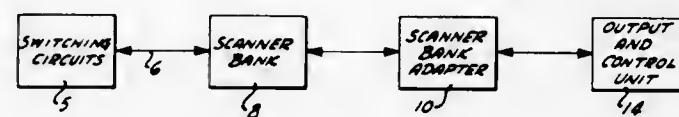
Int. Cl. H04m 15/10

U.S. Cl. 179-7 R

15 Claims

Disclosed is a local metering system for metering information concerning each subscribers use of a telephone system.

Each subscriber is associated with a unique location in memory. The subscriber lines are scanned in accordance with a binary addressing code from an address counter which does not necessarily access subscriber lines in their directory number order. The system storage output circuitry includes means for correlating the binary addressing with the subscriber line directory numbers. The system storage includes a circulating shift register memory which is stepped each time the address counter steps. The control circuitry and memory



cyclically test the system each cycle of the address counter. Specific locations in memory are assigned predetermined codes. Failure of the memories to properly read out the code when addressed indicates an error condition. Additionally, a test pattern is employed at directory number address locations. Once each cycle of the address counter the test pattern is compared with information decoded from the address counter to determine if the data paths and storage of the system are operating properly.

3,825,690

### LOSSLESS NETWORK JUNCTOR FOR PCM DIGITAL SWITCHING SYSTEMS

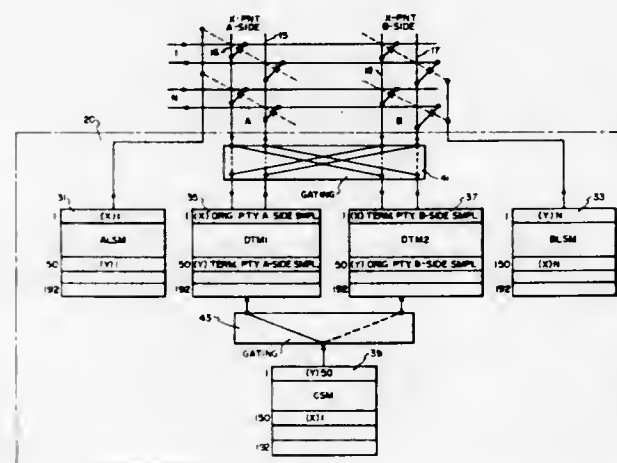
Michael J. Kelly, Melrose Park; Alex W. Kobylar, Chicago, and Bernard J. Reklere, Addison, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 1, 1972, Ser. No. 258,696

Int. Cl. H04j 3/00

U.S. Cl. 179-15 AT

11 Claims



A network junctor for use with a switching network of a PCM digital switching system including two vertical access buses connectible through the functioning of two line switching memory LSM units to any two horizontal group buses of N number of group buses, two data transfer memory DTM units associated with the two access buses, respectively, for receiving, storing and transmitting channel information samples in the form of digital code words, a channel switching memory CSM unit for addressing a selected one of the DTM units to receive and transmit predetermined channel information, and gating means for selectively interconnecting the CSM unit to the selected DTM unit and the DTM units with the two vertical access buses. Each of the five memory units contain channel storage capacities corresponding to the number of time slots per frame capacity of any horizontal group bus.

3,825,691

### F-T RADA RECEIVER WITH LEVEL DISCRIMINATION

Takamichi Honma; Shigeru Igarashi, and Hiroshi Harada, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

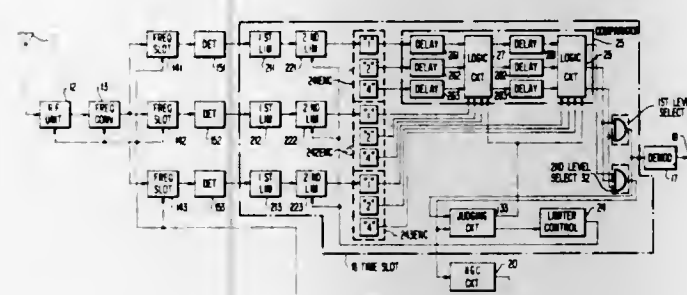
Filed July 17, 1972, Ser. No. 272,514

Claims priority, application Japan, July 16, 1971, 46-53343

Int. Cl. H04j 3/00

U.S. Cl. 179-15 BA

13 Claims



An F-T RADA receiver is provided with level discriminating means, including automatic gain control means. The level discriminating means exerts filtering action on the signal pulses having the frequency-time relation giving the probable address of the receiver with respect to the relative levels of such pulses so as not to produce the output signal from the signal pulses which are not of relatively uniform levels and are consequently judged to be signal pulses of false addresses but so as to produce the output signal from the signal pulses which are of relatively uniform levels and are accordingly discriminated as signal pulses of the true address.

3,825,692

### SIMPLIFIED CONFERENCE FACILITY FOR PBX

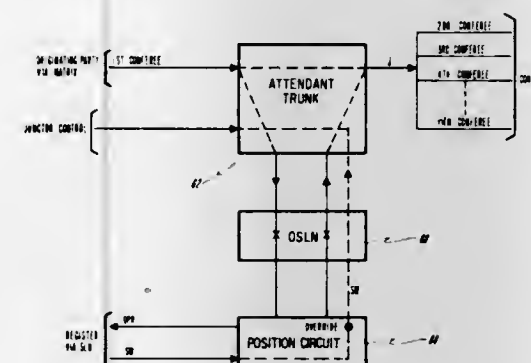
Klaus Gueldenpennig, Penfield; Uwe A. Pommerening, Webster, and Stanley L. Russell, West Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,379

Int. Cl. H04m 3/56

U.S. Cl. 179-18 BC

6 Claims



In an automatic private branch exchange where an operator may effect connection of a subscriber to a trunk circuit by connecting to an available register, inserting into the register the identity of the subscriber line circuit and forwarding a switch mark to the trunk from the register when the line circuit has been marked so that the trunk may acquire the services of the junctor control to complete its connection to the line circuit, a conference facility is made possible by controlling connection of the trunk to the junctor control directly from the switch mark without inhibition even when the trunk is already connected to another subscriber.

3,825,693

### TIME DIVISION MULTIPLEX BRANCH EXCHANGE

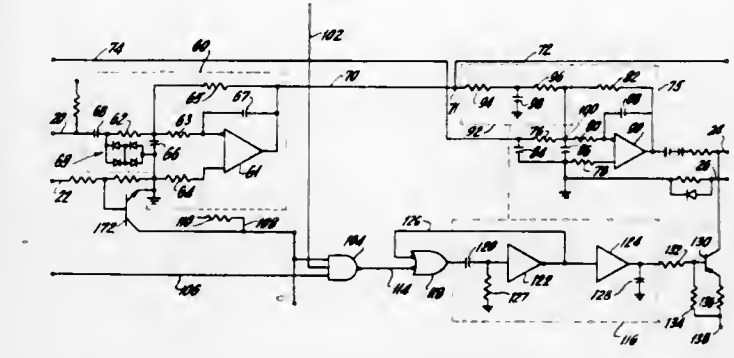
William Ralph Smith, and Herman Deutsch, both of Raleigh, N.C., assignors to TeleResources, Inc., White Plains, N.J.

Filed Sept. 25, 1972, Ser. No. 291,960

Int. Cl. H04j 3/12

U.S. Cl. 179-15 AT

4 Claims



A time division multiplex branch exchange includes a plurality of stations that have audio input and output capacity. A pair of receiving wires and a pair of transmitting wires are connected to each station. A plurality of receiving amplifiers and transmitting amplifiers are attached to the transmitting and receiving wires of each station, respectively. A summing means, which may include an amplifier, combines the inputs produced during each of a series of time slots which recur at a predetermined frequency. Input and output gates are connected to the receiving and transmitting amplifiers and to the summing means. Particular circuitry is described including a three input AND gate used for generating ring signals and a disconnect timer activated by the hookswitch to prevent the hookswitch from signalling a line holding condition.

3,825,694

### CONVERSATION DETECTOR FOR A TELEPHONIC CHANNEL CONCENTRATOR

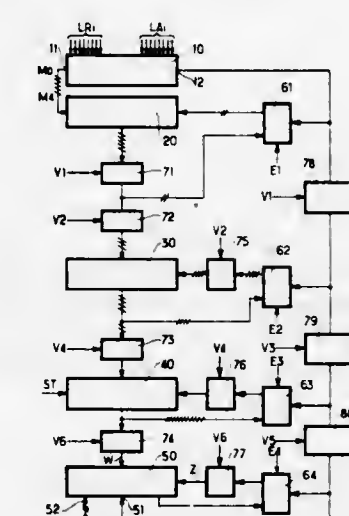
Etienne Penicaud, Chaville, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 30, 1972, Ser. No. 301,734

Int. Cl. H04j 5/00

U.S. Cl. 179-15 AS

7 Claims



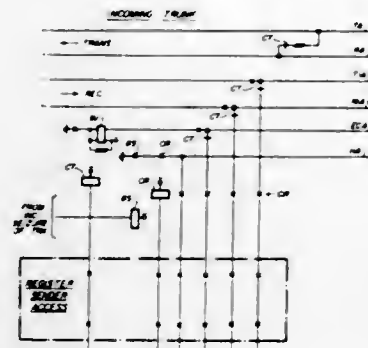
The samples tapped from a telephone channel are weighted according to the amplitude of each of them and the rhythm of the changes in polarity, the device deducing a "note" therefrom for each sample, positive or negative, calculating the sum of all the cumulated notes and deciding "conversation activity" if the cumulated note exceeds a certain threshold, and "non-activity" if the note passes below a second threshold lower than the previous one.







potential check, a multi-path (shorted leads) check, a shorted diode test, open diode test, a pull check, a hold check and a



transmission continuity test. If any one or more of these tests fail, the marker will not use the path, will report the trouble and then select another path.

3,825,702

### OPERATING MECHANISM FOR TWENTY FOUR HOUR CYCLE DIGITAL TIMER

Kingo Murata, Shiki, and Kaoru Wakabayashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Kōpaku, Tokyo-to, Japan

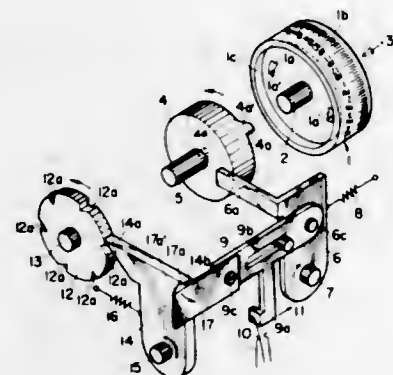
Filed Jan. 17, 1973, Ser. No. 324,405

Claims priority, application Japan, Jan. 19, 1972, 47-8599

Int. Cl. H01h 7/08

U.S. Cl. 200—35 R

4 Claims



A timer mechanism for a clock or the like arranged, in order to have the switch opening and closing operations performed accurately and reliably at preset times, so that a clutch operating member, which is held in operable condition by cooperative action of a timer setting member and clutch cam member, is released by cooperative action of a clutch controlling member rotating being synchronized with the minute shaft of the clock device and of a clutch control transmitting member.

3,825,703

### SWITCH FOR MULTISPEED ELECTRIC MOTOR

Georges Berthier, Villeurbanne, France, assignor to Emerjy, Villeurbanne, France, a part interest

Filed Feb. 14, 1973, Ser. No. 332,266

Claims priority, application France, Feb. 23, 1972, 72.06739

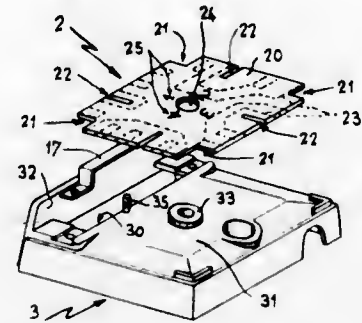
Int. Cl. H01h 43/08

U.S. Cl. 200—46

9 Claims

A switch for instantaneous control of the speed of an electric motor associated with electric pumps, central heating circulators, fans, air conditioners, and the like apparatus.

The switch comprises a contact holder element provided with a recess engaged by one of the sides of a removable



polygonal plate whose sides are provided with printed connections designed according to different diagrams.

3,825,704

### MICROSWITCH DEVICE ACTUATABLE AT TWO PRESET VALUES OF A MEASURABLE VARIABLE

Gualtiero Brauer, Milan, Italy, assignor to Facem Fabbrica

Apparecchi Controllo e Misura di Gualtiero Brauer, Milano, Italy

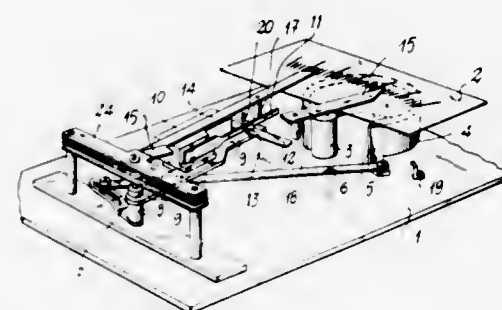
Filed Mar. 29, 1973, Ser. No. 345,898

Claims priority, application Italy, Apr. 11, 1972, 23008/72

Int. Cl. G01d 13/26

U.S. Cl. 200—56 R

7 Claims



Device for regulating between a maximum and a minimum the value for a variable, such as a pressure or a temperature. The device comprises an element moving as the controlled variable value changes and moving through a kinematic motion a microswitch having an operating lever extending between two manually movable pointers and defining the maximum and minimum values for the variable.

3,825,705

### DEVICE FOR DEACTIVATING AUTOMOBILE DOOR OPERABLE ELECTRIC SWITCH

Hubert Bourton, Star Rt., Waterville, Wash. 98858

Filed Aug. 20, 1973, Ser. No. 389,522

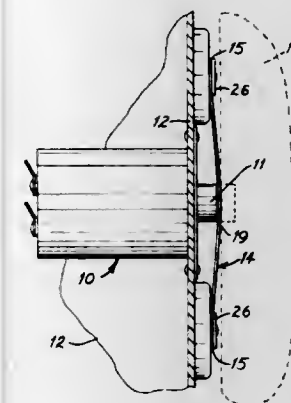
Int. Cl. H01h 3/16

U.S. Cl. 200—61.79

4 Claims

A device is described herein for use in deactivating automobile door-operable switches. The device basically comprises a non-stretchable elongated strap having the ends thereof fixed

to magnetic elements. A central portion of the strap is exposed of sufficient length to enable the magnetic elements to be secured to a door post on either side of a door-operable



switch. When in position, the central portion of the strap engages and holds the switch button depressed to enable an individual to leave the vehicle door open without activating the dome light or warning buzzer usually activated by the switch.

3,825,706

### FLUID PRESSURE UNBALANCE INDICATOR WITH PLURAL PISTONS

Guy Papiou, Arnouville Les Gonesse, France, assignor to Societe Anonyme D.B.A., Paris, France

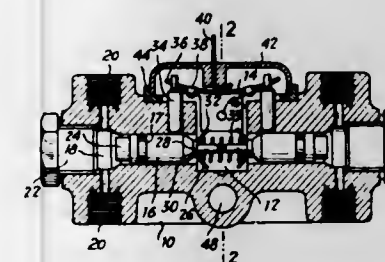
Filed Feb. 5, 1973, Ser. No. 329,791

Claims priority, application France, Feb. 10, 1972, 72.04463

Int. Cl. H01h 35/38

U.S. Cl. 200—82 D

2 Claims



A fluid pressure unbalance indicator comprising two separate pistons respectively subjected to forces created by the pressure prevailing in two independent fluid circuits, the pistons acting in opposition to one another and being mounted in a housing so as to move in conjunction with one another and to operate electrical contact members under the influence of a pressure difference which denotes failure of one of the fluid circuits and which produces a force capable of overcoming the force of a resilient system associated with the pistons. In the invention, the resilient system is situated in a region of the housing accessible to both pistons, and each end of the resilient system bears on a fixed portion of the housing and is engageable by the piston subjected to the higher of the fluid pressure forces.

3,825,707

### SWITCHING DEVICE FOR INDICATING THE LOADING OF A VEHICLE SEAT

Dieter Hanselmann, and Hans Prohaska, both of Bietigheim, Württemberg, Germany, assignors to SWF-Spezialfabrik für Autozubehör Gustav Rau GmbH, Bietigheim, Germany

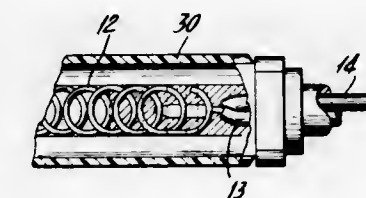
Continuation-in-part of Ser. No. 255,068, May 19, 1972, abandoned. This application June 8, 1973, Ser. No. 368,086

Claims priority, application Germany, May 21, 1971, 2125198

Int. Cl. H01h 3/14

U.S. Cl. 200—85 A

5 Claims



A switching device for indicating the loading of a vehicle seat includes a contact assembly comprising two resilient contact bands which are spaced apart by insulation holders and which will flex together upon loading of a seat to actuate an indicating circuit. The contact assembly advantageously comprises a band assembly of a form to be positioned in a major portion of the seat which is loaded by a person occupying the seat and it includes two terminals extending outwardly from the band which are adapted to be simply connected to a circuit for indicating, for example, when the seat is occupied and loaded and when the occupant has not fastened his seat belt. The band assembly may be of a shape such as an O, U, V or Z configuration and extend over a greater part of the surface of a seat and be embedded directly within the seat upholstery or a seat cushion and each band comprises a continuous flat helical spring with successive coils laying flat and being overlapped in contacting relationship. Adjacent bands are bendable upon loading of the seat to permit lateral as well as vertical movement to permit them to be easily displaced together in contacting engagement.

3,825,708

### METHOD AND MEANS FOR BREAKING A HIGH-POWER CIRCUIT

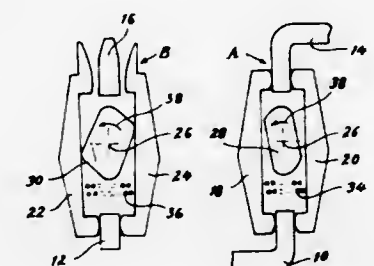
Kurt Tage Lennart Bergman, Sundsvall, Sweden, assignor to Kafak Aktiebolag, Sundsvall, Sweden

Filed Apr. 6, 1972, Ser. No. 241,662

Int. Cl. H01h 33/12

U.S. Cl. 200—146 R

5 Claims



A method of breaking a high-power current passing through a switch is characterized by transferring the current to a contact member which is then opened. The switch includes two groups of stationary contact members and a movable contact member, cams being provided to vary the opening and closing positions of the groups.



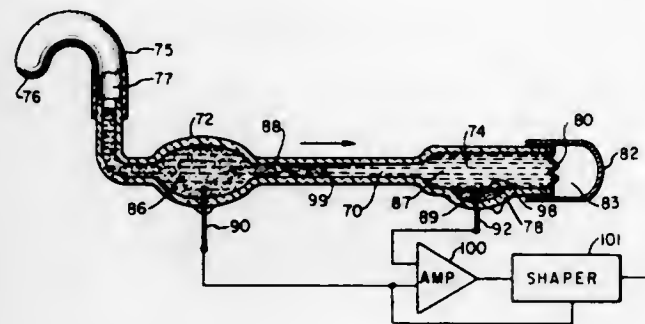
### 3,825,709 TRANSDUCER DEVICE

Arsene N. Lucian, P.O. Box 300, Manasquan, N.J. 08736  
Continuation-in-part of Ser. No. 37,965, May 18, 1970, Pat.  
No. 3,701,868. This application Oct. 27, 1972, Ser. No.  
301,268

Int. Cl. H01h 29/00

U.S. Cl. 200—192

16 Claims



A transducer using the electrocapillary effect at a single interface of a liquid metal and an electrolyte in which the metal is moved, by a force applied thereto, to disturb the interfacial tension, to result in the production of a voltage.

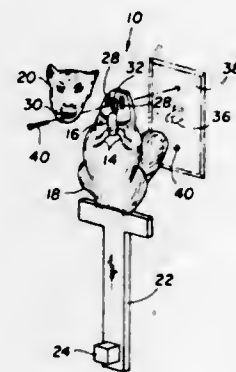
### 3,825,710

ANIMATED OPERATOR FOR ELECTRICAL SWITCHES  
Stuart J. Roberts, Denville, N.J.; Harold Rosenbaum, 29 Brit-  
tany Rd., Montville, N.J. 07045, and Sol Inspector, 59 Fair-  
field Ave., West Caldwell, N.J. 07006, assignors to said  
Rosenbaum and Inspector, by said Roberts  
Filed Sept. 10, 1973, Ser. No. 396,068

Int. Cl. H01h 3/02

U.S. Cl. 200—172 A

9 Claims



An animated operator for use with an electrical switch of the lever type in which the switch lever may be operated from a distant position while causing a corresponding animated movement to be performed by the operator.

### 3,825,711

#### ELECTRICAL SWITCH

Keith Lewis, Burnley, England, assignor to The Lucas Electri-  
cal Company Limited, Birmingham, England  
Filed Mar. 26, 1973, Ser. No. 344,552

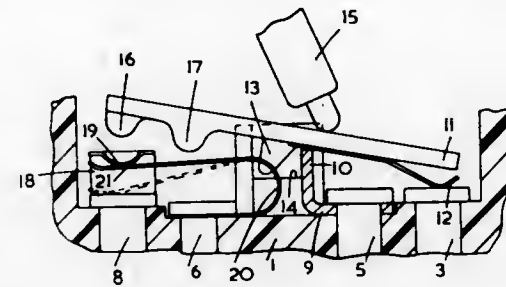
Int. Cl. H01h 5/18

U.S. Cl. 200—67 G

5 Claims

An electrical switch comprises a plurality of fixed contacts and a movable contact mounted on a carrier. There is provided an operating member which effects movement of the carrier between a first position in which the movable contact electrically interconnects the fixed contacts and a second position in which the movable contact is spaced from the fixed

contacts. The switch also includes further fixed contacts which are associated with a resilient conducting member. The resilient conducting member is electrically connected to a first of the further fixed contacts and is biased to be connected electrically with a second of the further fixed contacts when



the carrier is in one of its positions. The carrier includes a projection which, when the carrier is in its other position, engages the resilient member, and urges it out of connection with the second of the further fixed contacts and into electrical connection with a third of the further fixed contacts.

### 3,825,712

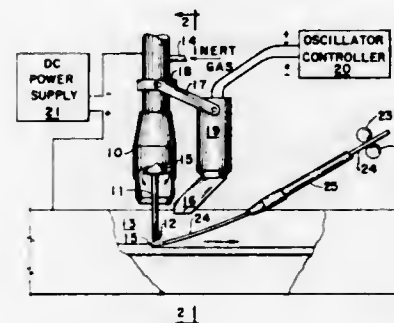
#### WELDING PROCESS

Francis E. Gibbs, Pleasanton, Calif., assignor to Kaiser Alu-  
minum & Chemical Corporation, Oakland, Calif.  
Filed Aug. 3, 1972, Ser. No. 277,566

Int. Cl. B23k 9/00

U.S. Cl. 219—137

15 Claims



This invention relates to a narrow-groove Gas-Tungsten-Arc (GTA) welding process for the butt welding of thick aluminum plates wherein the arc is oscillated across the width of the groove at a frequency between 100 and 300 cycles per minute. Shorter welding times and improved weldment soundness are obtained.

### 3,825,713

#### FUNCTION CONTROL CIRCUIT FOR EDM POWER SUPPLY

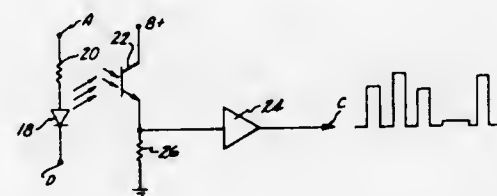
Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Indus-  
tries Operating Corp., New York, N.Y.

Filed May 8, 1972, Ser. No. 251,352

Int. Cl. B23k 9/16

U.S. Cl. 219—69 G

15 Claims



A system for controlling an electrical discharge machining apparatus wherein the system is rendered responsive to an

electrical gap parameter such as gap current or gap voltage level. Included in the system for responding to gap condition is a sensing circuit which includes a light-emissive device connected in circuit with the gap or with other essential operating elements such that there is provided a light output of an intensity proportional to gap current or voltage. A second, light responsive device such as a phototransistor or photo diode is used to convert the light signal into an electrical control signal, which signal in turn is utilized in a function control for the electrical discharge apparatus. The function control exercised includes machining power pulse on-time and off-time control, interruption of machining power responsive to gap short circuit condition, servo feed by providing relative movement of controllable speed and direction between a tool electrode and the workpiece, the gap width, and interruption of the power for the power supply in order to protect against gap short circuit condition arising from failure of an essential switching element in the EDM power supply such as one of the output electronic switches.

### 3,825,714

#### METHOD AND APPARATUS FOR CONTROLLING THE FEED OF AN ELECTRODE-TOOL RELATIVE TO A WORKPIECE IN ELECTRICAL DISCHARGE MACHINING

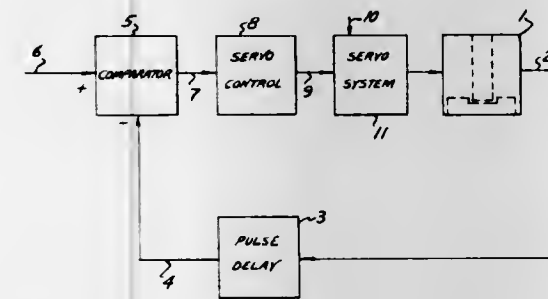
Georges-Andre Marendaz, Geneva, Switzerland, assignor to  
Ateliers des Charmilles S.A., Geneva, Switzerland  
Filed May 15, 1973, Ser. No. 360,407

Claims priority, application Switzerland, May 17, 1972,  
7292/72

Int. Cl. B23k 9/16

U.S. Cl. 219—69 G

12 Claims



A method and apparatus for controlling the advance, or feed, of an electrode-tool relative to a workpiece in electrical discharge machining, such as to provide maximum material removal efficiency and minimum electrode-tool wear. The control of the advance, or feed, of the electrode-tool is achieved by comparing a reference magnitude of predetermined value with an achieved magnitude depending upon the machining conditions, the achieved magnitude being obtained by measuring the random time delay between the moment at which a machining voltage pulse is applied across the machining gap between the electrode-tool and the workpiece and the moment at which an electrical discharge occurs across the gap.

### 3,825,715

#### PROCESS FOR CONTROLLING ELECTRICAL DISCHARGE SHAPING

Nageo Saito; Kazuhiko Kobayashi, both of Nagoya, and  
Shigeru Takagi, Kasugai, all of Japan, assignors to Mit-  
subishi Denki Kabushiki Kaisha, Chiyoda-ku, Japan

Filed May 29, 1973, Ser. No. 364,420

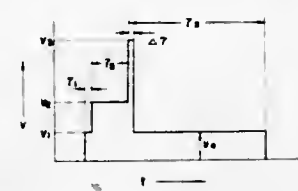
Int. Cl. B23k 9/16

U.S. Cl. 219—69 M

8 Claims

A process for electrical discharge shaping a workpiece by impressing a pulse voltage across a working gap between the workpiece and an electrode, wherein a waveform of the pulse

is controlled by effectively discharging the pulse. The working gap is controlled, so as to contribute to stable processing, depending upon the controlled pulse waveform. A pulse time width is divided into three intervals. When the discharge is formed during the first time interval the electrode movement



is controlled to increase the working gap. When the discharge is formed during the second time interval, the electrode movement is controlled to maintain the working gap. When the discharge is formed during the third time interval or no discharge is generated, the electrode movement is controlled to decrease the working gap.

### 3,825,716

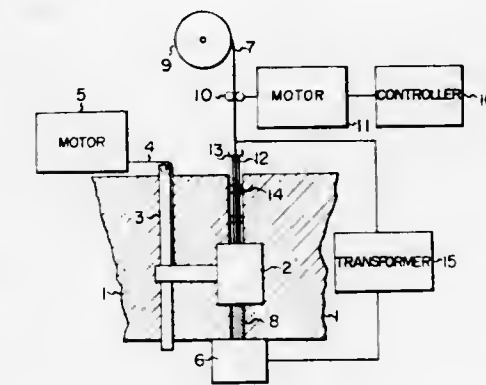
#### ELECTROSLAG WELDING METHOD

Satoshi Kokura; Genzi Taki, and Kiyoshi Watanabe, all of  
Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Sept. 29, 1972, Ser. No. 293,510

Int. Cl. B23k 25/00

U.S. Cl. 219—73

13 Claims



An electroslag welding method utilizing, as its heat source, the resistance heat created in a molten slag during passage of current therethrough, in which a consumable guide is disposed in an opening that is, the groove defined by parent metals for guiding a welding electrode and fixed relatively centrally of groove by means of solid pieces of a flux so as to preclude electric shorting occurring between guide and the groove faces of said parent metals, and then a welding electrode in the form of a ribbon is fed through said consumable guide from a reel of said welding electrode.

### 3,825,717

#### HAMMERING CIRCUIT FOR STUD WELDING APPARATUS

James S. Hughes, Jr., Bellmawr, N.J., assignor to Omark In-  
dustries, Inc., Portland, Oreg.

Filed Feb. 14, 1973, Ser. No. 332,390

Int. Cl. B23k 9/00, 11/04

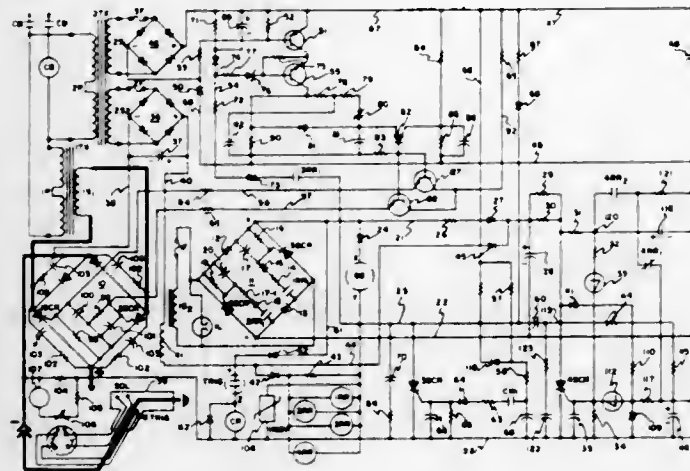
U.S. Cl. 219—98

11 Claims

Stud welding apparatus including circuitry for effecting a hammering action of the stud against the workpiece to break through paint, scale, etc. to establish good electrical contact. The stud welding gun includes a lifting solenoid and the hammering is effected, in one species, by converting the solenoids normal full wave rectified input to half wave rectified output and in a second embodiment by interrupting the DC power supply to the gun solenoid through a solid state device by an associated frequency variable multivibrator. Hammering is



discontinued upon the sensing of the establishment of welding current across the stud and workpiece in one species and in a second by continuing hammering until the electrical re-



sistance across the stud and workpiece reduces to a predetermined level. A safety timer circuit is employed to discontinue hammering after a predetermined time regardless of the establishment of acceptable electrical contact.

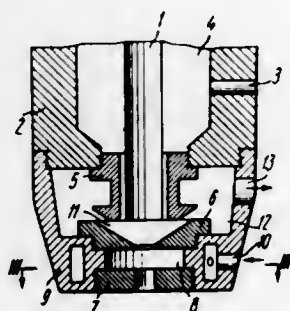
### 3,825,718 PLASMATRON

Otari Yakovlevich Mostashvili, ulitsa Perovskoi, 15; Robert Nikolaevich Suladze, ulitsa Barnova, 112; Ivan Isidorovich Navdarashvili, ulitsa Imvsky Tupik 14, and Mikhail Georgievich Devdariani, 4 Barnova, 20, all of Tbilisi, U.S.S.R.  
Filed Dec. 8, 1971, Ser. No. 205,975

Int. Cl. B23k 9/00

U.S. Cl. 219—121 P

3 Claims



A consumable cathode plasma arc torch for working metals with a water-stabilized plasma arc in which a tubular nozzle is mounted in co-axial relationship to the cathode with the lower lateral surface thereof in coplanar relationship with an upper lateral surface of one of two tandemly mounted arc forming nozzles. This relationship increases the reliability and efficiency of the plasma arc torch by decreasing the possibility of cooling liquid getting into the arc-forming nozzles and by decreasing the distance between the lower end of the cathode and the inner arc-forming nozzle.

### 3,825,719 CONTACT NOZZLE FOR A CONTINUOUS ARC WELDING ELECTRODE

Sven Jonas Roland Jonsson, Laxa, Sweden, assignor to Elek-triska Svetsningsaktiebolaget, Gothenburg, Sweden  
Filed June 18, 1973, Ser. No. 371,310

Claims priority, application Sweden, June 22, 1972, 8287/72; Sweden, Dec. 19, 1972, 16597/72

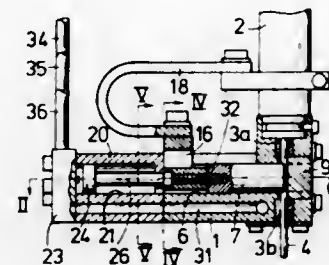
Int. Cl. B23k 9/00

U.S. Cl. 219—130

3 Claims

A contact nozzle for supplying welding current to a continuous, fusible arc welding electrode in which a pneumatic

cylinder or other resilient means maintain a contact member in engagement with an electrode backed on the opposite side



by a wear-resistant, electrically nonconducting or poorly conducting backing member.

### 3,825,720

#### ADAPTER FOR A MIG WELDER

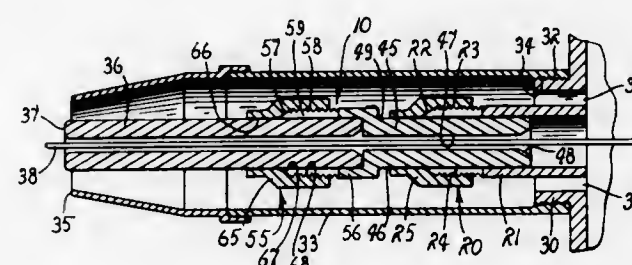
Adam J. Zillinger, Jr., 148 Minnewawa Ave., Fresno, Calif. 93727

Filed July 27, 1973, Ser. No. 383,098

Int. Cl. B23k 9/26

U.S. Cl. 219—130

3 Claims



An adapter for a welding tool to maximize the useful life of a welding wire feed tube for the tool, the adapter having an elongated tool engaging shank; a tube receiving sleeve borne by the shank; and a tube lock ring secured on the sleeve.

### 3,825,721

#### ELECTRODE FOR VERTICAL-UP OPEN ARC WELDING USING MOLDING SHOES

John E. Carroll, Chagrin Falls, and Carl E. Stump, Euclid, both of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 216,233, Jan. 7, 1972, abandoned. This application Jan. 4, 1973, Ser. No. 317,352

Int. Cl. B23k 35/22

U.S. Cl. 219—146

9 Claims

A cored-type welding electrode for vertical-up welding using molding shoes to hold the molten metal in position, using an open arc which does not require an externally-supplied shielding gas and which permits very high linear welding speeds. The core materials include a metal fluosilicate capable of breaking down in the heat of the arc to produce: a gas in sufficient volume to shield the arc from the atmosphere and a slag forming ingredient; and, other slag forming ingredients including the metal oxides and the alkali metal fluorides in a critical volume such that the total slag forming ingredients do not exceed six percent of the total electrode weight and the oxides are present in quantities at least greater than the fluorides. The self-shielded electrode further permits the use of active deoxidizers in quantities of under 0.5 percent.

### 3,825,722

#### THERMAL PRINTING HEAD

Hideo Taniguchi, Kyoto, Japan, assignor to Toyo Electronics Industry Corp., Kyoto, Japan

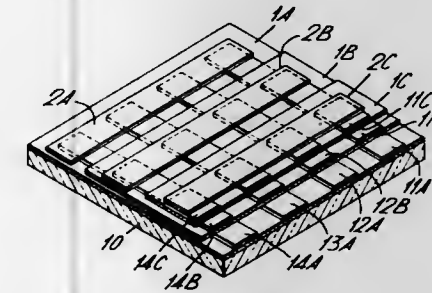
Filed Mar. 8, 1973, Ser. No. 339,431

Claims priority, application Japan, Mar. 16, 1972, 47-26794

Int. Cl. H05b 1/00

U.S. Cl. 219—216

10 Claims



A thermal printing head comprising a plurality of thin insulating layers each being provided on one surface thereof with a plurality of electrically conductive slips arranged in spaced parallel relation to one another. The insulating layers are piled stepwise one upon another so that one end portion of the upper surface of each of the layers with the corresponding end portions of the conductive slips thereon are exposed from beneath the end of the layer immediately above. A slip of an electrically resistive material extends transversely of and in contact with the exposed end portions of the conductive slips on each of said insulating layers, so that between each adjacent two of the conductive slips on all the insulating layers there are defined a plurality of dot-like portions of the resistive slips which are arranged in rows and columns on the printing surface of the head. Upon impression of a voltage between adjacent pairs of the conductive slips those defined portions of the resistive slips which are between the adjacent pairs of conductive slips are heated, and by selecting the pairs of conductive slips between which a voltage is to be applied it is possible to cause the heated defined dot-like portions of the resistive slips to take the shape of a symbol, so that when a sheet of heat-sensitive paper is pressed against the heated portions, the symbol is printed on the paper.

### 3,825,723

#### TEMPERATURE AND HUMIDITY TEST APPARATUS

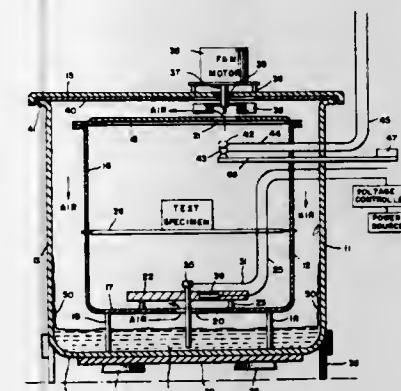
John O. Roeser, Arlington Heights, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Feb. 14, 1973, Ser. No. 332,376

Int. Cl. F27d 11/02

U.S. Cl. 219—401

14 Claims



An apparatus is provided for subjecting specimens such as electric switches and other components to a temperature and humidity controlled environment, particularly to a cycling en-

vironment which involves changes in relative humidity and temperature. The apparatus includes an inner drum nested within an outer drum so that the walls of the inner drum are spaced from the walls of the outer drum. The inner drum provides the specimen chamber, and an air inlet and air outlet are provided through the bottom and the top, respectively, of the inner drum. The bottom portion of the outer drum below the bottom of the inner drum serves as a water reservoir, and an electric heater is mounted on the bottom of the outer drum for heating the water contained in the outer drum. A thermostat within the water is operatively connected to the heater to maintain the temperature of the water at the desired level. A second heater is mounted within the inner drum adjacent the air inlet, and electrical control means are connected to the second heater so that the second heater supplies a constant amount of heat. An air blower or impeller is mounted on the outer drum above the air outlet of the inner drum, and the air impeller provides air flow from the air outlet, around the sides of the inner drum, over the water reservoir, through the air inlet, and through the specimen chamber. The air is heated to just below the desired test temperature as it passes over the heated water and becomes saturated with water. As the air passes through the air inlet into the specimen chamber, the second heater supplies just enough heat to raise the temperature of the air to the desired test temperature and to decrease the relative humidity of the air to the desired test humidity. Wet bulb and dry bulb thermocouples may be mounted within the specimen chamber and connected to a suitable recording device to record the wet bulb and dry bulb temperature conditions within the specimen chamber.

### 3,825,724

#### WRAP ADJUST DEVICE FOR CONTROLLING ENGAGEMENT BETWEEN A WEB AND ROLLER

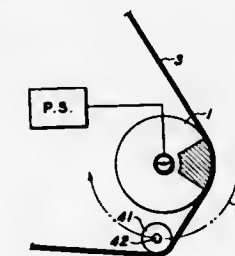
William Kingsley, and Robert F. Allis, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 171,819, Aug. 16, 1971. This application Dec. 26, 1972, Ser. No. 318,322

Int. Cl. H05b 1/02

U.S. Cl. 219—469

18 Claims



The temperature of a heat sensitive web is controlled by varying the contact area between the web and a thermo roller having an appropriate thermo energy device coupled to it. A wrap adjust roller is supported for movement along a circular path concentric with the periphery of the thermo roller and varies the surface area contact between web and thermo roller at different locations relative to the thermo roller.

### 3,825,725

#### THERMAL SYSTEMS INCORPORATING APPARATUS AND METHODS FOR SIMULATING TIME RELATED TEMPERATURES

Frank W. Leitner, and Bobby B. Childress, both of Charlotte, N.C., assignors to Coltron Industries, Inc., Charlotte, N.C.

Division of Ser. No. 779,778, Nov. 29, 1968, Pat. No. 3,586,830. This application June 9, 1971, Ser. No. 151,563

Int. Cl. H05b 3/06

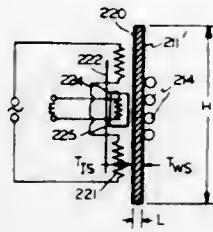
U.S. Cl. 219—530

10 Claims

Methods and apparatus for establishing and controlling thermal systems wherein sensing means may anticipate or log temperature conditions at other points, such as at the work or



loads and wherein the controlled heating means are related to the thermal capacity of the system. The simulation of load



temperature, regardless of presence of anticipation, is obtained even under varying load conditions.

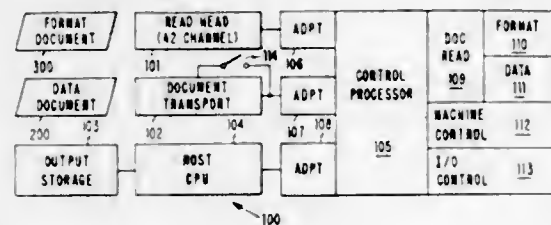
### 3,825,726 MULTIPLE FORMATTING FOR RECORD-CONTROLLED MACHINES

Richard L. Dorr, Rochester, Minn.; Edward G. Ihnot, Endwell, N.Y., and Malcolm E. Varner, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1973, Ser. No. 352,392  
Int. Cl. G06k 15/00; G06f 7/00

U.S. Cl. 235—61.6 R

14 Claims



A mark-reading machine, or other record-controlled device, produces an output record from indicia on a data documents, in accordance with specifications on one of a number of format documents. The data documents contain selection indicia, such as preprinted marks, for identifying which of the format documents applies thereto.

### 3,825,727 EMBOSSED CARD READER AND IMPRINTER

Domenico S. Sarcia, Winchester, Mass., assignor to Amron Research and Development Corporation, Longmeadow, Mass.

Filed Aug. 22, 1972, Ser. No. 282,715

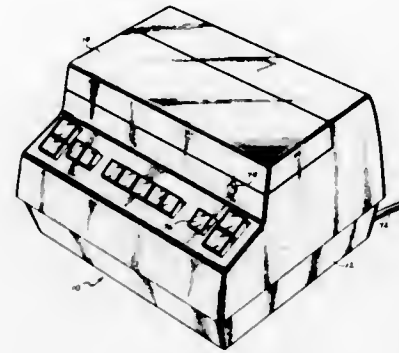
Int. Cl. G06k 13/07; B41J 45/12; B65h 5/06; G06k 1/12

U.S. Cl. 235—61.11 R

17 Claims

An embossed card reader and sales draft imprinter which employs a spring clutch drive assembly for driving an embossed card through a card reading station and an imprinting station. A guide plate assembly is provided for initially positioning the embossed card with respect to the card reading station. Spring-loaded embossment followers responsive to the

presence or absence of an embossment are located at the card reading station. These followers are used to modify the amount of light impinging upon a plurality of photodetectors in accordance with the presence or absence of the embossment. The output signals from the photodetectors are decoded



to provide a reading of the alphanumeric embossments on the card. After passing through the card reading station, the embossed card is brought into physical contact with a carboned sales draft to imprint thereon the embossed information on the card.

### 3,825,728 MAGNETIC CARD READER

Shunsaku Nakauchi, Mitaka, and Masanori Hirasawa, Tokyo, both of Japan, assignors to Tokyo Magnetic Printing Co., Ltd., Tokyo, Japan

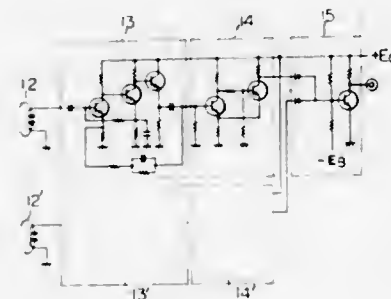
Filed Mar. 8, 1973, Ser. No. 339,220

Claims priority, application Japan, Mar. 14, 1972, 47-25212

Int. Cl. G06k 7/08; G11b 5/68

U.S. Cl. 235—61.11 D

5 Claims



A magnetic card reader for reading out digital code recorded magnetically on a card independently of variations in card velocity. A clock pulse signal is also recorded on the card and the reader reads out the digital code and clock pulse signal simultaneously and in synchronism with each other. The digital code and clock pulse signal are compared at a constant level in a detecting device so that only accurate digital code signals are read. The detecting device comprises amplifiers which reduce the degree of amplification in proportion to input frequency increases and which are connected respectively to each magnetic head and an AND

circuit to which the amplifier outputs are synchronously applied after being level-sensed.

### 3,825,729 CASH BOX WITH COIN COUNTER

Wilhelm Menke, Bingen, Germany, assignor to NSM-Apparatebau GmbH, Bingen/Rhein, Germany

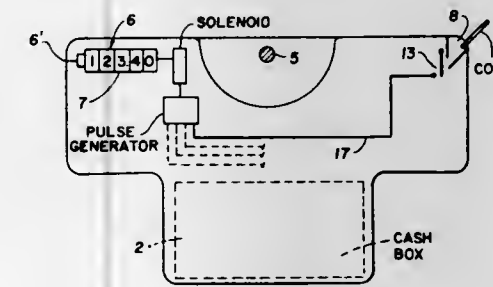
Filed Aug. 23, 1972, Ser. No. 283,222

Claims priority, application Germany, Aug. 26, 1971, 2142776

Int. Cl. G06m 3/08

U.S. Cl. 235—92 CN

2 Claims



In a coin operated machine such as a vending machine, jukebox or gaming device, a cash box is provided with a register operated by coins passing through a slot in the cash box for continuously indicating the total value of coins in the cash box.

### 3,825,730 TWO-WAY PROJECTION SYSTEM FOR DATA INPUT

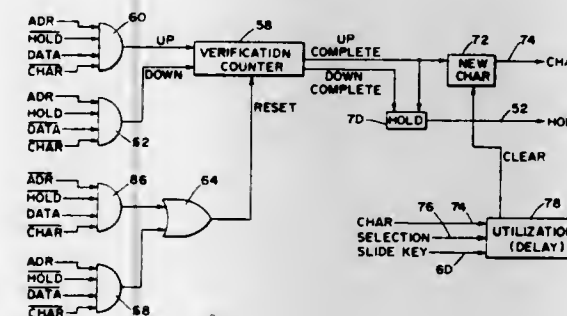
Harvey R. Worthington, Jr., Concord; Edward B. Rawson, Lincoln, and Daniel B. Schwarzkopf, Stow, all of Mass., assignors to Searle Medidata, Inc., Waltham, Mass.

Filed Nov. 7, 1972, Ser. No. 304,554

Int. Cl. G06m 11/00

U.S. Cl. 235—92 V

14 Claims



A data input terminal comprising a two-way projection system for the selection of desired input messages from a library of selectable messages. The library of messages is optically displayed in groups on a projection screen and selection of desired messages from the projected group is optically detected to provide electrical output signals representing screen locations corresponding to the selected messages.

### 3,825,731 NUMERICAL CONTROL SYSTEM

Kengo Kobayashi, Kawasaki; Mitsuo Manabe, Tokyo, and Shinichi Isobe, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

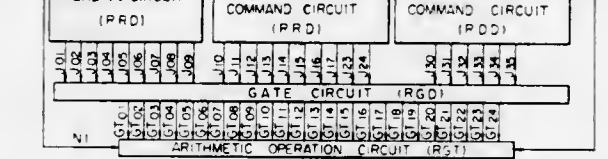
Continuation-in-part of Ser. No. 104,086, Jan. 5, 1971, abandoned. This application Jan. 5, 1973, Ser. No. 321,363

Claims priority, application Japan, Jan. 30, 1970, 45-7958

Int. Cl. G06f 15/46

U.S. Cl. 235—151.11

3 Claims



In the numerical control mode of the present invention, an incremental command and an absolute command are used together within a single block, thereby simplification of the programming process and extreme preciseness in the numerical control system being achieved.

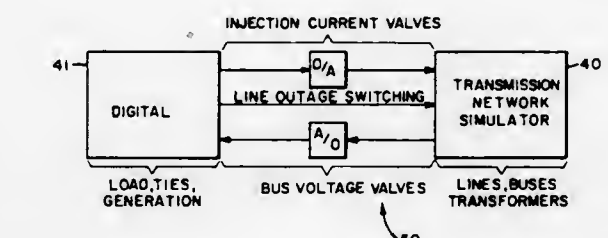
### 3,825,732 HYBRID POWER SYSTEM MODULES

Paul H. Haley, Pittsburgh, Pa., and Mark K. Enns, Ann Arbor, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 255,246

U.S. Cl. 235—151.21

18 Claims



Loadflow computer arrangements include a modularized analog network simulator which includes modular circuits representing power system generators and loads, as well as buses and lines. The modular generator circuit generator is constrained by scheduled generator electrical power and voltage magnitude values, and the modular load circuit is constrained by scheduled load power values. The modular bus, line, generator and load circuits are interconnected to simulate the power system and operate to force currents and voltages to satisfy current and voltage laws to provide the bus voltage solution.

### 3,825,733 TELEMETRY METHOD AND APPARATUS

Dowell White, 1312 Jessie Ln., Pasadena, Tex. 77502, and Daniel L. Craig, 225 Burwell, Highlands, Tex. 77562

Filed Aug. 11, 1971, Ser. No. 170,736

U.S. Cl. 235—151.31

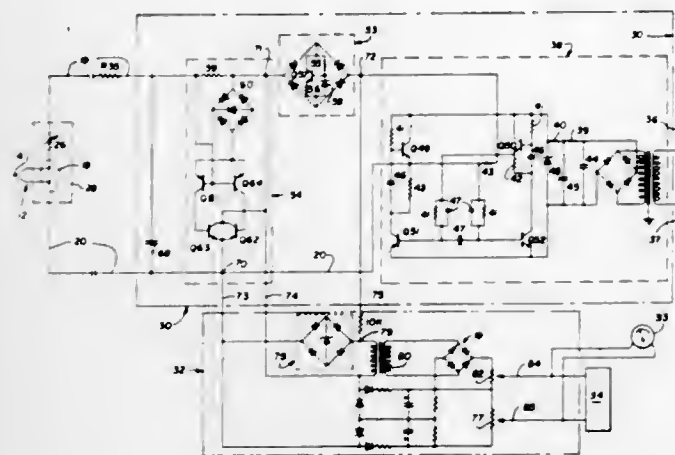
60 Claims

A method and apparatus for telemetry, wherein first and second electrical signals are generated and applied across a



remotely located electrical quantity, such as voltage or resistance, desired to be measured. The interaction of such first and second electrical signals with the electrical quantity to be

cles moving along the path. The output peaks from the scales are compared for detecting a failure in either scale during operation of the apparatus which would cause the peak weights to deviate by more than a permissible tolerance.



measured produces first and second resultant electrical signals which are used by a computer or analog portion of the telemeter to determine the value of the electrical quantity in question.

3,825,734

## MONITOR FOR MOVING VEHICLES

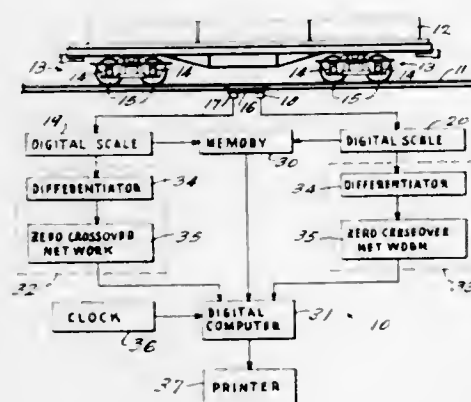
Norman H. Jacobs, Petersburg, Mich., and William C. Susor, Oregon, Ohio, assignors to Reliance Electric Company, Toledo, Ohio

Filed Mar. 14, 1973, Ser. No. 341,302

Int. Cl. G06f 15/20; G06g 7/48

U.S. Cl. 235-151.33

14 Claims



Apparatus for monitoring vehicles moving along a predetermined path, such as a train moving along a railroad track. A least two digital scales are positioned in the path and in a first embodiment include at least two load cells which are spaced apart less than the minimum axle spacing on the vehicles for successively measuring the axle weights of the moving vehicles. In a second embodiment, the load cells have a spacing greater than the maximum axle spacing on a truck at one end of a railroad car. The direction and speed of the vehicles are determined from the sequence and the time interval between peak outputs from the scales as the axles move sequentially over the scales. From the scale outputs, the apparatus may also determine when the vehicles stop or change direction, count the number of vehicles moving along the path, measure the total weight of each vehicle and identify the types of vehi-

### 3,825,735 COMMAND PULSE GENERATOR FOR COMPUTER-CONTROLLED MACHINING

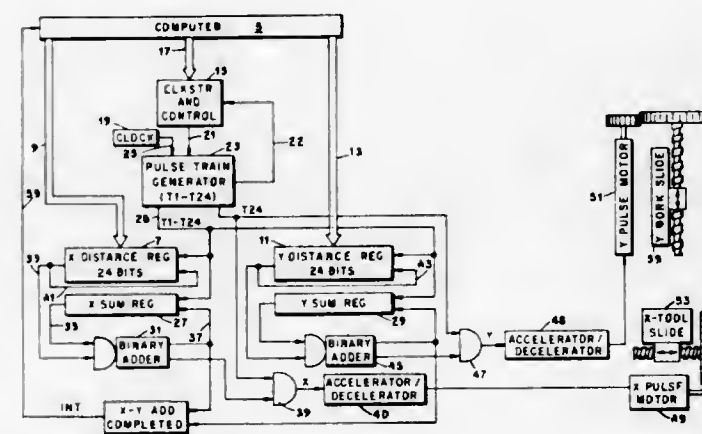
Gary L. Bowers; Clark M. Lay, both of Clinton, and Albert E. Stephens, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 12, 1973, Ser. No. 415,078

Int. Cl. G05b 19/40

U.S. Cl. 235-151.11

6 Claims



A system has been provided for generating travel command pulses in a machine tool positioning system under computer control which reduces computer computation time and at the same time allows increased machine tool travel speed. Pulse motors driven by pulse trains generated by the system under computer control provide the means for axis movement of the tool. The pulse trains for the axes movements are generated by an addition technique in a hardware hybrid digital differential analyzer. A 24-bit word representing the distance to be traveled along an axis is loaded from the computer core memory into a 24-bit distance register along with an 11-bit word loaded into a 11-bit clock store register which defines the amount of time allowed for tool travel corresponding to the given distance value. Addition is performed serially for each axis in parallel by corresponding 2-bit binary full adders having one input from the particular 24-bit distance register and another input from a 24-bit sum register which is initially cleared. The clock store register, after being loaded by the computer, loads the value into a counter which is counted to an overflow condition. This generates a train of 24 pulses which shift the contents of the distance register and the sum register into the binary full adder. The sum at the adder output is serially loaded into the sum register and repeatedly added to the original distance value, circulated in the distance register, at a rate determined by the rate of application of the train of 24 pulses applied to shift the contents of the distance and sum registers into the adder. A command pulse is generated provided there is an enable due to an overflow in the adder. The time interval between each 24-bit serial addition is determined by the value stored in the clock store register. The addition process is complete for a specific block when a marker bit is in the left-most bit position followed by all zeros in the sum register. This system requires considerably fewer electronic components and less complicated circuitry to achieve the generation of command pulses at a faster rate while reducing computer time.

### 3,825,736 CALCULATOR WITH PROVISION FOR EFFICIENTLY MANIPULATING FACTORS AND TERMS

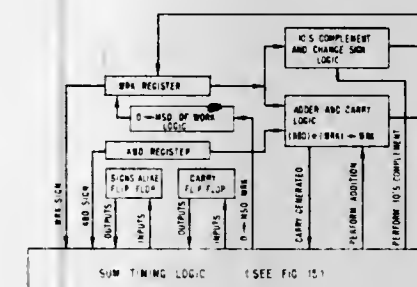
Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 826,306, May 21, 1969, abandoned, which is a division of Ser. No. 559,887, June 23, 1966, Pat. No. 3,566,160. This application Apr. 17, 1972, Ser. No. 244,994

Int. Cl. G06f 7/50, 7/52

U.S. Cl. 235-168

12 Claims



A keyboard input language is employed that enables the operator to combine numerical factors into algebraic terms in which multiply and divide operators appear in their normal algebraic context and to form algebraic sums of these terms by postfixing add and subtract operators. The algebraic sum of an algebraic number (representing an algebraic term) contained in a first register and of another algebraic number (representing another algebraic term) contained in a second register is formed by employing an adder for adding the number portions of the algebraic numbers contained in the first and second registers when the sign portions of these algebraic numbers are alike and by employing a circuit for complementing the sign and number portions of the algebraic number contained in the first register when the sign portions of the algebraic numbers contained in the first and second registers are different, employing an adder for thereafter adding the number portions of the algebraic numbers contained in the first and second registers, and employing a circuit for treating the sign and the sum of the number portions of these algebraic numbers without the most significant digit of the sum as the algebraic sum when the algebraic number contained in the first register has been complemented and the most significant digit of the sum is an overflow and for complementing the sign and the sum of the number portions of these algebraic numbers to get the algebraic sum when the algebraic number contained in the first register has been complemented and the most significant digit of the sum is not an overflow.

3,825,737

## DIGITAL PHASE DETECTOR

Alain Croisier, Cagnes, France, assignor to International Business Machines Corporation, Armonk, N.Y.

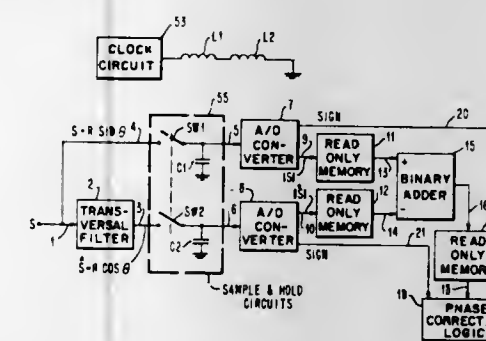
Filed Dec. 11, 1972, Ser. No. 313,893

Claims priority, application France, Dec. 21, 1971, 7147850

Int. Cl. G06f 15/34

U.S. Cl. 235-186

4 Claims



A detector in which the phase  $\theta$  of an applied sinusoid  $S = R \sin \theta$  is digitally obtained by determining the unit circle

equivalent of the quadrant of the phase angle from the sign match or mismatch between the sinusoid  $S$  and its quadrature  $S = R \cos \theta$  and by determining the unit circle equivalent of an acute reference angle  $\alpha$  derived according to the relation  $\alpha = \tan^{-1} e^{i\alpha} |S| - |n| \bar{S}$ . The signal and its quadrature are periodically sampled and digitally sign and magnitude encoded. The digital magnitudes  $|S|$  and  $|\bar{S}|$  are applied to table look-up devices to obtain  $\ln |S|$  and  $\ln |\bar{S}|$  respectively. A digital subtractor forms  $\ln |S| - \ln |\bar{S}|$ , which difference is then applied to a table look-up device to obtain  $\alpha$ . A logic element responsive to the encoded signs and the derived reference angle  $\alpha$  generates the coded equivalent to  $\theta$ .

3,825,738

## APPARATUS FOR GENERATING TWO AMPLITUDE-STABILIZED VOLTAGES

Felix Blaschke, and Lothar Schleicher, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

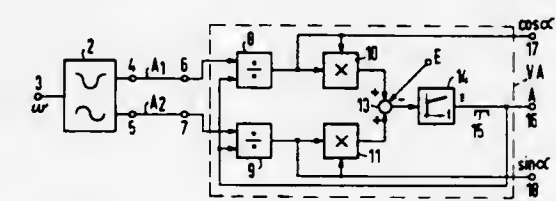
Filed Sept. 7, 1972, Ser. No. 286,924

Claims priority, application Germany, Sept. 9, 1971, 2145134

Int. Cl. G06g 7/22

U.S. Cl. 235-197

3 Claims



An apparatus for generating two amplitude-stabilized sinusoidal alternating-current voltages is disclosed. The apparatus includes a two-phase generator which is connected in cascade ahead of a vector analyzer. The output voltages of the two-phase generator are made to follow the output voltages of the vector analyzer with a control quantity which depends linearly on the difference between these voltages. The apparatus of the invention improves amplitude stabilization for the two-phase generator and accelerates the start-up thereof.

3,825,739

## HIGH SPEED FLUIDIC DEVICES

Edward F. Richards, and Warren B. Depperman, both of Winterpark, Fla., assignors to Martin-Marietta Corporation, New York, N.Y.

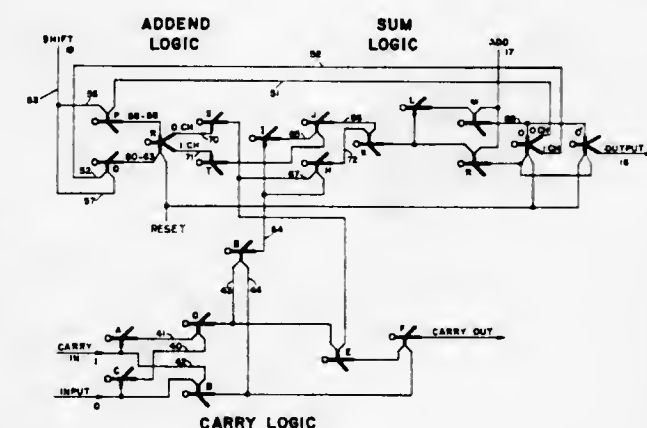
Division of Ser. No. 546,935, May 2, 1966, Pat. No. 3,550,604.

This application Sept. 16, 1970, Ser. No. 72,902

Int. Cl. G06d 1/10

U.S. Cl. 235-201 PF

7 Claims



This invention relates to a binary accumulator stage consisting of pure fluid bistable and OR-NOR elements. The stage is



joined with other similar stages to form a binary accumulator. Each stage sums an input value, a carry-in value supplied by a previous stage, and an addend value present in the addend register. An output signal and a carry-out signal are generated by each stage, the carry-out signal being fed to the succeeding stage as a carry-in signal.

3,825,740

# RECHARGEABLE FLASHLIGHT AND SUPPORT STAND THEREFOR

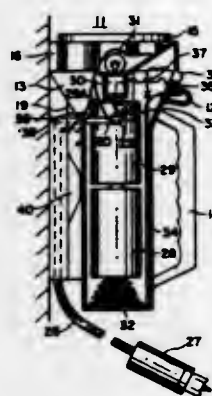
Abraham Friedman, and Aaron G. Friedman, both of 2444 Forest Green Rd., Baltimore, Md. 21209

Continuation-in-part of Ser. No. 291,518, Sept. 22, 1972, Pat. No. 3,749,905. This application May 7, 1973, Ser. No. 357,747. The portion of the term of this patent subsequent to July 31, 1990, has been disclaimed.

Int. Cl. F21H 7/00; H02J 7/00

U.S. Cl. 240—10.6 CH

17 Claims



A portable flashlight having rechargeable batteries and a support stand for attachment to a motor vehicle is provided. The flashlight defines a pair of contact electrodes mounted on the exterior of the flashlight casing which engage the stand and provide support for the flashlight and electrical contact for recharging the flashlight. Charging means is provided to match the voltage of the motor vehicle battery to the voltage of the rechargeable battery and preferably a light emitting diode is used to indicate the flow of current to said rechargeable battery. It is also preferred to provide means to protect the rechargeable battery from reverse charging.

3,825,741

# LIGHT SOURCE WITH HIGH EFFICIENCY LIGHT COLLECTION MEANS

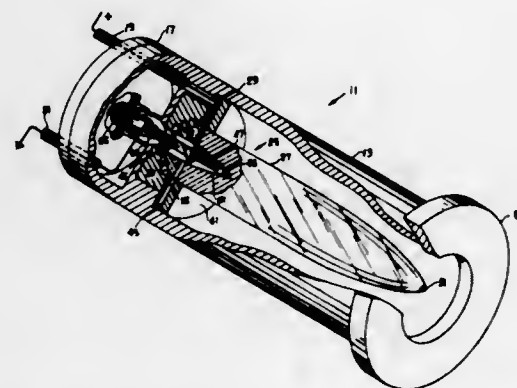
Harvey L. Morton, Lafayette, and Bradley H. Oland, Oakland, both of Calif., assignors to Tinsley Laboratories, Inc., Berkeley, Calif.

Filed Mar. 5, 1973, Ser. No. 338,376

Int. Cl. F21M 7/00

U.S. Cl. 240—41 R

14 Claims



A light collector which completely surrounds an extended source, such as an arc tube, with a forward and rearward col-

lector structure. The forward structure is an internally reflecting parabolic collector terminating in a narrow output aperture, while the rearward structure has two parts: a conical member with a rearwardly facing apex and a reflector member concavely behind the conical member. Both forward and rearward collector structures include axial pockets or apertures for receiving the extended source whose light rays are gathered and imaged through the output aperture.

3,825,742

# LAMP UNIT WITH CONTROLLED-DIFFUSION REFLECTOR AND METHOD OF MAKING THE REFLECTOR

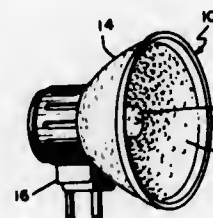
Robert E. Levin, South Hamilton, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jan. 2, 1973, Ser. No. 319,321

Int. Cl. F21V 7/06, 7/10

U.S. Cl. 240—103 R

12 Claims



For a lamp unit, a sagged glass reflector having a stippled, concave surface for providing controlled diffusion of light. The method of making the reflector comprises: providing a preheated concave mold having a uniform pattern of peened indentations in its surface and a plurality of vacuum drawing holes; placing a flat blank of glass across the opening of the mold; heating the glass to a plastic state; drawing a partial vacuum in the mold to force the plasticized glass to sag against the peened surface of the mold; cooling the glass to a rigid state; and applying a coating of reflective material on the concave surface of the sag-molded glass.

3,825,743

# MULTI-CHANGEABLE LAMPSHADE

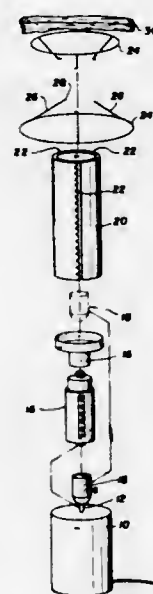
Frank E. C. Riley, Montreal, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 19, 1973, Ser. No. 408,193

Int. Cl. F21V 1/08

U.S. Cl. 240—144

4 Claims



A lamp shade structure comprising an elongated hollow translucent cylinder open at both ends, the cylinder having

parallel spaced notched tracks extending in the axial direction along the outer surface; a lamp shade; and means extending inward from the shade and engaging said tracks to support the cylinder within the shade.

3,825,744

# OVERSPEED DETECTOR FOR VEHICLE CONTROL SYSTEM

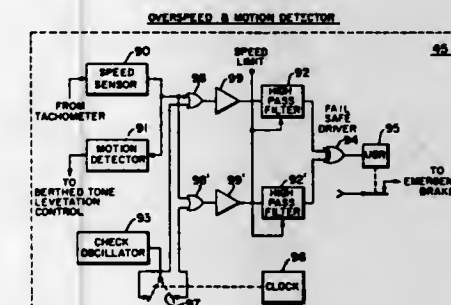
Henry C. Sibley, Adams Basin; John H. Auer, Jr., Fairport, and Willis R. Smith, Rochester, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Division of Ser. No. 152,845, June 14, 1971, Pat. No. 3,748,466. This application Mar. 26, 1973, Ser. No. 344,681

Int. Cl. B60I 15/00; G08B 21/00

U.S. Cl. 246—182 C

3 Claims



The Overspeed Detector for Vehicle Control Systems comprises a pair of high pass filters, having inputs governed by the actual vehicle speed signal, which deliver outputs only provided that the frequency of the inputs is above the frequency for the high pass filters, and the checking means includes an oscillator which generates a check signal with a frequency higher than the frequency of the high pass filters. The switching means alternately applies the check frequency to the inputs of the filters so that the filters alternately deliver output check frequency signals. Control means is governed jointly by outputs of the high pass filters and is operable to one state only when one of the filters at a time is delivering an output and operable to the other state when both filters deliver outputs contemporaneously.

3,825,745

# OBJECT DETECTING SYSTEM

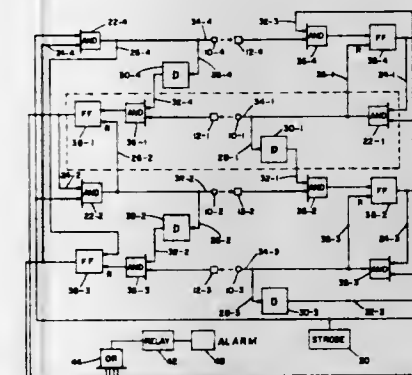
E. Craig Thomson, Wellesley, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed May 21, 1973, Ser. No. 362,113

Int. Cl. G06M 7/00; G08B 13/00

U.S. Cl. 250—208

24 Claims



An object detecting system in which an area is monitored by a series of sequentially operated sensor channels which form a step-wise moving beam to trace out a curtain of radiation across the area, each channel including a radiation transmitter and a corresponding radiation sensor. The transmitter of each channel is permitted to receive an energizing pulse only if an

output has been produced by the preceding channel; a pulse from a sensor is permitted to produce a channel output only if the transmitter of the preceding channel has received an energizing pulse. The system may be locked out if the radiation path between the transmitter and sensor of a channel is blocked by an object during operation of the channel.

3,825,746

# LIGHT PEN

Hayden Brian Kendler, Ilford; Lionel George Ripley, and David John Woollons, both of Lewes, all of England, assignors to National Research Development Corporation, London, England

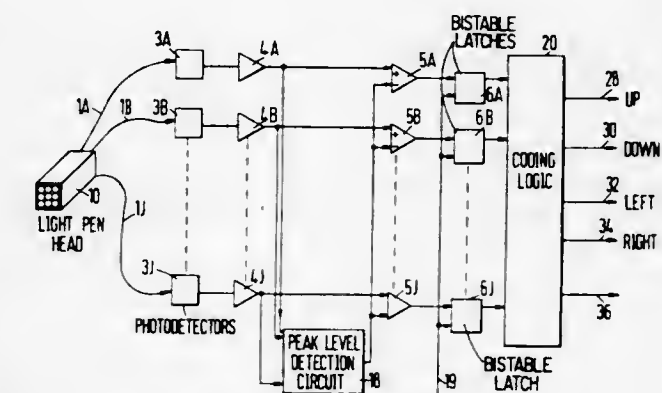
Filed Apr. 19, 1973, Ser. No. 352,692

Claims priority, application Great Britain, Apr. 27, 1972, 19582/72

Int. Cl. G02B 5/14; G08B 23/00

U.S. Cl. 250—209

6 Claims



A light pen for interactive computer graphics consists of an array of, for example, nine photo-electric sensors. Associated logic compares the signals from the various sensors with a common reference signal in order to generate command signals to move a spot of light incident on the array so that it is aligned with the centre of the array.

3,825,747

# SCANNER

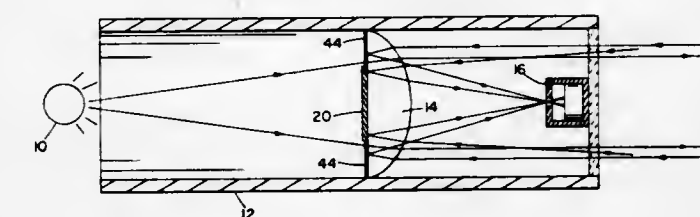
E. Craig Thomson, Wellesley, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed May 21, 1973, Ser. No. 362,117

Int. Cl. H01J 3/14

U.S. Cl. 250—216

10 Claims



Scanning apparatus in which a sensor is mounted within a transceiver casing and a single focusing means both forms a beam from a radiation source for delivery to a target and focuses a returned beam onto the sensor. A forward looking reflective surface is included in the path of one of the beams, causing that beam to be twice passed through the focusing means. The sensor faces the radiation source, thus avoiding the need for a separate lens for the returned radiation. The scanner is particularly useful in detecting retro-reflective targets.



3,825,748

## CAMERA AIMING STRUCTURE

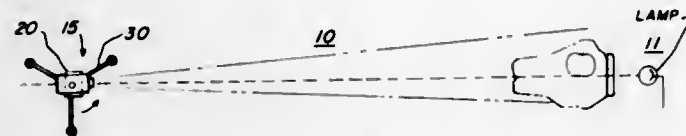
Henri Van Wandelen, San Carlos, Calif., assignor to Photo-Control Corporation, Minneapolis, Minn.

Filed Sept. 24, 1973, Ser. No. 399,928

Int. Cl. G01J 1/20

U.S. Cl. 250—221

16 Claims



The camera aiming structure in which a camera has associated therewith a lens and photo detecting apparatus together with a motor control circuitry and drive motor or motors adapted to orient the camera on a support or about one or more pivot axes to realign or align the camera with a subject in front of the same, the subject appearing in front of a lighted background so that the photo detecting lens and photo detecting apparatus sees a desired amount of light with respect to the subject to establish a reference position and detect change of the subject from a reference position.

3,825,749

## PHOTOELECTRIC PINFALL DETECTION SYSTEM

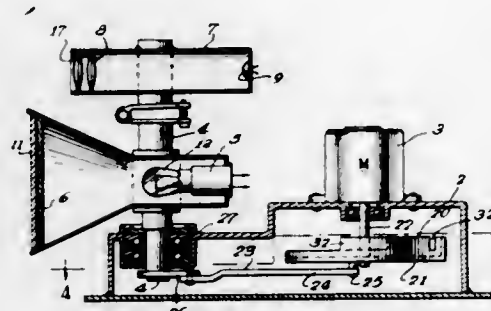
Michael G. Gautraud; Anthony J. Gretzky; Ivan Zachev; Richard D. Dunn, and Richard Szymanski, all of Muskegon, Mich., assignors to Brunswick Corporation, Skokie, Ill.

Filed June 5, 1972, Ser. No. 259,614

Int. Cl. H01J 39/12

U.S. Cl. 250—222 R

23 Claims



The invention includes a photoelectric bowling pin detection device and its interface with a computer scoring device and automatic pinsetter. The photodetection device or scanner includes a light source and a photosensitive element mounted for simultaneous sweep across the pin deck of the lane and a drive motor. Sensing action of the scanner and transmission of pinfall data to the computer is controlled by optical sensors mechanically gated by a rotating cylindrical mask attached to the scanner drive motor. The scanner is activated by passage of a delivered ball past a ball detector which causes the count to commence immediately upon ball passage and prior to initiation of the pinsetter cycle. Two scanners may be used and their counts compared for accuracy. In the event that all pins are down, the pinsetter is signaled to set new pins without the customary delay or detection cycle.

3,825,750

## METHOD AND APPARATUS FOR DETECTING DEFECTIVE SEALS ON BAG-SHAPED ARTICLES

Masao Hayase, Nagoya; Yoshiyuki Hayasaka, Tsushima, and Yozo Araki, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki, Tokyo, Japan

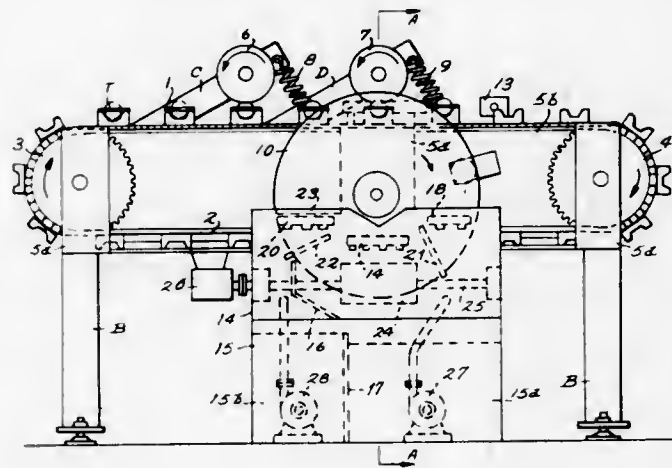
Filed Dec. 15, 1972, Ser. No. 315,509

Claims priority, application Japan, Dec. 21, 1971, 46-120128

Int. Cl. C10g 13/00

U.S. Cl. 250—223 R

7 Claims



Method and apparatus capable of not only automatically detecting seals on bag-shaped articles that are defective, but also automatically ejecting the defectively sealed bags as they move along a conveyor.

3,825,751

## METHOD AND APPARATUS FOR AERIAL RADIOACTIVITY SURVEYING FOR SURFACE MINERAL DEPOSITS WHICH COMPENSATES FOR THE RADIOACTIVE DECAY PRODUCTS IN THE ATMOSPHERE OF THE EARTH

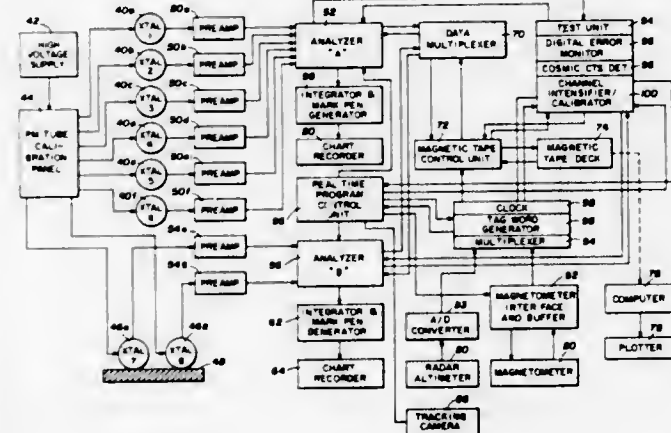
Clairborne H. Johnson, Jr., and Robert S. Foote, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 3, 1969, Ser. No. 13,917

Int. Cl. G01v 5/00

U.S. Cl. 250—253

12 Claims



An airborne gamma ray detection system is flown over the surface of the earth at a predetermined height. The energy

spectrum of gamma radiation from the surface of the earth is detected and recorded at locations spaced along the travel path of the system. The gamma radiation emanating from uranium decay products borne by the atmosphere of the earth is also sensed and recorded with sufficient regularity to detect naturally occurring variations therein. The gamma radiation data detected from the surface of the earth is then corrected in order to reduce the inaccuracies created by the gamma radiation sources present in the atmosphere.

3,825,752

## LOG-INJECTED-LOG SYSTEM

Robert P. Murphy, and H. Robert Froning, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

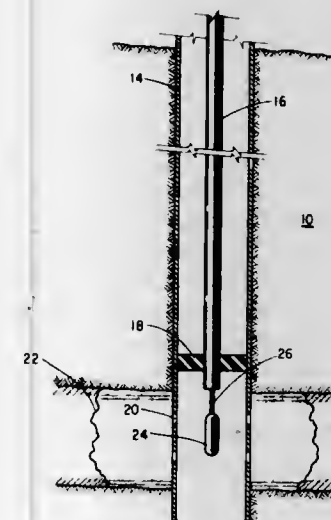
Continuation of Ser. No. 212,689, Dec. 27, 1971, abandoned.

This application Aug. 9, 1973, Ser. No. 387,091

Int. Cl. G01t 1/00

U.S. Cl. 250—258

5 Claims



This invention relates to determining the oil saturation in the underground rock reservoir by use of a log-inject-log technique. The formation rock adjacent the well bore is prepared such that the saturation conditions there are representative of those in the interwell area. A thermal decay time log is then run. A chlorinated hydrocarbon oil mixture or blend miscible with the formation oil and having a chlorine content about the same as the formation water is used to displace all the formation oil from adjacent the well bore. A second thermal neutron decay time log is then run. These two logs are then used to determine reservoir characteristics.

3,825,753

## METHOD FOR PROVIDING A NATURAL GAMMA-RAY LAG IN CONJUNCTION WITH ASSAY OPERATIONS WITHIN A BOREHOLE

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,647

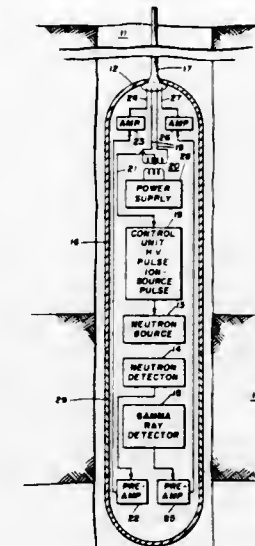
Int. Cl. G01v 5/00

U.S. Cl. 250—265

3 Claims

A borehole logging tool is utilized to assay the formations surrounding the borehole by operating a pulsed neutron source to irradiate the formations with bursts of neutrons. A neutron detector monitors the delayed neutrons produced by the formations upon irradiation by the neutrons, and a gamma-ray detector monitors the delayed gamma rays

produced by the formations upon irradiation by the source neutrons. The gamma-ray detector is also operated between



assay operations to detect the natural gamma radiation of the formations being assayed.

3,825,754

## DUAL SPECTRUM INFRARED FIRE DETECTION SYSTEM WITH HIGH ENERGY AMMUNITION ROUND DISCRIMINATION

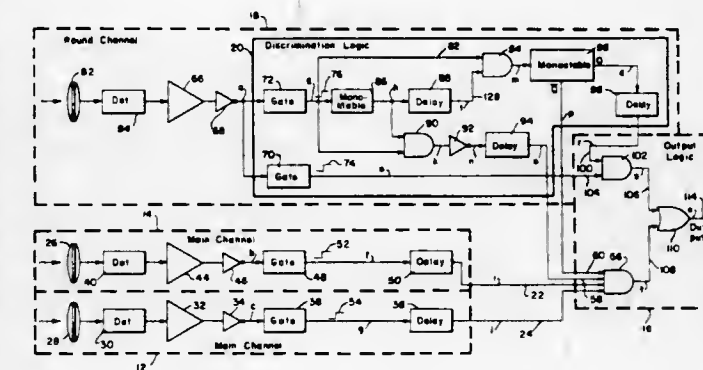
Robert J. Cinzori, and Gerald F. Stapleton, both of Santa Barbara, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed July 23, 1973, Ser. No. 381,814

Int. Cl. G01t 1/16

U.S. Cl. 250—338

14 Claims



Disclosed is a multichannel fire or explosion detection system wherein an output fire suppression or control signal is generated in response to fires or explosions which radiate power above a predetermined threshold level. The system includes means which discriminate against explosive fires in a fuel tank or other highly combustible material on the one hand and high energy exploding rounds of ammunition per se which do not subsequently cause a large scale fire. Thus, the present detection system will not generate an output fire suppression or control signal in the event a high energy ammunition round explodes in the vicinity of a fuel tank without igniting and exploding it. Additionally, fail safe detection logic means are provided in the present system and generate a time delayed fire suppression enable signal to thereby enable an output



signal gate in the event of a delayed or secondary fire or explosion above a predetermined magnitude.

3,825,755

## GAUGE FOR POLYMERS

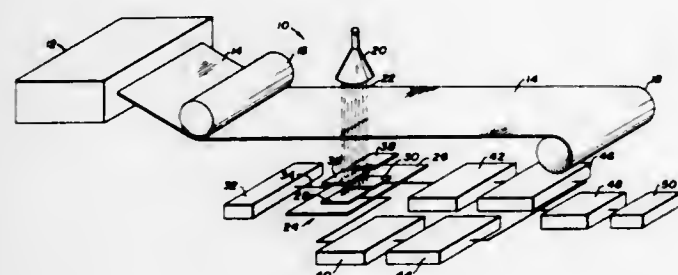
Wallace R. Ruskin, Blacklick, Ohio, assignor to Infra-Data, Inc., Columbus, Ohio

Filed Nov. 13, 1972, Ser. No. 305,990

Int. Cl. G01t 1/16

U.S. Cl. 250—339

8 Claims



A gauge for measuring the thickness of plastic film including an infrared radiation source transmitting light through or reflecting it from the film to reference and absorption photoconductive detectors. A signal generator is operatively connected to the detectors and causes modulation of the electrical signals emanating therefrom. Amplifiers and filters act on the signals and a comparator receives the signals from the reference and absorption detectors and gives an indication of the thickness of the film.

3,825,756

## CALIBRATION DEVICE FOR A GAS ANALYZER

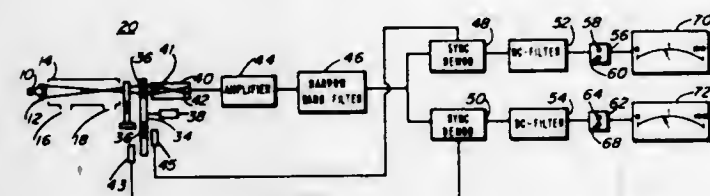
Morris Weiss, Pelham, N.Y., assignor to Barnes Engineering Company, Stamford, Conn.

Filed May 3, 1973, Ser. No. 356,876

Int. Cl. G01n 21/26

U.S. Cl. 250—343

3 Claims



A calibration device is provided for a gas analyzer which measures the amounts of a plurality of gases in a gas sample. A source of radiation is applied through a gas sample, and selectively applied to an infrared detector by a filter wheel which alternately applies radiation from an absorption region of the gas to be measured and from a transparent or reference wavelength. Filters for different absorption regions are used with the reference filter to detect the presence of different gases in the sample. A calibration device is inserted between the source and the infrared detector which attenuates radiation in the desired absorption regions while passing radiation in the reference region. The calibration device is comprised of a suitable infrared transmissive substrate, such as germanium, with different anti-reflective coatings on each side of the element to achieve the necessary attenuation for the measured wavelengths while passing radiation in the reference wavelength.

3,825,757

## NUCLEAR IMAGING SYSTEM

Harrison H. Barrett, Lexington, and Frank A. Horrigan, Waltham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

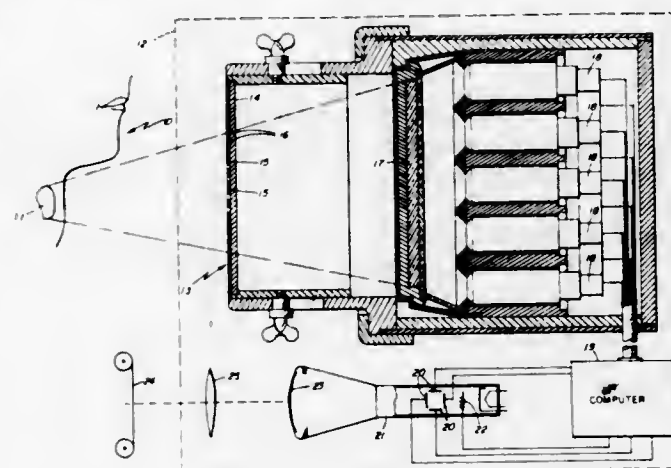
Continuation of Ser. No. 194,382, Nov. 1, 1971, abandoned.

This application May 14, 1973, Ser. No. 360,223

Int. Cl. G01n 21/34

U.S. Cl. 250—363

20 Claims



A nuclear imaging system for mapping the source of high energy nuclear particles from a living organ which has selectively absorbed a radioactive compound by spatially coding the energy from the source in a Fresnel pattern on a detector and decoding the detector output to produce an image of the source. The coding is produced by a Fresnel zone plate interposed between the nuclear energy source and the detector whose position is adjustable with respect to the detector to focus the slices of the nuclear source on the detector. By adjusting the zone plate to a plurality of positions, data from a plurality of cross-sectional slices are produced from which a three-dimensional image of the nuclear source may be obtained.

3,825,758

## SCINTILLATION CRYSTAL

Floro D. Miraldi, 2660 Edgemoor Rd., Cleveland Heights, Ohio 44106

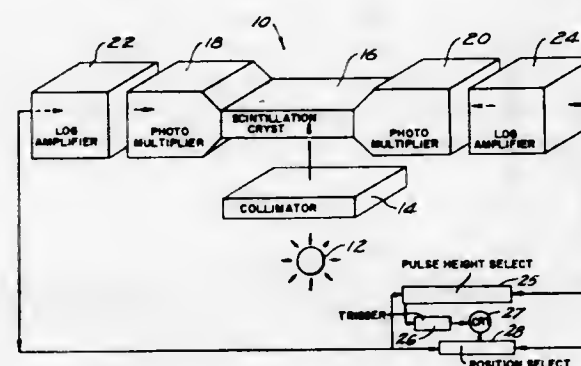
Continuation of Ser. No. 179,748, Sept. 13, 1971, abandoned.

This application Apr. 9, 1973, Ser. No. 349,022

Int. Cl. G01t 1/20

U.S. Cl. 250—366

4 Claims



A plurality of elongated scintillation crystals combined in a unit. The scintillation crystals may be either parallel bars or concentric tubular members. In either event separators such as aluminum foil may be used to prohibit signals from crossing between scintillation crystals. Magnesium oxide holds the individual scintillation crystals together as a unit and acts as a highly reflective material to enhance the transmission of the signals.

3,825,759

## GAMMA RAY DETECTOR WITH CHANNEL LIMITING MEANS

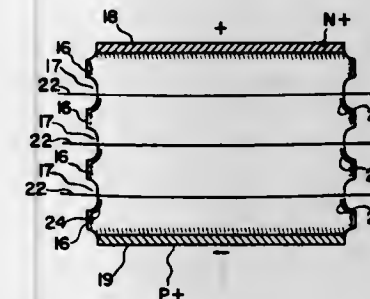
Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,922

Int. Cl. G01t 1/24

U.S. Cl. 250—370

12 Claims



High purity germanium gamma ray detectors are provided with at least one, and preferably a plurality, of lateral channel-limiting regions which prevent the short-circuiting of a substantial portion of the lateral surface of the detectors by spurious channels of conductivity-type opposite to that of the residual conductivity-type of the germanium.

3,825,760

## FLAME DETECTOR OPERABLE IN PRESENCE OF PROTON RADIATION

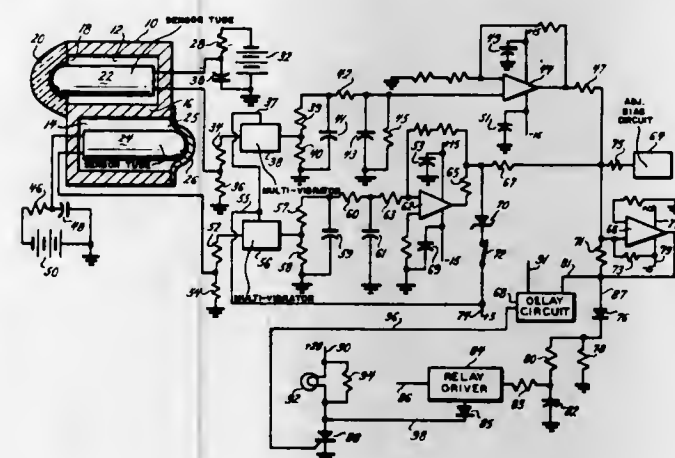
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, Washington, D.C.; Dayton J. Walker; John E. Turnage; Rodney M. F. Linford, both of Bridgeton, and Steve D. Cornish, St. Louis, all of Mo.

Filed Mar. 21, 1973, Ser. No. 343,308

Int. Cl. G01t 1/16

U.S. Cl. 250—372

8 Claims



A detector of ultraviolet radiation for operation in a space vehicle which orbits through high-intensity radiation areas. Two essentially identical ultraviolet sensor tubes are mounted within a shield which limits, to acceptable levels, the amount of proton radiation reaching the sensor tubes. The shield has an opening which permits ultraviolet radiation to reach one of the sensor tubes, hereafter referred to as the sensing tube. However, the shield keeps ultraviolet radiation from reaching the other sensor tube, hereafter referred to as the reference tube. Both sensor tubes receive approximately the same amount of proton radiation, but the sensing tube also is able to receive ultraviolet radiation. The circuitry of the detector subtracts the output of the reference tube from the output of the sensing tube. Therefore, any portion of the output of the sensing tube which is due to proton radiation is offset by the output of the reference tube.

reference tube. Consequently, the output of the circuitry of the detector is proportional to the amount of ultraviolet radiation reaching the sensing tube. A delay circuit in the detector prevents false alarms by keeping statistical variations in the proton radiation sensed by the two sensor tubes from developing an output signal.

3,825,761

## X-RAY APPARATUS FOR DISPLAYING IN SLOW MOTION TISSUES WHICH MOVE WITH THE RHYTHM OF THE HEART

Edmund Geratsdorfer, Munich, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 281,117, Aug. 16, 1972, abandoned,

which is a continuation of Ser. No. 93,089, Nov. 27, 1970,

abandoned. This application July 5, 1973, Ser. No. 376,364

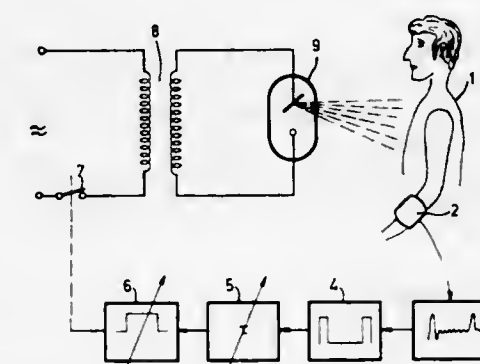
Claims priority, application Germany, Dec. 17, 1969,

1963312

Int. Cl. H05g 1/00

U.S. Cl. 250—402

2 Claims



A method of X-ray examination of objects that move in rhythm with the heart wherein the image information is switched on and off in synchronism with the heart action. In a preferred embodiment, the high voltage supply of the X-ray tube is switched on and off at the heart frequency and is on for a period that is short compared with the duration of one heart action.

3,825,762

## APPARATUS FOR MEASURING LUMINESCENT RADIATION

John U. White, 80 Lincoln Ave., Darien, Conn. 06902

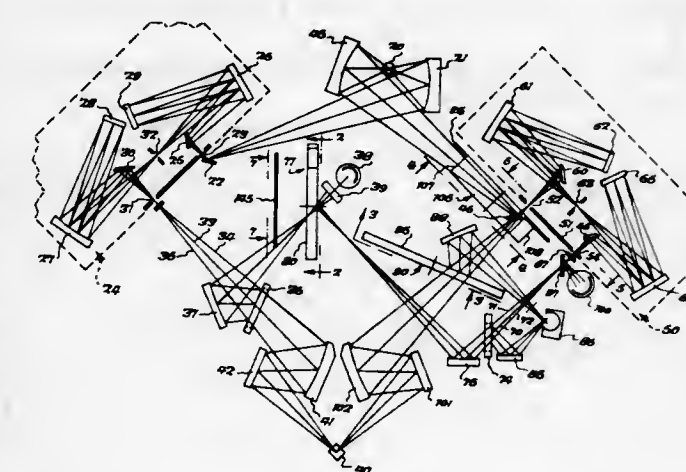
Continuation-in-part of Ser. No. 277,390, Aug. 2, 1972. This

application Dec. 5, 1972, Ser. No. 312,295

Int. Cl. G01n 21/52

U.S. Cl. 250—458

30 Claims



A luminescence spectrophotometer having an excitation monochromator and a dual channel emission monochromator



which receives light through one channel to form a monochromatic calibration beam. The beam is then split into two parts. One part is directed to a first detector having known wavelength response characteristics, and the second part is sent back through the other monochromator channel to a second detector. The ratio of these detector outputs is measured to determine the relative transmission and sensitivity of the luminescence system at each wavelength. Monochromatic light from the excitation monochromator also is split into two parts, with one going to a sample of luminescent material and the other going to the first detector alternately with the first part of the calibration beam. The emitted light from the sample and the second part of the calibration beam are directed to opposite sides of a rotating chopper and then alternately through the second monochromator channel to the second detector. The readings from the two detectors are combined in an electrical circuit to obtain a ratio that is a function of the ratio of luminescent to excitation intensities and is independent of source brightness and detector sensitivity.

3,825,763

### LUMINESCENT SCREEN HAVING A MOSAIC STRUCTURE

Martinus Adrianus Cornelis Ligtenberg; Albert Leendert Nicolaas Stevels, and Agnes Desiree Maria DePauw, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

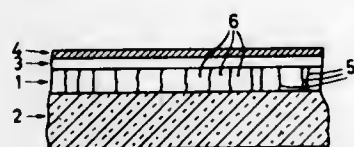
Filed July 10, 1972, Ser. No. 270,494

Claims priority, application Netherlands, July 10, 1971, 7109571

Int. Cl. G01t 1/20

U.S. Cl. 250—486

17 Claims



In a luminescent layer which is composed of spatially separated areas for reduction of lateral light dispersion in the layer, this subdivision is realized by provision of a crack structure in the luminescent layer.

This crack structure is realized by thermal treatment of a layer which is provided on a substratum, and can be made optimum by an appropriate choice of the layer thickness, so that deposition in a plurality of sublayers can be advantageous. The crack structure can also be caused by a pattern which is provided in the substratum surface or by means of a gauze which serves as a substratum.

3,825,764

### HIGH INTENSITY MODULATED INFRARED RADIATION SOURCE

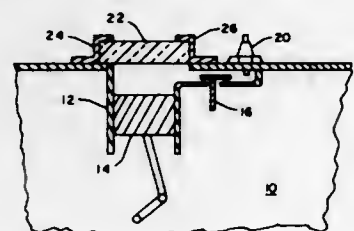
Glenn A. Anderson, Sr., Nashua, N.H., assignor to Sanders Associates, Inc., Nashua

Filed Oct. 2, 1972, Ser. No. 293,989

Int. Cl. G21h 3/00

U.S. Cl. 250—495

5 Claims



An internal combustion reciprocating engine having a highly transparent window replacing the head or a portion

thereof provides a modulated infrared radiation source whereby the radiation from the combustion gases passing through the window is essentially fully modulated at varying frequencies.

3,825,765

### PHOTOELECTRIC SURFACE SCANNING DEVICE

Helmut Schöber, Taufkirchen, and Bernd Marquardt, Munich, both of Germany, assignors to Firma Erwin Sicke Optik-Elektronik, Waldkirch, Germany

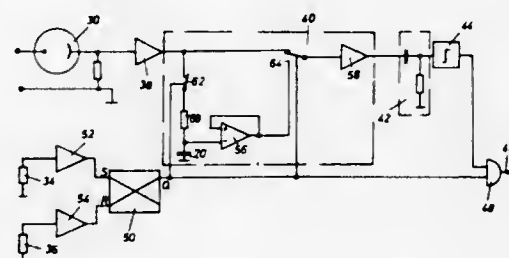
Filed Sept. 17, 1973, Ser. No. 397,813

Claims priority, application Germany, Sept. 14, 1972, 2245058

Int. Cl. G01n 21/38

U.S. Cl. 250—563

5 Claims



The signal from the photoelectric detector is employed by an electronic flaw analyzer only during the time that the light beam is sweeping across the surface to be examined. That signal is cut off from the flaw analyzer during the times that the light beam passes beyond the edges of the surface being examined. During these periods of cutoff, the flaw analyzer is supplied with a stored signal which stored signal was formed by taking the mean of a previous signal from the photoelectric detector.

3,825,766

### ELECTRICAL CONTROL APPARATUS

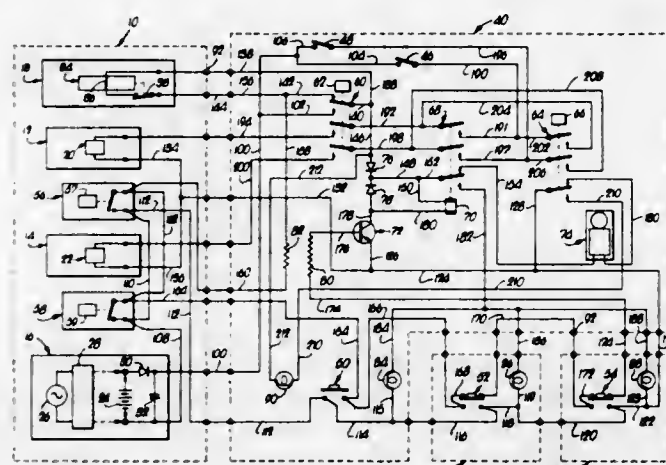
John S. Connor, Greenwood, and Robert E. Pugh, Grain Valley, both of Mo., assignors to Flke Metal Products Corporation, Blue Springs, Mo.

Filed July 11, 1973, Ser. No. 378,252

Int. Cl. B63j 2/06

U.S. Cl. 307—9

15 Claims



Improved electrical control apparatus is provided for the correlated control of systems having some desired relationship of interdependence between the functional conditions and operational states of various electrically responsive parts thereof, such as systems including a selectively operable device requiring electrical energization for operation thereof and associated electrically actuatable equipment for suppressing an occurrence of a potential hazard to which opera-

tion of the device may adversely contribute. The apparatus achieves correlated control of the device and equipment of such systems by providing for actuation of the suppression equipment whenever it is in functional condition and needed, ordinary selective operation of the device only when the equipment is in functional condition, presentation of a warning indication of conditions adversely affecting the ability of the equipment or its associated actuating controls to function, special override controlled operation of the device under exceptional circumstances when the equipment is known to be in a non-functional condition, and presentation of a warning indication when the special override control has been invoked. The preferred form of the apparatus also includes self-checking features for assuring its own functional integrity or indicating a fault therein. The apparatus is illustrated by an embodiment showing application of the invention to the correlated control of a system involving internal combustion engines and fire suppression equipment such as employed in in-board powered boats, from which example the applicability of the apparatus to other systems involving comparable considerations should be apparent.

3,825,767

### RECTIFIER ASSEMBLY

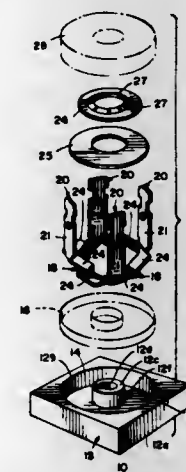
Marvin L. Shields, Bloomington, Ind., assignor to Sarkes Tarzian Inc., Bloomington, Ind.

Filed Aug. 22, 1973, Ser. No. 390,337

Int. Cl. H02b 1/00

U.S. Cl. 307—100

14 Claims



A rectifier assembly comprising a base formed of heat conductive material and having a flat, annular mounting face encircling an integral upstanding centrally positioned mounting post, a layer of electrically insulating material on said mounting face; a rectifier assembly comprising one or more heat producing rectifier elements mounted on said base in symmetrical array around said mounting post including conductive terminal means for at least some of said elements including flat strip portions in direct heat conductive contact against said layer of insulating material and means mounted on said post for uniformly and continuously forcing each of said strip portions against said layer of insulating material for transmission of heat developed in said rectifier elements to said heat sink base.

3,825,768

### PHASE SEQUENCE AND POWER LOSS DETECTOR

James W. Grygera, Racine, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 15, 1973, Ser. No. 332,855

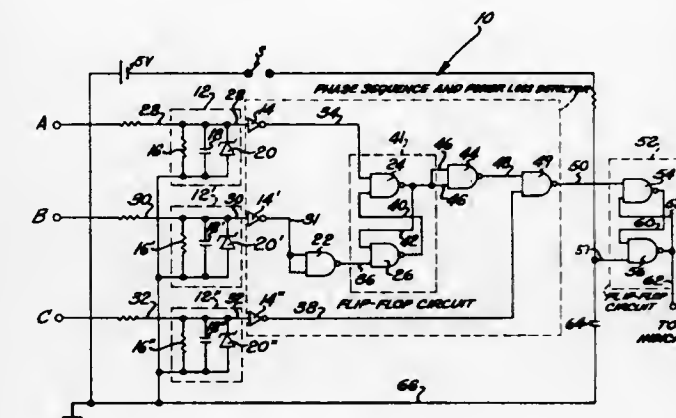
Int. Cl. H02h 1/00

U.S. Cl. 307—127

13 Claims

A phase sequence and power loss detector is provided to sense incorrect phase sequence or loss of power from a poly-phase power line. To this end predetermined individual con-

nections are provided for each phase signal of the poly-phase power line. The individual signals are conditioned by signal conditioning circuits and then directed to the phase sequence and power loss circuit. The phase sequence and power loss circuit produces a pulsating output signal when the individual signals of the poly-phase power signal have an incorrect phase relationship, or fail to provide power. A constant level output signal is produced by the phase sequence and power loss cir-



cuit when the individual signals of the poly-phase power signal have a predetermined phase relationship and provide power to their respective connections. The output of the phase sequence and power loss circuit is connected to a flip-flop circuit which converts the pulsating and constant level output signals of the phase sequence and power loss circuit to distinct first and second constant level output signals for operating an indicator.

3,825,769

### ALTERNATE LIGHT LIGHTING FIXTURE

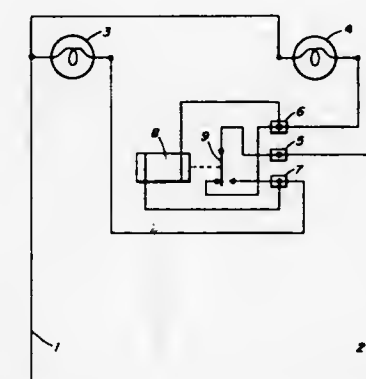
Ricker Alford, Jr., 211 Murray Rd., West Palm Beach, Fla. 33405

Filed June 23, 1972, Ser. No. 241,803

Int. Cl. H02j 1/00

U.S. Cl. 307—157

2 Claims



A primary lamp and a spare standby lamp are interconnected in parallel with a source of electrical energy through an automatic lamp changing device in order to provide illumination from the standby lamp should there be burn out of the primary lamp. Lamp change-over operation is effected by momentarily switching off the lamp energizing circuit following burn out of the primary lamp and involves a single relay device connected in series with the standby lamp to maintain the same energized in a circuit parallel to that of the primary lamp when operating.



3,825,770

## MULTI-FUNCTION LOGIC GATE

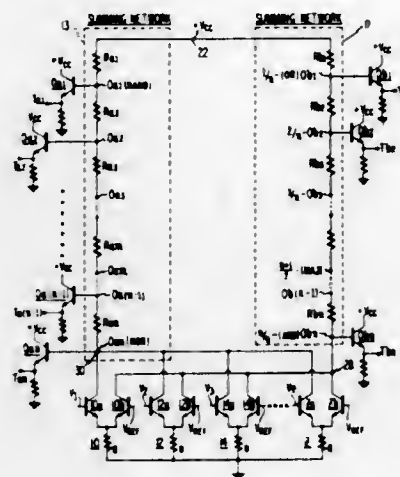
Daniel Hampel, Westfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,852

Int. Cl. H03k 19/08

U.S. Cl. 307-203

11 Claims



A pair of current carrying lines, and a plurality of signal controlled means, each such means supplying a current to one or the other of the current carrying lines depending upon the binary value represented by the signal controlling that signal controlled means. Connected to at least one of the current carrying lines is a summing network comprised of "N" resistors connected in series for simultaneously producing N different logic functions of the signals applied to said signal controlled means.

3,825,771

## IGFET INVERTER CIRCUIT

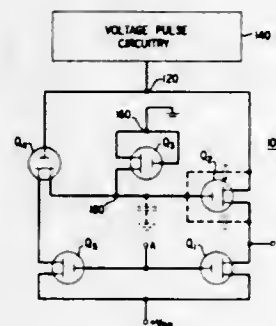
Harry Joseph Boll, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 4, 1972, Ser. No. 311,482

Int. Cl. H03k 19/08

U.S. Cl. 307-214

13 Claims



A semiconductor inverter circuit consists of a driver, a load, and two other IGFETs. One of the two IGFETs is wired as a diode that is connected to the gate of the load IGFET. The drain of the other IGFET is also connected to the gate of the load IGFET. The source and drain of the load and driver are connected together and serve as the output terminal of the circuit. The gate of the driver serves as the input terminal. The IGFET connected as a diode serves to hold the load on while the output signal drops from a high to a low state. This significantly decreases the time necessary to achieve this change of state as compared to the case in which the load turns off. The fourth IGFET serves to turn off the load when the output signal is to assume the high state.

## CONTACT BOUNCE ELIMINATOR CIRCUIT WITH LOW STANDBY POWER

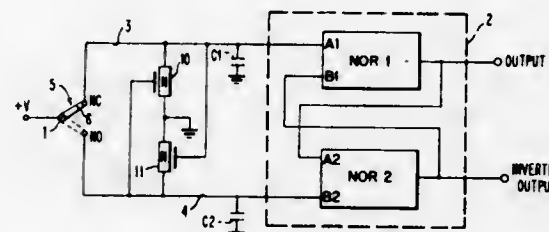
Richard Allan Ainsworth, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1973, Ser. No. 364,183

Int. Cl. H03k 3/286, 3/33, 19/08

U.S. Cl. 307-247 A

13 Claims



A contact bounce eliminator circuit including a pair of cross-coupled field effect transistors connected across the input leads of a flip-flop circuit for discharging an input when the potential source is switched from one input to the other. Energy in the circuit is dissipated only until circuit reaches a quiescent state, assuring low power dissipation when the mechanical contact is actuated. Virtually no power is dissipated in the quiescent state.

3,825,773

## INTERLOCKED PUSH-PULL DRIVER CIRCUIT

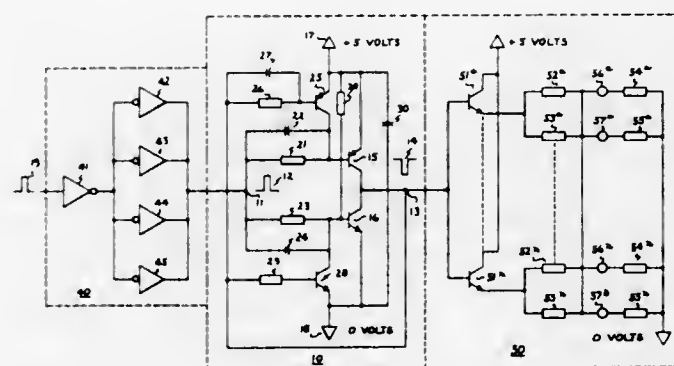
Olev Klivistik, Waynesboro, Va., assignor to General Electric Company, West Lynn, Mass.

Filed May 4, 1973, Ser. No. 357,458

Int. Cl. H03k 17/00

U.S. Cl. 307-255

6 Claims



An improved driver circuit having push-pull output transistors for supplying current to a load, includes an interlock circuit for preventing the simultaneous conduction of the two output transistors. The base-emitter junction of each output transistor is connected to the collector-emitter circuit of an interlock transistor. The base current for each interlock transistor comes from the current conducted to or from the load. As long as the interlock transistor is conductive, the input signal is unable to provide sufficient base current to turn on its associated output transistor. When the conductive output transistor becomes non-conductive, thereby removing the base current drive to the conductive interlock transistor, the conductive interlock transistor becomes non-conductive and

allows the input voltage to supply base current to turn on the non-conductive output transistor.

3,825,774

## DEVICE FOR CONVERTING AN INPUT VOLTAGE INTO AN OUTPUT CURRENT OR VICE VERSA

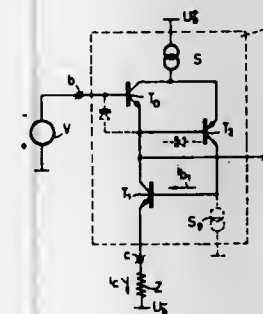
Theodorus Jozef Van Kessel; Rudy Johan Van De Plassche, and Johannes Otto Voorman, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,389

Claims priority, application Netherlands, Feb. 19, 1971, 7102199

U.S. Cl. 307-260

15 Claims



Device for the distortion-free conversion of a signal voltage into a signal current or vice versa which comprises an input transistor having two main electrodes. A high-resistance current supply source is included between the first main electrode and a supply point, while this main electrode is also connected via a current feedback path to the control electrode of a first transistor the main current path of which is connected in the circuit between the second main electrode of the input transistor and another supply point, the output of the device being a point of the latter circuit.

3,825,775

## CIRCUIT ARRANGEMENT FOR CONVERTING SQUARE WAVES INTO ASYMMETRICAL RECTANGULAR WAVES

Alan B. Welsh, Jasper, Ind., assignor to Jasper Electronics Manufacturing Company, Jasper, Ind.

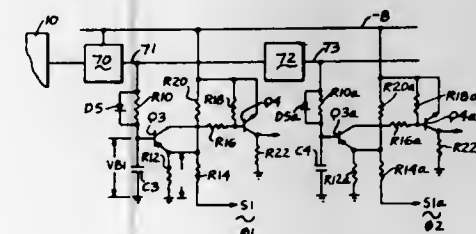
Continuation of Ser. No. 136,033, April 21, 1971, abandoned.

This application May 15, 1973, Ser. No. 360,461

Int. Cl. H03k 5/01

U.S. Cl. 307-268

9 Claims



The specification discloses a generator for producing rectangular waves in which the duty cycle of the waves is adjusted to eliminate unwanted harmonics therefrom. Means can be provided for varying the duty cycle in a desired manner.

3,825,776

## SWITCHABLE CURRENT GENERATOR

Christian A. Jacquart, Gattieres, France, assignor to IBM Corporation, Armonk, N.Y.

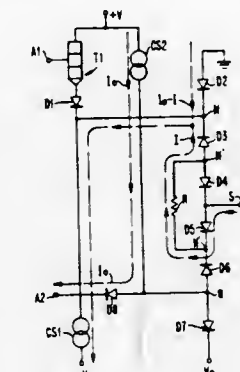
Filed Dec. 13, 1972, Ser. No. 314,866

Claims priority, application France, Dec. 21, 1971, 71.47851

Int. Cl. G05f 1/40, 3/00

U.S. Cl. 307-270

6 Claims



A current generator comprising switchable circuit means for selectively establishing current loops for providing high stable null, and equal but opposite polarity currents dependent only on resistive means.

3,825,777

## HALL CELL WITH OFFSET VOLTAGE CONTROL

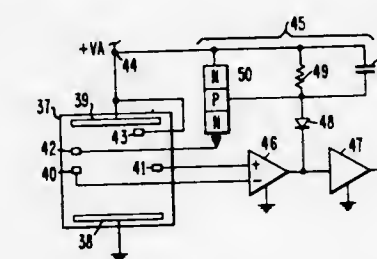
Roland J. Braun, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1973, Ser. No. 332,475

Int. Cl. H01l 19/00

U.S. Cl. 307-309

7 Claims



Offset voltage control means are provided for a semiconductor type Hall cell. The control means includes one or more auxiliary electrodes disposed at preselected spatial positions of the cell between the latter's current and sense electrodes. The auxiliary electrode(s) when connected to a predetermined electrical supply provide an auxiliary electrical field which controls the offset voltage at the sense electrodes.

3,825,778

## TEMPERATURE-SENSITIVE CONTROL CIRCUIT

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,234

Int. Cl. H03k 17/00

U.S. Cl. 307-310

21 Claims

A temperature sensitive switching circuit includes a current source supplying two groups of serially connected diodes. The number of such diodes in the first group is smaller than that in the second so that the first group drawn substantially all of the source current and the second only an infinitesimal portion of this current. As temperature increases, the voltage across both groups of diodes decrease, but the ability of the second group to carry a substantial amount of current increases at a more







a lamp cap with a sleeve fashioned from expanded metal which surrounds the seal regions, the expanded metal promoting heat dissipation from the seal regions, primarily by radiation and convection, so as to keep the seals below temperatures at which oxidation is a problem.

3,825,786

**METHOD FOR INCREASING THE POWER X-RAY TUBES AND APPARATUS FOR CARRYING OUT THE METHOD**  
Hans J. Einighammer, Hauserstr. 140, 76 Tübingen, and Rudolf Hauke, Balthesstr. 37, 7 Stuttgart 40, both of Germany

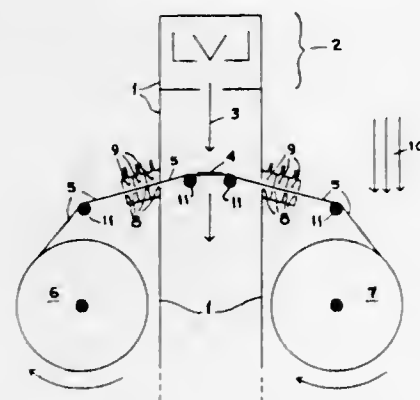
Filed Jan. 17, 1973, Ser. No. 324,388

Claims priority, application Germany, Feb. 2, 1972, 2204773

Int. Cl. H01j 35/08

U.S. Cl. 313-60

10 Claims



A method for increasing the electron beam density and power of X-ray tubes, and a novel X-ray tube construction, wherein the target is in the form of an elongated member of target material, such as a strip, tape or filament, which is mechanically moved across the path of the electron beam to continuously present cold target material to the beam and remove heated target material from the electron beam path for cooling at a location spaced therefrom.

3,825,787

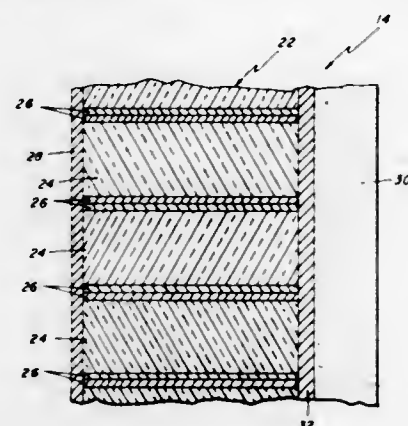
**IMAGE INTENSIFIER WITH IMPROVED INPUT SCREEN**  
Howard D. Doolittle, Stamford, Conn., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Continuation-in-part of Ser. No. 76,851, Sept. 30, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,614

Int. Cl. H01j 29/18

U.S. Cl. 313-102

27 Claims



An image intensifier tube having a novel input screen structure comprising a photocathode used in conjunction with a novel radiation-sensitive structure for increasing efficiency in the conversion of X-rays, gamma rays or neutrons to light and subsequently to electrons.

### 3,825,788 HIGH PRESSURE METAL VAPOR DISCHARGE LAMP WITH TUBULAR CURRENT LEAD INCLUDING FILLER RELEASE CONSTRUCTION

Johannes Pfaue, and Jochen Schmidt, both of Berlin, Germany, assignors to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH, Munich, Germany

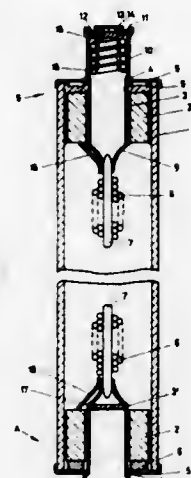
Filed Feb. 27, 1973, Ser. No. 336,368

Claims priority, application Germany, Mar. 1, 1972, 2209805

Int. Cl. H01j 61/22, 61/28

U.S. Cl. 313-174

12 Claims



The high pressure metal vapor discharge lamp, preferably a high pressure sodium vapor discharge lamp has an arc tube of refractory light-transmissive material such as polycrystalline alumina; it has at least one tubular lead hermetically sealed to the seals of the arc tube end portions formed with an enlarged section hermetically closed off from the exterior. The enlarged section contains the metal provided as the fill substance and a body with capillary interstices, such as a helical winding, tungsten, wool, or the like. The other end of the lead is in communication with the arc tube. The lead permits use of larger amounts of filling metal and provides dosed supply thereof to the discharge.

3,825,789

### VACUUM ARC DEVICES WITH HARD, DUCTILE, FERROUS ELECTRODES

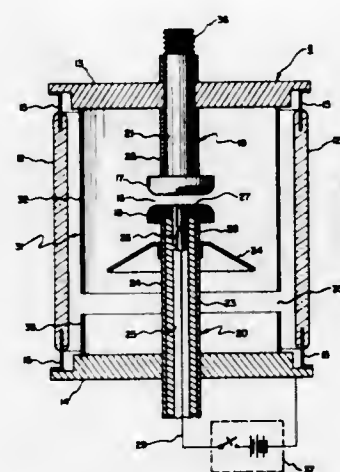
Lawson P. Harris, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 29, 1973, Ser. No. 375,133 The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl. H01h 1/02; H01j 1/02

U.S. Cl. 200-144 B

14 Claims



Vacuum arc devices utilized to protect electric circuit elements against very high transient currents and voltages and exhibiting high recovery voltage and high voltage holdoff

strength include primary arc electrodes fabricated from hardenable ferrous material exhibiting high hardness, ductility, and high tensile strength. Such vacuum arc devices are superior to similar devices utilizing copper or cuprous alloy electrode materials because of increased mechanical strength and increased voltage holdoff strength and higher current interruption capacity.

3,825,790

**PROCESS FOR EXCHANGE OF CHARGE AND APPARATUS FOR CARRYING OUT THE PROCESS**  
Martha Bacal, Paris, France, and Walter Reichelt, Los Alamos, N. Mex., assignors to Commissariat A L'Energie Atomique, Paris, France

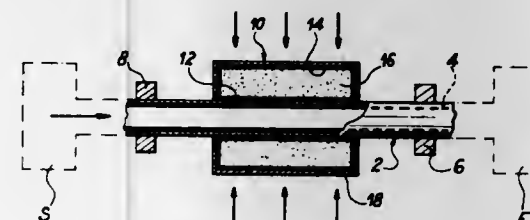
Filed Oct. 16, 1972, Ser. No. 297,660

Claims priority, application France, Oct. 19, 1971, 37448

Int. Cl. H01j 27/00

U.S. Cl. 313-362

6 Claims



Positive ions of a gas are charged with electrons from a metallic vapor to provide negative ions of the gas by passing the positive ions through an isothermal enclosure into contact with a metallic vapor providing electrons. The metal providing the vapor is circulated in closed cycle in the enclosure in vapor form from a hot central portion to cooler end portions thereof and in liquid phase from the end portions of the enclosure toward the central portion of the enclosure.

3,825,791

### FIELD-EFFECT STORAGE TUBE

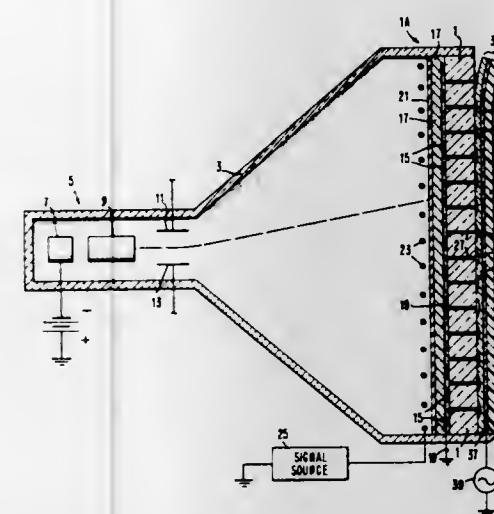
Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,878

Int. Cl. H01j 31/08, 29/08

U.S. Cl. 313-398

6 Claims



A field-effect storage cathode ray tube with layer of electroluminescent phosphor external to the tube to allow removal and replacement thereof. The inner surface of the tube faceplate is contacted with a conductive mesh. A layer of semiconductor then contacts the exposed inner surface of the

faceplate in the mesh openings and a layer of insulator contacts the layer of semiconductor. An array of conductive pins extends through the faceplate from the layer of phosphor in contact with its outer surface to the semiconductor within the respective mesh openings. A charge pattern written on the layer of insulator acts to vary local conductivity in the semiconductor and thus vary alternating current flow through local pins to cause a pattern of light emission from the phosphor corresponding to the charge pattern.

3,825,792

### NOVEL DISCHARGE LAMP AND COATING

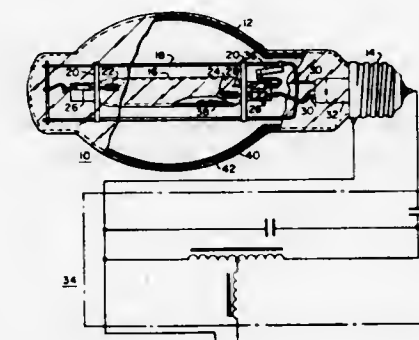
Fernand Rokosz, Clifton, and Joseph W. Sausville, Glen Rock, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 3, 1973, Ser. No. 376,254

Int. Cl. H01j 1/62

U.S. Cl. 313-109

2 Claims



A color corrected discharge lamp combination providing an emission with a very desirable color similar to that of an incandescent lamp, but maintaining the efficiency and long life advantages of a discharge lamp. The lamp is similar to a normal high-pressure mercury discharge lamp, but also contains a non-luminescent coating of silica, titania, magnesia or alumina or mixtures thereof on the interior surface of the outer envelope to provide a color-shift and a phosphor mixture coated over the non-luminescent coating. The phosphor mixture substantially comprises 70-90 percent by weight of yttrium vanadate phosphor or yttrium phosphate-vanadate phosphor and 10-30 percent by weight of magnesium fluoro-germanate or magnesium arsenate.

3,825,793

### RASTER CORRECTION CIRCUIT UTILIZING A PARABOLICALLY VARYING LOAD CIRCUIT

Wolfgang Friedrich Wilhelm Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 43,767, June 5, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,617

Int. Cl. H01j 29/70

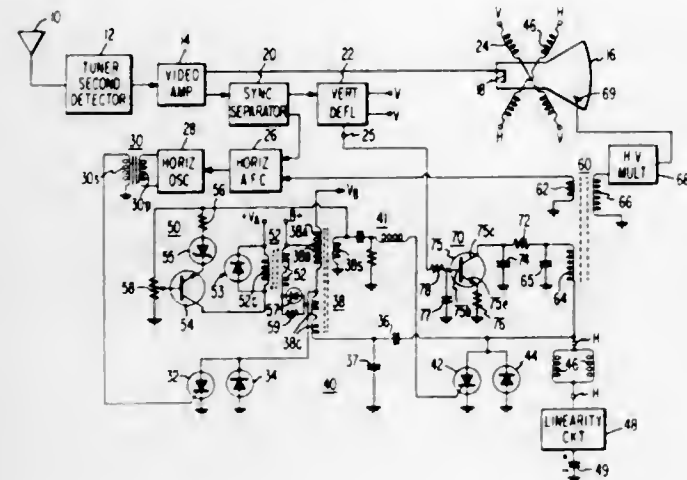
U.S. Cl. 315-27 GD

20 Claims

A raster correction circuit for a color television receiver provides side pincushion correction by utilizing a parabolically varying load circuit coupled in parallel relation with the horizontal yoke. In one embodiment, the load circuit includes a capacitor and a transistor driven by a vertical deflection frequency signal to be conductive during a portion of the vertical scan interval coupled across a direct voltage blocking capacitor which is serially coupled to the horizontal output



transformer. In another embodiment, an additional winding on the horizontal output transformer is loaded parabolically by the variable loading circuit to provide the desired correction. In a third embodiment, a direct current voltage



derived from a winding of the horizontal output transformer serves as the power supply for the vertical deflection stage. The vertical deflection stage loads the horizontal winding in a manner to provide side pincushion correction.

3,825,794

#### MICROWAVE TUBE HAVING AN IMPROVED OUTPUT SECTION

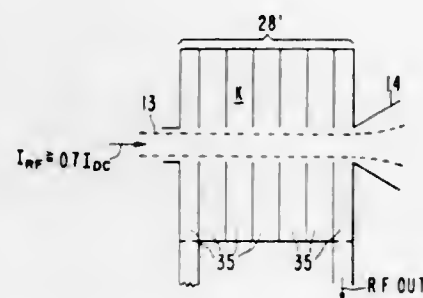
Robert J. Butwell, Cupertino, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 8, 1973, Ser. No. 339,444

Int. Cl. H01J 25/34

U.S. Cl. 315-3.6

10 Claims



A microwave beam tube is arranged such that an upstream driver portion of the microwave circuit is severed for radio frequency energy from a downstream output microwave circuit portion. The driver section is dimensioned and arranged and driven with microwave energy such that the signal component of beam current has a peak value at the output end of the driver section which is not less than 0.7 times the d.c. beam current. This modulated beam current then excites a signal wave on the output microwave circuit portion which is amplified thereon and coupled to a load. The output microwave slow wave circuit portion is a fundamental space harmonic forward wave circuit, such as a cloverleaf circuit, centipede circuit or long slot coupled cavity circuit. The output circuit portion has a small signal gain of not more than 13 db to obtain increased RF conversion efficiency and stability for the tube.

#### 3,825,795 PHOTOCONDUCTIVE CAMERA TUBE AND METHODS OF MANUFACTURE

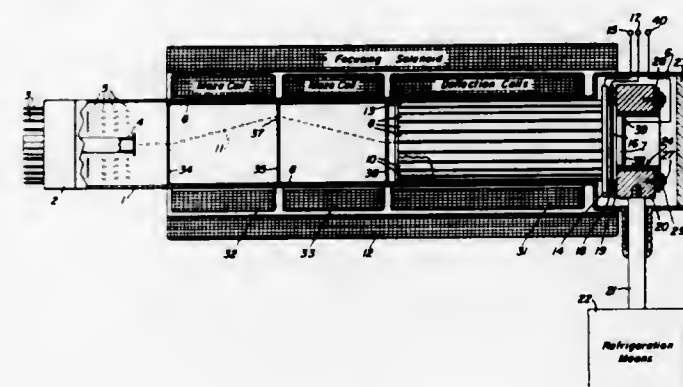
Rowland W. Redington, and Pieter J. Van Heerden, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 56,799, Sept. 19, 1960, Pat. No. 3,781,955. This application Jan. 2, 1964, Ser. No. 344,155

Int. Cl. H01J 29/70

U.S. Cl. 315-10

14 Claims



The object of this invention is to provide an improved photoconductive camera tube target of increased extended sensitivity utilizing a target composed of arsenic or antimony doped germanium semiconductor with the addition of copper to the semiconductor.

3,825,796

#### CRT GEOMETRY CORRECTION NETWORK

Vincent G. Bello, Norwalk, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

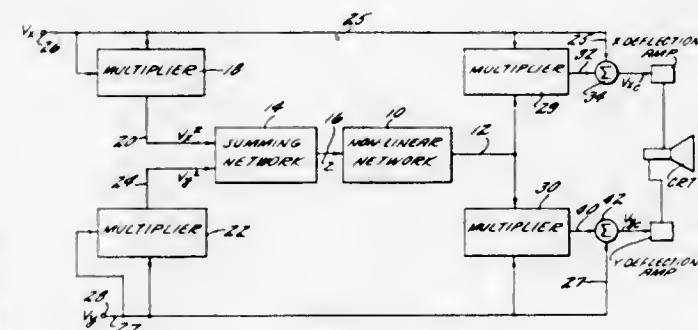
Continuation of Ser. No. 155,094, June 21, 1971, abandoned.

This application Jan. 26, 1973, Ser. No. 326,633

Int. Cl. H01J 29/70

U.S. Cl. 315-27 GD

1 Claim



Geometry distortion, caused by the radius of curvature of the face of a CRT being larger than the axial distance of the CRT beam source to the CRT face, is corrected by a network which is an implementation of the precise mathematical relationships which describe the correction of the geometry distortion. A nonlinear network is used to generate correction signals which are subtracted from the uncorrected deflection signals, thereby providing corrected deflection signals.

3,825,797

#### TIMING HOLDING DEVICE FOR HEAD LAMP CIRCUIT

Tsunao Maeda, and Masaichi Hattori, both of Nagoya, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

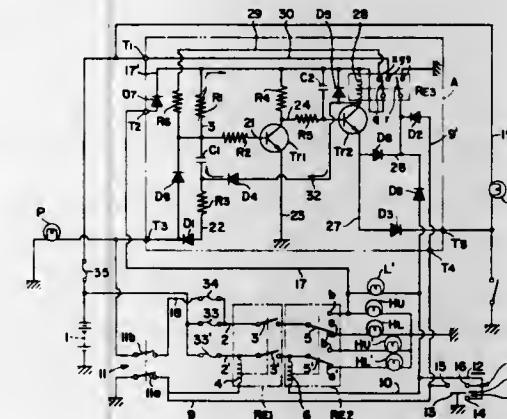
Filed Nov. 24, 1972, Ser. No. 309,480

Claims priority, application Japan, Nov. 25, 1971, 46-110494

Int. Cl. B60q 1/06

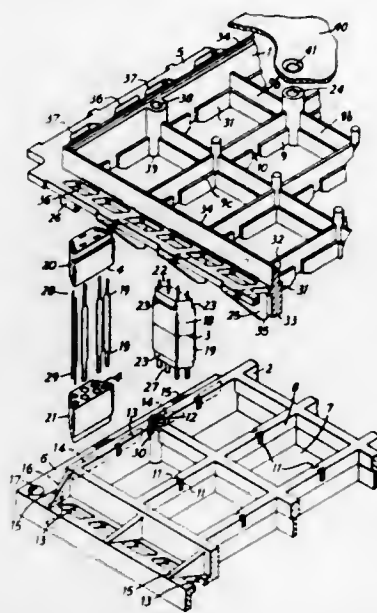
U.S. Cl. 315-83

5 Claims





lower sections, respectively of the frame assembly. The use of terminal receiving members separate from the mounting



frame reduces the precision that would otherwise be required of the mounting frame and lowers the capital cost of the molding equipment.

3,825,801

## ELECTRICAL INTEGRATED CIRCUIT PACKAGE

Alan Robert Beavitt, Towcester, and John Peter McCarthy, Weston Favall, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

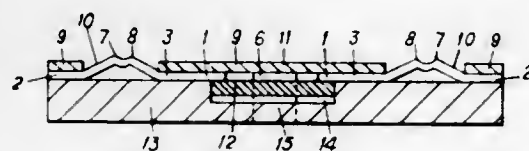
Filed Jan. 30, 1973, Ser. No. 327,904

Claims priority, application Great Britain, Feb. 23, 1972, 8257/72

Int. Cl. H05k 5/00

U.S. Cl. 317-101 CP

4 Claims



An integrated circuit package includes conductors (3) bonded between a cover (9) and a base (13) which has a cavity (14) in which a chip (12) is received. Each conductor (3) joins an attach pad (1) which protrudes into the cavity (14) with a contact (2) which projects (7, 8) through a window (10) in the cover (9). When bolted (20) to a printed circuit board (16), the contact projections (7, 8) make contact with contact areas (18) on the board.

3,825,802

## SOLID CAPACITOR

Henry Yasuo Kumagai, Lower Macungie Township, Lehigh County, Pa., and Hugh Morris McKnight, Lewisville, N.C., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,518

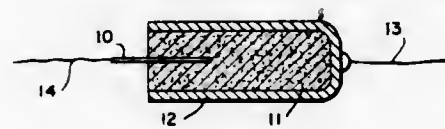
Int. Cl. H01g 9/05

U.S. Cl. 317-230

8 Claims

An improved solid capacitor is disclosed. The capacitor comprises a porous body of compressed particles of a film-forming metal suitably doped with a dopant selected from the group comprising N, Si, P, B and mixtures thereof. An electrolytically formed dielectric oxide film of the film-forming metal covers the exposed surface of each of the particles. Im-

pregnating the body and in intimate contact with the dielectric film is a layer of manganese dioxide. A layer of graphite overlies the layer of manganese dioxide and a metal casing encom-



passes the major portion of the body which is insulated therefrom and in electrical contact with the layer of graphite. Electrical lead means are attached to the porous body and the casing.

3,825,803

## SEMICONDUCTOR LEAD AND HEAT SINK STRUCTURE

Herman Budde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,136

Claims priority, application Netherlands, Apr. 6, 1972, 7204574

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

5 Claims



A semiconductor device, for example, an integrated circuit, comprising a flexible insulating foil which has conductor tracks to which a semiconductor element is connected. A cooling element which preferably extends in the longitudinal direction of the foil is connected to the rear side of the semiconductor element but does not cover the ends of the conductor tracks remote from the semiconductor body. The cooling member comprises raised portions which extend to against the foil and are soldered or welded to metallized contact places on the foil. The longitudinal ends of the cooling member may be provided with bent connection portions which also serve as abutments, for example, during the connection in a slot-like aperture of a mounting panel or on an insulating substrate.

3,825,804

## CLAMPED DISC TYPE SEMICONDUCTOR ASSEMBLY WITH BUILT-IN CONTACT PRESSURE GAGE

Bernd Amelunxen, Lampertheim, Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

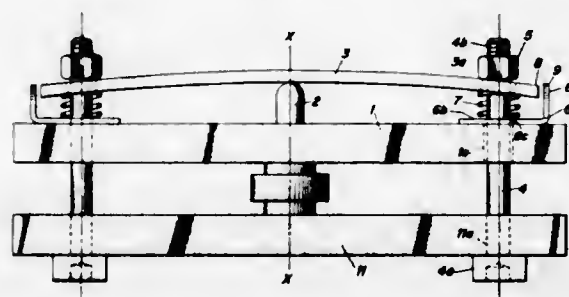
Filed Feb. 22, 1973, Ser. No. 334,975

Claims priority, application Germany, Mar. 3, 1972, 2210180

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

1 Claim



A clamped semiconductor disc assembly wherein the semiconductor disc is located between a pair of pressure plates and the clamping force is applied by way of a leaf spring

and clamping bolts which extend through the pressure plates and the end portions of the leaf spring. As the bolts are tightened, a clamping pressure is transmitted from a contact point at the center of the leaf spring to a projection provided on one of the pressure plates, the pressure being transmitted through the projection to the pressure plate and thence to the semiconductor disc along an axis coincident with the center of the disc. Simultaneously the projection functions as a fulcrum for the leaf spring resulting in a deflection of the end portions of the spring, and the amount of this deflection thus becomes a measure of the clamping force which can be read off on a scale type gage, wherein the end of the spring serves as the pointer element of the gage in association with a stationary scale supported by the pressure plate.

3,825,805

## TRANSISTOR CARRIER FOR MICROWAVE STRIPLINE CIRCUIT

Erwin Franz Belohoubeck, Kendall Park, and David Michael Stevenson, Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

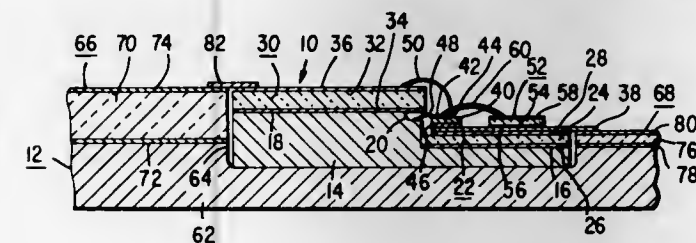
Filed May 24, 1973, Ser. No. 363,629

This application of Ser. No. 156,814, June 25, 1971, abandoned.

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

8 Claims



A transistor carrier adapted to be mounted in a microwave transmission line including a metal substrate which is adapted to be connected to the ground plane of the transmission line and a pair of impedance transmission line segments mounted in spaced relation on the substrate. A transistor having base emitter and collector contacts is mounted on one of the transmission line segments with the collector electrode being electrically connected to the transmission line. One of the base or emitter electrodes is electrically connected to the substrate and the other is electrically connected to the other transmission line segment. A series capacitor-impedance element compensating network is mounted on the same transmission line segment as the transistor and is electrically connected between the transmission line and the electrode of the transistor which is connected to the substrate.

3,825,806

## OPTICAL SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Hiroyuki Kasano, Akishima, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

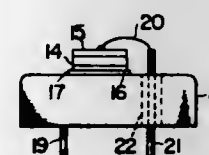
Division of Ser. No. 212,430, Dec. 27, 1971, Pat. No.

3,745,423. This application June 13, 1973, Ser. No. 369,463  
Claims priority, application Japan, Dec. 25, 1970, 45-130686

Int. Cl. H01l 15/00

U.S. Cl. 317-234 R

1 Claim



Light-emitting semiconductor devices consist of a crystal having a Ge concentration of less than 1 ppm and a p-n junction

and the method of manufacturing the same. The light-emitting semiconductor device has emission peaks at 1.57 eV in a visible band and can be manufactured inexpensively compared to the conventional light-emitting semiconductor devices.

3,825,807

## HIGH GAIN BARRIER LAYER SOLID STATE DEVICES

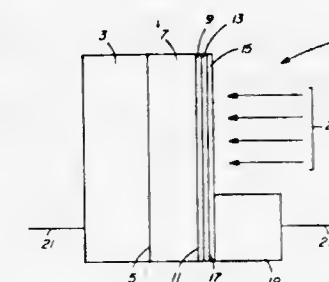
Edward L. Wolf, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,607

Int. Cl. H01l 15/00

U.S. Cl. 357-30

16 Claims



A radiation responsive device is disclosed having a barrier generating material, such as a dye or metal, interposed between two semiconductive elements, at least one of which is radiation penetrable. Metal layers are associated with the outer faces of the semiconductive elements so that the device can be biased by an externally applied potential. Radiation absorbed adjacent the barrier generating material produces a current gain in the forwardly biased device. The device can be fabricated by successively vacuum depositing upon a semiconductive element surface a layer of a barrier generating material, a semiconductive overlayer and a metal layer. The metal layer can be chosen to form a rectifying junction with the semiconductive overlayer. The barrier generating material is chosen to exhibit a surface photovoltage when applied to the surface of one of the semiconductive elements.

3,825,808

## SIGNAL-SEEKING, POWER-DRIVEN MAST FOR USE IN LASER BEAM CONTROLS AND SURVEYING SYSTEMS

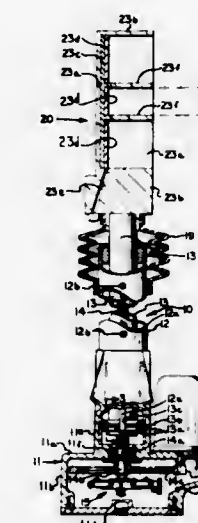
Ted L. Teach, Springfield, Ohio, assignor to Lasserplane Corporation, Dayton, Ohio

Filed May 10, 1973, Ser. No. 358,881

Int. Cl. G05d 3/04

U.S. Cl. 318-266

3 Claims



This invention relates to the construction of a power-driven extensible mast for mounting a photocell unit which is utilized to detect a laser beam which is periodically swept over a work-



ing area at a known elevation. Suitable circuits are provided between the photocell unit carried by the extensible mast and a motor unit which effects the raising and lowering of the mast to automatically maintain the mast at a height corresponding to exact vertical alignment with the photocell unit with the laser beam.

Another feature of the invention is the provision of automatic limit switch means which function to reverse the direction of the driving motor when the mast reaches either the top or bottom extremity of its vertical movement.

3,825,809

### GARAGE DOOR POWER OPERATOR HAVING PARTIAL OPEN CAPABILITY

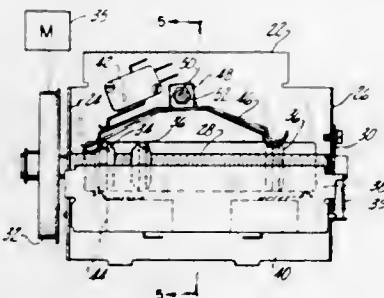
Geoffrey W. Gatland, Walled Lake, Mich., and Kenneth L. Robitaille, Windsor, Ontario, Canada, assignors to Vemco Products, Inc., Detroit, Mich.

Filed July 23, 1973, Ser. No. 382,029

Int. Cl. H02p 1/22

U.S. Cl. 318—282

7 Claims



An automatic power operator for garage doors having adjustable limit stops including a short screw shaft driven by the operator motor and a pair of traveler nuts on the screw shaft and individually adjustable in linear position to establish up and down limits of travel. The travelers nuts operate in connection with up and down limit switches to shut off power to the drive motor after the predetermined limit of travel has been reached. A "memory" device in the form of a pivotal lever is disposed adjacent the screw shaft and the down limit switch to hold the down limit switch in the open circuit condition until the door is nearly fully opened such that a second actuation of the device following initiation of movement in the upward direction simply causes the operator motor to stop. By this feature any of an infinite number of partially opened door positions can be readily accomplished by the user.

3,825,810

### SERVOMECHANISM, PARTICULARLY A VEHICLE SPEEDOMETER OR TRIP-RECORDER

Norbert Helmschrott, Schweinfingen, Germany, assignor to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Filed June 23, 1972, Ser. No. 265,797

Claims priority, application Germany, June 26, 1971, 2131915

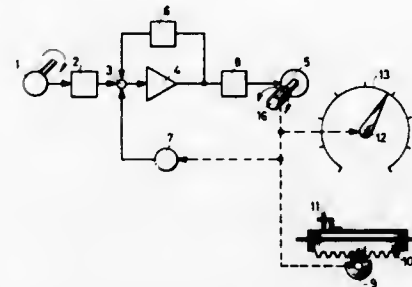
Int. Cl. G05b 5/01

U.S. Cl. 318—618

10 Claims

A servomechanism, particularly a vehicle speedometer or trip-recorder includes a controlled member, such as a speedometer needle or a trip-recorder scribe, as well as a servomotor and a drive gear driven by the servomotor. A servoamplifier has an output connected to the servomotor and a differential input. A command unit connected to the amplifier input furnishes thereto signals indicative of a commanded position for the controlled member. A feedback transducer furnishes to the amplifier input signals indicative of the position of the controlled member, and has a transducer input gear driven by the drive gear and defining therewith a first meshing region having a predetermined orientation relative to the axis of the transducer input gear. A driven gear driven by the trans-

ducer input gear and driving the controlled member, defines with the transducer input gear a second meshing region having a predetermined orientation relative to the axis of said trans-



ducer gear which is angularly offset from the orientation of the first meshing region by an angle of substantially less than 180°, and most advantageously, 0°.

3,825,811

### SYSTEM AND METHOD FOR MONITORING A PRESS LOAD

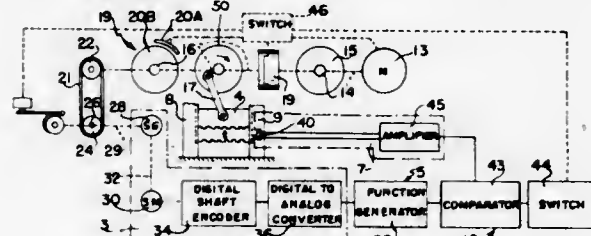
Herman W. Smith, Vancouver, Wash., and Paul H. Berka, Apollo, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 26, 1973, Ser. No. 335,913

Int. Cl. G05d 15/00

U.S. Cl. 318—646

11 Claims



A system and method for monitoring the load on a forming press during its work cycle including a digital encoder operably connected by a servomechanism to a timing mechanism on the press so as to provide a digital output determinative of any given position of the press ram during its work cycle. A digital-to-analog converter converts the digital signal to an analog signal indicative of the ram position. The analog signal is directed to a function generator which is pre-programmed to produce a signal representative of a predetermined tolerable stress load on the press at such position of the press ram. This representative signal is compared to the actual stress load on the press, as measured by one or more strain sensing devices associated with the press, so as to produce a warning signal and/or to stop the press ram at a selected time in the work cycle when the actual load on the press exceeds the predetermined tolerable load for the system.

3,825,812

### RECTIFIER BRIDGE SILICON CONTROLLED RECTIFIER TRIGGER CIRCUIT

Alfred P. De Buhr, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 11, 1973, Ser. No. 350,078

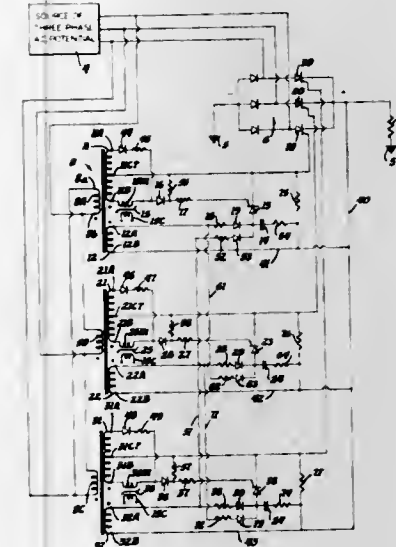
Int. Cl. H02m 1/08

U.S. Cl. 321—5

3 Claims

Corresponding to each silicon controlled rectifier of a three-phase bridge rectifier circuit is a center tapped and an untapped secondary winding pair of a three-phase transformer, a pilot silicon controlled rectifier, a capacitor and an output winding of a magnetic amplifier. Each center tapped secondary winding supplies gate-cathode current to the pilot

silicon controlled rectifier which corresponds to the same bridge circuit silicon controlled rectifier through the corresponding output winding of the magnetic amplifier. Each untapped secondary winding supplies gate-cathode current to the corresponding bridge circuit silicon controlled rectifier through the anode-cathode electrodes of the corresponding



pilot silicon controlled rectifier and charging current to the corresponding capacitor. Each capacitor is also connected across another one of the untapped secondary windings which places a charge thereon prior to the time the corresponding pilot silicon controlled rectifier is triggered conductive through the anode-cathode electrodes.

3,825,813

### MULTI-PHASE THYRISTOR INVERTER CIRCUIT

Rainer Wirtz, Unterriexingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

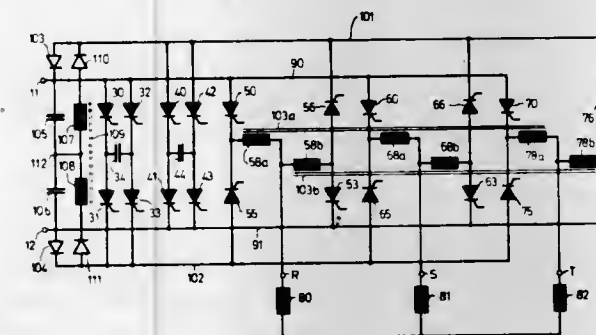
Filed July 16, 1973, Ser. No. 379,849

Claims priority, application Germany, Aug. 10, 1972, 2239396

Int. Cl. H02m 7/52

U.S. Cl. 321—5

12 Claims



To provide for better high speed performance of motors which are connected to a multi-phase thyristor inverter, the thyristor inverter has separate return feed lines, isolated from the supply source by diodes, and separate groups of return feed thyristors which are energized after cut-off of the main current supplying thyristors, to conduct stored energy fed back into the supply source through the separate lines and diodes after cut-off of the conducting thyristors.

3,825,814

### ACTIVE FILTER FOR THE INPUT HARMONIC CURRENT OF STATIC POWER CONVERTERS

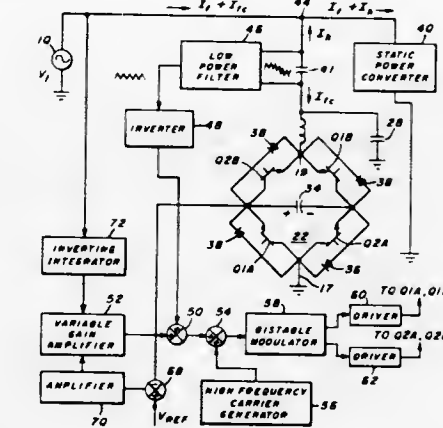
Brian R. Pelly, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 29, 1973, Ser. No. 364,451

Int. Cl. H02m 1/12

U.S. Cl. 321—9 A

8 Claims



An active filter for the input harmonic currents of static power converters comprising an active harmonic voltage generator connected in series with a passive reactive element, the series combination being connected across the converter input terminals. The passive reactive element is such that essentially the full-line voltage appears across the passive reactive element whereby the volt-ampere rating of the active harmonic voltage generator can be materially reduced.

3,825,815

### ELECTRICAL POWER SYSTEM

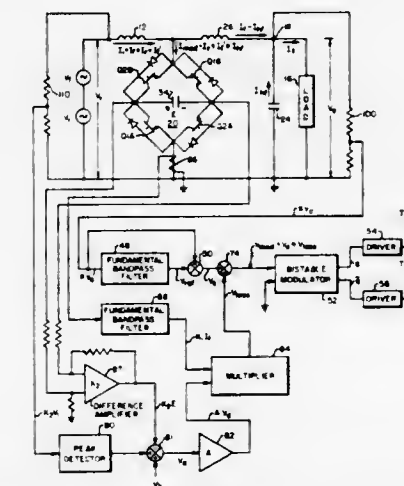
Laszlo Gyugyi, Eric J. Stacey, and Eugene C. Strycula, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 12, 1973, Ser. No. 369,333

Int. Cl. H02m 1/12

U.S. Cl. 321—9 A

15 Claims



Active power filters interposed between an electrical power source section and a load section for generating a synthetic ripple which opposes and effectively eliminates an electrical ripple generated in one of the sections, either the source or the load. In the preferred embodiments of the invention, the synthetic ripple is generated by means of static semiconductor switches from direct current or direct voltage storage elements such as inductors or capacitors, the charge on these elements being obtained and maintained from the power source by appropriate control, and static semiconductor switches rated to handle only the ripple components. The active filters that are described herein have nearly an ideal characteristic.



That is, they allow only the fundamental component of the input waveform to pass to the output, without appreciable attenuation, while rejecting all other components regardless of their frequency and independently of whether they are generated by the power source or the load. As compared to prior art filters employing some form of controllable attenuator, the filters of the present invention have substantially higher efficiency and appreciable weight and size reductions over conventional passive L-C filters.

3,825,816

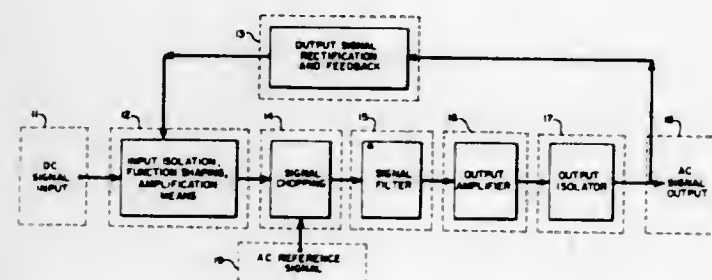
## DC-TO-AC AND AC-TO-DC CONVERTER SYSTEMS

Mauro Giuseppe Togneri, Houston, and Harry Samuel Elliott, Stafford, both of Tex., assignors to Varco, Inc., Houston, Tex.

Filed July 16, 1973, Ser. No. 379,331  
Int. Cl. H02m 7/00

U.S. Cl. 321-18

15 Claims



A signal conversion system wherein variable amplitude, direct current or voltage signals from instrument sensors, which represent the magnitude of measured physical variables by amplitude modulated direct current or voltage signals, are converted to variable amplitude alternating current voltage signals at a frequency determined by the reference signal frequency of the said signal conversion system (usually 60 cycles) (FIG. 1) and a second signal conversion system wherein variable amplitude alternating current signals from instrument sensors, which represent the magnitude of measured physical variables or control signals by amplitude modulated alternating current voltage signals, are converted to variable amplitude direct current or voltage signals (FIG. 2). In both types of conversion, the input signal is filtered for normal mode noise and filtered by a feedback portion of the system for common mode noise. The conversion process also includes magnitude scaling of the variable amplitude input signal, including but not limited to, square root extraction and linear amplitude adjustment.

3,825,817

## THYRISTOR CHOPPER CIRCUITS

Hardev Reval, London, England, assignor to C.A.V. Limited, Birmingham, England

Filed July 3, 1973, Ser. No. 376,157  
Claims priority, application Great Britain, July 6, 1972, 31593/72

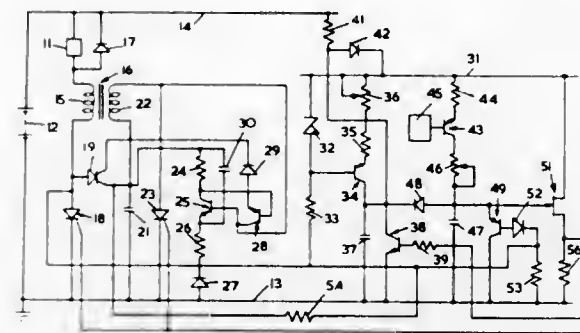
Int. Cl. H02m 7/52

U.S. Cl. 321-45 C

3 Claims

A thyristor chopper circuit has a main thyristor for supplying current to a load and a commutating capacitor for turning the main thyristor off. The capacitor is charged by a saturating transformer when the main thyristor conducts, the primary

winding of the saturating transformer being connected in series with the main thyristor, and current limiting means being



provided for restricting the maximum mean current flow through the main thyristor, the current limiting means being responsive to the time taken for the transformer to saturate.

3,825,818

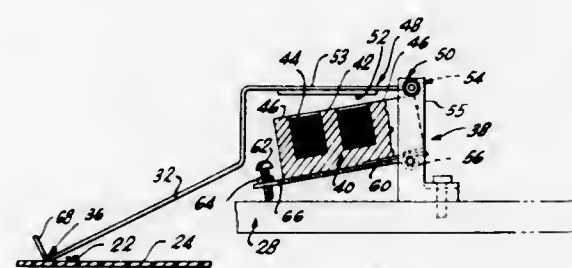
## ELECTROMAGNETIC TRANSDUCER FOR SENSING MOVEMENT OF A THREAD-LIKE OBJECT PAST A PREDETERMINED POINT

Leonard A. Mayberry, 735 Nancy St., Escondido, Calif. 92025  
Filed June 29, 1972, Ser. No. 267,652

Int. Cl. G01r 33/00

U.S. Cl. 324-34 R

5 Claims



An electromagnetic transducer for sensing the passage of a wire under a probe connected to the transducer and generating a signal in response thereto. The probe configuration is such that as the end of the probe falls off the trailing side of the wire, a relatively constant output signal is generated regardless of the speed of movement of the wire. An electromagnet is continuously energized to attract an armature connected to the probe and the pressure of the end of the probe against a reference surface is adjusted by varying the spacing between the electromagnet and the armature.

3,825,819

## DYNAMIC PROOF LOADING OF METAL BOND STRUCTURES USING PULSED MAGNETIC FIELDS

Karl A. Hansen, Seattle, and Clarence D. Lunden, Federal Way, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 12, 1973, Ser. No. 340,191

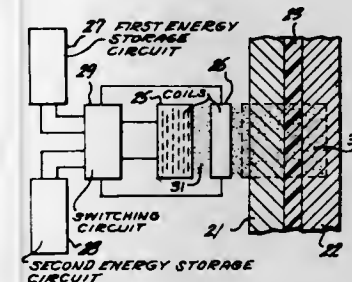
Int. Cl. G01b 19/02

U.S. Cl. 324-34 R

18 Claims

A method and apparatus for developing tensile stress within bonded metal structures. A magnetic field is first developed slowly in the bonded metal structure by pulsing a coil adjacent the metal structure with a high energy electric pulse. At substantially the peak of the slow high energy pulse, a comparatively fast pulse in an opposing current direction is applied

through the coil adjacent the same surface. The fast negative pulse effectively shuts off the slow pulse, resulting in a very rapid decrease in the magnetic field adjacent the surface of the metal structure. The magnetic field internal the structure initially established by the slow pulse is, during the fast nega-



tive pulse, at or near a maximum, and just beginning to diffuse through the structure. This creates a large negative magnetic field gradient across the structure from internal the structure to the surface nearest the coils, and thus, a resulting large tensile stress on the bond line.

3,825,820

## GATE CIRCUIT FOR NON-DESTRUCTIVE TESTING SYSTEMS FOR INDICATING WHEN TEST SIGNALS LIE WITHIN PREDETERMINED LIMITS

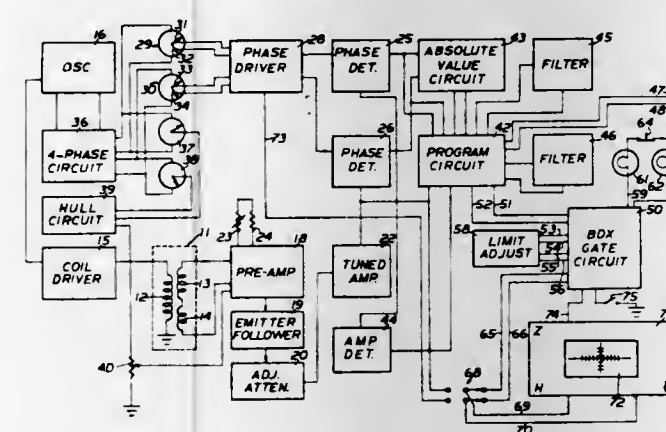
John J. Flaherty, Elk Grove, and Eric J. Strauts, Harwood Heights, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Oct. 31, 1972, Ser. No. 302,518

Int. Cl. G01r 33/12

U.S. Cl. 324-37

18 Claims



Box gate circuit is disclosed for non-destructive testing systems such as eddy current testing systems in which first and second signals in phase quadrature relation are developed. The circuit preferably includes first and second adjustable limit circuits and first and second comparator circuits coupled to a gate circuit to develop an output signal only when the amplitude of the first signal is between limits set by the first limit circuit and the amplitude of the second signal is concurrently between limits set by the second limit circuit. Monitoring means are provided preferably including an oscilloscope and a multiplexer arrangement alternately applies the first and second signals and slow and fast sawtooth signals to the horizontal and vertical inputs of the oscilloscope with intensity of the oscilloscope spot being controlled from the output of the box gate circuit.

3,825,821

## MAGNETIC PARTICLE FLAW DETECTOR USING AN ELECTRON BEAM SCANNER TO GENERATE PULSES REPRESENTATIVE OF THE IMAGE OF THE FLOW PROJECTED ON THE SCANNER SCREEN

Friedrich Martin Forster, Grathwohlstrasse 4, D-7410 Reutlingen, Germany

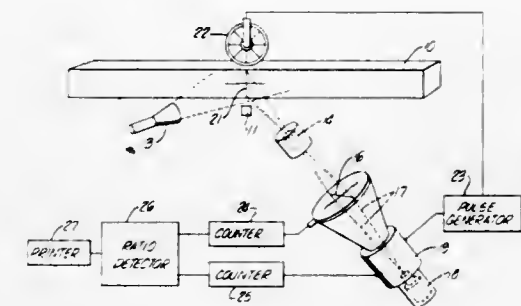
Filed Feb. 20, 1973, Ser. No. 334,088

Claims priority, application Germany, Feb. 26, 1972, 2209146

Int. Cl. G01r 33/12

U.S. Cl. 324-38

8 Claims



In testing ferromagnetic bodies for surface defects by magnetic powder techniques, an image of a magnetized test body treated with magnetic powder is formed on the screen of an electron beam scanner arranged to scan the image and generate signals representing image intensity. The scanner develops pulse signals on scanning of defects marked by the magnetic powder which serve to identify the existence and magnitude of such defects. Such signals are utilized to spray mark defect locations or actuate processing circuits to identify magnitude and kind of defects.

3,825,822

## APPARATUS FOR INSPECTING THE QUALITY OF SHORT, ELECTRICALLY CONDUCTIVE WORKPIECES BY THE EDDY CURRENT TEST METHOD

Friedrich M. O. Forster, Grathwohlstrasse 4, 7410 Reutlingen, Germany

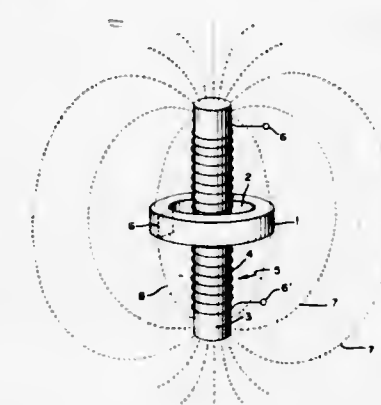
Filed May 29, 1973, Ser. No. 364,608

Claims priority, application Germany, Sept. 23, 1972, 2246871

Int. Cl. G01r 33/00

U.S. Cl. 324-40

9 Claims



Short apertured electrically conductive workpieces, such as nuts, ball bearing races or wrist pins are inspected by the eddy current test method by establishing an alternating magnetic field which causes eddy currents in the workpiece portion surrounding the aperture. The magnetic field is shaped in such a manner as to prevent a significant portion of the magnetic lines from being intercepted by the workpiece.



3,825,823

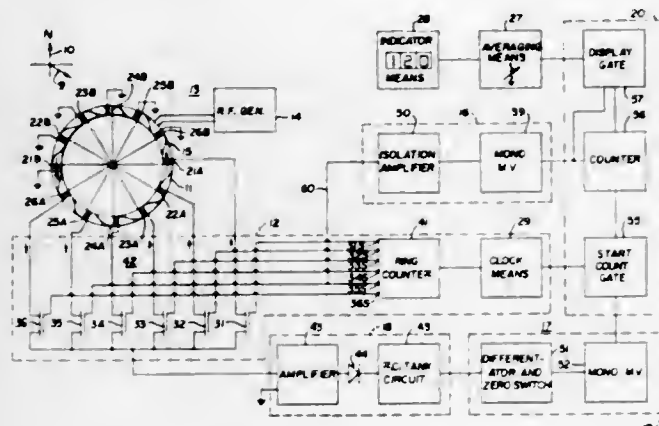
# APPARATUS FOR DETECTING THE DIRECTION OF A MAGNETIC FIELD RELATIVE TO A MARKER DIRECTION BY SEQUENTIALLY SCANNING PLURAL STATIONARY SENSORS

Leopold Rovner, 2201 Acacia Park Dr., Cleveland, Ohio 44124

Filed Jan. 21, 1972, Ser. No. 219,725  
Int. Cl. G01r 33/02

U.S. Cl. 324-43 R

14 Claims



An apparatus to detect the direction of an external magnetic field is disclosed incorporating a flux gate magnetometer having a plurality of sensing coil arrays. A scanner sequentially connects each sensing array to a detector to determine the sensing coil system which is in orthogonal alignment with the external magnetic field. A marker device is incorporated into the apparatus to produce an output to the detector when the scanning sequence is in alignment with a marker direction. The apparatus can incorporate a numerical readout to indicate the direction of external magnetic field relative to the marker direction.

3,825,824

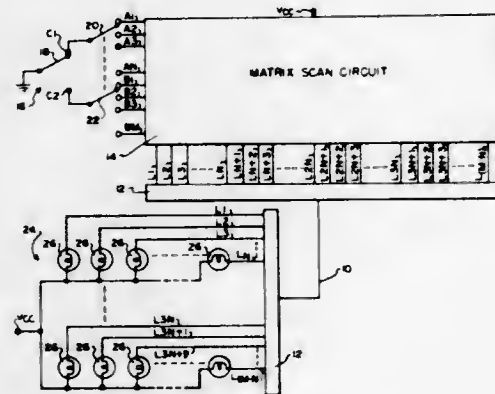
# MATRIX SCANNING CIRCUIT FOR TESTING A MULTIPLICITY OF CIRCUIT PATHS

Roger G. Herron, Clearwater, Fla., and Stanley F. Hon, Morton Grove, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 1, 1973, Ser. No. 366,222  
Int. Cl. G01r 31/02

U.S. Cl. 324-51

7 Claims



A diode matrix scan circuit having  $m + n$  inputs and  $m \times n$  outputs for testing  $m \times n$  circuit paths in  $m + n$  operations of a scanning rotary switch.

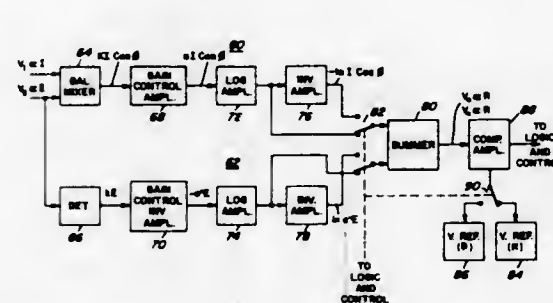
# 3,825,825 AUTOMATIC ANTENNA COUPLER UTILIZING SYSTEM FOR MEASURING THE REAL PART OF THE COMPLEX IMPEDANCE OR ADMITTANCE PRESENTED BY AN ANTENNA OR OTHER NETWORK

Carl M. Smolka, Skinner Rd., Marion, N.Y. 14505

Division of Ser. No. 229,215, Feb. 18, 1972, which is a continuation-in-part of Ser. No. 7,619, Feb. 2, 1970, abandoned. This application Sept. 4, 1973, Ser. No. 393,843  
Int. Cl. G01r 27/00

U.S. Cl. 324-57 R

6 Claims



An automatic antenna coupler is described which includes a matching network having adjustable reactive elements. Control for these elements is provided by a system for detecting the real part of the complex impedance presented by the antenna or matching network. A logic and control system for adjusting the reactive elements is operated in accordance with the real part detector output so as to provide the desired impedance match.

3,825,826

# MEASURING INSTRUMENT FOR THE MEASUREMENT OF DIRECT CURRENT OR DIRECT CURRENT VOLTAGE

Josef Thannhuber, Landau, Germany, assignor to Firma Hank Einhell, Landau, Germany

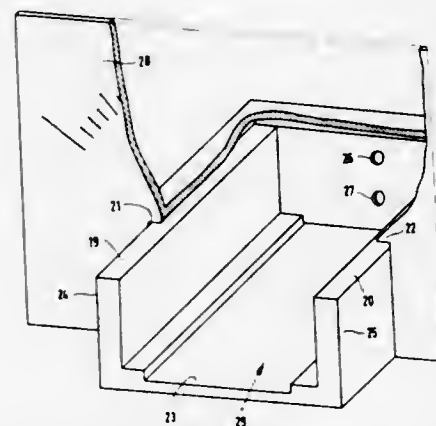
Filed Dec. 4, 1972, Ser. No. 311,570

Claims priority, application Germany, Dec. 3, 1971, 2160169

Int. Cl. G01r 1/20

U.S. Cl. 324-147

11 Claims



A measuring instrument for measuring direct current or direct current voltage comprising a synthetic plastic body having first and second parallel chambers; an indicator support member pivotally mounted in the first chamber with a plate of soft magnetic material and an indicator pointer attached thereto; a bar magnet clamped in the second chamber with the longitudinal axis of the magnet lying approximately in the plane of the plate of magnetic material; said magnet determining by virtue of its position with reference to the magnetic plate, the position of the plate and the orientation of the indicator pointer; and a measuring coil surrounding the plastic body in such a manner that when the current or voltage to be measured is conducted through the coil, the field lines of the

measuring coil extend approximately perpendicular to the direction of magnetization of the bar magnet; said plastic body and measuring coil being received in a receptacle in a scale supporting member such that the indicator pointer is located immediately in front of the scale.

3,825,827

# COLUMNAR DISPLAY FOR ELECTRICAL SIGNALS WITH DIGITAL SIGNAL LIMIT SET

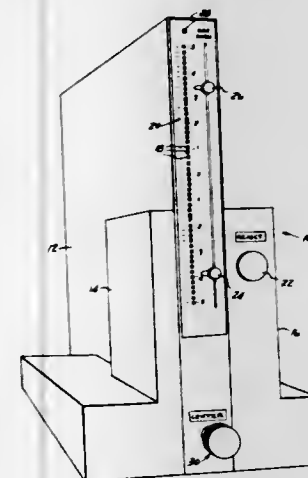
Gerald Tumbush, Xenia, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 13, 1972, Ser. No. 243,649

Int. Cl. G01r 19/16, 13/02

U.S. Cl. 324-103 P

9 Claims



A system for displaying the level of a variable electrical signal is disclosed, in which the variable electrical signals are converted into digital form, which are in turn decoded and arranged to consecutively activate a vertical series of indicator elements up and down the series in response to increases and decreases respectively in the digital signal, and with any preceding activated element being deactivated so that only a single individual indicator element corresponding to each digital signal is activated. Accordingly, the rise and fall of the position of the activated indicator element indicates the level of the electrical signal. An arrangement is also disclosed for providing signal limit indication comprising means for comparing the digital signal corresponding to the variable electrical signal with preset digital limit signals which means drives a limit indicator element whenever the generated digital signal is outside the preset values.

3,825,828

# DEVICE FOR TESTING SEMICONDUCTORS AND OTHER ELECTRICAL COMPONENTS

John C. Pfeiffer, 560 Garden Dr., Louisville, Ky. 40206

Filed Dec. 21, 1972, Ser. No. 317,409

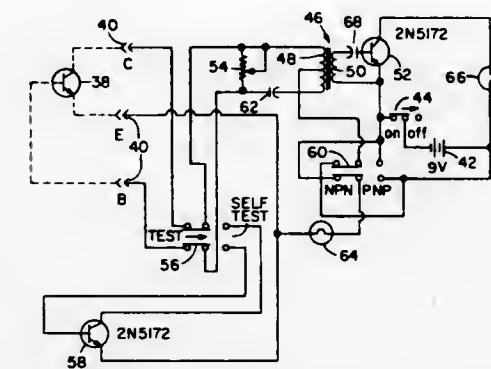
Int. Cl. C01r 31/22

U.S. Cl. 324-158 T

11 Claims

A device for testing the dynamic operation of semiconductor and other electrical components which may exhibit amplifier characteristics, having circuitry adapted to form an electronic oscillator in association with such a component, an amplifier stage coupled to the circuitry, and an indicator lamp connected to the amplifier stage to detect the presence of oscillations in the circuitry. An additional feature includes a second indicator lamp connected to the circuitry to detect current flow through various electrodes of the component under test to indicate its d.c. electrical continuity. The polarity of a d.c. potential applicable to the component being tested is reversible to permit testing of the dynamic properties of both PNP and NPN type semiconductors as well as for testing the rectifier properties of transistor junctions, diodes, thyristors and other electrical components. The device also features

means for testing its own operation including a transistor which may be switched into the circuitry of the oscillator stage in place of the component to be tested. Collector feedback



bias is utilized in the operation of the oscillator stage to minimize thermal instability thereof and to permit operation of the stage at radio frequencies.

3,825,829

# RADIO SYSTEM EMPLOYING SIMULTANEOUSLY TRIGGERED PULSE REPEATERS

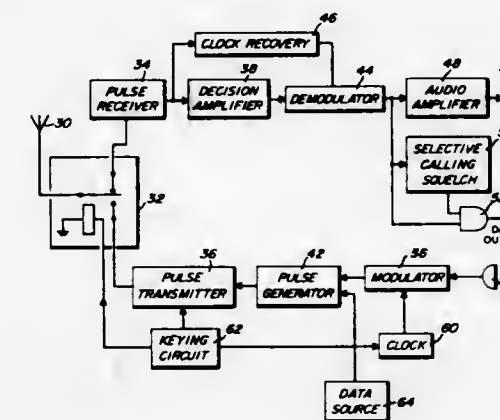
William V. Braun, Lauderhill, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 29, 1973, Ser. No. 327,332

Int. Cl. H04b 7/18

U.S. Cl. 325-6

13 Claims



An asynchronous radio repeater system for providing radio coverage within a large building or the like employs a plurality of pulse repeaters distributed over the communications area. Each repeater receives oscillation pulses from a portable pulse transmitter or from another repeater and transmits pulses of oscillations having substantially the same frequency as the received oscillations. A blanking system is incorporated in each repeater to disable the repeater for a predetermined time duration following the transmission of a pulse to prevent self-sustaining oscillation of the system.

3,825,830

# OFFSET OSCILLATOR SYSTEM FOR RADIO TRANSMITTER AND RECEIVER

William W. O'Connor, Lombard, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 6, 1972, Ser. No. 312,460

Int. Cl. H04b 1/40

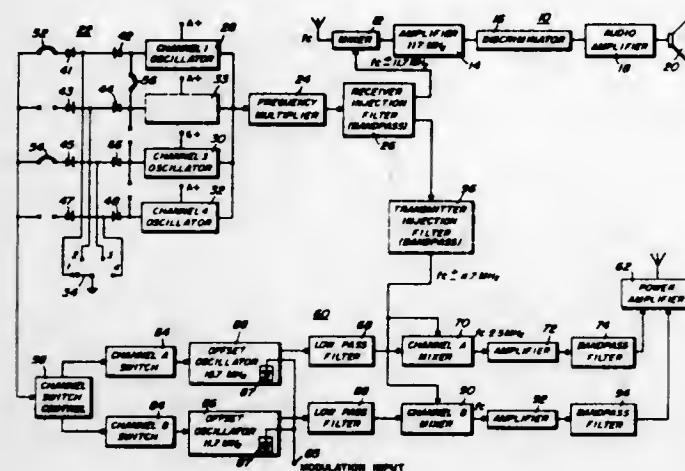
U.S. Cl. 325-20

7 Claims

An oscillator system for determining the operating frequency of a transmitter and a receiver includes a receiver local oscillator and an oscillator-mixer combination for off-setting



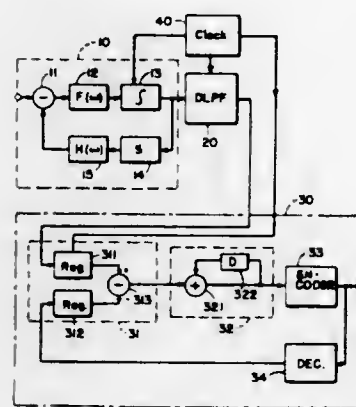
the frequency of the local oscillator to provide an excitation signal for the transmitter. The operating frequency of the transmitter and receiver can be changed by changing only the



frequency of the local oscillator, thereby reducing the number of crystals or oscillators needed for a multifrequency radio. The offsetting oscillator is frequency modulated to frequency modulate the transmitter.

### 3,825,831 DIFFERENTIAL PULSE CODE MODULATION APPARATUS

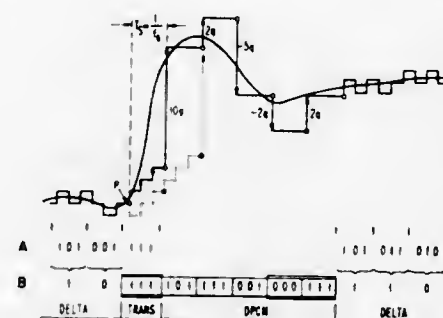
Tatsuo Ishiguro, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan  
Filed Oct. 26, 1971, Ser. No. 192,198  
Claims priority, application Japan, Oct. 28, 1970, 45-95370  
Int. Cl. H04b 1/00, 7/00  
U.S. Cl. 325-38 B 2 Claims



A differential pulse code modulator includes a delta modulator for converting an analog input signal to a delta modulated signal, a digital filter for removing quantizing noise components, and a direct feedback pulse code modulation encoder. The feedback encoder includes a subtractor for determining the difference between a decoded digital signal and the output of the digital filter, a digital integrator for integrating the output of the subtractor, a digital coder for converting the output of the integrator to a differential pulse code modulation signal and a digital decoder for converting the differential signal to the decoded digital signal supplied to the subtractor. Clock pulses are supplied to the delta modulator, the digital filter, and the direct feedback pulse code modulation encoder.

### 3,825,832 METHOD AND DEVICE FOR CODING AND DECODING VIDEO SIGNALS

Armin H. Frei, Rueschlikon; Hans R. Schindler, Au, and Peter Vettiger, Thalwil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed May 22, 1972, Ser. No. 255,489  
Claims priority, application Switzerland, Jan. 5, 1972, 8113/71  
Int. Cl. H03k 13/22  
U.S. Cl. 325-38 B 12 Claims

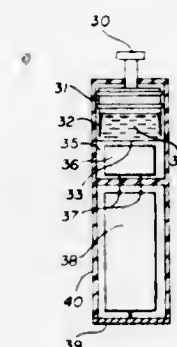


Method and device for coding and decoding video signals employing two different modes: Delta Coding for regions of minor amplitude changes, and DPCM Coding for edges which exhibit large amplitude changes. Switching between modes is effected by the bit stream carrying the video information, with a minimum of extra marker bits. Further improvement is achieved by using a higher scanning frequency for delta coding and transferring a reduced number of bits extracted by majority selection.

### 3,825,833 PERSONAL SECURITY DEVICE

John C. Bogue, 101 Ocean Ave., and Robert I. Sarbacher, both of Santa Monica, Calif., assignors to said Bogue, by said Sarbacher

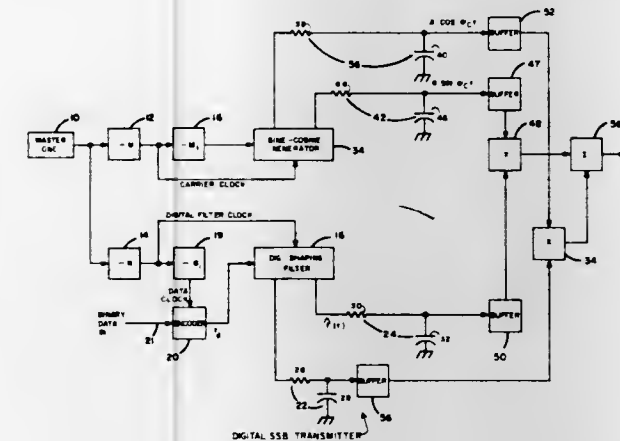
Filed May 18, 1972, Ser. No. 254,409  
Int. Cl. H04b 1/02  
U.S. Cl. 325-119 10 Claims



A self-powered electromagnetic signaling device having the appearance of a lipstick, ring, cigarette lighter, hotel or motel key or any other device commonly worn on the person or carried is disclosed. The device utilizes a reserve battery that remains inactive until actuated. Since the battery remains inactive unless actuated, the power source for the signaling device has a long stand-by life. The battery is actuated by a pushing, turning or pressing motion that can be accomplished without attracting attention. Once the battery is activated, the device emits a continuous signal until the energy of the battery has been exhausted.

### 3,825,834 DIGITAL SSB TRANSMITTER

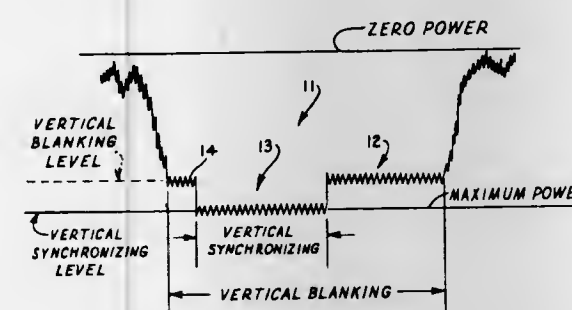
Richard Stuart, and Arvind M. Bhopale, both of Belts, Md., assignors to Rixon Electronics, Inc., Silver Spring, Md.  
Filed July 5, 1972, Ser. No. 269,047  
Int. Cl. H04b 1/02  
U.S. Cl. 325-137 4 Claims



A digital single sideband transmitter for data modems including a digital filter which shapes the incoming binary data into two outputs in the form of equally delayed Inverse Fourier and Hilbert transforms of a near ideal lowpass filter. These outputs are respectively multiplied in analog multipliers by inphase and quadrature components of the carrier as produced by a sine-cosine generator. The outputs of the multipliers are then summed to produce a modulated single sideband signal. The digital filter serves to delay, truncate and shape the response using a shaping or window function of the general form  $K_0 - K_1 \cos[(\pi/T)t]$  where  $K_0$  and  $K_1$  are constants and the function exists for the truncated period  $t = 0$  to  $2T$ .

### 3,825,835 SIGNAL-TO-NOISE RATIO MEASUREMENT

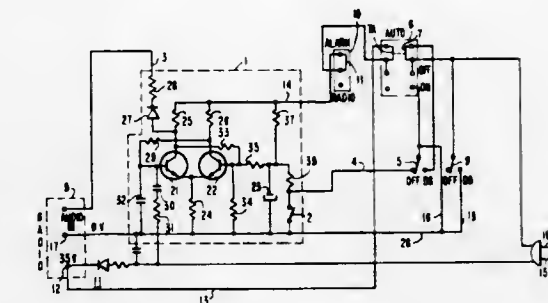
Robert L. Hammett, Burlingame; Ronald H. Todd, Los Altos, and Lawrence W. Templeton, Menlo Park, all of Calif., assignors to Hammett & Edison, San Francisco, Calif.  
Filed Sept. 16, 1971, Ser. No. 180,981  
Int. Cl. G01r 19/10; H04b 1/00  
U.S. Cl. 325-363 6 Claims



System and apparatus for the measurement of signal-to-noise ratio in electrical signals. An adjustable meter is set to the signal level or known fraction thereof and a square wave is added to the signal for display on an oscilloscope. A pair of vertically displaced oscilloscope traces, both containing the signal and the noise, are displayed and the square wave amplitude is adjusted to move the traces into contiguous or tangent relationship. The measured adjusted square wave amplitude is the signal-to-noise ratio of the electrical signal.

### 3,825,836 DELAYED ALARM AND DROWSE FOR CLOCK RECEIVERS

Gerald Dee Pyles, Marion, Ind., assignor to RCA Corporation, New York, N.Y.  
Filed July 3, 1972, Ser. No. 268,787  
Claims priority, application Great Britain, July 5, 1971, 31464/71  
Int. Cl. H04b 1/16  
U.S. Cl. 325-396 6 Claims



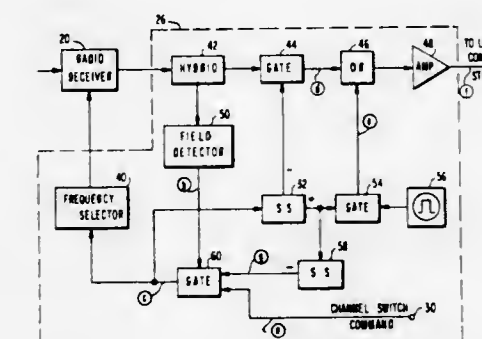
A timed full alarm condition is delayed for a short period of subdued alarm, by connecting the timer output through a modified Schmidt trigger circuit to the full-alarm generator. At the same time the timer output is connected to the subdued alarm generator, without a delay mechanism.

The delay feature is given by combining a charging circuit in the Schmidt triggering scheme. A transistor of the Schmidt circuit is used for analog processing of an alarm buzz tone signal as well as for outputting the trigger impulse. A renewed delay can be manually introduced by discharging the charging circuit without restoration of the timed switch to its quiescent condition. Recharging then commences a second cycle of delay with subdued alarm, then a repeated full-alarm.

The invention is embodied in a clock radio, where personal subdued alarm is the radio playing, and the full alarm is amplified clipped line waveform reproduced as a buzz on the radio loudspeaker. The discharge switch gives a drowse facility, again with radio.

### 3,825,837 TELEVISION RADIO FREQUENCY SWITCH

Robert David Briskman, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.  
Filed June 1, 1972, Ser. No. 258,694  
Int. Cl. H04b 1/06; H04n 5/44  
U.S. Cl. 325-456 8 Claims



In a satellite ground station adapted to receive a plurality of television channels arriving, respectively, on different frequency carriers, a separate tuneable receiver is provided for each control center which is served by the ground station. When the tuneable receiver is switched in frequency, the first field sync pulse following receipt of a switching signal initiates a blank field which is placed at a d.c. level corresponding to the black level of the television picture. The succeeding field will be a complete field of the T.V. signal on the switched frequency.



3,825,838

## SEARCH TUNE DETECTOR CIRCUIT

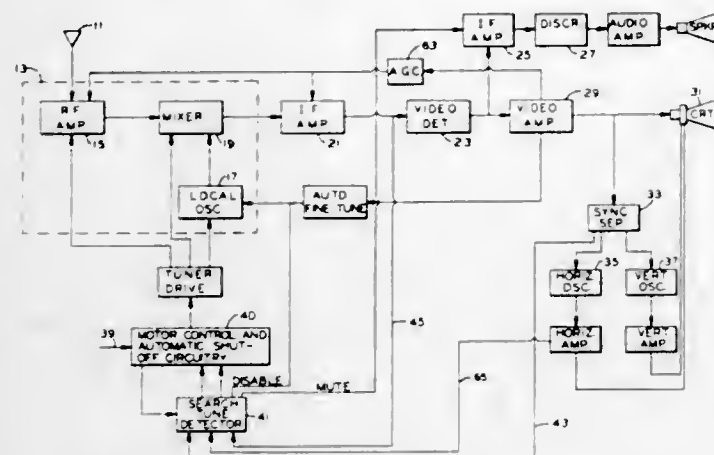
Louis F. Mayle, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Aug. 3, 1972, Ser. No. 277,550

Int. Cl. H04b 1/34

U.S. Cl. 325-470

7 Claims



An improved circuit for indicating the tuning of a heterodyne television receiver to an active station and for providing an output signal indicative thereof is disclosed. The circuit employs a tuned circuit resonant at an intermediate frequency of the receiver for sensing proper tuning but allows this resonant circuit to sense only during the concurrence of flyback and synchronizing signals. A Darlington pair senses resonance in the resonant circuit and provides a search tune stop signal when that resonance occurs. The Darlington pair also functions to cause inhibition of the receiver audio signal during search tuning and to prevent resonance in the tuned circuit at times other than during search tuning.

3,825,839

## CONSTANT CURRENT FIELD EMISSION ELECTRON GUN

Teruo Someya; Nobuyuki Kobayashi, and Toshinori Goto, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

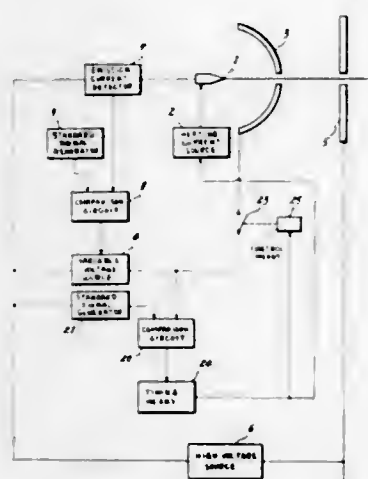
Filed Apr. 19, 1972, Ser. No. 245,328

Claims priority, application Japan, Apr. 30, 1971, 46-28753; Japan, July 12, 1971, 46-51610

Int. Cl. H01j 29/46; H02h 7/00, 9/02

U.S. Cl. 328-9

6 Claims



An improved field emission type electron gun is automatically controlled so as to generate a stable emission current. The preferred embodiment employs a detecting means for detecting the emission current fluctuation and a control means for controlling the electric field for field emission according to the output signal of said detecting means.

3,825,840

## SOLID STATE RESOLVER

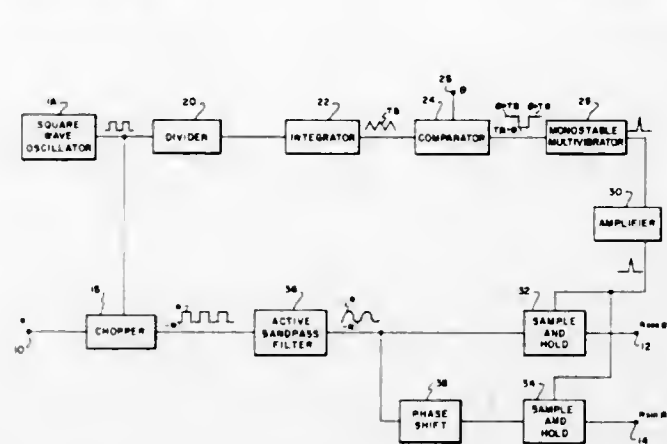
Henry P. Bell, Laurel, and William H. Licata, Adelphi, both of Md., assignors to the United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1973, Ser. No. 349,873

Int. Cl. H03k 5/08

U.S. Cl. 328-28

4 Claims



A solid state resolver to provide coordinate conversions in guidance systems. D.C. input signals of  $R$  and  $\theta$  are supplied with the output of the resolver being  $R \sin \theta$  and  $R \cos \theta$ . A circuit comprising a field effect transistor is used to sample a sine wave of amplitude  $R$  to produce the desired output signals.

3,825,841

## DIGITAL SYSTEM INCLUDING A PULSE COUNTER FOR SELECTIVELY INTERCONNECTING A SOURCE OF ENERGY AND A PLURALITY OF ENERGIZABLE ELEMENTS

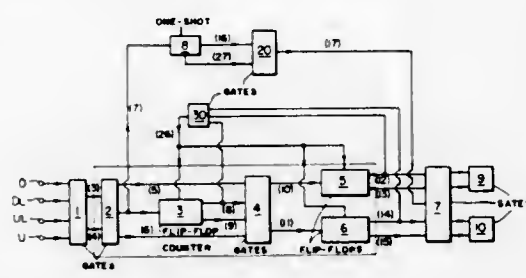
Richard A. Rappaport, Henrietta, N.Y., assignor to Sykron Corporation, Rochester, N.Y.

Continuation of Ser. No. 105,080, Jan. 8, 1971, abandoned, which is a division of Ser. No. 733,334, May 31, 1968, Pat. No. 3,555,381. This application Feb. 2, 1973, Ser. No. 329,080

Int. Cl. H03k 17/02

U.S. Cl. 328-70

7 Claims



Digital circuitry converting input pulses into stepping motor winding energization pattern. Input pulses are converted by an up-down counter into sequence of pulse patterns corresponding to desired sequences of energization patterns, and produce gating pulses maintaining energization patterns between input pulses for only just such time as is needed to assure completion of motor steps. The counter is a flip-flop arrangement receiving input pulses from separate up and down input gates. The counter can produce more than the desired number of patterns, but production of undesired patterns makes the counter revert to a desired pattern. The stepping motor upon stepping to one of its limits disables the corresponding input gate, in effect.

3,825,842

## PULSE RATE DISCRIMINATOR GENERATING OUTPUT ONLY AT PREDETERMINED INPUT FREQUENCY

Jerry Linward Birchfield, 2204 Tanglewood Rd., Decatur, Ga. 30033, and Richard Wallace Moss, 545 W. Sandtown Rd., Marietta, Ga. 30060

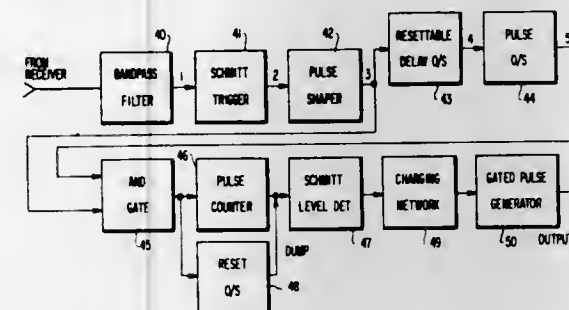
Division of Ser. No. 176,058, Aug. 30, 1971, Pat. No.

3,757,315. This application Apr. 18, 1973, Ser. No. 352,394

Int. Cl. H03k 9/06

U.S. Cl. 328-138

13 Claims



A pulse rate discriminator for generating an output signal only when the input signal thereto is of a predetermined frequency. A delay one-shot multivibrator means is connected to a pulse-generating means which generates first pulses timed with every other axis crossing of the input signal. The delay one-shot multivibrator means generates a delay pulse of pre-set duration which duration is a first predetermined fraction of the period corresponding to said predetermined frequency. A pulse one-shot multivibrator means is connected to the delay multivibrator means for generating second pulses the duration of which are a second predetermined fraction of the period corresponding to said predetermined frequency. An AND gate is connected to the pulse generating means and to the pulse one-shot multivibrator means for generating a coincidence signal each time the first and second pulses coincide and means is provided for detecting the coincidence signals and for generating the output signal only when a predetermined minimum number of the coincidence signals are detected.

3,825,843

## SELECTIVE DISTORTION COMPENSATION CIRCUIT

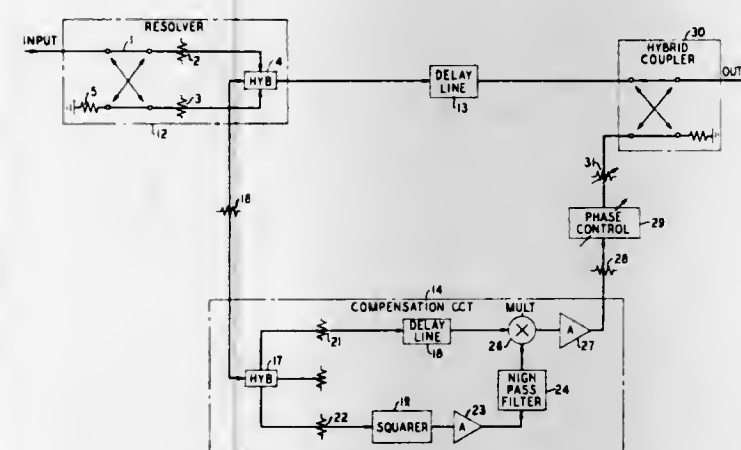
Robert Irving Felsberg, and Hotze Miedema, both of Boxford, Mass., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed June 8, 1973, Ser. No. 368,110

Int. Cl. H03b 1/04

U.S. Cl. 328-163

5 Claims









there is a need to energize one or the other load. The AC supply voltage to the condition responsive system amplifier and current comparators is shorted out early in each half cycle by a four layer diode across the input of the condition responsive circuit. This arrangement allows for switching to a relatively high impedance within the condition responsive circuit to virtually eliminate the power dissipation therein except during the initial portion of each applied waveform and thus also insures that switching of the silicon controlled rectifiers and triacs only occurs near the voltage crossover of the alternating current supply.

3,825,853

**AMPLIFIER TUBE FOR POWER AMPLIFICATION**  
Gerard Sire, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 1, 1972, Ser. No. 311,151

Claims priority, application France, Dec. 6, 1971, 71.43710

Int. Cl. H03f 3/60

U.S. Cl. 330—53

2 Claims



An amplifier tube for power amplification comprises a protection device against self-oscillation of the kind which develop in a cavity of the amplifier tube.

This device comprises waveguides coupled at one end to this cavity and having such cross-section dimensions that they form short-circuits at the frequencies of operation of the amplifier tube and act as a trap at the frequency of the self-oscillation. The guides may be located outside the cavity, if the location thereof makes this possible; they may also be provided in the plunger of the cavity.

3,825,854

**AMPLIFIER WITH SUBSTANTIALLY ZERO DISTORTION PRODUCTS**

Henri T. Pichal, St. Petersburg, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

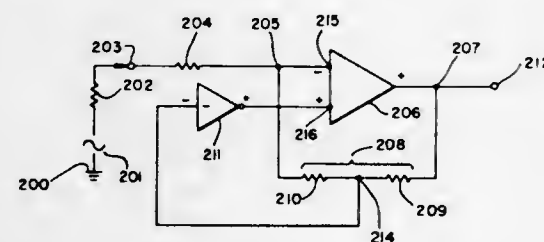
Continuation of Ser. No. 96,803, Dec. 10, 1970, abandoned.

This application Oct. 11, 1972, Ser. No. 296,693

Int. Cl. H03f 1/26

U.S. Cl. 330—149

8 Claims



An amplifier with substantially zero distortion products is disclosed. A circuit is provided that independently compares the signals in the amplifier output with all the signals provided

by the amplifier input source and discriminates between the original signals (fundamentals) and non-original signals (distortion product, spurious signals, and noise, etc.) present in the output terminals of the amplifier or network. Having discriminated and isolated the nonoriginal signals these are then re-inserted back into the amplifier in such phase that provides cancellation of the internally generated products.

3,825,855

**FREQUENCY SYNTHESIZER WITH COARSE STAIRSTEP FREQUENCY CONTROL AND FINE PHASE CONTROL**

Jean-Claude Basset, Paris, and Pierre Helms, Argenteuil, both of France, assignors to U.S. Phillips Corporation, New York, N.Y.

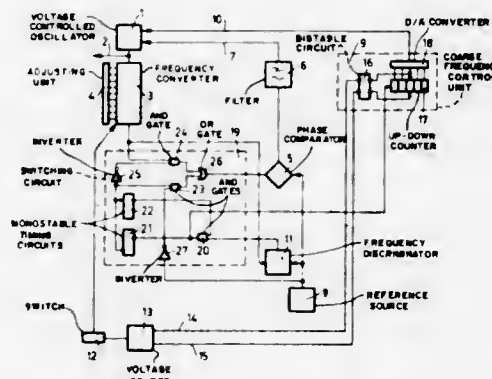
Filed Feb. 6, 1973, Ser. No. 330,005

Claims priority, application France, Feb. 8, 1972, 72.04105

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A

9 Claims



The output frequency of a voltage controlled oscillator is phase and frequency locked to the frequency of a reference source through a frequency converter. The frequency converter divides the voltage controlled oscillator frequency by an adjustable division ratio and applies the divided frequency to both a phase comparator and a frequency discriminator. A coarse frequency control unit applies an output of the frequency discriminator to the voltage controlled oscillator as a stepwise adjustable coarse frequency control signal. The phase comparator output provides a fine control signal to the voltage control oscillator. In response to an adjustment of the frequency converter to a new division ratio a two position switch sets the counting direction of an up-down counter in the coarse frequency control unit in accordance with the sense of the change in division ratio. In response to a change in the output frequency of the frequency converter the frequency discriminator provides an output pulse that initiates a timing sequence in a switching circuit. The switching circuit in response to the output pulse of the frequency discriminator first disconnects the phase comparator from the frequency converter for a predetermined time period, then disconnects the frequency discriminator from the coarse frequency control unit and reconnects the frequency converter to the phase comparator for a second predetermined time period, after which the phase and frequency adjusting circuits are restored.

3,825,856

**LASER GENERATOR FOR SINGLE TRANSVERSE MODE OPERATION**

Jacques Pezot, Marcoussis, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 7, 1972, Ser. No. 313,186

Claims priority, application France, Dec. 10, 1971, 71.44398

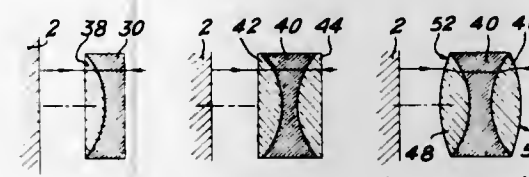
Int. Cl. H01s 3/05

U.S. Cl. 331—94.5 C

6 Claims

A laser generator which oscillates in a single transverse mode comprises an amplifying medium placed within a resonator consisting of two oppositely facing mirrors.

Provision is made within the resonator for an optical system of revolution having an axis which is adjacent to the resonator



axis and comprising a divergent lens of homogeneous absorbent material.

3,825,857

**SIMULATED DICE GAME AND CONTROL CIRCUIT THEREFOR**

Dennis D. Dice, Yadkinville, N.C., assignor to Electronic Data Controls Corporation, Winston-Salem, N.C.

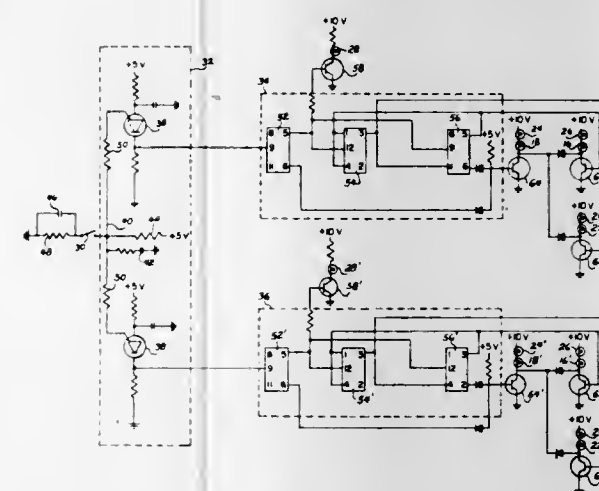
Division of Ser. No. 253,057, May 15, 1972. This application

Aug. 8, 1973, Ser. No. 386,730

Int. Cl. H03k 3/82

U.S. Cl. 331—111

2 Claims



A simulated dice game including a playing board on which is presented a display including lamps arranged in a pattern corresponding to the spot patterns on two dice. A manually operated switch button is provided to activate and deactivate pulse generating devices for each lamp arrangement, and the generated pulses are fed to counter circuits that are switched through a predetermined recurring sequence of operating states which selectively energize the lamps through output circuitry to show combinations of one to six lamps on each die. The pulse generating device produces triggering pulses at a relatively low frequency and at a constant repetition rate during activation thereof by the switch button and produces such pulses at a descending repetition rate upon deactivation thereof by the switch button whereby the lamps flash visibly during activation and continue to flash at a descending repetition rate upon deactivation until a final operating state is displayed upon cessation of pulse generation.

3,825,858

**LOCAL OSCILLATOR FOR USE IN A VHF TUNER FOR A TELEVISION RECEIVER**

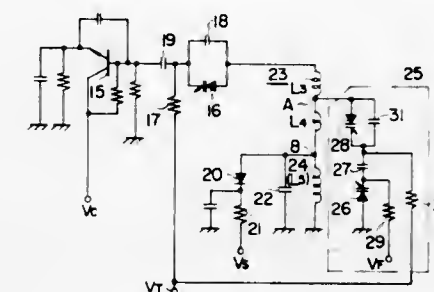
Kiyoshi Amemiya; Masakazu Kondou, both of Yokohama; Kazuhiko Yamazaki, Fujisawa, and Fumio Kanai, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,139

Int. Cl. H03b 3/04, 5/12

U.S. Cl. 331—117 R

2 Claims



A local oscillator for a VHF tuner employing variable capacitance diodes in which a high band tuning coil is tapped at a suitable point and an AFC circuit is connected to this point so as to eliminate variations of the AFC sensitivity depending on the high and low bands. Further, a variable capacitance diode is connected in series with the AFC circuit and tuning voltage is applied to this variable capacitance diode so as to eliminate variations of the AFC sensitivity depending on the channel.

3,825,859

**MINIMUM INSERTION LOSS YIG PULSE COMPRESSION FILTER TRANSDUCER**

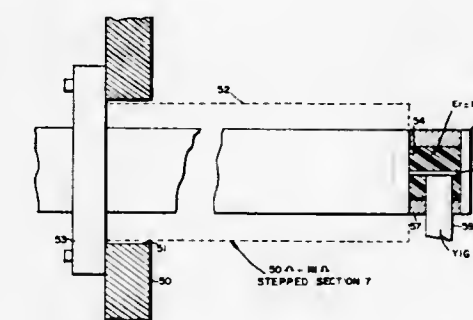
Gerald I. Klein, Westbury, N.Y.; Robert A. Moore, Severna Park, and Stephen F. Payer, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 80,390, Oct. 30, 1970, abandoned, which is a continuation of Ser. No. 809,672, March 24, 1969, abandoned. This application May 25, 1972, Ser. No. 257,052

Int. Cl. H03h 9/30, 9/34

U.S. Cl. 333—30 M

3 Claims



The present invention relates generally to a broad band delay line utilizing magnetoelastic coupling and propagation of acoustic waves. Microwave pulse compression is effected by an axially magnetized YIG rod. The YIG rod performs the function of a wide band dispersive delay line having a monotonically increasing delay versus frequency characteristic. Pulse compression is effected by differentially delaying the successive instantaneous frequency components of a swept input pulse. Insertion loss is maintained less than 20 db from 1.0 to 3.0 GHz and as low as 7 db.



3,825,860

**SURFACE WAVE DELAY LINE WITH QUARTER-WAVE TAPS**

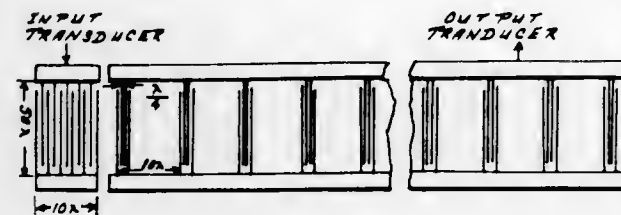
Paul H. Carr, Bedford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,638

Int. Cl. H03h 9/26, 9/30; H01v 7/00

U.S. Cl. 333—30 R

3 Claims



A surface wave delay line apparatus utilizing quarter-wave taps in a multiply tapped LiNbO<sub>3</sub> delay line to reduce reflections.

3,825,861

**COAXIAL LINE TO STRIP LINE CONNECTOR**

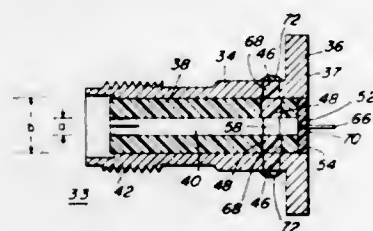
John R. O'Donnell, Ashland, Mass., assignor to EG & G, Inc., Bedford, Mass.

Filed Sept. 10, 1973, Ser. No. 395,486

Int. Cl. H01p 5/08

U.S. Cl. 333—33

3 Claims



A connector for coupling a coaxial cable and a strip line having compensating material in the launch area disposed in a slot extending diametrically across the face of a member that insulates a connecting rectangular tab from the connector body.

3,825,862

**HELICAL RESONATOR**

Yasumi Koizumi, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

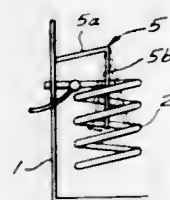
Filed Sept. 7, 1973, Ser. No. 395,462

Claims priority, application Japan, Nov. 1, 1972, 47-12541

Int. Cl. H01p 7/06, 7/04

U.S. Cl. 333—83 R

5 Claims



A resonator comprises a metal housing, a helical coil disposed inside the housing, and means for adjusting the resonant frequency of the coil. The adjustment means takes the form of a generally L-shaped metallic strip having a first portion secured to the housing and a second portion extending into the interior of the coil. The position of the second portion is changeable relative to the coil turns to adjust the resonant frequency of the coil.

3,825,863

**MICROWAVE TRANSMISSION LINE**

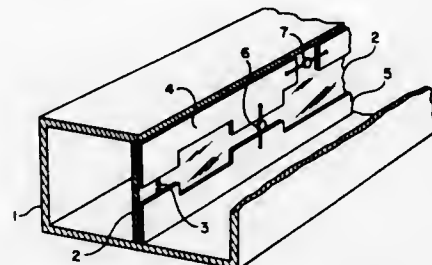
Paul J. Meier, Westbury, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed May 18, 1973, Ser. No. 361,634

Int. Cl. H01p 3/12, 1/00

U.S. Cl. 333—95 R

7 Claims



A microwave transmission structure consisting of a hollow conductive waveguide with at least one film conductor supported on a dielectric substrate within the guide to provide a conductive surface projecting inwardly from the guide wall in the manner of a ridge in ridgeguide.

3,825,864

**AERIAL TUNING DEVICE**

Sven Ramstrom, Lyckeby, Sweden, assignor to Karlskronavarvet AB, Karlskrona, Sweden

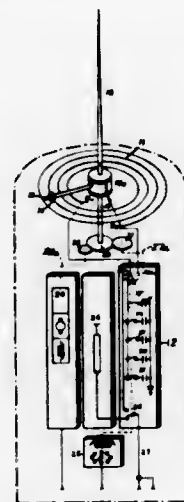
Continuation of Ser. No. 177,369, Sept. 2, 1971, abandoned.

This application June 25, 1973, Ser. No. 373,099

Int. Cl. H03j 5/00; H03h 7/38

U.S. Cl. 334—39

2 Claims



An aerial tuning device comprising a coil and a capacitor having variable inductance and capacitance, respectively, said coil being connected in series with the aerial and also connected to the capacitor. The coil is provided with a movable contact, and the capacitor has a continuously rotating adjustment shaft, said shaft being operatively linked with said movable contact, so that the shaft is rotated at the same time as the contact of the coil is moved. Thus, during the movement of the coil contact, the capacitance of the capacitor varies up and down between a minimum value and a maximum value.

3,825,865

**ELECTROMAGNETIC RELAY**

Robert E. Prouty, and Robert E. Graf, both of Logansport, Ind., assignors to Essex International Inc., Fort Wayne, Ind.

Filed May 11, 1973, Ser. No. 359,613

Int. Cl. H01h 51/06

U.S. Cl. 335—128

2 Claims

An electromagnetic relay having an electromagnetic coil, frame and a pivotable armature. The frame is a generally C-

3,825,867

**ELECTRICAL PROTECTORS AND METHODS OF ASSEMBLING THE SAME**

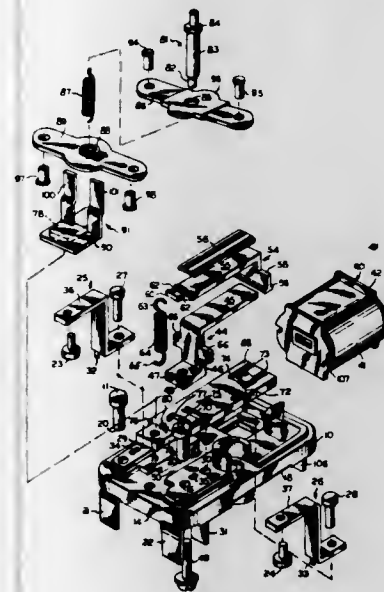
Thomas Georgopoulos, Chicago, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Continuation-in-part of Ser. No. 245,462, April 19, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 342,662

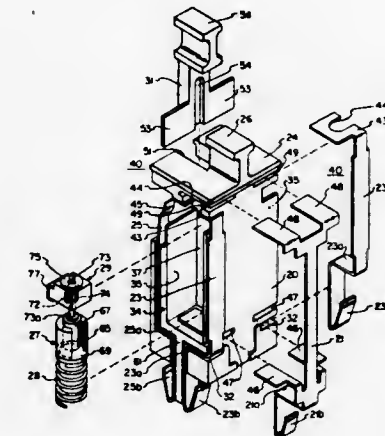
Int. Cl. H01h 39/00

U.S. Cl. 337—32

18 Claims



directly to the armature provides for normally closed as well as normally open contacts and includes a post connected to the armature as well as contact carrying arms which slide on the post.



Electrical protectors useful for protecting incoming line pairs in telephone main distributing frames including a pair of protector assemblies of redundant nature encased within common housing means. Each protector assembly includes two separate grounding paths through the provision of two spaced grounding contacts, circuit protective means for selectively providing at least one of the grounding paths, and first and second circuit contact means for providing a normal circuit current path through the assembly. Spring means, employed to maintain relative positions of assembly parts, are positioned between one grounding contact and the circuit protective means and comprise a portion of a first grounding path for the assembly. A projectible pin element is urged by the spring means toward direct engagement with the other grounding contact to establish a second grounding path for the protector assembly under particular circuit fault conditions. In one practice, current limiting means constitutes a portion of the normal circuit current path. In another practice, the normal circuit current path by-passes all parts of the circuit protective means. Circuit interruptive means are provided to remove a selected one of the circuit contact means from the normal current path to provide a detent position for the protector assembly.

3,825,866

**SYSTEM AND APPARATUS FOR UNDERGROUND TRANSFORMER INSTALLATION**

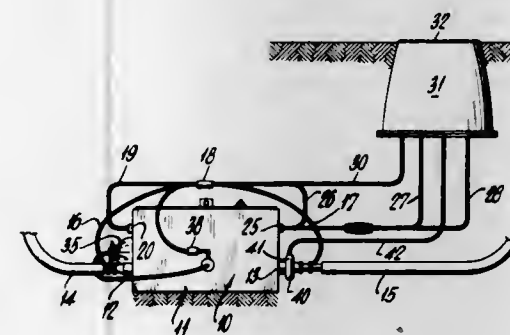
Nicholas E. Piccione, 28 Stengel Pl., Smithtown, N.Y. 11787

Filed June 29, 1972, Ser. No. 267,275

Int. Cl. H01h 71/20

U.S. Cl. 337—17

3 Claims



In an underground distribution transformer system the tank of the transformer is connected to a protective grounded anode, and is connected to the system neutral only by way of a voltage responsive shunt bypass. The shunt bypass is comprised of an encapsulated device including a lead disk connected to one terminal thereof and separated from another lead disk connected to the other terminal thereof by a Mylar disk having a central aperture. Spring loading is provided in the device for urging the lead disks together when they are melted due to arc-over currents in the gap defined by the Mylar disk.

3,825,868

**THERMALLY RESPONSIVE SWITCH**

Thurman S. Jess, Mundellen, Ill., and Wilbur F. Jackson, Rolling Hills, Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 116,185, Feb. 17, 1971, abandoned.

This application Jan. 15, 1973, Ser. No. 323,616

Int. Cl. H01h 45/02

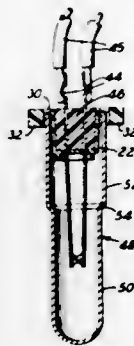
U.S. Cl. 337—112

9 Claims

A thermally responsive switch and method for making the same in which a pair of contact elements including at least one bimetallic element are mounted within an integral support base molded from a mass of thermosetting material which is cured at the desired operating temperature for the switch. The contact elements each have a protruding stop and are biased



during manufacture such that the stops abut the support base while the contact ends are maintained in a predetermined



relationship with each other whereby the switch is calibrated at the same time the thermosetting material is cured.

3,825,869

**AIRCRAFT GROUND HANDLING EQUIPMENT**  
Francis B. Loomis, Brockville, Ontario, Canada, assignor to The St. Lawrence Engine Co. Limited, Brockville, Ontario, Canada

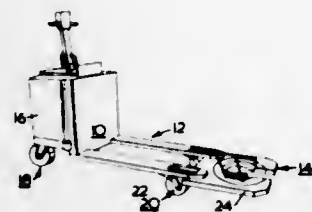
Filed July 11, 1973, Ser. No. 378,202

Claims priority, application Canada, Apr. 12, 1973, 168532

Int. Cl. B60b 29/00

U.S. Cl. 214—331

8 Claims



This relates to aircraft ground handling apparatus including a base member having an opening therein and an entry-way extending from a peripheral portion of the base member to said opening. An aircraft wheel engaging element is mounted on the base member in the region of the opening in the base member for rotation relative thereto about a generally vertical axis. The rotatable element has an entry-way therein leading into a free or open central region therein and arranged such that when said element is rotated to bring the entry-way thereof into general alignment with the entry-way in the base member, the base member may be advanced at a low level toward a wheel of an aircraft such that said wheel enters through said aligned entry-ways into the central region of said wheel engaging element. Means are provided for applying a torque to said element to rotate same through a selected angle relative to the base member. The wheel engaging element is sized and arranged to engage peripheral portions of the aircraft wheel to apply lifting forces to same when said base member is lifted after said element has been rotated through said selected angle relative to the base member.

### 3,825,870 FUSE ELEMENT AND A HIGH VOLTAGE CURRENT-LIMITING FUSE

Yoshio Ono; Chiu Sekine, both of Nagoya; Naotoshi Takaoka, and Nobuyoshi Asai, both of Inuyama, all of Japan, assignors to Takamatsu Electric Works Ltd., Inuyama, Japan

Filed Nov. 5, 1971, Ser. No. 196,039

Claims priority, application Japan, Nov. 11, 1970, 45-99578; Dec. 25, 1970, 45-135349[U]; Sept. 2, 1971, 46-67620

Int. Cl. H01h 85/04

U.S. Cl. 337—159

15 Claims



A fuse element essentially consisting of a plurality of fuse wires twisted together and press rolled under the twisted state and a high voltage current-limiting fuse which comprises at least one of the above mentioned fuse elements wound spirally with a given pitch around an insulating core embedded in an arc quenching filler within an insulating tube closed at the ends thereof by external and internal electrodes connected to the ends of the fuse element. The presence of the fuse wires twisted together and rolled under the twisted state makes it possible to refrain the overvoltage from sudden rising in a positive manner. The fuse element with a low melting point alloy portion incorporated therein and assembled within a Teflon sleeve is capable of reliably interrupting the full-range of fault currents.

3,825,871

### ELECTRIC FUSE WITH TRIP DEVICE

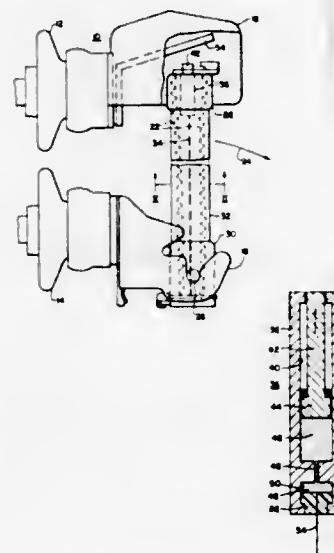
Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1973, Ser. No. 417,693

Int. Cl. H01h 71/20

U.S. Cl. 337—171

9 Claims



A current limiting fuse structure characterized by a tubular, electrically insulating casing having spaced terminals thereon, one end of the casing being pivotally mounted on first terminal means and the other end of the casing being releasably mounted on second terminal means, a first fusible element within the casing and extending between the spaced terminals, trip means for unlatching the other end of the casing and comprising a plunger and a delayed explosive charge for driving the plunger against the second terminal means for releasing the other end of the casing from a second terminal means upon ignition of the delayed explosive charge, and a second fusible element extending between the terminal at said one end of the casing and the delayed explosive charge.

3,825,872

### CLOCK CONTROLLED THERMOSTAT

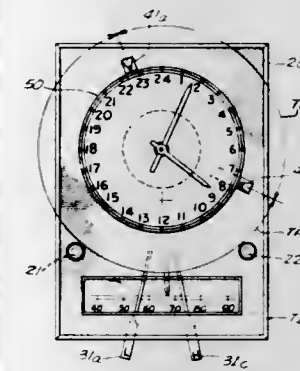
Keith A. Sadler, 1505 Del Gado Dr., Sherman Oaks, Calif. 91403, and Ralph E. Phillips, Jr., 9154 Janice Pl., Beverly Hills, Calif.

Filed June 4, 1973, Ser. No. 366,584

Int. Cl. H01h 37/00

U.S. Cl. 337—301

6 Claims



A clock controlled thermostat in which the clock does not require a separate source of power but is energized from the same source as the remaining circuitry of the thermostat.

3,825,873

### CONTACT WHEEL ASSEMBLY FOR STRAND ANNEALING TUBING

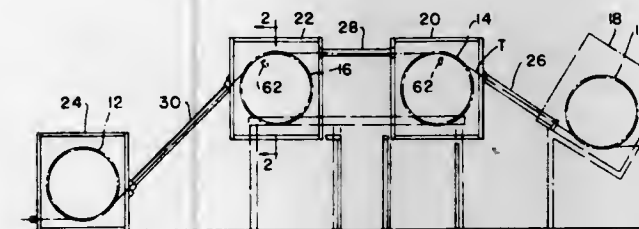
James L. Herren, Decatur, Ala., and Edward P. Habdas, Dearborn, Mich., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 18,882, March 12, 1970, abandoned, which is a division of Ser. No. 706,589, Feb. 19, 1968, Pat. No. 3,518,405. This application Mar. 21, 1972, Ser. No. 236,759

Int. Cl. H01r 39/46

U.S. Cl. 339—8 R

10 Claims



A contact wheel assembly for use in conducting current to or from copper tubing engaged with the wheel. The wheel is peripherally grooved to receive advancing tubing and sparking is substantially eliminated by forming the tube contacting portion thereof of electrographitic material.

3,825,874

### ELECTRICAL CONNECTOR

William J. Peverill, San Clemente, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,884

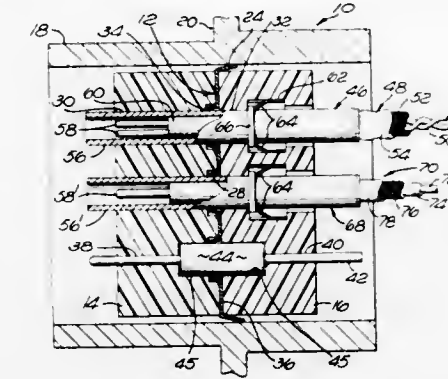
Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

5 Claims

An electrical connector with an internal grounding foil for grounding outer conductors of multi-conductor cables. The invention is particularly suited for Twinax cables in which the shields are grounded to the connector shell by the grounding

foil to preclude or minimize the transmission of electromagnetic pulses (EMP) through the connector. The connector



also houses pin contacts which may be either insulated from the grounding foil or carry filter elements which attenuate radio frequency interference (RFI).

3,825,875

### ELECTRICAL PLUG WITH SELECTABLE GROUNDING TERMINALS

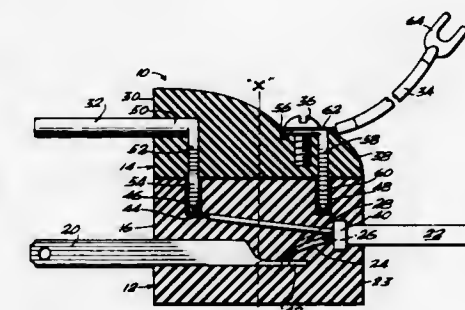
Lewis B. Garrett, 1020 W. 47th St., Hialeah, Fla. 33012

Filed Nov. 12, 1973, Ser. No. 415,144

Int. Cl. H01r 3/06

U.S. Cl. 339—14 RP

13 Claims



An electric plug for connecting a three-wire electrical system to a three-prong or two-prong electric receptacle comprising, generally, a plug having the conventional two current-carrying prongs and a top portion, manually adjustable, to present a third, ground prong, for reception in a conventional three-prong receptacle or a pigtail for connection to the conventional metal wall box of a two-prong receptacle. The top portion is manually adjustable in a manner whereby either the ground prong or the pigtail is disposed in electrical connection with the third, ground wire, in the wire cable to the plug while the grounding terminal not in use is disconnected therefrom.

3,825,876

### ELECTRICAL COMPONENT MOUNTING

Neil F. Damon, Cumberland, R.I.; Robert S. Laurence, Attleboro, and Ralph C. Hoy, East Falmouth, both of Mass., assignors to Augat Inc., Attleboro, Mass.

Filed Aug. 12, 1971, Ser. No. 171,217

Int. Cl. H05k 3/32

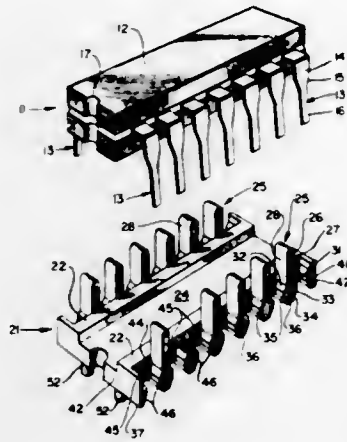
U.S. Cl. 339—17 CF

10 Claims

An electronic component mounting system particularly adapted for the economical high density packaging of integrated circuits selectively in readily removable or soldered permanent attachment. Each integrated circuit component is rigidly attached to a complementary cartridge of insulated material and the assembled structure may be inserted in either normal or inverted position within terminals correspondingly arrayed on a mounting panel. In one position the assembly may be plugged in and snapped out as required, while in in-



verted position the individual leads of the integrated circuit may be soldered to respective terminals. Each of the mounting panel terminals is provided with a wire wrapping pin extension



and the spacing of the pins remains as in prior systems, enabling the use of existing wire wrap programs without change.

3,825,877

#### PRINTED CIRCUIT ASSEMBLY AND METHOD FOR FABRICATION THEREOF

Tadato Ojima; Kazuhiro Koiso, and Toshihiko Nakano, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

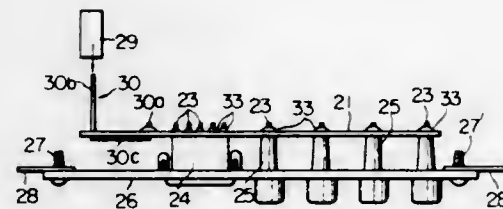
Filed May 31, 1972, Ser. No. 258,336

Claims priority, application Japan, May 31, 1972, 46-37952; June 15, 1971, 46-51266; June 15, 1971, 46-51267; June 16, 1971, 46-51949

Int. Cl. H05k 1/04

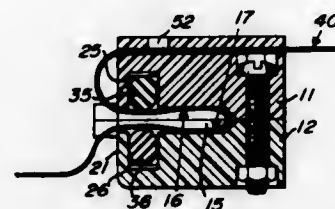
U.S. Cl. 339-17 C

7 Claims



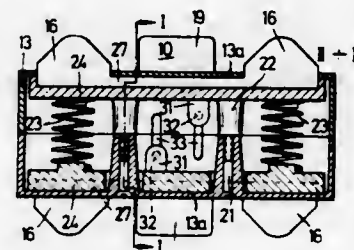
A printed circuit assembly is herein proposed which has a multiplicity of generally L-shaped external terminal elements each of which is connected at one end to a printed circuit on the printed base panel through a soldered joint and which is formed at the other with a plug portion which is to be inserted into a plug socket. The plug portion projects usually perpendicularly from the printed base panel and extends on the same side as the joints on the base panel. The joints on the base panel are therefore soldered in a single dip-soldering operation in which the plug portions of the external terminal elements are kept intact with the result that no changes in size and configuration are invited as a result of the dip-soldering operation. The external terminal elements are thus readily inserted into the plug socket and are prevented from being dislocated or deformed when the plug socket is connected to or disconnected from the group of the terminal elements. The assembly may further include retaining means for securely holding the terminal elements in position relative to the printed base panel.

3,825,878  
FLEXIBLE FLAT CABLE SYSTEM  
Carl Finger, Glenview, and John W. Pausche, Norridge, both of Ill., assignors to Motorola, Inc., Chicago, Ill.  
Filed Sept. 10, 1973, Ser. No. 395,475  
Int. Cl. H05k 1/07  
U.S. Cl. 339-17 F 5 Claims



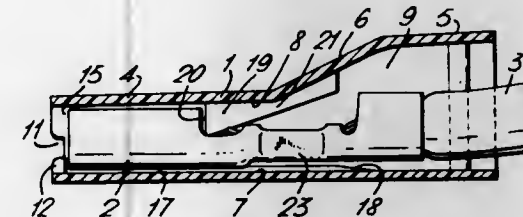
A housing having an elongated slot therein with opposed parallel channels in the upper and lower surfaces adjacent the opening of the slot and parallel spaced apart ridges extending transverse to the longitudinal axis of the channels in the bottom surface of each of the channels. An elongated cylindrical, silicone rubber member having a diameter slightly larger than the width and depth of the channels positioned in each of the channels so as to extend slightly into the slot and a flexible flat cable having a fold therein transverse to the parallel conductors and positioned in the slot between the resilient members with each conductor parallel to and overlying a ridge in the adjacent channel. Said cable further defining openings between the conductors positioned in overlying relationship to the resilient members and a portion of the cable folded back over the housing and fixed in position by a strip of plastic having openings therethrough to provide test point access to the conductors.

3,825,879  
ADAPTER FOR CURRENT DISTRIBUTOR RAIL  
Kurt Hesse, 38, Waterfohr, 4920 Lemgo-Lippe, Germany  
Filed Aug. 2, 1972, Ser. No. 277,303  
Claims priority, application Austria, Aug. 3, 1971, 6789/71  
Int. Cl. H01r 9/00  
U.S. Cl. 339-21 R 3 Claims



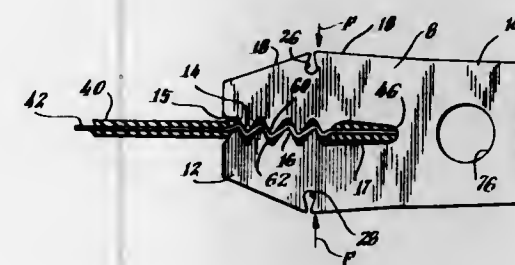
An adapter for joining two current distributor rails together, or supplying or tapping current to or from a rail, comprises a two-part insulating housing, a pair of contact assemblies spring-loaded to extend retractable contacts through slots in opposite sides of the housing so as to engage current carrying conductors in the rail(s), when in use, an earthing plate on the housing located to first engage an earthing conductor when the adapter is inserted into a rail, and locking lugs on the adapter to engage slots in the rail.

3,825,880  
ELECTRICAL CONNECTOR HOUSING  
Dino Battaglia; Mario Bergonzi; Wladimiro Teagno, and Franco Trevisiol, all of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.  
Filed Dec. 15, 1972, Ser. No. 315,400  
Claims priority, application Italy, Dec. 22, 1971, 32799/71  
Int. Cl. H01r 9/16  
U.S. Cl. 339-59 R 5 Claims



An electrical connector housing comprising a tubular body of resilient insulation material internally formed with an integral detent presenting a forward facing shoulder and with a stop for limiting forward movement of an inserted contact receptacle, at least a portion of the body being of generally rectangular cross-section, is characterized according to the present invention in that, the detent extends across a corner of the portion of rectangular cross-section, and presents a forward facing shoulder of triangular cross-section and a rear surface inclined rearwardly, outwardly and between the adjacent walls of the portion of rectangular cross-section.

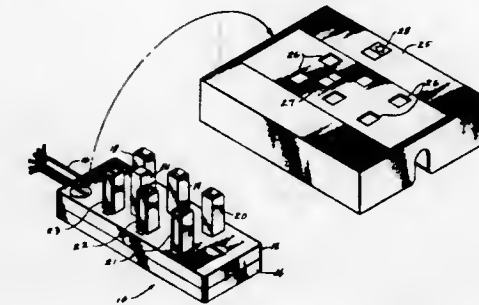
3,825,881  
TERMINATION DEVICE FOR FLAT ELECTRICAL CONDUCTORS  
Jon Wigby, Sandy Hook, Conn., assignor to Burndy Corporation, Norwalk, Conn.  
Filed Dec. 29, 1972, Ser. No. 319,143  
Int. Cl. H01r 1/20  
U.S. Cl. 339-97 R 6 Claims



An electrical contact element for gripping and providing electrical contact with a flat conductor includes an integral, bifurcated-shaped segment having a pair of jaw members each of which include teeth formed along inner edges of the jaws. Outer jaw edges extend to an apex along a length thereof. A slot is formed in each jaw at the apex and extends generally inwardly from the apex. The apex is positioned along the length of the jaw at a location for providing that upon the application of a crimping force to the element at the apex, the element will deform near the slot and grip a conductor positioned between the jaws with a force which decreases progressively along the length of the jaw from inner to outer teeth. Deformation of the element results in the establishment of creep resisting forces which lock the jaws to the cable.

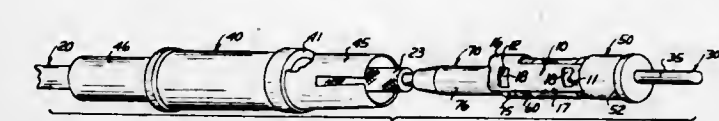
924 O.G.—40

3,825,882  
CORD ADAPTER FOR TELEPHONES  
Council A. Tucker, Los Angeles, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.  
Filed Oct. 19, 1972, Ser. No. 299,180  
Int. Cl. H01r 13/58, 13/54  
U.S. Cl. 339-103 R 11 Claims



A cord adapter has a plurality of male plug stabs to establish electrical contact with a cooperating contact in a plug receptacle or jack. Each plug stab is comprised of a post extending upwardly from the base of the adapter and receiving a blade of a contact with the end of the blade staked to the post at the top thereof. The vertical portion of the blade faces laterally outward. Spade terminals of the cord are adapted to be received in spade terminal receptacles within the base and engage additional blades of the contacts. The spades are bent at right angles so that their shanks are received in troughs of the adapter's contact mounts to keep individual spades from touching other spades and to present a low vertical profile in the cord adapter. The cord itself is secured within the adapter either by a T-type connection or a fixed loop connection. A catch for a latch extends from the base on the plug stab side for latching engagement in the female plug receptacle.

3,825,883  
COAXIAL CABLE CONTACT  
Valentine J. Hemmer, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.  
Filed Feb. 27, 1973, Ser. No. 336,311  
Int. Cl. H01r 17/04  
U.S. Cl. 339-177 R 5 Claims



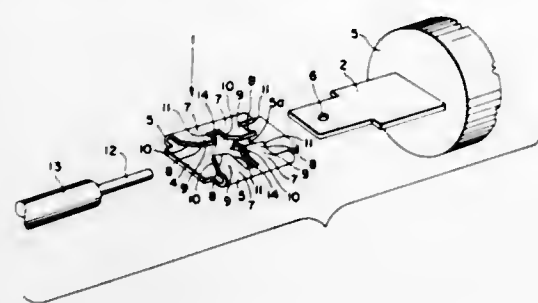
A contact assembly for the plug and jack portion of a coaxial cable connector assembly. The contact assembly includes a plurality of members which are demountably secured together by a metal retention clip.

3,825,884  
ELECTRICAL CONNECTION CLIP  
Bernard Charles Duchatellier, Paris, France, assignor to Rapid S. A., Paris, France  
Filed Jan. 22, 1973, Ser. No. 323,597  
Int. Cl. H01r 13/24  
U.S. Cl. 339-244 R 4 Claims

An electrical coupling device designed for instantaneous manual coupling of a conductor, such as an electrical conductor wire, to the conducting pin of an electrical apparatus of any type. The coupling has the general cross-sectional shape



of a C whose body is approximately flat and has a lug protruding toward the inside of the C and whose wings are respectively lateral direction to prevent the belt from rotating or twisting during tow about its longitudinal axis. Proper seismic coupling



ly constituted of a pair of small tongues which are sloped with respect to the base.

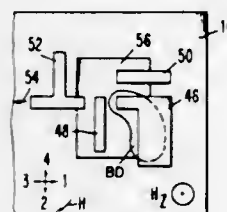
3,825,885

### MAGNETIC BUBBLE DOMAIN SYSTEM HAVING IMPROVED OPERATING MARGINS

Robert J. Hendel, Glenham; Theodore F. Jamba, Jr., Vestal; George E. Keefe, Montrose, and Laurence L. Rosier, Amawalk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed June 27, 1972, Ser. No. 266,758  
Int. Cl. G11c 11/14

U.S. Cl. 340—174 TF

10 Claims



A structure for increasing the reliability of a magnetic bubble domain memory system in which the operating margins of various components within the system are enlarged so that the margins of the components will have a larger area of overlap. For components in which a lessening of the effect of the bias field  $H_z$  is desirable (splitters, generators, corner propagation elements, etc.), a thin layer of magnetically soft material (for instance, permalloy) is provided which extends over the area of the magnetic sheet in which the component function takes place. This thin layer is in addition to the overlay elements used to provide the function. In a memory system, selectively placed "thin patches" of permalloy or strips of permalloy are used in the critical component areas to improve operating margins of these components.

3,825,886

### TOWABLE SEISMIC DETECTOR CONVEYANCE

Ben B. Thigpen, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.  
Filed May 3, 1971, Ser. No. 139,426  
Int. Cl. G01s 9/66

U.S. Cl. 340—3 T

3 Claims

Seismic exploration is conducted by towing a conveyance over the earth's surface. The conveyance includes a flexible support member, such as a thin, elongated flexible belt, carrying a plurality of seismic detectors which are suitably spaced apart. A signal channel interconnects the detectors with a signal utilization device. The belt extends sufficiently in a

between the detectors and ground is achieved. If necessary the detectors can be acoustically isolated from the belt.

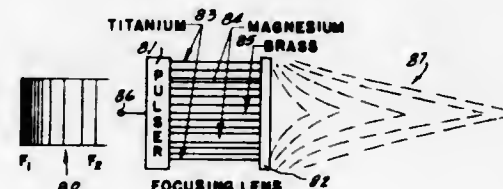
3,825,887

### ULTRASONIC BAND TRANSMISSION, FOCUSING, MEASURING AND ENCODING SYSTEMS

Edward J. Murry, Palos Park, Ill., assignor to Fibra-Sonics, Inc., Chicago, Ill.  
Filed Apr. 3, 1972, Ser. No. 240,577  
Int. Cl. H04b 11/00

U.S. Cl. 340—15

8 Claims



A method and apparatus for transmitting sonic waves of all shapes and durations which utilizes a bundle of fibrous transmitting material which vary in length or material or density or distribution or locations such that the received wave may be selectively shaped and formed to meet a desired criteria.

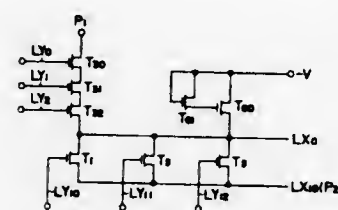
3,825,888

### DECODER CIRCUIT

Hiroto Kawagoe, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan  
Filed June 23, 1972, Ser. No. 265,475  
Claims priority, application Japan, June 23, 1971, 46-44791  
Int. Cl. H04I 3/00

U.S. Cl. 340—347 DD

4 Claims



A decoder circuit with a matrix of MIS transistors wherein a first group of MIS transistors are provided between a potential supply source line and output leads, the transistors of the first group are connected in series, a second group of MIS transistors are provided between a ground line and the output leads, the transistors of the second group are connected in parallel, and gate electrodes of the first and second groups of transistors are connected directly to or indirectly through inverters to address input lines with a predetermined pattern in order to obtain desired output signals.

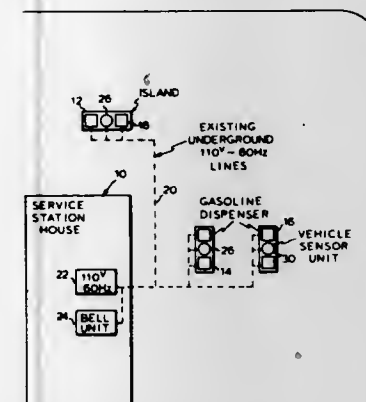
3,825,889

### VEHICLE DETECTION SYSTEM

Ralph J. Koerner, Canoga Park, Calif., assignor to Canoga Controls Corporation, Canoga Park (L.A.), Calif.  
Continuation-in-part of Ser. No. 125,724, March 18, 1971, Pat. No. 3,714,626. This application Jan. 8, 1973, Ser. No. 321,585  
Int. Cl. G08g 1/01

U.S. Cl. 340—38 L

5 Claims



A system useful for indicating the entry of a vehicle onto a specified area of the earth's surface. The system includes a magnetic field sensor which yields an output signal indicative of the magnetic field intensity thereat. The sensor is mounted adjacent to but outside of a volume being monitored which constitutes the projection of the specified area in the direction of the magnetic field thereat. When the magnetically permeable mass of a vehicle enters the volume being monitored, it increases magnetic field intensity therein but reduces the field intensity outside of this volume. The reduction in field intensity is recognized by the sensor which then energizes an indicating device, which in the case of a service station installation, for example, can be a remote bell. The sensor preferably comprises a flux gate magnetometer mounted within a thin substantially rigid housing dimensioned to fit within a slot formed by saw cutting a roadway surface.

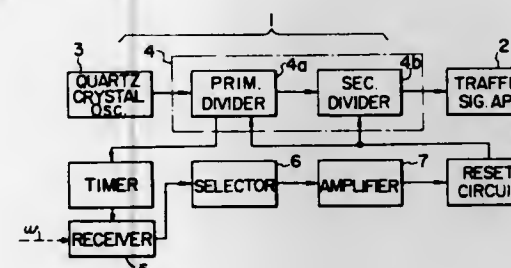
3,825,890

### CONTROL SYSTEM FOR A TRAFFIC SIGNALLING APPARATUS

Takanori Miyazato; Keiichi Nakayama, both of Tokyo, and Masao Fujii, Koube, all of Japan, assignors to Kabushiki Kaisha Hattori Tokiten, Tokyo, Japan  
Filed July 17, 1970, Ser. No. 55,929  
Claims priority, application Japan, July 17, 1969, 44-56325  
Int. Cl. G08g 1/085

U.S. Cl. 340—40

10 Claims



A traffic signalling apparatus having green, yellow and red signal lamps is controlled by a control system comprising a standard signal generator source having a constant high frequency output and a time cycle generator for generating time signals. A receiving circuit periodically receives a broadcast wave serving as a reference frequency source and appropriate frequencies are selected and used to compensate for frequency variations occurring in the time cycle generator. The

control system may include a programming device whereby a programmed time cycle pattern of operation of the various colored signal lamps may be selectively changed at certain times of the day to most effectively control the traffic flow. The programming device may be used in conjunction with a series of traffic lights to variably stagger the operation of successive traffic lights in dependence upon changing traffic conditions.

3,825,891

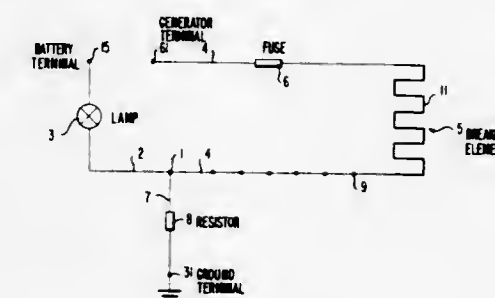
### BRAKE-LINING WEAR-INDICATOR

Norbert Kinast, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany  
Filed Jan. 12, 1972, Ser. No. 217,172  
Claims priority, application Germany, Jan. 16, 1971, 2102077

Int. Cl. G08b 21/00

U.S. Cl. 340—52 A

28 Claims



A brake lining wear indicator installation for a brake with a rotatable brake member constructed, for example, as drum or disk, against which the brake lining retained in a brake shoe or the like is forced during the braking operation; an electric line carried in the brake is thereby ruptured or connected with ground as soon as the wear of the brake lining exceeds a predetermined value and a lamp is caused to be lighted up or another indicator representing an electrical resistance is thereby rendered operable.

3,825,892

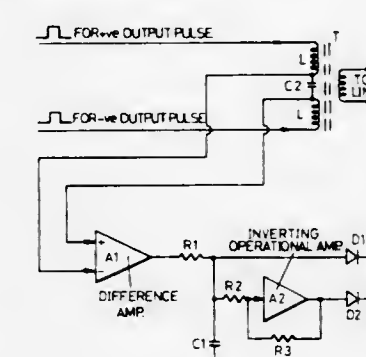
### ERROR DETECTOR FOR LOW DISPARITY CODE SIGNALS

Richard John Catchpole, Bishop's Stortford, England, assignor to International Standard Electric Corporation, Armonk, N.Y.  
Filed May 11, 1973, Ser. No. 359,387  
Claims priority, application Great Britain, June 6, 1972, 26357/72

Int. Cl. G08c 25/00

U.S. Cl. 340—146.1 AB

8 Claims



This relates to error detection in a PCM system employing a low disparity code. A low disparity code is that type of code that over a long period of time the average number of MARKS and SPACES are approximately equal. When such a code is error free no direct current component is produced, but when an error occurs a low frequency component is introduced into



the average signal value. According to the present invention errors in a low disparity code signal are detected by employing a low pass filter that will respond to the low frequency component of the average signal value.

3,825,893

# MODULAR DISTRIBUTED ERROR DETECTION AND CORRECTION APPARATUS AND METHOD

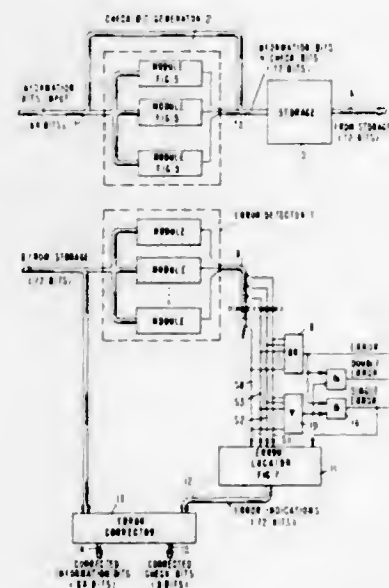
Douglas C. Bossen, Wappingers Falls; Se J. Hong; Mu-Yue Hsiao, both of Poughkeepsie, and Arvind M. Patel, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1973, Ser. No. 364,480

Int. Cl. H04L 1/10

U.S. Cl. 340-146.1 AL

8 Claims



Errors in code words fetched from memory or utilized in some other device are detected by apparatus distributed throughout the memory and then corrected. Illustratively, a 72-bit parallel code word, comprising a 64-bit information portion and an 8-bit check portion is fetched from the memory. The check bit generator consists of 8 identical modular units which, in the case of use in a memory, can be located at different locations within the memory. The identical modular units are connected in accordance with connections determined by an H matrix. The H matrix is partitioned into eight equal sections associated with eight information bits forming a byte and a single check bit. The rows of each partition or section are cyclically permuted from section to section. For example, the first row of the first section becomes the second row of the second section, etc. Each partition of the H matrix contains the same number of 1's and each row within a partition is part of a different code group. Each of the identical modular arrangements contains a logic circuit grouping. The input information byte bits are connected to the circuits of the logic grouping so as to produce as circuit outputs the parities of the part of the code groups in the partition or section associated with the module. The identical modular units also contain circuitry to receive the partial code group parities from the other modular units concerned with the same code group. These partial code group parities and the partial code group parity of the respective module are combined to provide the check bit for the particular module. The partial code group parity outputs from the module are transmitted to the successive other modules to form the partial code group parity inputs for the respective modules. After the information has been utilized such as writing in storage, the information bits and check bits are read into an error detector which compares the check bits generated from the received information bits with the received check bits. An error locator analyzes any mismatch to determine the location of an error. An error corrector then corrects any information or check bit which is

identified as incorrect by the error locator. The error detector can consist of the same identical modular units as the check bit generator.

3,825,894

# SELF-CHECKING PARITY CHECKER FOR TWO OR MORE INDEPENDENT PARITY CODED DATA PATHS

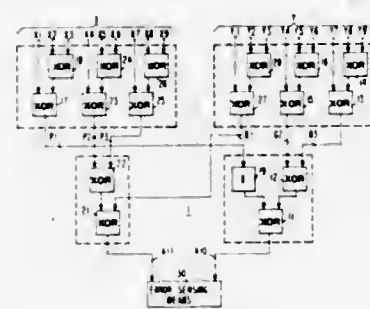
Allen M. Johnson, Jr., Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,451

Int. Cl. H04L 1/10; G06F 1/10

U.S. Cl. 340-146.1 AG

8 Claims



A series of self-checking error checking circuits are disclosed for checking two or more independent sets of parity coded data lines. Each data signal set includes any logical combination of binary "1's" and "0's" and at least one parity bit. Each checking circuit comprises two Exclusive-OR tree circuits wherein each tree obtains its inputs from different input lines of each set of independent data lines whereby complementing outputs are produced by the two tree circuits for any correct signal set when the checker is error free. Any error in the data will cause the two outputs to be the same. Malfunctions or failures in the checking circuit are checked by certain legitimate code signals which similarly cause an error representation in the output of the checker.

3,825,895

# OPERAND COMPARATOR

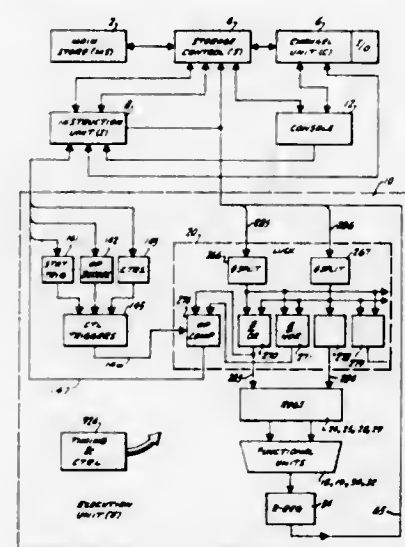
Dee E. Larsen, San Jose, and Michael R. Clements, Santa Clara, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed May 14, 1973, Ser. No. 360,331

Int. Cl. G06F 7/04

U.S. Cl. 340-146.2

17 Claims



Disclosed is a digital data processing system and comparator for comparing operands for equality relationships. The operands are compared on a bit-by-bit basis from the highest-

order bit toward the lowest-order bit. The comparison is carried out simultaneously and in parallel for all bits. The equality relationships determined by the comparison are greater than, less than, equal to, and overflow in the case of fixed point additions and subtractions. The comparisons are valid for positive and negative numbers in fixed point and normalized floating point arithmetic.

3,825,896

# COMPUTER INPUT/OUTPUT INTERFACE SYSTEMS USING OPTICALLY COUPLED ISOLATORS

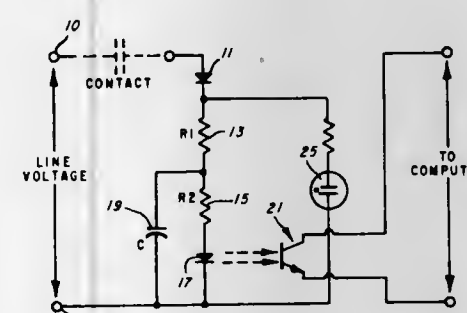
Robert E. Obenhaus, South Easton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 1, 1972, Ser. No. 249,021

Int. Cl. H03K 17/56

U.S. Cl. 340-147 R

10 Claims



An input/output interface system for a digital computer utilizes an optically coupled isolator which provides electrical isolation between an external device and the computer. The signal from the external device may be of either A.C. or D.C. form, and the interface system output signal is a logic signal compatible with the I/O logic of the computer. The preferred optically coupled isolator comprises a light emitting diode which is selectively positioned with respect to a photo transistor, such that the diode and photo transistor are physically, and thus electrically, spaced apart but are optically coupled together. A current input signal passing through the light emitting diode causes the diode to radiate, the radiation being received at the base of the photo transistor, which then produces a logic signal indication. In an output interface circuit, the light emitting diode is connected to receive the digital output of the computer and the output of the photo transistor drives a gating circuit which gates power to a load. The interface circuits are particularly adaptable for use in computerized control systems wherein external devices are monitored or controlled.

3,825,897

# TRANSMITTER CONTROL CIRCUIT FOR ALARM SYSTEM

Richard A. Lawton, Don Mills, Ontario, Canada, assignor to Electronic Surveillance Corporation Limited, Willowdale, Ontario, Canada

Filed Sept. 24, 1973, Ser. No. 399,833

Int. Cl. H04G 3/00

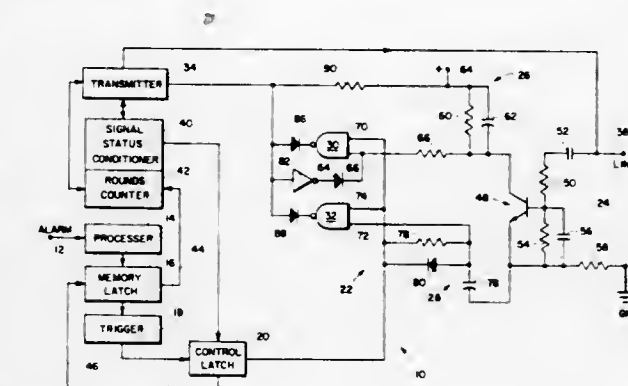
U.S. Cl. 340-147 LP

6 Claims

In an alarm system having a plurality of stations connected to a single line, where each station has a transmitter which can transmit a pulsed signal to the line which is indicative of an alarm event at that station, it is important that "collisions" between signals from different stations on the same line be avoided. Line lock-out means are provided at each station to preclude transmission of a pulsed signal, from that station when a pulsed signal from another station connected to the line is sensed; and the line lock-out means is provided with a timing circuit which operates to permit transmission from that station after a predetermined period of time following the last sensed pulse from another station on the line. Thus, the station may immediately transmit on the event of an alarm if suffi-

cient time has passed since the last time a pulse from another station was sensed on the line; or the transmission is held off until that predetermined period of time follows the last sensed pulse on the line from another station.

However, in the event of continual sensing of a line busy condition because of an intermittent fault on the line or a "runaway" transmitter at another station, each station will seize the line after a predetermined length of time has passed since



the event of an alarm at that station, regardless of the condition of the line. Thus, the line lock-out circuitry will preclude transmission of a signal from a station for about 5 seconds after sensing any pulse from another station, but the line may be seized after 5 seconds from the last sensing of a pulse from another station. A 2 minute "override" timer operates to seize the line regardless of its condition, two minutes after an alarm event at that station, if the alarm signal has not already been transmitted.

3,825,898

# SAFETY LOCK WITH PROVISION FOR KEY USER IDENTIFICATION

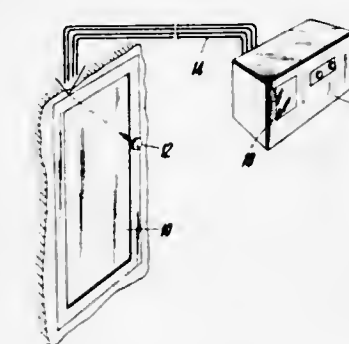
Allan Miller, Irvington, N.Y., assignor to Phillips Screw Company, Natick, Mass.

Filed Feb. 17, 1971, Ser. No. 116,088

Int. Cl. H04G 3/00

U.S. Cl. 340-149 R

14 Claims



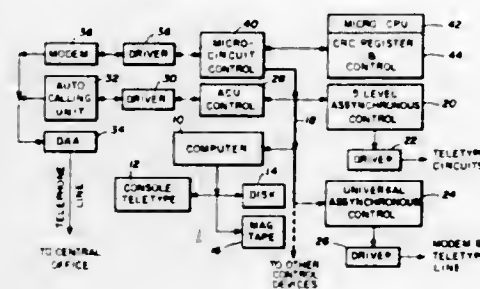
A lock includes a device capable of producing distinctly different electrical signals in response to the key employed to operate the lock. The keys capable of operating the lock are substantially identical in all details except for the depth of one signature notch. The output signal produced by the device is in turn proportional to the depth of the signature notch of the operating key. In the embodiment shown, the signal producing device includes a magnetic member movable within the lock by an extent corresponding to the depth of the signature notch, and a fixed transducing element capable of producing an output signal proportional to the relative position of the movable magnetic member. Also disclosed is a system employing the lock to prevent access of certain individuals into the protected premises only at certain times of the day.







response to the line control characters, synchronizes and forms the text data into message blocks. After completion of a message block, a CRC error code signal is computed and compared with the CRC characters contained within the digital data. If the error check is satisfactory, the message block is



transmitted to the computer for storage and for later transmittal to a designated communication control device. The digital data utilized with the invention is transmitted in the transparent text mode such that the line control characters may be selectively utilized for control functions or for text data.

3,825,906

### SUPERCONDUCTIVE SHIFT REGISTER UTILIZING JOSEPHSON TUNNELLING DEVICES

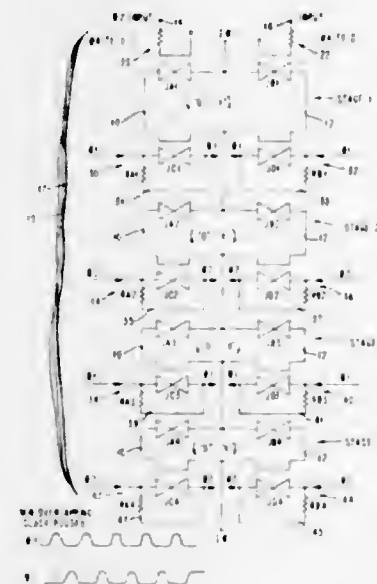
Harvey C. Hamel, Charles A. Kunzinger, and William K. Stelzenmuller, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,236

Int. Cl. G11c 11/44

U.S. Cl. 340—173.1

7 Claims



A two-phase superconductive shift register using Josephson tunnelling devices is provided wherein a plurality of shift register stages each includes a first and second branch in parallel to which a DC current is supplied. A Josephson tunnelling device is located in each branch which operates in its no voltage state when the DC current is applied thereto. A first and second input means is provided for switching one of the Josephson tunnelling devices in accordance with an input to cause the input current to flow through the other branch. A first and second coupling means are located between the stages of the shift register, the first coupling means coupling the first branch circuits of successive stages and the second coupling means coupling second branch circuits of successive stages. The coupling means are energized in response to phase time pulses and current flow in the preceding stage causing the Josephson device in the next stage to switch to its finite voltage stage thereby causing the current to flow in the opposite branch in the next stage.

3,825,907

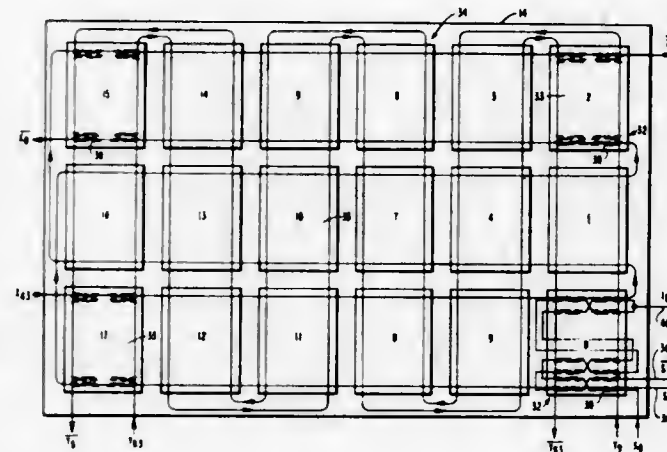
### PLANAR CORE MEMORY STACK

Victor L. Sell, Santa Monica, and Syed M. S. Alvi, Placentia, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 165,477, July 26, 1971, Pat. No. 3,711,839. This application Oct. 5, 1971, Ser. No. 186,621 Int. Cl. G11c 5/08, 11/06

U.S. Cl. 340—174 MA

32 Claims



A planar, pluggable core memory stack is provided having a variable word and bit length. The highly versatile stack includes a single printed circuit board having symmetrical plug connectors and printed circuits permitting either a first size memory to be mounted on one side with pluggable attachment in a first orientation or a different size memory to be mounted on the other side with pluggable connection in an opposite orientation. The number of bits in each word may be varied between one and 18 regardless of which side the cores are mounted on. The cores are grouped into closely spaced mats, one for each bit, and all of the mats lie in the same plane. The close core spacing, a four corner wiring technique, and a disclosed method of mounting components permits all of the core mats as well as diode decoder arrays to be mounted entirely on a selected side of the printed circuit board without interfering with circuits printed on the other side to accommodate a different size of memory. Disclosed alternative wiring arrangements include a common X and Y drive technique which reduces the number of driver switches by about 1/2 and a 3 1/2D configuration which permits a trade off between word and bit size or the number of address lines within a single board or the use of two planar stacks together with no increase in the number of address lines.

3,825,908

### SOLID STATE SWITCH STRUCTURE

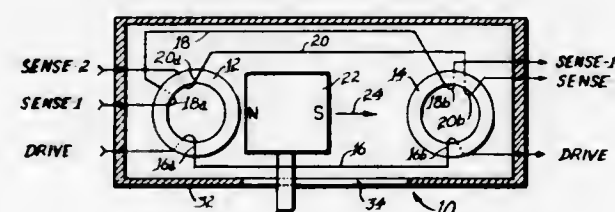
Keith A. Engstrom, River Grove, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 2, 1973, Ser. No. 328,908

Int. Cl. G11c 11/06

U.S. Cl. 340—174 PM

4 Claims



The embodiment of the invention disclosed herein is directed to a solid state switch structure which includes first and second spaced apart saturable magnetic cores. The cores are saturated in the presence of a magnetic field of given

strength. A drive wire passes through both cores, and a pair of sense wires pass through both cores but are wound thereabout in opposite directions. The saturation of one of the magnetic cores causes an output signal from one sense wire of one polarity and an output from the other sense wire of the opposite polarity. Moving the magnet from adjacent one saturable magnetic core to adjacent the other saturable core reverses the polarity of the output signals at the sense wires. While moving the magnet between saturable magnetic cores a point is reached whereupon no output signal is sensed at either sense wire.

3,825,909

### SOLID STATE SWITCH STRUCTURE

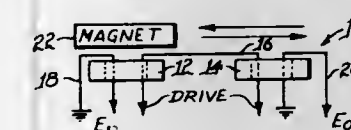
Keith A. Engstrom, River Grove; Victor M. Bernin, Mount Prospect, and George J. Bury, Lake Villa, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 2, 1973, Ser. No. 328,909

Int. Cl. G11c 23/00

U.S. Cl. 340—174 PM

3 Claims



The embodiment of the invention disclosed herein is directed to a solid state switch structure which includes first and second spaced apart closed magnetic core structures. The cores are saturated in the presence of a magnetic field of given field strength. Drive wire means pass through the cores and a pair of sense wires pass through both cores to receive pulse signal information from the drive wire when one or both of the cores is in an unsaturated condition. The saturation of one core provides an output signal from one sense wire and no output signal from the other sense wire while saturation of the other core reverses the output signals from the different sense wire. Movement of the magnetic member from registry with one core to registry with another core will provide mechanically hysteresis. This is accomplished by positioning the magnet and cores in such a manner that a finite movement of the magnet is at all times required between the on and off conditions of the switch.

3,825,910

### PROPAGATION OF MAGNETIC DOMAINS BY SELF-INDUCED DRIVE FIELDS

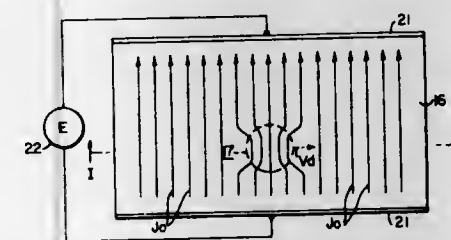
Walter J. Carr, Jr., and Robert C. Miller, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 250,706, May 5, 1972. This application June 11, 1973, Ser. No. 368,914

Int. Cl. G11c 11/14; G01r 11/06

U.S. Cl. 340—174 TF

21 Claims



A magnetic domain propagation device has a self-induced drive field for moving a magnetic domain in a thin magnetic layer of ferro-magnetic material. A domain drive layer formed of a current conducting material overlays the magnetic layer in a magnetically coupled relationship. An electric field is applied to the drive layer to produce a uniformly distributed cur-

rent therein adjacent to the surface of the magnetic layer. A magnetic domain in the magnetic layer alters the uniform current density of the drive layer to produce a perturbed current region adjacent the magnetic domain. A resultant magnetic field is produced by the perturbed current which interacts with the magnetization of the magnetic domain so as to provide an induced drive magnetic field. The velocity and direction of the magnetic domain is controllable by variation of the applied electric field or by varying the current perturbing effects in the drive layer.

3,825,911

### REMOTE READING COMPASS SYSTEM

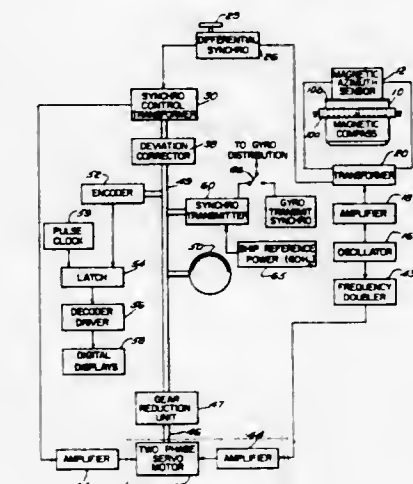
Harold S. Burns, Falmouth, Mass., assignor to Electro Marine Corp.

Continuation-in-part of Ser. No. 88,427, Nov. 10, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 312,951

Int. Cl. G08c 5/00

U.S. Cl. 340—198

6 Claims



A magnetic compass system having an inductor element which is responsive to the magnetic field generated by a magnet system attached to a compass card, or directly from the earth's natural magnetic field, the inductor element having alternating current supplied thereto and having polyphase output connected to a servo loop having usual mechanical shafting, which is connected to a dial read-out. Within the servo loop a synchro differential may be placed to correct the indicated reading of the compass for magnetic variation and an encoder may be connected to the mechanical shaft of the servo loop to convert the rotary motion into logic signals such as binary coded signals, which then can be followed by a storage latching circuit and a decoder driver so that the output can be read on standard digital display units. Also by adding a 400 Hz or a 60 Hz synchro transmitter to the servo loop output shaft, the information available from the magnetic compass system, which is suitably corrected for variation, is available to the gyro distribution system and may therefore supply heading information to radar and other gyro repeater devices in the event of main gyro failure.

3,825,912

### TORQUE WRENCH MONITOR

Dennis M. Wiese, Warren, and Raymond P. Sawicki, Wyandotte, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 12, 1973, Ser. No. 378,664

Int. Cl. G08b 23/00

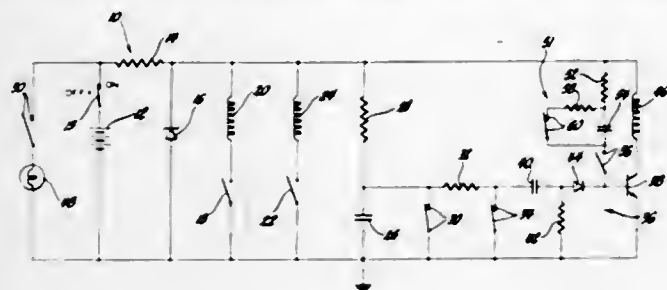
U.S. Cl. 340—213 R

2 Claims

A circuit for providing an indication each time a threaded element has been properly tightened by a power torque wrench. A first switch is actuated upon the initiation of operation of the torque wrench to enable a capacitor to be charged at a predetermined rate. A second switch is responsive to the achievement of a predetermined torque output by the torque



wrench to couple the charge across the first capacitor to the base of a transistor through a second capacitor. If the elapsed time between the actuation of the first switch and the actuation of the second switch is greater than a predetermined



minimum, the signal coupled to the base electrode of the transistor is sufficient to bias the transistor into conduction to energize a lamp for providing an indication that the bolt has been properly tightened.

3,825,913

**FUEL BURNER SUPERVISORY SYSTEM**

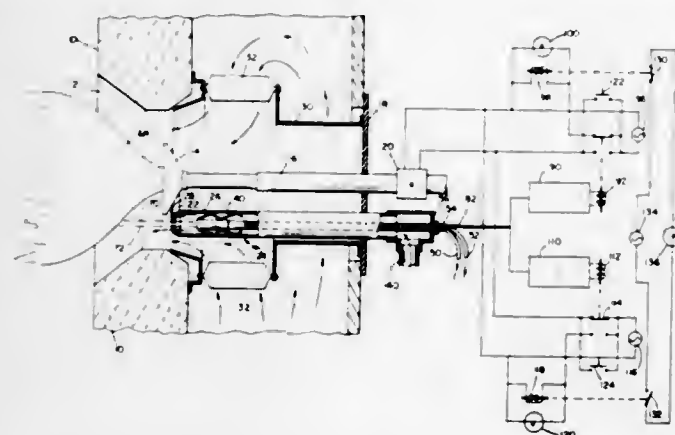
Arthur G. B. Metcalf, Winchester; Philip Guiffreda, North Andover, and Alfred H. Bellows, Cambridge, all of Mass., assignors to Electronics Corporation of America, Cambridge, Mass.

Filed Mar. 31, 1972, Ser. No. 240,074

Int. Cl. F23n 5/08; G08b 17/12

U.S. Cl. 340-228

15 Claims



Fuel burner supervisory system wherein a pair of flame sensors are located close to the flame being supervised, periods of flame absence are simulated for each sensor, elements are respectively responsive to the sensors to assume a trouble state when an associated sensor indicates the absence of flame other than during a period of simulated flame absence, or when the sensor indicates the presence of flame during a period of simulated flame absence, and a flame failure alarm is connected to signal when both elements are in their trouble states, thus indicating a likely absence of flame.

3,825,914

**LAMP FAILURE DETECTOR ASSEMBLY**

Robert Schacket, Laurelton, N.Y., assignor to Electrospace Corporation, North Bergen, N.J.

Filed Dec. 22, 1972, Ser. No. 317,762

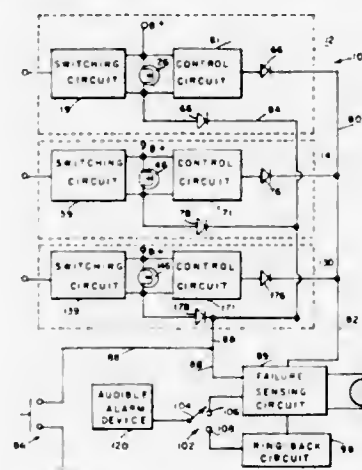
Int. Cl. G08b 21/00

U.S. Cl. 340-251

5 Claims

A lamp failure detector assembly includes a plurality of lamp filament sensors. Each lamp filament sensor includes a switching circuit which is connected to an associated pilot lamp to be monitored and to a transducer which is capable of assuming one of two states. In one state of the transducer, the switching circuit causes a current having one level to flow through the lamp, the level being sufficient to visibly light the lamp. In the other state of the transducer, the switching circuit

causes a current to flow through the lamp which is insufficient to visibly light the lamp. A control circuit is connected to the pilot lamp to be monitored — the control circuit being so arranged so as to cause a monitoring current to flow through the pilot lamp when the filament of the latter is good irrespective of the state of the transducer, the monitoring current which passes through the bulb and through the control circuit having a level sufficient to be detected by the control circuit yet insufficient to visibly light the lamp. Each control circuit of a respective lamp filament sensor is arranged to sense the level of current flow through an associated pilot lamp and for generating a control signal when current flow through the pilot lamp is interrupted. A failure sensing circuit is connected to each of the control circuits for receiving a control signal



when one of the monitored pilot lamps fails and for energizing a failure indicator lamp as well as an audible alarm device. A ring-back circuit connected to the failure sensing circuit is connectable to the audible alarm device so that when the audible alarm device is connected to the ring-back circuit while one of the monitored pilot lamps is faulty, the audible alarm device is not energized. When the faulty pilot lamp is replaced by a good lamp, the failure sensing circuit and the ring-back circuit change their respective states so that the failure indicator lamp is deenergized and the audible alarm device is energized. The latter energization of the audible alarm device is termed the ring-back and gives an indication that a faulty bulb has been replaced by a good one — the ringing back being continued until the audible alarm device is again connected to the failure sensing circuit.

3,825,915

**CIRCUIT FOR SENSING THE ABSENCE OF A SAFETY GROUND IN AN ELECTRICALLY OPERATED TRANSPORT VEHICLE SYSTEM**

Ronald C. Dow, Richardson, Tex., assignor to Monocab, Inc., Garland, Tex.

Filed Sept. 20, 1972, Ser. No. 290,449

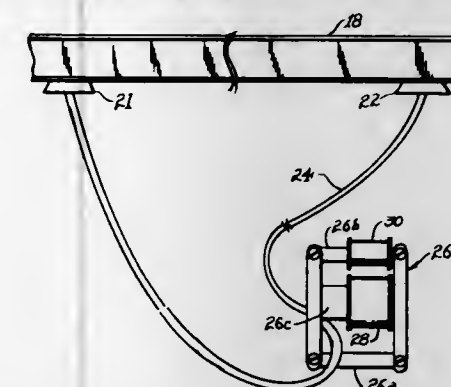
Int. Cl. G01r 31/02; B61 3/00; G08b 21/00

U.S. Cl. 340-256

4 Claims

The embodiment of the invention disclosed herein is directed to a circuit for sensing the absence of a safety ground from electrically operated machines or vehicles. The circuit includes a magnetic frame having first and second magnetic circuit paths extending about the frame with a common circuit portion thereof from which excitation energy is induced into the magnetic frame. A single turn closed loop winding is positioned about one portion of the magnetic frame and a load winding is positioned about another portion of the magnetic frame. During normal conditions, when the closed loop winding is maintained, this indicating good connection for the safety ground, the magnetic flux path is primarily directed about the magnetic frame to maintain maximum excitation of the load winding. This load winding is then connected to a transistor circuit which operates an indicating device of any suitable kind. Upon disconnection of the safety ground, the closed loop winding becomes open circuited and the im-

pedance of the magnetic field in the magnetic frame changes abruptly to cause a substantial reduction in the magnetic cir-



cuitry associated with the load winding. This then causes automatic energization of the indicator for indicating that safety ground has been lost.

3,825,916

**LASER FENCE**

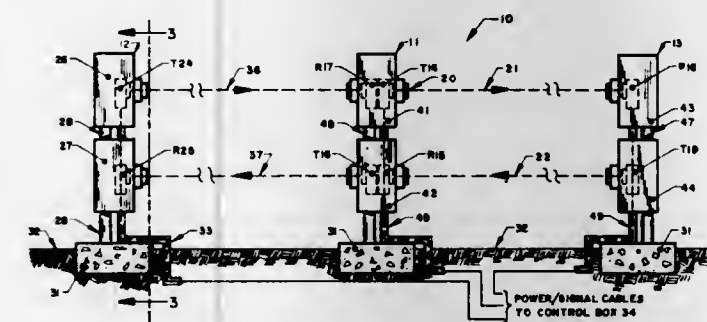
Richard K. Steele, Sacramento, and Douglas E. Roudabush, Carmichael, both of Calif., assignors to California Crime Technological Research Foundation, Sacramento, Calif.

Filed Oct. 20, 1972, Ser. No. 299,456

Int. Cl. G08b 13/18

U.S. Cl. 340-258 B

1 Claim



First and second transmitting stations provide two, parallel, line-of-sight, pulsed beams of infrared energy generated from a solid state source. The (laser) beams are intercepted by corresponding receiving stations. The two line of sight beams are displaced horizontally and vertically from each other; and by orienting the beams along a perimeter to be protected, any invasion of the perimeter is sensed by interruption of the beams. Detection of animals, such as dogs, is negated by logic circuitry affording height discrimination. The circuitry also discriminates with respect to man parameters, such as man's usual forward velocity, namely, approximately 1/2 feet per second to 10 feet per second. False alarms from flying birds, leaves and the like, are thereby minimized. Intrusions can be indicated by audible and visual local alarms, or, if desired, by automatic telephone dialing, radio or closed circuit TV to more distant centers. By using additional stations and corner reflectors, where appropriate, a continuous chain is constructed to enclose an area to be guarded.

3,825,917

**SECURITY WINDOW**

Clyde L. Lucky, Santa Susana, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

Filed Nov. 16, 1972, Ser. No. 307,089

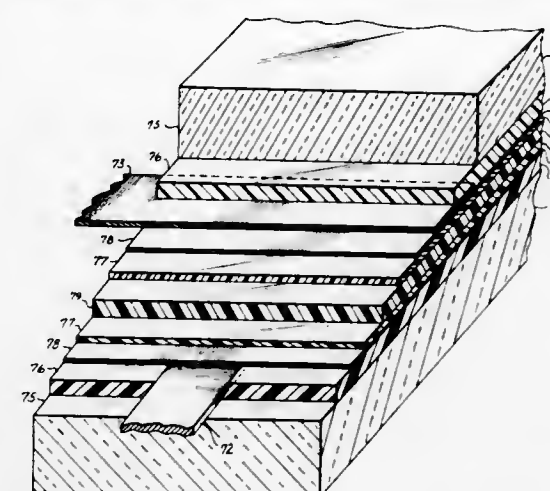
Int. Cl. G08b 13/04

U.S. Cl. 340-274

10 Claims

A security window system having a transparent structure having high resistance to penetration is described. A transparent conductive layer is provided over most of the area of the window and the resistance of the layer is monitored for sensing penetration. Preferably the layer is subdivided into a

number of conductive regions for substantially increasing the sensitivity of the system to minor interruptions in the layer. Temperature and stress effects can be minimized by connect-



ing different conductive areas of the layer as arms of a resistance bridge. An alarm may be sounded when a small steady state change in resistance is sensed or when a rapid change in resistance is sensed.

3,825,918

**IMPACT SENSITIVE SECURITY WINDOW SYSTEM**

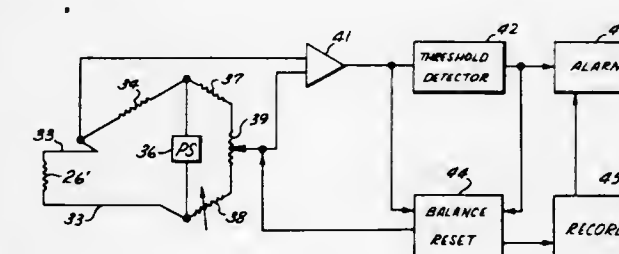
H. Gordon Laidlaw, Jr., Thousand Oaks, and Berton P. Levin, Santa Monica, both of Calif., assignors to The Sierracin Corporation, Sylmar, Calif.

Filed Nov. 16, 1972, Ser. No. 307,090

Int. Cl. G08b 13/04

U.S. Cl. 340-274

11 Claims



A security window system having a transparent structure having high resistance to penetration is described. A transparent conductive layer is provided over most of the area of the window and the resistance of the layer is monitored for sensing penetration. Preferably the layer is subdivided into a number of conductive regions for substantially increasing the sensitivity of the system to minor interruptions in the layer. Temperature and stress effects can be minimized by connecting different conductive areas of the layers as arms of a resistance bridge. An alarm may be sounded when a small steady state change in resistance is sensed or when a rapid change in resistance is sensed.

3,825,919

**LAMINATED SECURITY WINDOW**

Berton P. Levin, Santa Monica, and Roger E. Nelson, Northridge, both of Calif., assignors to The Sierracin Corporation, Sylmar, Calif.

Filed Nov. 16, 1972, Ser. No. 307,095

Int. Cl. G08b 13/04

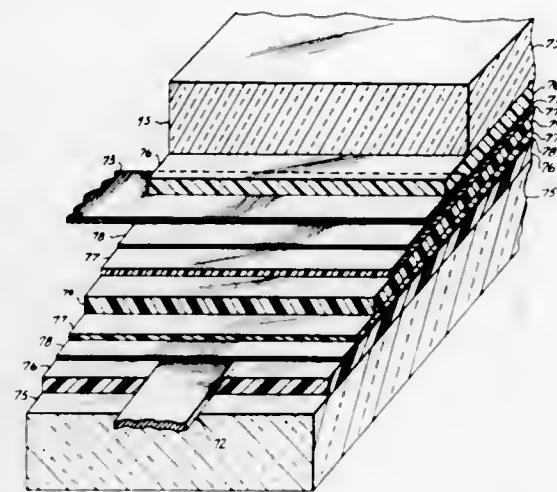
U.S. Cl. 340-274

20 Claims

A security window system having a transparent structure having high resistance to penetration is described. A transparent conductive layer is provided over most of the area of the window and the resistance of the layer is monitored for sensing penetration. Preferably the layer is subdivided into a number of conductive regions for substantially increasing the



sensitivity of the system to minor interruptions in the layer. Temperature and stress effects can be minimized by connecting different conductive areas of the layer as arms of a resistance bridge. An alarm may be sounded when a small steady state change in resistance is sensed or when a rapid change in resistance is sensed.



3,825,920

## LAMINATED SECURITY WINDOW SYSTEM

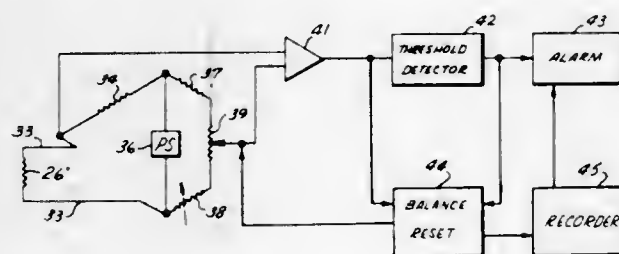
Roger E. Nelson, Northridge, and Clyde L. Lucky, Santa Susana, both of Calif., assignors to The Sierracin Corporation, Sylmar, Calif.

Filed Nov. 16, 1972, Ser. No. 307,096

Int. Cl. G08b 13/04

U.S. Cl. 340—274

16 Claims



A security window system having a transparent structure having high resistance to penetration is described. A transparent conductive layer is provided over most of the area of the window and the resistance of the layer is monitored for sensing penetration. Preferably the layer is subdivided into a number of conductive regions for substantially increasing the sensitivity of the system to minor interruptions in the layer. Temperature and stress effects can be minimized by connecting different conductive areas of the layer as arms of a resistance bridge. An alarm may be sounded when a small steady state change in resistance is sensed or when a rapid change in resistance is sensed.

3,825,921

## TRAILER POSITION INDICATOR

Louis J. Marus, 9151 River Bluff Rd., Millington, and James D. Abernathy, Memphis, both of Tenn., assignors to said Marus and Bogatin, by said Abernathy, a part interest to each

Filed Nov. 17, 1972, Ser. No. 307,475

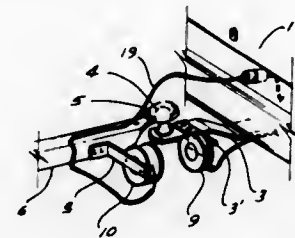
Int. Cl. G08b 21/00

U.S. Cl. 340—282

6 Claims

A system for indicating to an operator of a towing vehicle the relative disposition of a towed trailer, comprising an emitter provided on said towing vehicle, a coil mounted upon the trailer for induction of a current therein, the strength of

which current will depend upon the relative positioning of said emitter and said coil, an instrument provided in said towing vehicle for indicating the strength of the induced current and being connected to said coil, and a source of alternating current connected to said emitter.



vehicle for indicating the strength of the induced current and being connected to said coil, and a source of alternating current connected to said emitter.

3,825,922

## CHANNEL PLATE DISPLAY DEVICE HAVING POSITIVE OPTICAL FEEDBACK

John Ernest Ralph, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

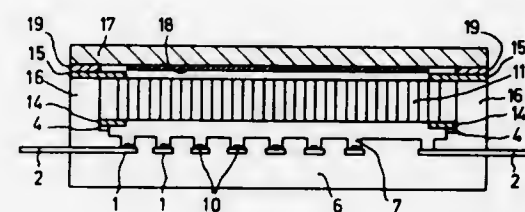
Filed Jan. 22, 1973, Ser. No. 325,852

Claims priority, application Great Britain, Feb. 8, 1972, 5789/72

Int. Cl. H01j 39/18

U.S. Cl. 340—324 M

4 Claims



Display device comprising a cathode-luminescent layer, a plurality of electron multiplier elements, and a plurality of individually energizable cathodes. The cathodes are photo-cathodes and an optical feedback path is provided between said luminescent layer and said photo-cathodes through said electron multiplier elements.

3,825,923

## VISUAL DISPLAY APPARATUS WITH CHARACTER MATRIX

Gerhard Pirchl, Dietikon, Switzerland, assignor to Romay AG, Oberkult, Switzerland

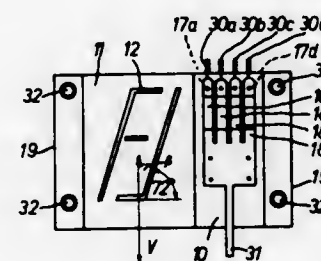
Filed Sept. 8, 1972, Ser. No. 287,267

Claims priority, application Switzerland, Sept. 15, 1971, 13490/71

Int. Cl. G09f 9/32

U.S. Cl. 340—336

6 Claims



An apparatus for the visual indication or display of characters, especially decimal numerical characters, which characters are associated with successive adjustments or settings of an adjustment component and a base body and of which

characters there is visually indicated during each adjustment or setting the character associated therewith. The base body comprises a visual surface composed of a character matrix consisting of lines for the characters to be displayed or indicated. There are also provided cover elements adjustable by the adjustment component for the lines of the character matrix in order to cover during successive adjustments the excessive lines of the character matrix which are not needed for the visual display of the relevant character.

3,825,924

## PULSE CODE MODULATION CODE CONVERSION

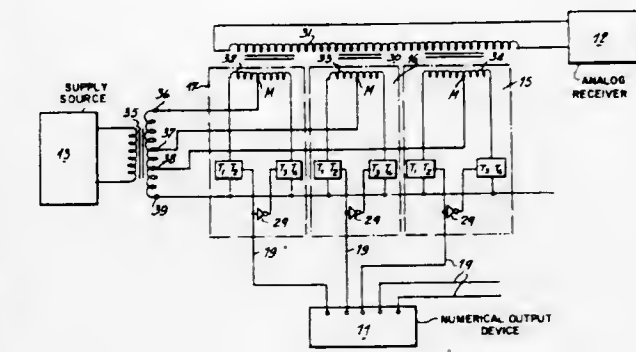
William Lloyd Montgomery, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 27, 1972, Ser. No. 266,690 The portion of the term of this patent subsequent to Aug. 29, 1989, has been disclaimed.

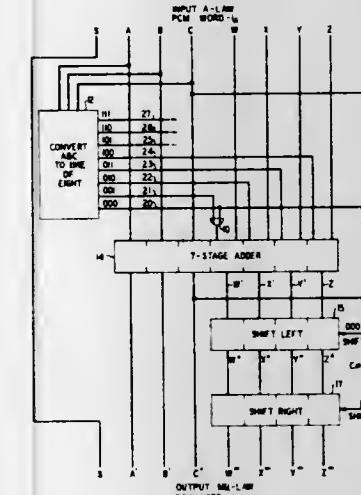
Int. Cl. G06f 7/38

U.S. Cl. 340—347 DD

11 Claims



ing an analogue version of the complete digital input signal to a receiving device.



Method and apparatus for the direct digital conversion between PCM codes representing two different companding laws. The mu-law and the A-law code words each contain the eight bits S ABC WXYZ, where S is the sign of the signal sample, ABC is the segment code, and WXYZ is the position code. Together the segment and position codes describe the amplitude of the signal sample, which is generally different in the two systems. Code conversion is accomplished by identifying the value of the segment code and selectively incrementing, decrementing and shifting the position code. Mid-riser as well as mid-tread forms of the A-law are considered.

3,825,925

## CONVERTER OF DIGITAL DATA INTO ANALOGUE DATA

Gaston Joseph Drusch, 38 Avenue Douglas Haig, Versailles, France

Filed Apr. 10, 1973, Ser. No. 349,864

Claims priority, application France, Apr. 10, 1972, 72.12518

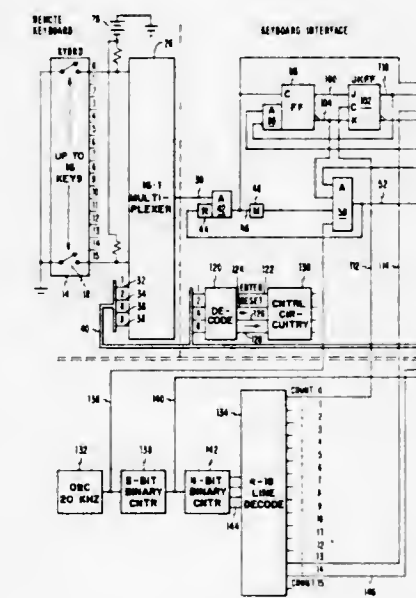
Int. Cl. H04l 3/00; H03k 13/00

U.S. Cl. 340—347 DA

11 Claims

The present device includes a number of networks each having an analogue output corresponding to the weight of a digital signal applied to an input terminal thereof. The inputs

Interfacing circuitry connected with a multiplexer activated by keyboard switches and providing an output on the application of a code thereto corresponding with a particular keyboard switch when actuated, the interfacing circuitry including a keyboard counter inhibited in its counting action by an output signal from the multiplexer on depression of one of the keyboard keys and supplying a code to the multiplexer, gating means for gating the content of the counter to a buffer, and delay means for delaying the gating action to the buffer until the expiration of a predetermined time after the raising of an output of the multiplexer. The delay means includes an oscillator driving a decode or counter providing timed successive output signals, and a plurality of flipflops under the control of these timing signals.



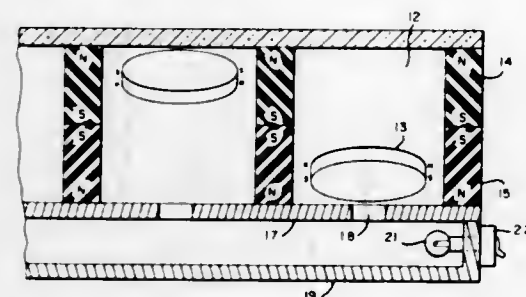


### 3,825,927 MAGNETIC DISCBOARD

Renold R. Passien, 375 Flamingo Ave., Campbell, Calif. 95008  
Filed June 14, 1972, Ser. No. 138,728  
Int. Cl. G08b 5/24

U.S. Cl. 340—373

3 Claims



A magnetic display device of the type wherein magnetized discs are selectively moveable within closely spaced openings or chambers in a laminated panel, the panel including a pair of magnetized sheets with their magnetic poles similarly disposed, openings extending through both sheets, and a bipolar magnetized disc positioned within each opening for rotation and shuttle movement under the influence of a selectively applied magnetic field, and non-magnetic cover sheets secured to opposite surfaces of the magnetic sheets. A light panel is mounted on the rear surface of the laminated panel. Shuttling of the discs with a magnetic stylus from the rear, a position of rest (erase state) to the front (write state) exposes a ray of light in each chamber. The display of individual characters is achieved by the forward and rear movement of the individual discs in each chamber. When the discs are in the rear (erase state), they block the rays of light coming through the rear panel. This is easily accomplished since the diameter of the chambers in the rear is smaller than the diameter of the front chambers. However, when the discs are in the (write state) forward position, the ray of light from each chamber is free to travel to the front panel. This then presets (in the dark) a pattern of characters in the form of small dots of light.

### 3,825,928

#### HIGH RESOLUTION BISTATIC RADAR SYSTEM

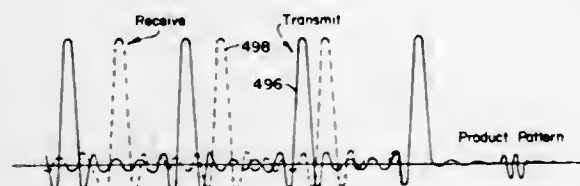
Frederick C. Williams, Topanga, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 14, 1972, Ser. No. 225,807

Int. Cl. G01s 9/02; H01q 3/26

U.S. Cl. 343—5 R

6 Claims



A bistatic radar system using separate antennas for transmit and receive and taking advantage of the fact that the net radar resolution depends on the product of the two gain patterns. In one illustrated system of the invention, a low resolution transmitter pattern is combined with an ambiguous high resolution receiver pattern formed of a thinned array of phase controlled radiating elements. The elements are separated by a distance greater than the wavelength of the RF signal. In this thinned array approach, the suppressed receive grating lobes may be placed at alternate nulls of the transmit pattern by spacing the receiver array elements to be approximately one-half the transmitted antenna width. The transmit radar forms a conventional sector scanning antenna pattern that illuminates the forward area and the receiving antenna has elements spaced

so they form a multilobe pattern that contains selected spacing of grating lobes. In operation only one of these grating lobes is illuminated by the transmit pattern. The transmit and receive antennas are scanned in synchronism either sequentially or in some jump scan sequence to provide the sector scan display. The system is operable substantially without microwave waveguides in the wings of an aircraft by providing a local oscillator signal that is phase shifted to control the antenna pointing. Other systems in accordance with the invention may also utilize a thinned array for transmitting and a single lobe antenna receiving or may utilize thinned array for both transmitting and receiving.

### 3,825,929 COMPATIBLE SPLIT-BAND DISTANCE MEASURING METHOD AND APPARATUS

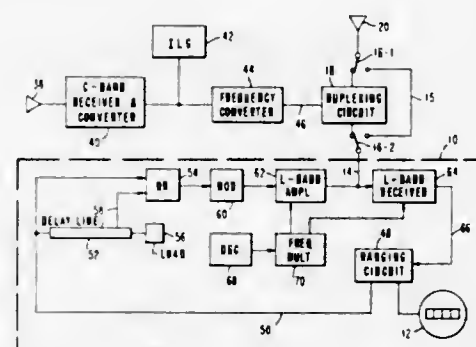
Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,230

Int. Cl. G01s 9/06, 9/56

U.S. Cl. 343—6.5 R

21 Claims



L-band signals transmitted from an airborne distance measuring equipment elicit a response from a ground station in C-band. The C-band response is converted in the airborne equipment to L-band to derive a distance measurement. The utilization of unwanted response signals received by direct radiation in L-band is prevented when C-band responses are expected.

### 3,825,930

#### RADAR PROVIDED WITH PULSE REPETITION FREQUENCY DISCRIMINATION

Eric Davies, Essex, England, assignor to The Marconi Company Limited, Chelmsford, England

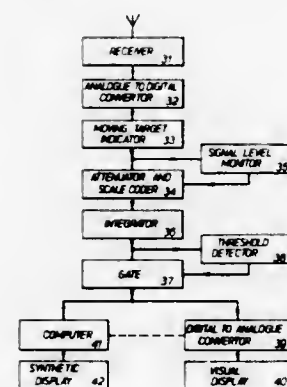
Filed Dec. 21, 1972, Ser. No. 317,161

Claims priority, application Great Britain, Dec. 23, 1971, 60141/71

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

18 Claims



In order to reduce the effect of jamming pulses or spurious noise on the operation of a radar, incoming signals are attenuated to below a threshold level. Only those pulses which on integration over a number of pulse repetition periods exceed the

threshold level are utilised. Additional information concerning a radar target is obtained from the degree of alternation to which each incoming signal is subjected in order to bring it below the threshold level.

### 3,825,931

#### PHASE FRONT DETECTION SYSTEM

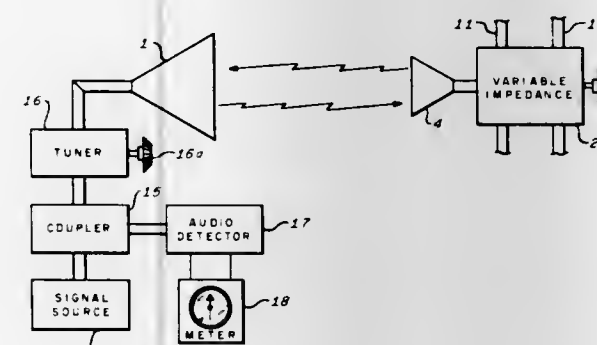
Robert E. Gonzalez, Tampa, and Harry F. Strenglein, Clearwater, both of Fla., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,005

Int. Cl. G01r 29/10

U.S. Cl. 343—100 AP

2 Claims



The invention is an improved arrangement for the detection of the location of the phase front of a signal emitted by a large aperture antenna by employment of a reflecting test device comprising a cyclically varied impedance.

### 3,825,932

#### WAVEGUIDE ANTENNA

George Alfred Hockham, Takeley, England, assignor to International Standard Electric Corporation, New York, N.Y.

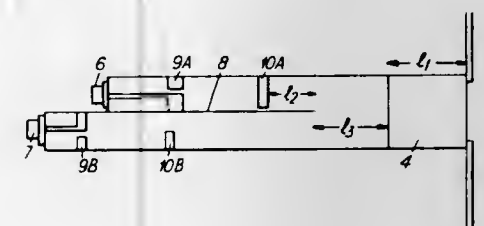
Filed May 16, 1973, Ser. No. 360,724

Claims priority, application Great Britain, June 8, 1972, 26760/72

Int. Cl. H01q 13/06, 1/48, 5/00

U.S. Cl. 343—776

3 Claims



This invention relates to a multi-frequency phased array steerable beam waveguide antenna in which the waveguide radiator elements have a cut-off frequency between two operating frequencies of the antenna. At the lower frequency the waveguides are terminated to function as evanescent mode resonators giving a first passband centered on the lower frequency. At the higher frequency the waveguides are propagating and are terminated to give a second passband centered on the higher frequency.

### 3,825,933

#### SPIRAL ANTENNA STRIPLINE TERMINATION

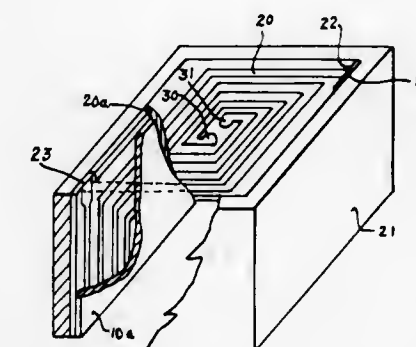
Thomas R. Debski, Bethpage, and Joseph G. Gaudio, Port Jefferson Station, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 18, 1973, Ser. No. 380,420

Int. Cl. H01q 1/36

U.S. Cl. 343—895

2 Claims



A high power stripline termination for a spiral antenna is provided wherein the termination is mounted within the cavity of the antenna. The termination is comprised of a spiraling length of transmission line etched on a lossy substrate. The spiraling line permits the use of an effectively long transmission line within a small area.

### 3,825,934

#### SCRATCH STRAIN RECORDER

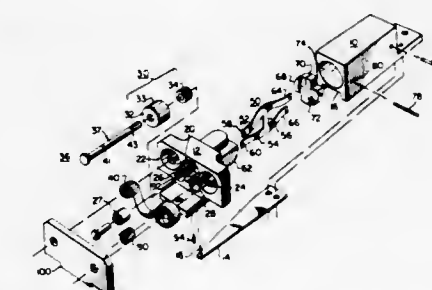
Ronald Price, Hazeldean, Ontario, and Jozsef W. Kelemen, Ottawa, Ontario, both of Canada, assignors to Leigh Instruments Limited, Carleton Place, Ontario, Canada

Filed May 2, 1973, Ser. No. 356,634

Int. Cl. G01c 7/04; G01d 9/38

U.S. Cl. 346—7

12 Claims



A scratch strain recorder is disclosed which is comprised of a support assembly and a recording head assembly. The recording head assembly includes a recording tape storage means and a recording tape transport means. A recording element is provided comprising an arm and a recorder stylus. One end of the arm is fixed to the support assembly with the other end of the arm carrying the recorder stylus and urging the stylus against a recording tape at a recording station within the recording head assembly. The device further comprises a rotational drive source means connected between the support assembly and the recording head assembly. The recording tape transport means comprises a unidirectional drive connected at one end to the rotational drive source means an operatively associated at its other end with the tape for transporting said tape in one longitudinal direction past the recording station. The rotational drive source means is comprised of an H-shaped or a U-shaped element. An element of either shape has two longitudinal members which are transversely bowed, and a connecting member. Relative longitudinal motion between the support assembly and the recording head assembly causes an increase or a decrease in the bows of the longitudinal members which in turn causes a rotational motion of the connecting member. The uni-directional drive is connected to this connecting member.



3,825,935

## ELECTRICAL SIGNAL REGISTER

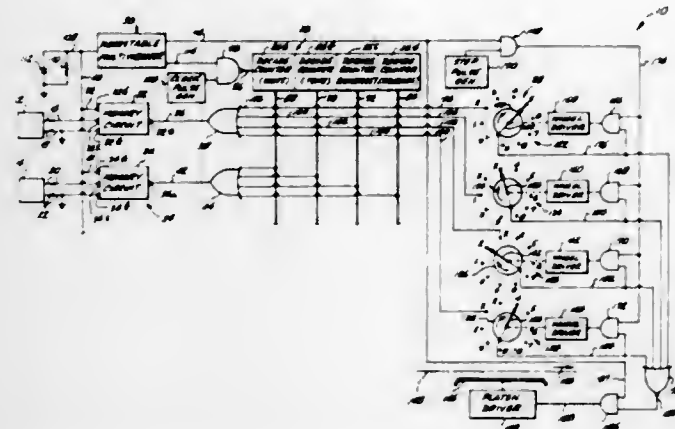
Joe M. Kortman, Vancouver, Wash., assignor to H. Dutton Hayward, Trustee of the Hilda Trusts, Tacoma; Joseph Schulein and Margaret A. Schulein, both of Vancouver, all of Wash., part interest to each

Filed Oct. 2, 1972, Ser. No. 293,846

Int. Cl. G01d 9/00

U.S. Cl. 346—34

8 Claims



Apparatus in an electrical signaling system for registering or making a record of signals produced by a plurality of remote signaling devices. The apparatus includes memory circuitry that immediately notes, and remembers, which, if any, devices have transmitted signals, search circuitry which recurrently searches the memory circuitry for such information, and printing mechanism which is actuated immediately in response to information thus uncovered by the search circuitry to print a permanent record reflecting such information. Searching of the memory circuitry stops during intervals of operation of the printing mechanism.

3,825,936

## TONER APPLICATOR FOR MAGNETIC PRINTING SYSTEM

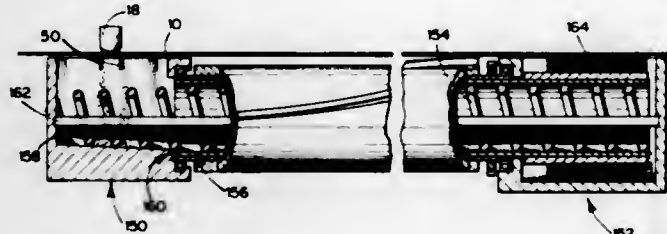
Owen J. Ott, Brookfield Center; David W. Ginn, Newton, and Lester F. Miller, Jr., Bethel, all of Conn., assignors to Data Interface, Inc., Danbury, Conn.

Filed May 24, 1972, Ser. No. 256,417

Int. Cl. G01d 15/00, 15/12, 15/20

U.S. Cl. 346—74 MP

8 Claims



For use in a magnetic printing system in which magnetic toner powder is applied to recorded areas of a magnetic surface for subsequent transfer to a writing surface, apparatus for applying toner powder to the recording surface and for retaining the toner in an enclosed environment to prevent contamination of the printing apparatus. A substantially closed toner supply is employed having a first section confronting a first portion of a recording surface at which powder is applied, and a second section confronting a second portion of the recording surface at which residual amounts of toner are removed. A transport mechanism is provided to convey material removed from the recording surface from the second section back to the first section to replenish the toner supply and may include conveyor apparatus operative to convey toner powder away from the imprinting mechanism.

3,825,937

## PRINT ELEMENT LIFTING ASSEMBLY FOR A TIME RECORDER

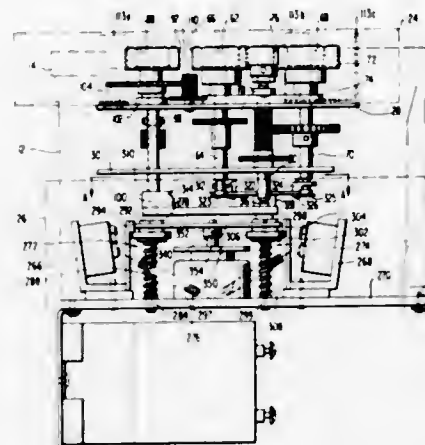
Dominick Tringali, and John W. Dillard, both of Columbia, S.C., assignors to Universal Business Machines, Incorporated, Columbia, S.C.

Division of Ser. No. 239,124, March 19, 1972, Pat. No. 3,793,641. This application July 16, 1973, Ser. No. 379,495

Int. Cl. G01d 15/24

U.S. Cl. 346—141

11 Claims



A recorder for automatically printing a record receiver, such as a card, with actual time and elapsed time. The recorder includes a chute assembly with cooperating electronic elements for automatically positioning a card therein prior to selectively operating a print actuator assembly. The last named assembly includes a plurality of marking assemblies carried by lift shafts and arranged to engage said record receiver. An actuator is provided for said lift shafts in conjunction with a trigger assembly that embodies a first coil member to release said actuator and a second coil member to recock said actuator.

3,825,938

## PHOTOGRAPHIC FOCUSING SCREEN CAMERA

Carl Koch, Stetten, Switzerland, assignor to Sinar AG Schaffhausen, Feuerthalen, Switzerland

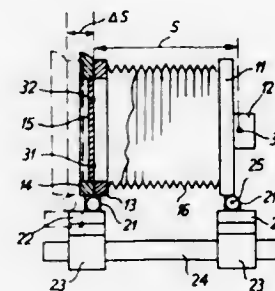
Filed Feb. 5, 1973, Ser. No. 329,870

Claims priority, application Switzerland, Feb. 4, 1972, 1679/72

Int. Cl. G03b 27/68

U.S. Cl. 354—160

18 Claims



A photographic focusing screen camera having adjustably mounted 9 and image carriers and a focusing arrangement for varying the distance between them, a swinging arrangement for one of the carriers for swinging it about a swing axis relative to the other carrier, a first scale and pointer on the swinging arrangement for reading the adjusted swing position, a focusing screen on the image carrier with markings on the screen for determining the limitations of a measuring basis on the screen, a second scale and pointer on the focusing arrangement for a measuring angle, the second scale having angular graduations in accordance with the formula:  $\sin \alpha = \Delta S/M$  wherein M is the measurement of the measuring basis; S

is difference of the focusing distance between the lens and the image points at the screen markings, necessary for obtaining sharp image of two parts of an object lying at different distances from the camera; and  $\alpha$  is the angle by which the one carrier is to be swung in order to simultaneously produce a sharp image of the two different parts of the object on each of the markings.

3,825,939

## FILM TRANSPORTING MECHANISM FOR PHOTOGRAPHIC CAMERAS

Dieter Engelsmann, Unterhaching; Dieter Maas, Munich, and Rolf Schroder, Baldham, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

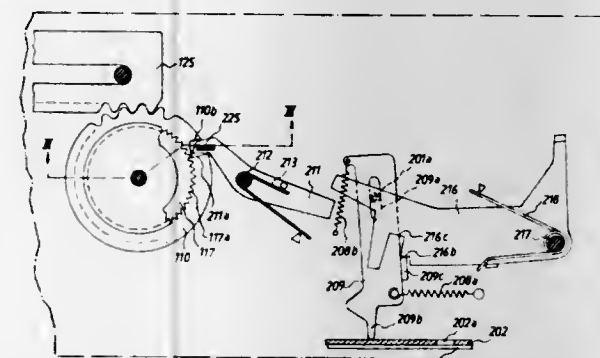
Filed Nov. 28, 1973, Ser. No. 419,728

Claims priority, application Germany, Nov. 30, 1972, 2258639

Int. Cl. G03b 1/10, 1/16, 17/42

U.S. Cl. 354—213

10 Claims



A still camera wherein a reciprocable actuating member turns the planet carrier of a planetary transmission whereby the ring gear of the transmission rotates the takeup reel in order to effect the transport of roll film by the length of a frame. When the transport of film by the length of a frame is completed, a control lever is automatically disengaged from a second gear which is rotatable by the sun gear of the transmission so that the second gear can rotate in response to further rotation of the planet carrier from a starting position. The camera release can be depressed only when the control lever is disengaged from the second gear and the planet carrier returns to its starting position.

3,825,940

## FOCAL PLANE SHUTTER

Tadao Hayami, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-To, Japan

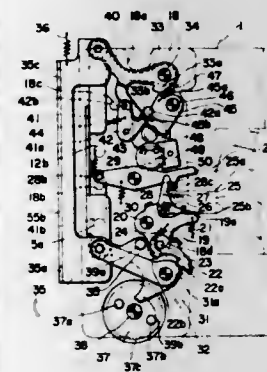
Filed Oct. 3, 1972, Ser. No. 294,547

Claims priority, application Japan, Oct. 6, 1971, 46-78455

Int. Cl. G03b 9/36

U.S. Cl. 354—241

1 Claim



A focal plane shutter having a shutter blade closing actuating member actuated by a release interlocking plate moved in

3,825,941

## RELEASE SWITCH DEVICE FOR A CAMERA

Inao Moriyama, Sagami, and Masamichi Toyama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,900

Claims priority, application Japan, Feb. 28, 1972, 47-24263; Feb. 28, 1972, 47-24264

Int. Cl. G03b 19/18, 17/38

U.S. Cl. 354—266

6 Claims



The actuating member of a shutter release mechanism first operates a first set of switches while its progressive motion charges an arcuate spring to a dead point at which it reverses the direction in which it urges a second set of switches. Upon passing the dead point, the arcuate spring operates the second set of switches. The first set of switches may set exposure factors, turn on a tape recorder, or turn on lighting, for example. The second set of switches releases the camera shutter and may perform other functions too.

3,825,942

## SHUTTER FOR CAMERAS

Hiroaki Watanabe, Fujisawa, and Solchi Nakamoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

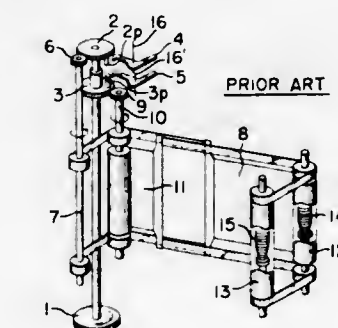
Filed July 31, 1973, Ser. No. 384,281

Claims priority, application Japan, Aug. 8, 1972, 47-79359

Int. Cl. G03b 9/62

U.S. Cl. 354—267

2 Claims



In a camera shutter wherein high shutter speeds are controlled mechanically and low shutter speeds are controlled



electrically, there is provided a shutter opening control member and a shutter closing control member whose relative position is adjustable in accordance with a set shutter speed and which are movable together over a predetermined stroke, during which the two control members act on a shutter opening member and a shutter closing member in succession to control the shutter mechanically. For low shutter speeds, the closing control member during its predetermined stroke does not act on the closing member but actuates the latter member during an additional movement imparted to the closing control member by electromagnet means.

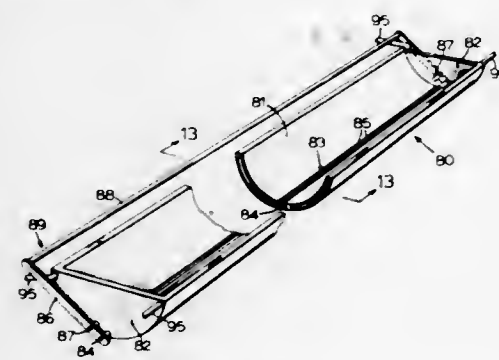
3,825,943

## PHOTOGRAPHIC DEVELOPER APPARATUS

Raymond Joseph Maszyan, Burlington, Ontario, Canada, assignor to Alex L. Clark Limited, Toronto, Ontario, Canada  
Division of Ser. No. 80,836, Oct. 15, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 292,103  
Int. Cl. G03d 1/04

U.S. Cl. 354—331

6 Claims



A trough for holding photographic processing chemicals. The trough comprises a rod which externally seals a longitudinal slot in the bottom of the trough, and a lever for moving the rod in an arcuate path away from the slot to allow rapid emptying of the chemicals from the trough.

3,825,944

## AUTOMATIC TAPE LOADING DEVICE FOR MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

Yoshikazu Terao, Tokyo, and Junichi Ura, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

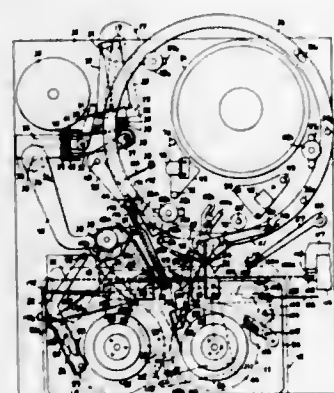
Filed Oct. 24, 1972, Ser. No. 299,666

Claims priority, application Japan, Oct. 25, 1971, 46-84565; Oct. 25, 1971, 46-84566; Oct. 25, 1971, 46-98899[U]; Oct. 25, 1971, 46-98900[U]; Oct. 25, 1971, 46-98901[U]; Oct. 25, 1971, 46-98902[U]; Oct. 25, 1971, 46-98903[U]; Mar. 2, 1972, 47-25188[U]

Int. Cl. G11b 15/66

U.S. Cl. 360—85

5 Claims



A tape-autoloading type recording and/or reproducing apparatus comprises a tape out from the interior of a cassette to

the outside thereof. The tape thus drawn out is pulled along a predetermined tape path thereby to wrap the same around the circumference of a guide drum. Motive power is transmitted from a single motive power source, first to the tape drawing out means and then to the tape pulling around means. The motive power transmitting means detects the arrival of the drawing out means approximately at a predetermined position and changes over to the pulling around means thereby stopping the motive power transmission to the drawing out means.

3,825,945

## FIELD EFFECT SEMICONDUCTOR MEMORY APPARATUS WITH A FLOATING GATE

Fujio Masuoka, Ebina, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

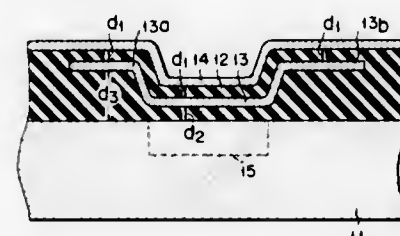
Filed Feb. 27, 1973, Ser. No. 336,366

Claims priority, application Japan, Feb. 29, 1972, 47-20973

Int. Cl. H01l 1/14

U.S. Cl. 357—23

7 Claims



A field effect semiconductor memory apparatus with a floating gate which is so constructed that when a gate electrode is impressed with voltage, there is created across the floating gate and substrate an electric field stronger than, or at least as strong as, that prevailing across the floating gate and gate electrode, whereby the floating gate is stored with information by being impressed with a relatively low level of voltage and the stored information is extinguished by giving rise to an avalanche breakdown across the substrate and at least either of the source and drain.

3,825,946

## ELECTRICALLY ALTERABLE FLOATING GATE DEVICE AND METHOD FOR ALTERING SAME

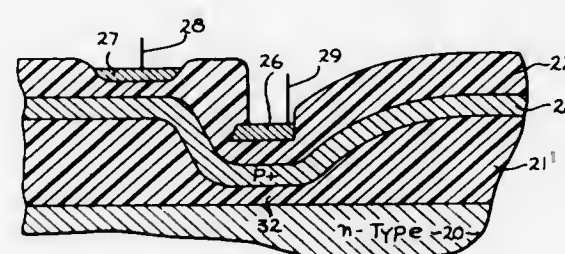
Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 300,563, Oct. 25, 1972, abandoned, which is a continuation of Ser. No. 106,643, Jan. 15, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 407,910

Int. Cl. H01l 1/14

U.S. Cl. 357—23

13 Claims



A field effect device having a floating gate which can be charged or discharged electrically is disclosed. A pair of spaced apart regions in a substrate define a channel above which a floating gate is disposed and insulated from the channel. The regions have a conductivity type opposite to the substrate. A second gate is disposed above and insulated from the floating gate. The floating gate may be charged electrically by producing an avalanche breakdown at the junction formed by one of the spaced apart regions and the substrate causing the

passage of electrons through the insulation onto the floating gate. The floating gate may be discharged by the application of a voltage to the second gate relative to the spaced apart regions and substrate causing the passage of electrons from the floating gate through the insulation onto the second gate.

## ERRATUM

For Class 357—30 see:  
Patent No. 3,825,807

3,825,947

## METHOD AND MEANS FOR GIVING POINT OF SALE COMMERCIAL ANNOUNCEMENTS

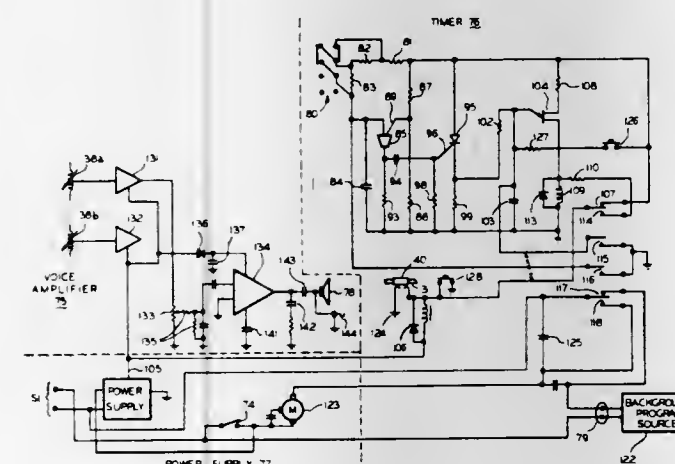
Jerome Rubin, Englewood Cliffs, N.J., and Avery Lockner, Garnerville, N.Y., assignors to Jerome Rubin, Englewood Cliffs, N.J., and Michael H. Davis, Oak Brook, Ill.

Filed Feb. 16, 1973, Ser. No. 333,283

Int. Cl. G11b 15/02, 15/06

U.S. Cl. 360—12

17 Claims



Point of sales advertisements are given by a tape recorder which periodically plays back prerecorded commercial announcements. In one embodiment, a tape recorder turns on and interrupts background program material. An interlock on the tape player prevents the playing of any unauthorized cassette or cartridge.

3,825,948

## HIGH SPEED THERMAL DUPLICATION OF MAGNETIC TAPE

William B. Hendershot, III, San Jose; David Wald, Santa Clara, and Larry K. Whitlock, San Jose, all of Calif., assignors to Consolidated Video Systems, Inc., Santa Clara, Calif.

Filed Dec. 11, 1972, Ser. No. 313,710

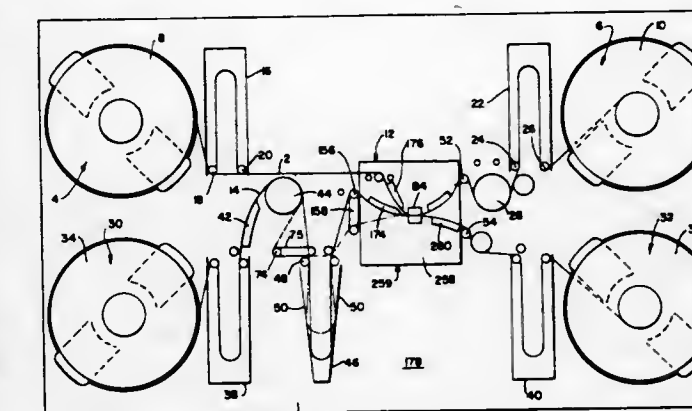
Int. Cl. G11b 5/86

U.S. Cl. 360—16

35 Claims

A system for high speed thermal duplication of a master magnetic tape onto a copy magnetic tape utilizing a master tape transport and a copy tape transport for guiding the tapes over an index plate having a hardened tape support surface along predetermined paths between supply stations and take-up stations, the master tape path and copy tape path being coincident over a predetermined length. A removable transfer station interposed in the paths of the master tape and the copy tape transports includes a releasable clamp which yieldingly biases the tapes together along the predetermined distance of path coincidence. A tape heater upstream from the pressure clamp heats the copy tape to a predetermined temperature

prior to pressure contact against the master tape. The system provides an adjustable tape, tension control and equalization for the master and the copy tapes, a tachometer for measuring



the length of master and copy tapes passing the transfer area, feedback control responsive to the tachometer for adjusting tape tensions, and means for maintaining tape edges of differently sized tape in controlled contact with the index plate.

## ERRATUM

For Class 360—85 see:  
Patent No. 3,825,944

3,825,949

## CARTRIDGE CHANGER WITH CARTRIDGE SENSING MEANS

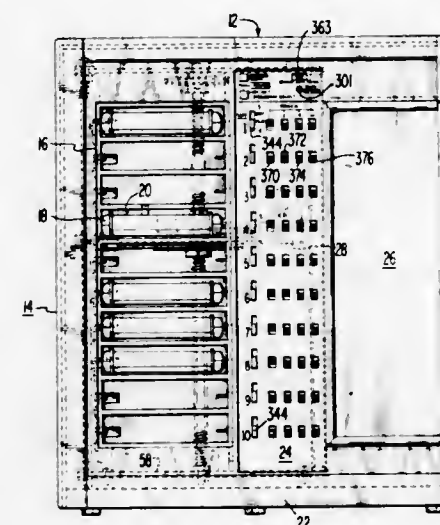
Gerald Dee Pyles, Indianapolis, Inc., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,483

Int. Cl. G11b 23/10

U.S. Cl. 360—91

11 Claims



A tape cartridge changer includes a plurality of tape cartridge receptacles which are each adapted to receive a tape cartridge and a movable structure which supports a portion of the changer playing mechanism. A movable mechanical stop is positioned adjacent each of the receptacles to block an inserted tape cartridge from being positioned in the path of travel of the movable structure. The movable structure as it moves toward each cartridge receptacle engages and moves the mechanical stop adjacent the cartridge receptacle away from its blocking position. This permits a tape cartridge in the cartridge receptacle to be brought into operative engagement with the portion of the tape changer playing mechanism supported by the movable structure.

Detector means at each of the cartridge receptacles sense the presence or absence of a tape cartridge in the receptacle.



As the movable structure moves between the different cartridge receptacles, a switch mechanism mounted on the movable structure is actuated by the detector means when a cartridge is sensed as being present in the receptacle. The switch mechanism is operable when actuated to stop the movable structure at a predetermined point for playing a cartridge in the receptacle.

3,825,950

**MAGNETIC CARD READER-RECORDER**

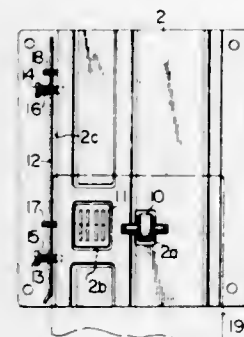
Hiromasa Kobayashi; Yuzo Oguchi, and Kazuhiko Nakata, all of Suwa-gun, Nagano-ken, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Selsakusho, Nagano-ken, Japan

Filed Nov. 17, 1972, Ser. No. 307,513

Claims priority, application Japan, Nov. 24, 1971, 46-94313  
Int. Cl. G11b 5/56

U.S. Cl. 360—109

11 Claims



The apparatus comprises a card positioning member for correctly positioning a magnetic card in its movement along its path of travel adjustable in its position relative to the path of travel of the card. By adjusting the position of the card positioning member in accordance with the size and type of the magnetic card to be handled, it is possible to bring the magnetic tracks on the card into alignment with the magnetic head

and cause the magnetic tracks to be correctly oriented relative to the magnetic gap of the magnetic head when the card moves along its path of travel while being maintained in pressing engagement with the card positioning member, whereby information can be magnetically recorded on the card or the information carried by the card can be magnetically read.

3,825,951

**MAGNETIC DISC MEMORY**

Toshio Katsumori; Shu Kawakami, and Isamu Kobayashi, all of Odawara, Japan, assignors to Kogyo Gijutsuin, Tokyo, Japan

Continuation of Ser. No. 110,156, Jan. 27, 1971, abandoned.

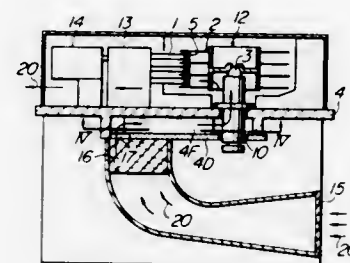
This application Nov. 20, 1972, Ser. No. 307,902

Claims priority, application Japan, Feb. 6, 1970, 45-9919

Int. Cl. G11b 23/02

U.S. Cl. 360—133

1 Claim



A magnetic disc memory apparatus having a multiplicity of fins secured to a base which supports a motor, a spindle carrying a disc pack, a carriage carrying magnetic head supporting means and an actuator for the carriage. The fins are disposed in the path of externally drawn air so as to minimize the difference between the temperature of the base and the temperature of the disc pack.

## DESIGNS

JULY 23, 1974

232,134

**BIB OR SIMILAR ARTICLE**

Lars Marten Andersson, Molnlycke, Inga Gunilla Margaretha Strandell, Goteborg, and Eric Harry Ove Svard, Lerum, Sweden, assignors to Molnlycke AB, Goteborg, Sweden

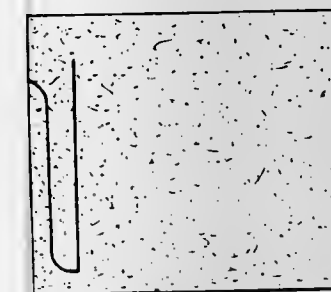
Filed Apr. 30, 1973, Ser. No. 355,487

Claims priority, application Sweden Oct. 30, 1972

Term of patent 14 years

Int. Cl. D2—02

U.S. Cl. D2—226



232,135

**CIGARETTE LIGHTER CASE**

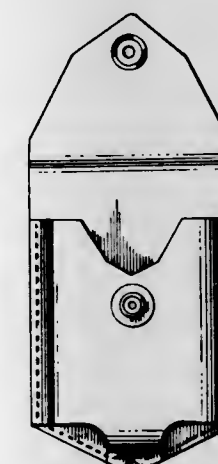
Paul H. Dodson, Roanoke, Va., assignor to Dodson Specialties Incorporated, Roanoke, Va.

Filed Aug. 6, 1971, Ser. No. 169,892

Term of patent 14 years

Int. Cl. D2—07

U.S. Cl. D2—400



232,136

**ARMCHAIR**

Eric Sigfrid Persson, Horby, Sweden, assignor to Expo-Nord AB, Horby, Sweden

Filed Nov. 8, 1972, Ser. No. 304,680

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—6.7



232,137

**BABY TRAVEL CRADLE**

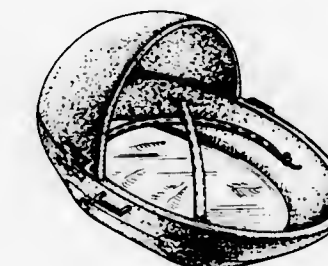
Gerald Joseph Peltier, 834 E. Philadelphia, Pomona, Calif. 91766

Filed Dec. 26, 1972, Ser. No. 318,019

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—14



232,138

**OPHTHALMIC CHAIR**

John Truman Armbruster, Niagara Falls, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 10, 1973, Ser. No. 322,349

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—22

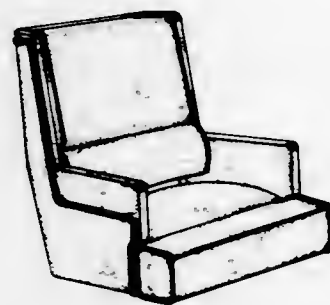




232,139

**COMBINED CHAIR AND LEG SUPPORT**  
 Jose M. Rodriguez, Los Angeles, Calif., assignor to  
 Beelner & Thomas, El Monte, Calif.  
 Filed Nov. 29, 1972, Ser. No. 310,639  
 Term of patent 7 years  
 Int. Cl. D6—01

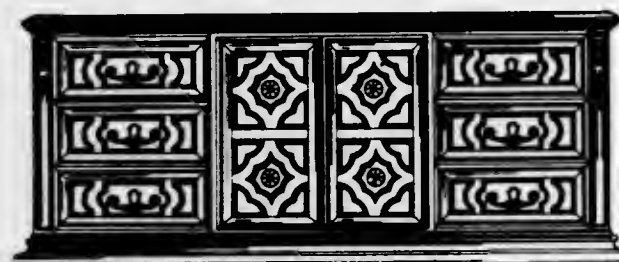
U.S. Cl. D6—37



232,140

**TRIPLE DRESSER OR SIMILAR ARTICLE**  
 Huey T. Keller, High Point, N.C., assignor to Empire  
 Furniture Company (a division of Vaughan Furniture  
 Company, Incorporated), Johnson City, Tenn.  
 Filed Dec. 15, 1972, Ser. No. 315,355  
 Term of patent 14 years  
 Int. Cl. D6—04

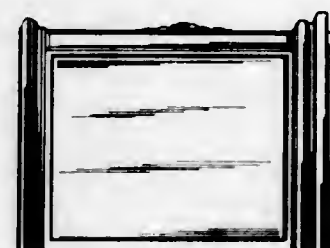
U.S. Cl. D6—154



232,141

**TRIPLE DRESSER OR SIMILAR ARTICLE**  
 Huey T. Keller, High Point, N.C., assignor to Empire  
 Furniture Company (a division of Vaughan Furniture  
 Company, Incorporated), Johnson City, Tenn.  
 Filed Dec. 15, 1972, Ser. No. 315,527  
 Term of patent 14 years  
 Int. Cl. D6—04

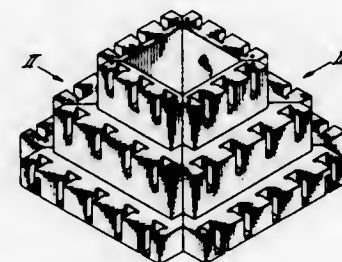
U.S. Cl. D6—154



232,142

**TOOTHBRUSH DISPLAY STAND**  
 Baard Spydevold, Oslo, Norway, assignor to A/S  
 W. Jordan Borste & Penselfabrik, Oslo, Norway  
 Filed Nov. 17, 1972, Ser. No. 307,384  
 Term of patent 14 years  
 Int. Cl. D6—04

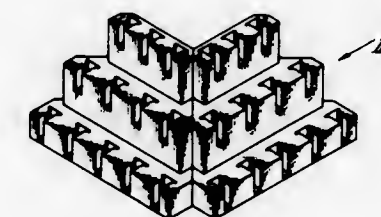
U.S. Cl. D6—188



232,143

**TOOTHBRUSH DISPLAY STAND**  
 Baard Spydevold, Oslo, Norway, assignor to A/S  
 W. Jordan Borste & Penselfabrik, Oslo, Norway  
 Filed Nov. 20, 1972, Ser. No. 308,242  
 Claims priority, application Norway Sept. 4, 1972  
 Term of patent 14 years  
 Int. Cl. D6—04

U.S. Cl. D6—188



232,144

**SHELF SPINDLE**  
 James A. Ford, Sturgis, Mich., assignor to  
 Kirsch Company, Sturgis, Mich.  
 Filed July 13, 1972, Ser. No. 271,260  
 Term of patent 14 years  
 Int. Cl. D6—06

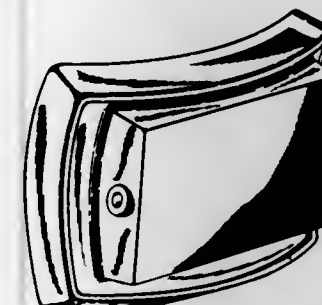
U.S. Cl. D6—195



232,145

**ADJUSTABLE HEADREST**  
 John T. Armbruster, Niagara Falls, N.Y., assignor to  
 American Optical Corporation, Southbridge, Mass.  
 Filed Dec. 7, 1972, Ser. No. 313,062  
 Term of patent 14 years  
 Int. Cl. D6—06

U.S. Cl. D6—200



232,146

**SET OF BATH TREADS**  
 Roger L. Dean, Geneva, Ill., assignor to Minnesota  
 Mining and Manufacturing Company, St. Paul, Minn.  
 Continuation-in-part of design application Ser. No.  
 173,732, Aug. 20, 1971. This application Feb. 7,  
 1972, Ser. No. 224,386  
 Term of patent 14 years  
 Int. Cl. D6—11

U.S. Cl. D6—210



232,147

**CLEATED ATTACHMENT FOR STREET SHOES**  
 Natalie A. Frisch, 6900 Bobbyboyar Ave., and Hubert J.  
 Vallis, 22942 Vost St., both of Canoga Park, Calif.  
 91304  
 Filed Feb. 28, 1973, Ser. No. 336,718  
 Term of patent 14 years  
 Int. Cl. D2—04

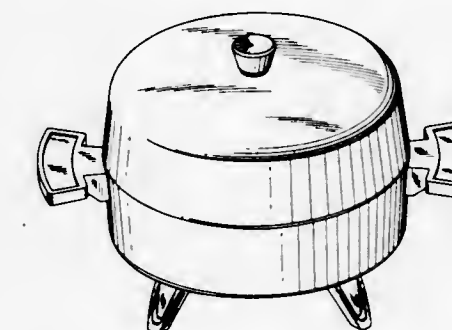
U.S. Cl. D2—317



232,148

**ELECTRIC CASSEROLE OR SIMILAR ARTICLE**  
 Harold E. Yarrington, Eau Claire, Wis., assignor to  
 National Presto Industries, Inc., Eau Claire, Wis.  
 Filed Aug. 31, 1972, Ser. No. 285,367  
 Term of patent 14 years  
 Int. Cl. D7—02

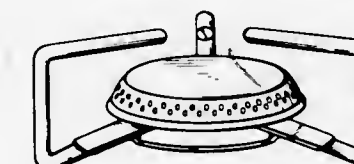
U.S. Cl. D7—94



232,149

**STOVE BURNER**  
 Thomas A. Bergquist, Chicago, Ill., assignor to  
 Olin Corporation  
 Filed May 30, 1972, Ser. No. 258,194  
 Term of patent 14 years  
 Int. Cl. D7—02

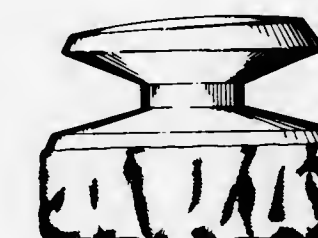
U.S. Cl. D7—136



232,150

**APPLICATOR FOR WAX**  
 James C. McKinney, Greenville, S.C., and Ronald A.  
 Peterson, New York, N.Y., assignors to Morton-Nor-  
 wich Products, Inc., Norwich, N.Y.  
 Filed Feb. 23, 1972, Ser. No. 228,794  
 Term of patent 14 years  
 Int. Cl. D7—05

U.S. Cl. D7—178



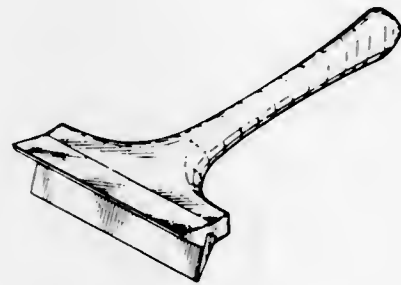


232,151

**COMBINED ICE SCRAPER AND MOISTURE REMOVER**

Baard Spydevold, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway  
Filed Sept. 14, 1971, Ser. No. 180,539  
Term of patent 14 years  
Int. Cl. D7—99; D8—05

U.S. Cl. D7—184



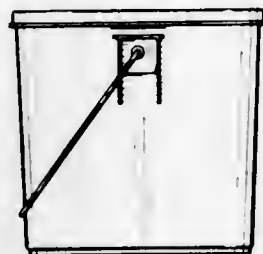
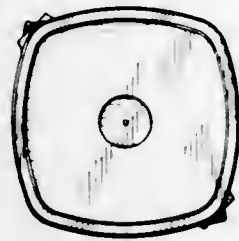
232,152

**COMBINED CONTAINER AND CLOSURE THEREFOR**

William H. Roper, Los Angeles, Robert E. Roper, Los Alamitos, and Charles R. Roper, Huntington Beach, Calif., assignors to Frank Roper, North Hollywood, and Ralph A. Miller, Van Nuys, Calif., fractional part interest to each

Filed May 17, 1972, Ser. No. 254,348  
Term of patent 14 years  
Int. Cl. D7—07

U.S. Cl. D7—187

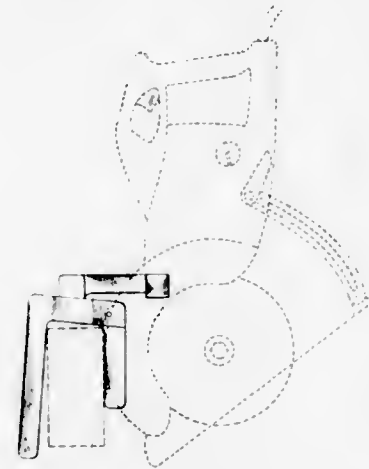
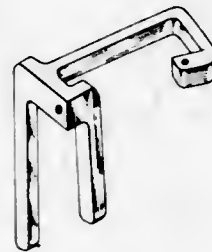


232,153

**RAFTER SUPPORTABLE ATTACHMENT FOR A CIRCULAR SAW**

Jerry C. Pepper, Rte. 1, Box 1513, Elk Grove, Calif. 95624  
Filed June 8, 1972, Ser. No. 261,143  
Term of patent 14 years  
Int. Cl. D8—99

U.S. Cl. D8—70



232,154

**DRAPERY SLIDE FOR A CURTAIN ROD**

Samuel Galletti, 1360 NE. 204th Terrace, North Miami Beach, Fla. 33162  
Filed June 29, 1973, Ser. No. 375,088  
Term of patent 14 years  
Int. Cl. D8—08

U.S. Cl. D8—239

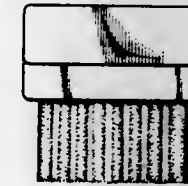


232,155

**DRAPERY SLIDE FOR A CURTAIN ROD**

Samuel Galletti, 1360 NE. 204th Terrace, North Miami Beach, Fla. 33162  
Filed June 29, 1973, Ser. No. 375,090  
Term of patent 14 years  
Int. Cl. D8—08

U.S. Cl. D8—239

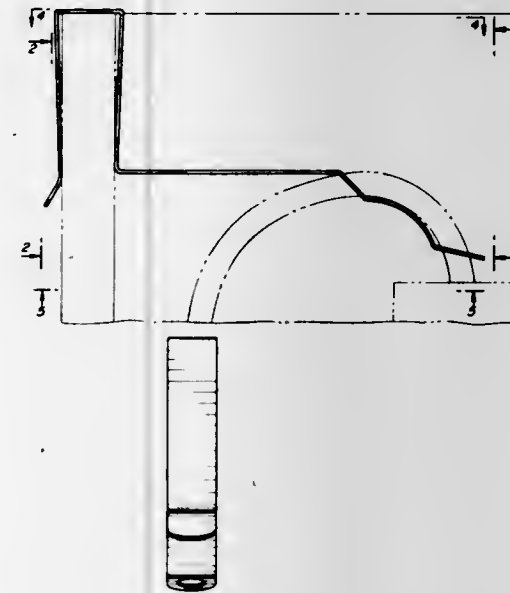


232,156

**SUPPORT FOR TOILET TANK REFILL TUBE**

Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Fredric E. Schmuck, 427 Fernhill Lane, Anaheim, Calif. 92806  
Filed Mar. 6, 1972, Ser. No. 232,336  
Term of patent 14 years  
Int. Cl. D8—08

U.S. Cl. D8—259



232,157

**COMBINED BOTTLE AND SUPPORT CLIP THEREFOR**

Fred J. Jacobs, Fairlawn, N.J., assignor to Knomark, Inc., Jamaica, N.Y.  
Filed Aug. 30, 1972, Ser. No. 284,923  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—10



232,158

**BOTTLE**

Warren J. Luedtke, Racine, Wls., assignor to S. C. Johnson & Sons, Racine, Wls.  
Filed Aug. 14, 1972, Ser. No. 280,707  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—167



232,159

**EYELASH CONTAINER**

Elizabeth Benjamin, Kingston-upon-Thames, England, assignor to Crystal Products Company Limited, Surbiton, Surrey, England

Filed Sept. 28, 1971, Ser. No. 184,656  
Claims priority, application Great Britain July 27, 1971  
Term of patent 14 years  
Int. Cl. D9—03

U.S. Cl. D9—171

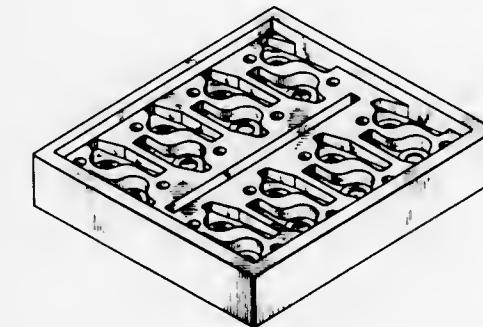


232,160

**COMBINED PACKAGING AND DISPLAY CONTAINER FOR AUTOMOTIVE ROCKER ARMS**

Robert G. Gibson, North Palm Beach, Fla., assignor to Crane Cams Incorporated, Hallandale, Fla.  
Filed June 21, 1972, Ser. No. 264,946  
Term of patent 14 years  
Int. Cl. D9—03

U.S. Cl. D9—185

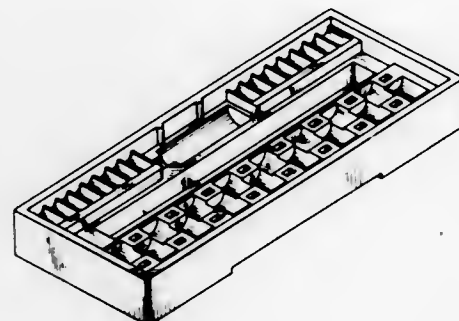




232,161

**COMBINED PACKAGING AND DISPLAY CONTAINER FOR AUTOMOTIVE CAMS**  
Robert G. Gibson, North Palm Beach, Fla., assignor to Crane Cams Incorporated, Hallandale, Fla.  
Filed June 21, 1972, Ser. No. 264,947  
Term of patent 14 years  
Int. Cl. D9—03

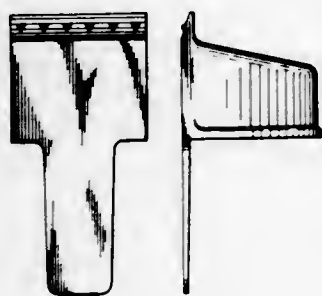
U.S. Cl. D9—185



232,162

**COMBINED ICE SCRAPER AND OVERCAP**  
Laurel E. Carr, Chicago, Ill., assignor to The Bell Company, Inc., Chicago, Ill.  
Filed Sept. 18, 1972, Ser. No. 289,808  
Term of patent 14 years  
Int. Cl. D9—07

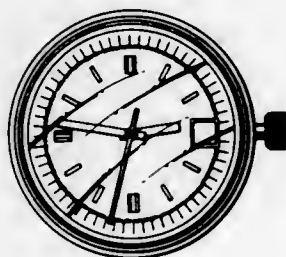
U.S. Cl. D9—261



232,163

**WATCH CASE**  
Renaud Langer, Neuchatel, Switzerland, assignor to Ebauches Electroniques SA, Neuchatel, Switzerland  
Continuation-in-part of abandoned design application Ser. No. 165,437, July 22, 1971. This application Oct. 26, 1971, Ser. No. 192,694  
Term of patent 14 years  
Int. Cl. D10—02

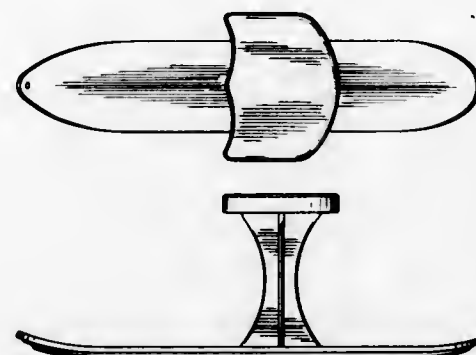
U.S. Cl. D10—37



232,164

**SKI SKOOTER**  
John E. Bemis II, Keewatin, Minn. 55769, and George J. Knezovich, 3842 2nd Ave. W., Hibbing, Minn. 55746  
Filed Apr. 9, 1973, Ser. No. 349,558  
Term of patent 7 years  
Int. Cl. D21—02

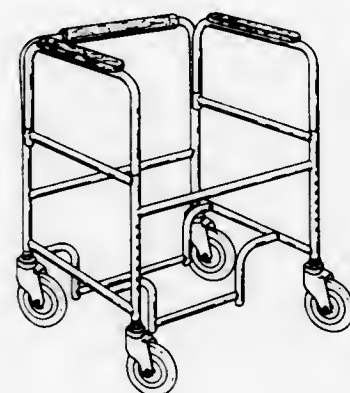
U.S. Cl. D12—10



232,165

**MOBILE FRAME FOR SUPPORTING A CHEMICAL CLOSET OR THE LIKE**  
Montague Hiller, 20 Carrington Ave., Borehamwood, England  
Filed Aug. 28, 1972, Ser. No. 283,957  
Claims priority, application Great Britain Mar. 20, 1972  
Term of patent 14 years  
Int. Cl. D12—02

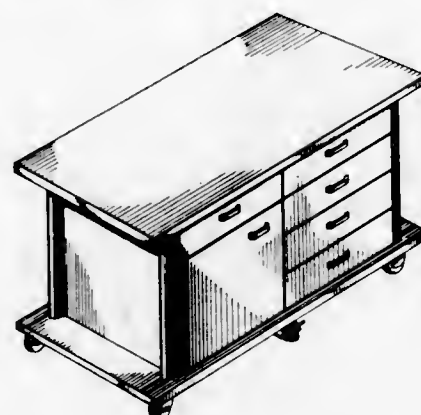
U.S. Cl. D12—25



232,166

**DESIGN FOR MOBILE CART**  
John P. Salsgiver, West Acton, Mass., assignor to United Technical Corporation, West Concord, Mass.  
Filed Nov. 22, 1971, Ser. No. 201,249  
Term of patent 14 years  
Int. Cl. D12—02; D6—04

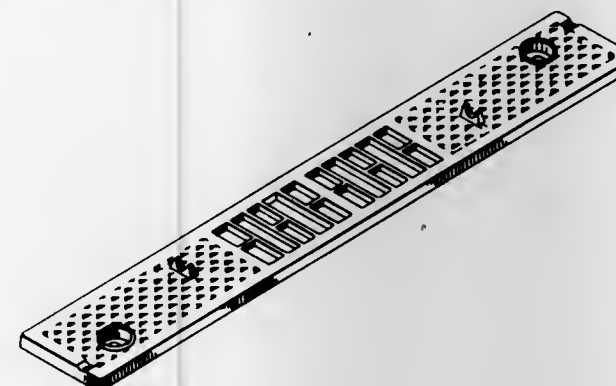
U.S. Cl. D12—27



232,167

**BOAT STORAGE COMPARTMENT LID OR THE LIKE**  
Carl R. Cordell, Jr., 215 Idlewood Drive, Hot Springs, Ark.  
Filed Dec. 8, 1972, Ser. No. 313,406  
Term of patent 14 years  
Int. Cl. D12—99

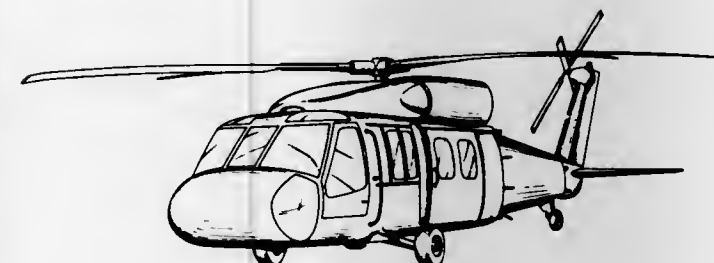
U.S. Cl. D12—70



232,168

**HELICOPTER**  
Ray D. Leonl, Woodbridge, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.  
Filed June 30, 1972, Ser. No. 267,819  
Term of patent 14 years  
Int. Cl. D12—07

U.S. Cl. D12—73



232,169

**ICE BOAT OR THE LIKE**  
Robert Rounds, Jr., 1706 Brentwood Lane, Wheaton, Ill. 60187  
Filed Jan. 31, 1973, Ser. No. 328,429  
Term of patent 14 years  
Int. Cl. D12—06

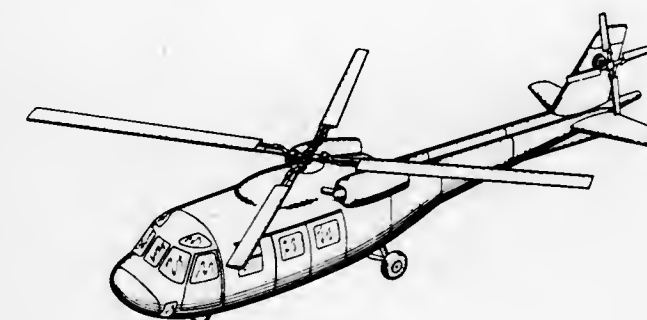
U.S. Cl. D12—64



232,170

**TWIN ENGINE HELICOPTER**  
John Diamond, West Chester, and David Walter Harry and John Jacob Schneider, Media, Pa., assignors to The Boeing Company, Seattle, Wash.  
Filed Dec. 26, 1972, Ser. No. 318,290  
Term of patent 14 years  
Int. Cl. D12—07

U.S. Cl. D12—73



232,171

**TIRE OR SIMILAR ARTICLE**  
Gernot Arendt, Traiskirchen, Austria, assignor to Firma Deutsche Semperit Gummiwerk G.m.b.H., Munich, Germany  
Filed July 29, 1971, Ser. No. 167,539  
Claims priority, application Germany Feb. 10, 1971; Mar. 26, 1971  
Term of patent 14 years  
Int. Cl. D12—15

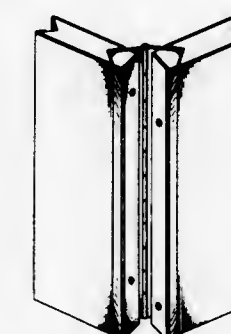
U.S. Cl. D12—142



232,172

**HINGED FREE-STANDING PARTITION**  
Steve Themis, 130 9th St., San Francisco, Calif. 94103  
Filed June 14, 1971, Ser. No. 152,743  
Term of patent 14 years  
Int. Cl. D25—02

U.S. Cl. D13—1 K



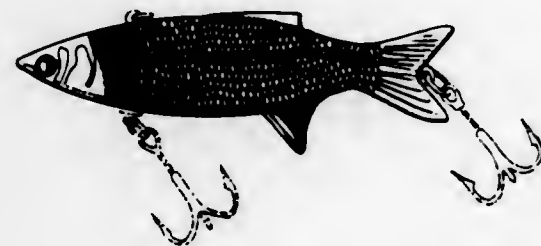


232,173

**FISH LURE**

Earl E. Miller, Knoxville, Tenn., assignor to The Brunswick Corporation, Skokie, Ill.  
Filed Oct. 22, 1971, Ser. No. 192,723  
Term of patent 14 years  
Int. Cl. D22—05

U.S. Cl. D22—27

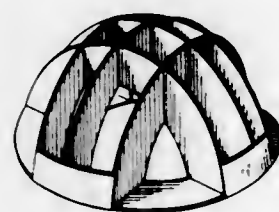


232,174

**MODULE FOR A FILTER MEDIA**

Joseph N. La Borde, 1801 Ormandy Drive, Baton Rouge, La. 70808  
Filed Mar. 12, 1973, Ser. No. 340,219  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—4

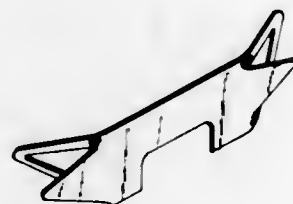


232,175

**SUPPORT FOR THE HEATING ELEMENT OF A RADIANT HEATER OR THE LIKE**

Ralph Santoro, Verona, Pa., assignor to Emerson Electric Co., St. Louis, Mo.  
Filed May 5, 1972, Ser. No. 250,843  
Term of patent 14 years  
Int. Cl. D23—03

U.S. Cl. D23—127

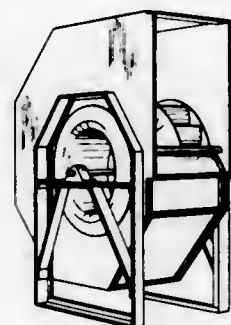


232,176

**FAN**

George T. Brockman, Stoddard, Richard W. Kabat, Genoa, and Ronald J. Lievens, Onalaska, Wis., assignors to The Trane Company, La Crosse, Wis.  
Filed May 8, 1972, Ser. No. 251,574  
Term of patent 14 years  
Int. Cl. D23—04

U.S. Cl. D23—162

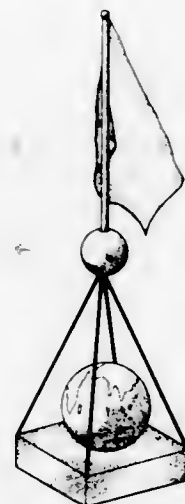


232,177

**FLAG STAND**

Joseph S. Craig, Marion, Iowa (530 4th Ave. E., Cresco, Iowa 52136)  
Filed Sept. 5, 1972, Ser. No. 286,564  
Term of patent 14 years  
Int. Cl. D11—05

U.S. Cl. D29—17 A

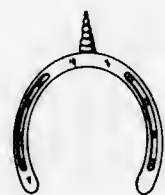


232,178

**NOVELTY UNICORN HORSESHOE OR THE LIKE**

Jack P. McDaniel, Cumberland, N.C. (514 Owen Drive, Fayetteville, N.C. 28304)  
Filed Nov. 12, 1971, Ser. No. 198,499  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—5 GP

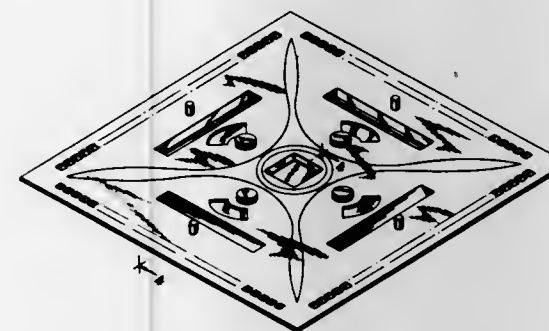


232,179

**GAME BOARD**

Murray Zaintz, 60 Tynan St., Staten Island, N.Y. 10312  
Filed Jan. 15, 1973, Ser. No. 323,851  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—5 SS



232,180

**TILTABLE TOY**

Hermann Neuhierl, 36 Waldestrasse, 8510 Furth, Bavaria, Germany  
Filed Oct. 29, 1971, Ser. No. 194,102  
Claims priority, application Germany July 5, 1971  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—15 A

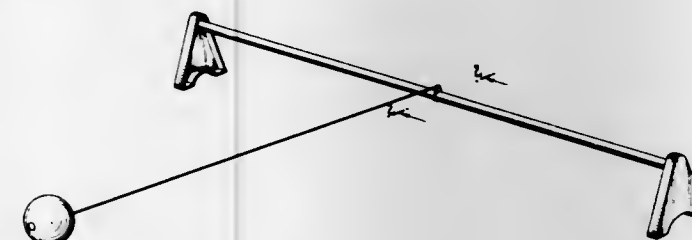


232,181

**TENNIS GAME TETHER BALL**

Raymond J. Lohr, Robert Thomas Auer, and Laurie Jay Campbell, Erie, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.  
Filed Mar. 13, 1972, Ser. No. 234,444  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—15 P

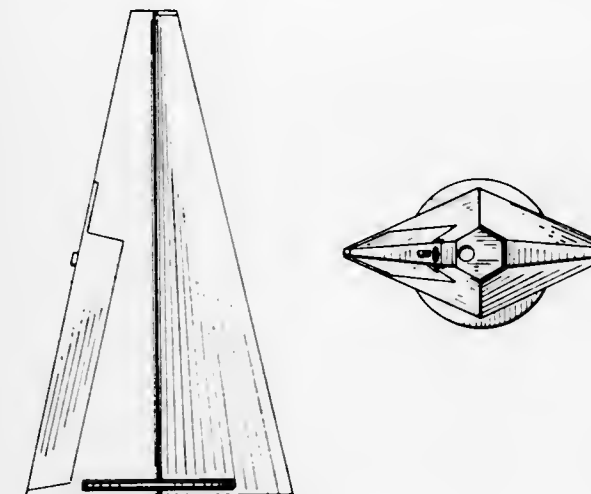


232,182

**KALEIDOSCOPE**

Alfred A. Orans, 225 Ellison Ave., Westbury, N.Y. 11590  
Filed Sept. 8, 1972, Ser. No. 287,558  
Term of patent 7 years  
Int. Cl. D21—01

U.S. Cl. D34—15 A

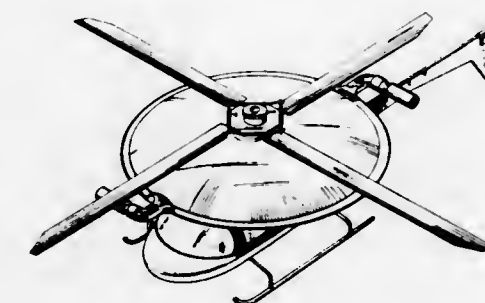


232,183

**TOY HELICOPTER**

Richard E. Reed, 6396 Condor Court, Ventura, Calif. 93003  
Filed Oct. 10, 1972, Ser. No. 296,190  
Term of patent 7 years  
Int. Cl. D21—01

U.S. Cl. D34—15 KK

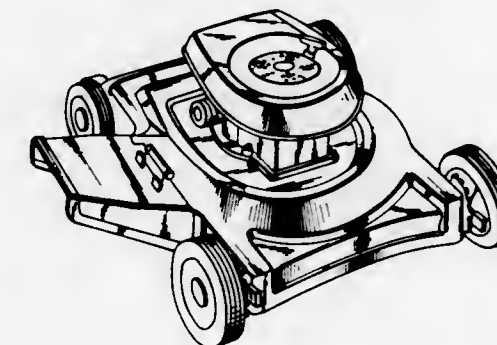


232,184

**COMBINED HOUSING, DEFLECTOR AND MOTOR SHROUD ARRANGEMENT FOR A ROTARY LAWNMOWER**

Larry M. Cognata, Nashville, Tenn., assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.  
Filed Jan. 19, 1973, Ser. No. 324,969  
Term of patent 14 years  
Int. Cl. D15—03

U.S. Cl. D40—1 B





232,185

**ELECTRIC LANTERN**

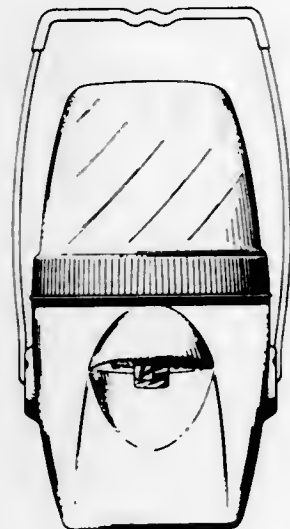
Nolan K. Rhoades, Beloit, and Whitley Pemberton, Stoughton, Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 13, 1972, Ser. No. 306,004

Term of patent 14 years

Int. Cl. D26—02

U.S. Cl. D48—24 R



232,187

**ACCESS LID FOR AN AUTOMATIC CLOTHES WASHER UTILIZING A WASH ADDITIVE DISPENSER, OR SIMILAR ARTICLE**

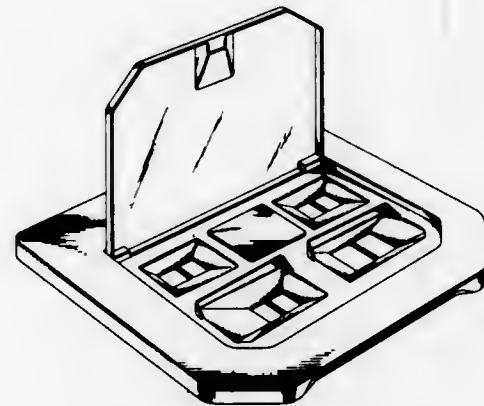
Perry C. McCollom, Jr., Louisville, Ky., assignor to General Electric Company

Filed Feb. 15, 1973, Ser. No. 332,612

Term of patent 14 years

Int. Cl. D5—05

U.S. Cl. D49—1 A



232,186

**COMBINED ELECTRIC GENERATOR AND LIGHT FOR BICYCLES**

Pierre Cible, Paris, France, assignor to Cible Vendome, Bobigny, France

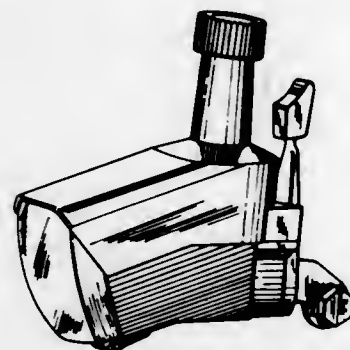
Filed Jan. 17, 1973, Ser. No. 324,251

Claims priority, application France July 18, 1972

Term of patent 14 years

Int. Cl. D26—06

U.S. Cl. D48—24 A



232,188

**ELECTRONIC COMPARATOR**

Robert Sramek, Sterling Heights, Mich., assignor to Etronic Corporation, Detroit, Mich.

Filed Oct. 27, 1972, Ser. No. 301,630

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D52—6 R



232,189

**ETCHER CABINETS**

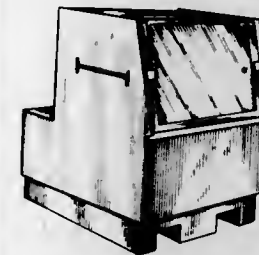
Daniel L. Goffredo, Riverton, N.J., and Conrad Dale Shakley, Spring Mills, Pa., assignors to Chemcut Corporation, State College, Pa.

Continuation-in-part of abandoned design application Ser. No. 194,798, Nov. 1, 1971. This application Feb. 3, 1972, Ser. No. 223,387

Term of patent 14 years

Int. Cl. D15—09

U.S. Cl. D55—1 R



232,190

**RIGHT ANGLE DRIVE AND PEDESTAL**

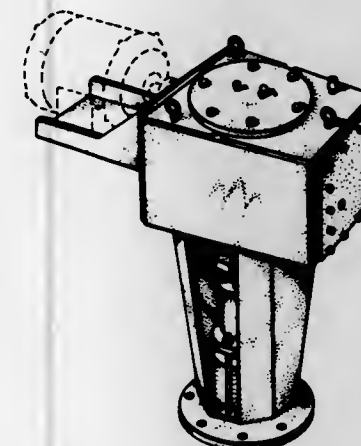
John G. Fenic, Donald L. Kime, and William C. Raridan, Dayton, and Read C. Viemeister, Yellow Springs, Ohio, assignors to Chemineer, Inc., Dayton, Ohio

Filed Dec. 18, 1972, Ser. No. 315,923

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D55—1 D



232,191

**RIGHT ANGLE DRIVE**

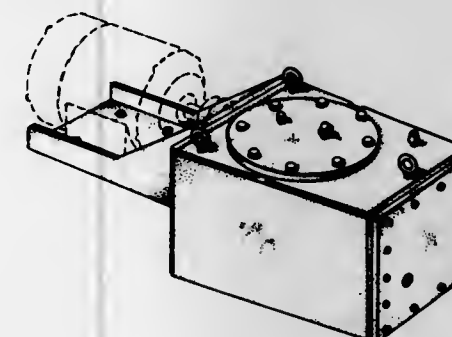
John G. Fenic, Donald L. Kime, and William C. Raridan, Dayton, and Read C. Viemeister, Yellow Springs, Ohio, assignors to Chemineer, Inc., Dayton, Ohio

Filed Dec. 18, 1972, Ser. No. 316,069

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D55—1 D



232,192

**PHOTOGRAPHIC FILM SHEET PROCESSOR**

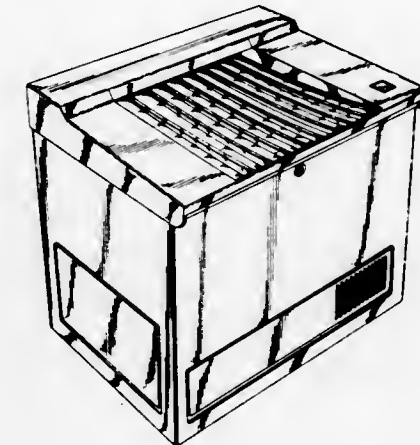
Ralph M. Vigna, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 14, 1972, Ser. No. 271,845

Term of patent 14 years

Int. Cl. D16—04

U.S. Cl. D61—1 Q



232,193

**COVER FOR A DATA TYPING MACHINE OR THE LIKE**

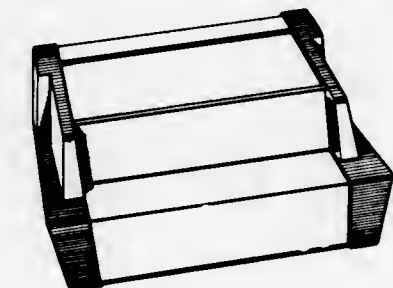
Allen D. Alexander, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed May 11, 1972, Ser. No. 252,522

Term of patent 14 years

Int. Cl. D18—99

U.S. Cl. D64—11 R



232,194

**TELLER STATION PRINTER**

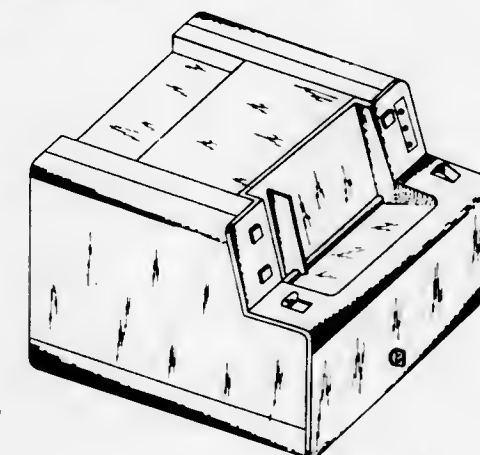
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, and David L. Schaum, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 14, 1973, Ser. No. 370,062

Term of patent 14 years

Int. Cl. D14—02; D18—02

U.S. Cl. D64—11 B





232,195

**TELLER STATION PRINTER**

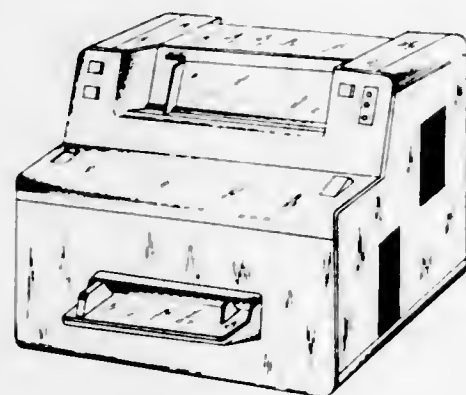
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, and David L. Schaum, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 14, 1973, Ser. No. 370,099

Term of patent 14 years

Int. Cl. D14-02; D18-02

U.S. Cl. D64-11 B



232,197

**POCKET CLIP FOR WRITING INSTRUMENT**

Toshihiro Nakata, Tokyo, Japan, assignor to Platinum

Fountain-Pen Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1971, Ser. No. 204,790

Claims priority, application Japan June 5, 1971;

July 22, 1971

Term of patent 14 years

Int. Cl. D19-99

U.S. Cl. D74-17 A



232,198

**LITTER**

Thomas L. Thompson, 3135 Bayside Drive,

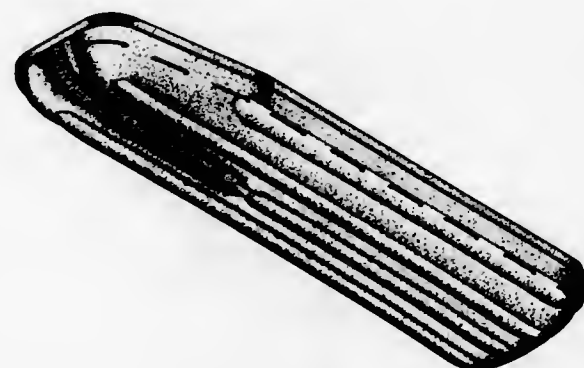
Corona Del Mar, Calif. 92014

Filed Mar. 24, 1972, Ser. No. 238,013

Term of patent 14 years

Int. Cl. D24-99

U.S. Cl. D83-1 E



232,196

**PAINT ROLLER**

John F. Mason, Phoenix, Ariz. (Building 450-B,

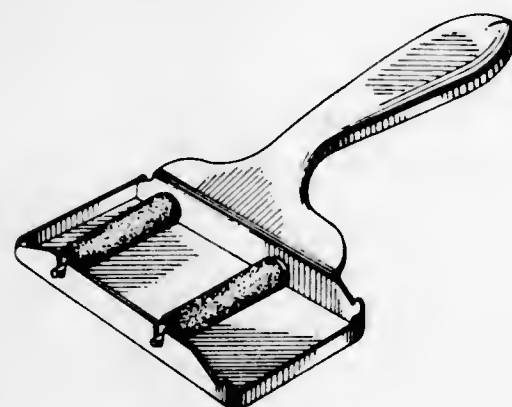
Mickley Run Apts., Whitehall, Pa. 18052)

Filed Nov. 15, 1972, Ser. No. 306,534

Term of patent 14 years

Int. Cl. D8-05

U.S. Cl. D64-18



232,199

**ELECTRIC SHAVER**

Hermann R. Schaefer, Bridgeport, Conn., assignor to

Sperry Rand Corporation, New York, N.Y.

Original design application Nov. 16, 1970, Ser. No.

25,997. Divided and this application Aug. 30, 1972,

Ser. No. 280,744

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D95-3 A

**LIST OF PATENTEEES**

TO WHOM

PATENTS WERE ISSUED ON THE 23d DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-T-O Inc.: See—  
Fechheimer, Paul R., 3,825,043.
- A-1 Engineering, Inc.: See—  
Neuman, Gordon E., 3,825,123.
- AB Bygg-och Transportekoneone (BF): See—  
Bryntse, Anders Ivar; and Berkestad, Karl Erik, 3,824,897.
- AB Cold-Bound Pellets: See—  
Kihlstedt, Per Gudmar, 3,825,638.
- Abate, Loris: See—  
Schon, Nutrizio Maria; and Abate, Loris, 3,824,627.
- Abernathy, James D.: See—  
Marus, Louis J.; and Abernathy, James D., 3,825,921.
- Acevedo, Raul. Adjustable split artificial tooth with micrometer wheel means for dynamically adjusting the mestodistal tooth dimension. 3,824,691, Cl. 32-71.000.
- ACF Industries, Incorporated: See—  
Kalsi, Manmohan S., 3,825,030.
- Achermann, Franz: See—  
Achermann, Werner; and Achermann, Franz, 3,825,441.
- Achermann, Werner; and Achermann, Franz, to Boise Cascade Corporation. Method for impregnating corrugated cardboard, and resultant product. 3,825,441, Cl. 117-119.000.
- Acrometal Products, Inc.: See—  
Steinback, Clarence L., 3,825,277.
- Action Communication Systems, Inc.: See—  
Allen, Chester C., Jr., 3,825,905.
- Addressograph-Multigraph Corporation: See—  
Kolibas, James A., 3,825,338.
- Van Acker, John J., 3,824,922.
- Zimmer, Robert E., 3,825,249.
- Adelmann, Robert Witsenhausen, to Societe Anonyme de Recherches de Mecanique Appliquee. Ski-stick and associated looped carrier strap. 3,825,276, Cl. 280-11.37h.
- Agatsuma, Takashi: See—  
Kikuchi, Akira; Agatsuma, Takashi; and Anzai, Akio, 3,825,454.
- Agfa-Gevaert Aktiengesellschaft: See—  
Engelsmann, Dieter; Maas, Dieter; and Schroder, Rolf, 3,825,939.
- Heilmann, Max, 3,825,425.
- Agfa-Gevaert N.V.: See—  
Pollett, Robert Joseph; Philippaerts, Herman Adelbert; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, 3,825,426.
- Agg, Michael John: See—  
McMurry, David Roberts; and Agg, Michael John, 3,825,370.
- Ahmed, Adel Abdel Aziz, to RCA Corporation. Temperature-sensitive control circuit. 3,825,778, Cl. 307-310.000.
- Ahrens, Gerhard W. Production of stable, nonhydroxy homogeneous in natural and mineral oils soluble vitamin-E-active cream-base-coesters of the mineral-oil-insoluble D-alpha-tocopheryl-acid-succinate with anhydrous oils. 3,825,563, Cl. 260-345.500.
- Ainsworth, Richard Allan, to International Business Machines Corporation. Contact bounce eliminator circuit with low standby power. 3,825,772, Cl. 307-274.00a.
- Ajinomoto Co., Inc.: See—  
Kubota, Koji; Yoshihara, Yasuhiko; Hirakawa, Hayao; Kamijo, Hirotaka; Nosaki, Shigeki; Yoshinaga, Fumihiko; Okumura, Shinji; and Okada, Hiroshi, 3,825,472.
- Tazuke, Hideo; Kitahara, Toshio; and Kageyama, Hiroo, 3,825,559.
- Ajupov, Rustem Nurievich: See—  
Starostin, Jury Stepanovich; Plokhov, Viktor Ivanovich; Erokhov, Veniamin Kuzmich; Ivanov, Vladimir Prokopievich; Krotkov, Vladimir Nikolaevich; Anisimov, Albert Viktorovich; Ajupov, Rustem Nurievich; and Golovinov, Mikhail Fedorovich, 3,824,832.
- Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, to Sumitomo Chemical Company. Fluoran compounds. 3,825,561, Cl. 260-335.000.
- Akticbolaget Bofors: See—  
Andersson, John-Erik, 3,824,846.
- Albertzart, R. Richard, to Hayes-Albion Corporation. Lightweight fan. 3,825,369, Cl. 416-229.000.
- Alexander, Donald Ray. Serial number embossing apparatus. 3,824,921, Cl. 101-19.000.
- Alexander, Herman: See—  
Langwell, John D., 3,824,720.
- Alfa Farmaceutici, S.p.A.: See—  
Gargiolo, Francesco, 3,825,473.
- Alford, Ricker, Jr. Alternate light lighting fixture. 3,825,769, Cl. 307-157.000.
- Allaben, Charles M., Jr., to Borg-Warner Corporation. Shaft lock device. 3,825,312, Cl. 308-236.000.
- Allam, Elsayed: See—  
Katz, Carlos; Garcia, Felipe; and Allam, Elsayed, 3,825,670.
- Allen, Chester C., Jr., to Action Communication Systems, Inc. Binary synchronous communications processor system and method. 3,825,905, Cl. 340-172.500.
- Allen, Gerald Dean: See—  
Santos, Anthony R.; Santos, Ontario R.; and Allen, Gerald Dean, 3,824,769.
- Allen, Scott D.: See—  
Hall, Wayne C., 3,824,738.
- Allied Chemical Corporation: See—  
Valentine, John P.; and Luley, Wilbert E., 3,824,766.
- Allis, Robert F.: See—  
Kingsley, William; and Allis, Robert F., 3,825,724.
- Allis-Chalmers Corporation: See—  
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- Altman, Richard M.; and Rosenblatt, Jerome J. Zoom lens optical system for infrared wavelengths. 3,825,315, Cl. 350-2.000.
- Aluminum Company of America: See—  
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- Amalgamated Dental Company, Limited, The: See—  
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- Amalgamated Dental Company, The: See—  
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- Amann, John A. Sectionalized laminate strip structure. 3,825,463, Cl. 161-36.000.
- Amberg, Ralph G., to Owens-Illinois, Inc. Apparatus for testing and sorting cups. 3,824,840, Cl. 73-45.300.
- Amdahl Corporation: See—  
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- Amelunxen, Bernd, to BBC Brown Boveri & Company Limited. Clamped disc type semiconductor assembly with built-in contact pressure gage. 3,825,804, Cl. 317-234.00r.
- Amemiya, Kiyoshi; Kondou, Masakazu; Yamazaki, Kazuhiko; and Kanai, Fumio, to Hitachi, Ltd. Local oscillator for use in a VHF tuner for a television receiver. 3,825,858, Cl. 331-117.00r.
- American Can Company: See—  
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- Ames, William A.; and Ward, James J., to Eastman Kodak Company. Purification of a,a-disubstituted-beta-propiolactones. 3,825,573, Cl. 260-343.900.
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- Bogue, John C.: See—  
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- Bogue, John C.; and Sarbacher, Robert I. said Sarbacher assor. to said Bogue, John C. Personal security device. 3,825,833, Cl. 325-119.000.
- Boise Cascade Corporation: See—  
Achermann, Werner; and Achermann, Franz, 3,825,441.
- Boll, Harry Joseph, to Bell Telephone Laboratories, Incorporated. Igft inverter circuit. 3,825,771, Cl. 307-214.000.
- Bombardier, Jerome, to Bnmardier Limited. Stop device for snowmobile steering mechanism. 3,825,086, Cl. 180-5.000.
- Bombardier Limited: See—  
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- Bondie, Dale J.; Sutton, Robert S.; and Lewelling, James D., to Ex-Cell-O Corporation. Machine tool with automatic tool changing means. 3,824,892, Cl. 90-58.00b.
- Bonne, Roger, to Commissariat a l'Energie Atomique. Device for analysing a substance by atomic absorption with background correction. 3,825,344, Cl. 356-85.000.
- Boone, Philip. Supplemental sheet-dispensing device for a toilet-tissue dispenser. 3,824,953, Cl. 118-75.000.
- Boone, Robert L. Fishing lure. 3,824,732, Cl. 43-42.050.
- Booth, Clarence R., Jr., to Continental Can Company, Inc. Compartmentalized carton. 3,825,174, Cl. 229-28.00b.
- Borg-Warner Corporation: See—  
Allaben, Charles M., Jr., 3,825,312.
- Borglum, Keith B. Cover assembly. 3,825,215, Cl. 248-147.000.
- Bosch, Robert, G.m.b.H.: See—  
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- Schneider, Rolf; and Muller, Hans-Martin, 3,824,966.
- Wirtz, Rainer, 3,825,813.
- Bosch, Robert, Photokino GmbH: See—  
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- Krumbein, Fritz; and Lieckfeldt, Hans, 3,825,218.
- Bosley, Denis V.: See—  
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- Bossen, Douglas C.; Hong, Se J.; Hsiao, Mu-Yue; and Patel, Arvind M., to International Business Machines Corporation. Modular distributed error detection and correction apparatus and method. 3,825,893, Cl. 340-146.1a1.
- Boston Machine Works Co.: See—  
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- Bottoms, Harry Simister, to Lucas, Joseph, (Industries) Limited. Gear pumps and motors. 3,825,377, Cl. 418-170.000.
- Bottos, Baltassar. Insect trap. 3,824,734, Cl. 43-121.000.
- Bouffard, Joseph T.: See—  
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- Bouiller, Jean Georges: See—  
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- Boultinghouse, Ace: See—  
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- Bourassa, Hugh A.: See—  
Sorenson, Charles E.; Stubblefield, Clyde D.; Debaille, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., 3,824,772.
- Bourton, Hubert. Device for deactivating automobile door operable electric switch. 3,825,705, Cl. 200-61.790.
- Bowers, Gary L.; Lay, Clark M.; and Stephens, Albert E., to United States of America, Atomic Energy Commission. Command pulse generator for computer-controlled machining. 3,825,735, Cl. 235-151.110.
- Bowman, John L., to Motorola, Inc. Machine for cutting brittle materials. 3,824,982, Cl. 125-16.000.
- Boyak, Arnold C.: See—  
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- Boyd, Violet; Evans, Ronald Arthur; Holt, Kenneth Anthony; and Renfrew, Andrew Hunter Morris, to Imperial Chemical Industries Limited. Leucauramine derivatives. 3,825,507, Cl. 260-518.00r.
- Bracco Industria Chimica Societa per Azioni: See—  
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- Bradford, Robert S.; Richardson, Harvey J.; Dubbe, Richard F.; and Ebbinga, Richard D., to Minnesota Mining & Manufacturing Company. System for controlling film motion. 3,825,675, Cl. 178-6.70a.
- Braid, Milton, to Mobil Oil Corporation. Organic compositions containing synergistic antioxidant mixtures. 3,825,496, Cl. 252-48.200.
- Bramley, Robert K.: See—  
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- Brandstatter, Georg: See—  
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- Brandstatter, Horst, to Brandstatter, Georg. Toy boat with separate compartment for battery and motor. 3,824,735, Cl. 46-243.0mv.
- Brandstetter, Rudi: See—  
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- Branick, Charles Earl. Wheel balancing apparatus. 3,824,862, Cl. 73-480.000.
- Branovich, Louis E.; Fitzpatrick, William B. P.; and Long, Martin L., Jr., to United States of America, Army. Vapor deposition method. 3,825,440, Cl. 117-106.00r.
- Brauer, Gualtiero, to Facem Fabbria Apparecchi Controlo e Misura di Gualtiero Brauer. Microswitch device actuatable at two preset values of a measurable variable. 3,825,704, Cl. 200-56.00r.
- Braun, Roland J., to International Business Machines Corporation. Hall cell with offset voltage control. 3,825,777, Cl. 307-309.000.
- Braun, William V., to Motorola, Inc. Radio system employing simultaneously triggered pulse repeaters. 3,825,829, Cl. 325-6.000.
- Breuer, Hermann: See—  
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- Breev, Boris Dmitrievich: See—  
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- Bressanelli, Jerome P.: See—  
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- Brewington, Harold G. Remotely controlled mirror and power amplified drive means therefor. 3,825,324, Cl. 350-289.000.
- Bridgestone Tire Company Limited: See—  
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- Nakamura, Kihei; Yamazaki, Harumichi; Masuda, Hirotugu; Sato, Takeshi; and Kiuchi, Yoshinori, 3,825,292.
- Briggs & Stratton Corporation: See—  
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- Briggs, Walton Ellis, to Varian Associates. Leak detecting system and method for passing a measured sample of gas to a leak detector. 3,824,839, Cl. 73-40.700.
- Briskmen, Robert David, to Communications Satellite Corporation. Television radio frequency switch. 3,825,837, Cl. 325-456.000.
- Bristol Products, Inc.: See—  
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- Bristol-Myers Company: See—  
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- British Titan Limited: See—  
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- British-American Tobacco Co., Ltd.: See—  
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- Bronkhorst, Armand Francois, to Holvricka International B.V. Processing a curd-whey mixture. 3,824,918, Cl. 99-452.000.
- Bronswerk-Apparatenbouw N.V., v/h Moring & Steenaart: See—  
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- Brooks, Daryl G. Self-tapping replacement stud with chip collection and storage chamber. 3,824,888, Cl. 85-47.000.
- Brooks, John Hawley, to McCulloch Corporation. Multi-stage control for torque converters in engine driven vehicles. 3,824,867, Cl. 74-230.17e.
- Brothers, Donald C.: See—  
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- Brown & Root, Inc.: See—  
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- Brown, Clinton E.; and Frommer, Moshe-Aharon, to Hydronautics, Incorporated. Peritoneal artificial kidney. 3,825,493, Cl. 210-23.000.
- Brown, Glenn R., to Bristol Products, Inc. Wash basin adapted for securement to a support. 3,824,636, Cl. 44-187.00a.
- Brown, Henry: See—  
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- Brown, Neil F.: See—  
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- Brown, Omar L.; and Schubert, James R., to Frazee, Eral C. Easy opening container having shoulders to safeguard all severed edges. 3,825,149, Cl. 220-54.000.

- Brown, Richard E., to Warner-Lambert Company. Process for preparing substituted chromone-3-carbonitriles, carboxamides and carboxylic acids. 3,825,574, Cl. 260-345.200.
- Brown, Wendell W.; Davis, Michael I.; and Pipitone, Ralph M., to International Business Machines Corporation. Interlevel communication in multilevel priority interrupt system. 3,825,902, Cl. 340-172.500.
- Brown, Wendell W., to International Business Machines Corporation. Automatic switching of storage protect keys. 3,825,903, Cl. 340-172.500.
- Brownback, Dewey Earl, to International Business Machines Corporation. Interfacing circuitry for connecting a remote keyboard with a data receiving buffer. 3,825,926, Cl. 340-365.00e.
- Brubaker, Harry E. Automatic rake. 3,824,773, Cl. 56-369.000.
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- Brucker, William S. Golf-club selection aid. 3,824,698, Cl. 33-277.000.
- Brumagim, Ivan S., to Secondary Processing Systems, Inc. Rotary internal combustion engine. 3,824,968, Cl. 123-8.450.
- Brunswick Corporation: See—  
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- Bryntse, Anders Ivar; and Berkestad, Karl Erik, to AB Bygg-och Transportekoneone (BF). Multispeed hydraulic or pneumatic device. 3,824,897, Cl. 91-411.00a.
- Bryson, Robert A.: See—  
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- Bublitz, Donald E.: See—  
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- Buchanan, Robert A.; Alves, Ronald V.; Maple, T. Grant; and Sobon, Leon E., to Lockheed Missiles & Space Company, Inc. Method of making rare earth oxysulfide luminescent film. 3,825,436, Cl. 117-33.50r.
- Budde, Herman, to U.S. Philips Corporation. Semiconductor lead and heat sink structure. 3,825,803, Cl. 317-234.00r.
- Buell, Kenneth B., to Procter & Gamble Company, The. Apparatus for preparing airtel. 3,824,652, Cl. 19-156.300.
- Buell, Kenneth B., to Procter & Gamble Company, The. Apparatus for preparing airtel. 3,825,194, Cl. 241-191.000.
- Bulin, Edward G., to Webster Electric Company, Inc. Method of encapsulating electric equipment. 3,825,639, Cl. 264-72.000.
- Bull, Brian S., to Coulter Electronics, Inc. Method for sedimentation study. 3,824,841, Cl. 73-61.400.
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- Burch, Nathan L.; and Tapia, Leonard G., said Tapia assor. to Bell & Howell Company. Method of making a ferrite head. 3,824,685, Cl. 29-603.000.
- Burchett, Paul James. Tethered ball for sports practice. 3,825,259, Cl. 273-29.00a.
- Burdick, Robert E.; and Wolf, Baxter K., to Rolair Systems, Inc. Modular air cushion transporting system. 3,825,093, Cl. 180-119.000.
- Burdick, Robert E., to Rolair Systems, Inc. Remote control for air bearing transporters and the like. 3,825,094, Cl. 180-125.000.
- Burg, Donald E., to American Hospital Supply Corporation. Centrifuge rotor. 3,825,178, Cl. 233-26.000.
- Burk, Emmett H.; and Fuger, Karl E., to Atlantic Richfield Company. Method for preparing cyclic nitrile carbonates. 3,825,554, Cl. 260-307.00a.
- Burk, John L.; Duffy, Daniel M.; Hogan, Spurgeon G., Jr.; Larson, Russell H.; and McGilvray, Bruce L., to International Business Machines Corporation. Virtual memory system. 3,825,904, Cl. 340-172.500.
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- Burns, Harold S., to Electro Marine Corporation. Remote reading compass system. 3,825,911, Cl. 340-198.000.
- Burns, Robert G., to Pylon, Incorporated. Outdoor display device for sequentially displaying a series of panels. 3,824,721, Cl. 40-32.000.
- Burroughs Corporation: See—  
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- Kjos, Magne Jarle; and Molleman, Johan Henri, 3,825,203.
- Burstein, Albert H.; and Heiple, Kingsbury G., to Sampson Corporation, The. Bone joint fusion prosthesis. 3,824,631, Cl. 3-1.000.
- Burthardt, Charles J. Adjustable screw-lock pliers. 3,824,882, Cl. 81-401.000.
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- Busch, Hansjochen: See—  
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- Butterweck, Hellmut. Sealed-end jacked pipe assembly and method of making same. 3,825,035, Cl. 138-109.000.
- Butwell, Robert J., to Varian Associates. Microwave tube having an improved output section. 3,825,794, Cl. 315-3.600.
- BYK Gulden Lomberg Chemische Fabrik GmbH: See—  
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- Cahoy, Roger Paul, to Gulf Research & Development Company. Method for combating certain foliar diseases of plants. 3,825,662, Cl. 424-300.000.
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- California Pellet Mill Company: See—  
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- Call, Donald H.; Atwood, Elbridge L.; Cary, Joseph A.; and Surette, James D. Mini sewage treatment system. 3,825,494, Cl. 210-138.000.
- Camber International (England) Limited: See—  
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- Campagna, Edward R., to Dart Industries, Inc. Covered glass bottle or the like. 3,825,141, Cl. 215-1.00e.
- Campagna, Edward R., to Dart Industries, Inc. Thermoplastic shielded glass bottle. 3,825,142, Cl. 215-1.00e.
- Campbell, Alastair; and Thoburn, Allan, to Imperial Chemical Industries Limited. Manufacture of 1, 4, 1-trichloroethane. 3,825,609, Cl. 260-658.00j.
- Campbell, J. A., Company: See—  
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- Campbell, Robert E.; Hetzler, Lewis R.; and Huntzinger, Gerald O., to General Motors Corporation. Internal combustion engine ignition system. 3,824,977, Cl. 123-148.00e.
- Campbell, William G., Jr.: See—  
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- Canderton, Norman Victor; and Goadby, Walter, to Camber International (England) Limited. Patterning mechanism for multi-feed circular knitting machines. 3,824,809, Cl. 66-50.00r.
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- Canon Camera Kabushiki Kaisha: See—  
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- Canon Kabushiki Kaisha: See—  
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- Moriyama, Inao; and Toyama, Masumichi, 3,825,941.
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- Watanabe, Hiroaki; and Nakamoto, Soichi, 3,825,942.
- Canron, Inc.: See—  
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- Capucio, Eugene G. Drop-out toaster. 3,824,915, Cl. 99-329.00r.
- Carborundum Company, The: See—  
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- Carlick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., to Sun Chemical Corporation. Radiation curable printing ink compositions comprising an isocyanate-modified polyfunctional ester and a photoinitiator. 3,825,479, Cl. 204-159.230.
- Carlisle, Richard S. Highly absorbent pressure dressing for wounds. 3,824,996, Cl. 128-186.000.
- Carlsson, Hilding Ake Gerry: See—  
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- Carp, Ralph W.; Ingels, Ward A.; and Ang, Leoncio T., to Bendix Corporation, The. Means for detecting failure of various elements of an adaptive braking system through the use of trickle currents. 3,825,307, Cl. 303-21.0af.
- Carpenter, Denis Cecil John: See—  
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- Carr, George W., to Pullman Incorporated. Twist lock arrangement for tying container down. 3,825,294, Cl. 296-35.00a.
- Carr, Paul H., to United States of America, Air Force. Surface wave delay line with quarter-wave taps. 3,825,860, Cl. 333-30.00r.
- Carr, Walter J., Jr.; and Miller, Robert C., to Westinghouse Electric Corporation. Propagation of magnetic domains by self-induced drive fields 6340/174.0tf. 3,825,910, Cl. .
- Carrier Corporation: See—  
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- Church, Richard A., 3,824,800.
- Smith, Joseph W.; and Hollencamp, Eugene A., 3,824,667.
- Carroll, John E.; and Stump, Carl E., to Lincoln Electric Company, The. Electrode for vertical-up open arc welding using molding shoes. 3,825,721, Cl. 219-146.000.
- Carroll, Richard R., to Litton Industrial Products, Inc. Machine tool. 3,824,891, Cl. 90-11.00a.
- Carter, Edward W., to Glasrock Products, Inc. Method of preparation of a porous thermosetting resin. 3,825,506, Cl. 260-2.50l.
- Cary, John M.; and Mahacek, Michael F. Extendible conveyor system. 3,825,107, Cl. 198-139.000.
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Casciano, Frederick M. Steerable aqua-sled. 3,824,945, Cl. 114-235.0ws.

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Chambers, Marshall R. Automotive brake tester assembly. 3,824,847, Cl. 73-132.000.

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Cherry, Kenneth Floyd. Navigational devices. 3,824,693, Cl. 33-76.00r.

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Clark, Kenneth M., to Deutsch Company Electronic Components Division. Method of providing a coupling for electrical connectors or the like. 3,824,681, Cl. 29-593.000.

Clauss, Richard J.; Tomaszewski, Thaddeus W.; and Brown, Henry, to Oxy Metal Finishing Corporation. Electrolyte and method for electrodeposition microporous chromium-nickel composite coatings. 3,825,478, Cl. 204-41.000.

Clawson, Lawrence G., to Thermo Electron Corporation. Fuel system. 3,824,965, Cl. 123-32.00r.

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Cole, Edward N.; and Niepoth, George W., to General Motors Corporation. Internal combustion engine and method of operation for exhaust emission control. 3,824,788, Cl. 60-274.000.

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Coop, Vernon W., to Sugden, Basil H. Method of joining sheet metal, and sheet metal joints. 3,824,757, Cl. 52-758.00d.

Cooper, George W., to Fruchauf Corporation. Sway-arrest system. 3,825,128, Cl. 212-15.000.

Cooper, James E.: See—  
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Darges, Walter; Karpis, John J.; Pettigout, George L.; and Witbeck, Walter G., to Boeing Company, The. Aircraft heating and ventilating system. 3,825,212, Cl. 244-118.00p.

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Data Interface, Inc.: See—  
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David Manufacturing Company: See—  
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Davies, Eric, to Marconi Company Limited, The. Radar provided with pulse repetition frequency discrimination. 3,825,930, Cl. 343-7.700.

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- Debski, Thomas R.; and Gaudio, Joseph G., to United States of America, Air Force. Spiral antenna stripline termination. 3,825,933, Cl. 343-895.000.
- Decalock Limited: See—  
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- Deck, Fritz; and Keim, Norbert. Device for guiding a flat paint brush. 3,824,647, Cl. 15-248.00r.
- Decker, Herbert, to Triumph Werke Nuerzberg A.G. Type head tilt and rotating mechanism. 3,825,102, Cl. 197-55.000.
- DeCoulos, John, to Boston Machine Works Co. Apparatus for applying welting to a shoe component. 3,824,643, Cl. 12-67.00k.
- Deklerk, John, to Westinghouse Electric Corporation. Interdigital mosaic thin film shear transducer. 3,825,779, Cl. 310-9.800.
- DelGiudice, Frank Paul: See—  
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- Delmotte, Roger Edmond, to Societe Anonyme des Usines de Calenelle en abregé Saluc. Process for the manufacturing of rackets for tennis and other similar games. 3,825,646, Cl. 264-257.000.
- Delorme, Raymond Louis, to Societe Honeywell Bull (Societe Anonyme). Drive device for a flexible strip provided with marginal perforations. 3,825,161, Cl. 226-67.000.
- Demi, Roy C., to Robertshaw Controls Company. Manifold arrangement and parts therefor or the like. 3,825,225, Cl. 251-363.000.
- Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Hydrazines, hydrazides and hydrazones of isoxazopyridine carboxylic acids and esters. 3,825,535, Cl. 260-240.00g.
- Depperman, Warren B.: See—  
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- Descoins, Charles E.; and Henrick, Clive A., to Zoecon Corporation. Synthesis of 1-bromo-trans-3, trans-5-heptadiene. 3,825,607, Cl. 260-654.00r.
- Deutsch Company Electronic Components Division: See—  
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- Deutsch Company Electronic Components Division, The: See—  
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- Dewhurst, Ernest James. Cartons. 3,825,171, Cl. 229-52.00a.
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- Diamond, Julius; and Santora, Norman J., to Rorer, William H., Inc. Substituted phenylacetic acid compounds. 3,825,587, Cl. 260-501.160.
- Diamond, Julius, to Rorer, William H., Jr. Thiopseudouronium compounds. 3,825,597, Cl. 260-564.00c.
- Dice, Dennis D., to Electronic Data Controls Corporation. Simulated dice game and control circuit therefor. 3,825,857, Cl. 331-111.000.
- Dickey, W. S., Clay Manufacturing Company: See—  
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- Dierschok, Gunther Rudolph, to Timex Corporation. Horological movement employing inductive stepping motor. 3,824,781, Cl. 58-23.00r.
- Dietz, Wolfgang Friedrich Wilhelm, to RCA Corporation. Raster correction circuit utilizing a parabolically varying load circuit. 3,825,793, Cl. 315-276.00d.
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- Dobranskyj, Lew; and Einhorn, Ruediger, to Coats & Clark, Inc. Combination padlock. 3,824,816, Cl. 70-25.000.
- Dobson, Richard N.; and Webster, Gordon A., to Dominion Foundries & Steel Limited. Process for the fabrication of structural column members. 3,824,661, Cl. 29-155.00c.
- Dockum, Arthur L. Miniature table model shuffleboard and shufflebowling game. 3,825,264, Cl. 273-126.00r.
- Doering, Beauford C., to Par-Way Mfg. C. Liquid spray head. 3,825,188, Cl. 239-498.000.
- Dolfi, James J., Sr. Line vacuum controlled manifold vacuum spoiler. 3,825,031, Cl. 137-480.000.
- Dolfini, Joseph E.: See—  
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- Domain Industries, Inc.: See—  
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- Donahue, Jerome T.; Hess, Walter F.; Knoebel, Gordon W.; and Sydow, Donald E., to Oconomowoc Mfg. Corporation. Method of fabricating a bearing assembly. 3,824,658, Cl. 29-148.40a.
- Doolittle, Howard D., to Machlett Laboratories, Incorporated. The. Image intensifier with improved input screen. 3,825,787, Cl. 313-102.000.
- Dorr, Richard L.; Ihnot, Edward G.; and Varner, Malcolm E., to International Business Machines Corporation. Multiple formatting for record-controlled machines. 3,825,726, Cl. 235-61.60r.
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- Drury, Raymond L., Jr.; Hines, James W.; and Nevin, Charles S., to Staley, A. E., Manufacturing Company. Film forming hydrophilic amide polymer compositions. 3,825,514, Cl. 260-29.6ta.
- Drusch, Gaston Joseph. Converter of digital data into analogue data. 3,825,925, Cl. 340-347.0da.
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- Duchatellier, Bernard Charles, to Rapid S.A. Electrical connection clip. 3,825,884, Cl. 339-244.00r.
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- Duffert, Heinrich, to Kraftwerk Union Aktiengesellschaft. Conductor bar for electrical machines. 3,825,783, Cl. 310-213.000.
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- Dunlop Limited: See—  
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- Dunn, Richard D.: See—  
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- Dunning, Charles E.; and Kellenberger, Stanley R., to Kimberly-Clark Corporation. Apparatus for forming airlaid webs. 3,825,381, Cl. 425-83.000.
- Duperow, Donald E.; and Ferlin, William J., to Lincoln Brass Works, Inc. Gas burner. 3,825,402, Cl. 239-568.000.
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- Durden, John G. III, to Durden Enterprises, Ltd. Disposable electrosurgical cautery. 3,825,004, Cl. 128-275.100.
- Durham, Henry B. Cable bender. 3,824,834, Cl. 72-387.000.
- Dykzeul, Theodore J., to Robertshaw Controls Company. Convertible burner with heating of flame sensing element. 3,825,399, Cl. 431-80.000.
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- Dzioba, Donald L., to General Motors Corporation. Hydraulic motor having a hydraulic lock control drive pin. 3,824,899, Cl. 91-491.000.
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- Eastman Kodak Company: See—  
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- Ebert, Lloyd A. Method of applying a removable cover to an electrical insulator bushing. 3,824,676, Cl. 29-450.000.
- Ebneter, Markus, to Ferd. Ruesch Maschinenfabrik, Firma. Printing mechanism with overdrive for the printing cylinder and inking rollers. 3,824,925, Cl. 101-212.000.
- Eckert, Robert John, Jr.; and Laran, Roy Joseph, to Ciba-Geigy Corporation. Process for the preparation of cyanogen chloride. 3,825,658, Cl. 423-383.000.
- Eckstein, Wolfgang. Filtering device for removing bacteria from the ventilation air. 3,824,770, Cl. 55-279.000.
- Economy, James; and Matkovich, Vlado I., to Carborundum Company. The. Boron carbide fiber production. 3,825,469, Cl. 161-172.000.
- Eda, Takeichi. Rotary type internal combustion engine. 3,824,963, Cl. 123-8.470.
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- Edison, Lamonte R., to General Motors Corporation. Electronic fuel injection system. 3,824,969, Cl. 123-32.0ea.
- EG & G, Inc.: See—  
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- Egan Machinery Company: See—  
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- Egger, Michael E.: See—  
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- Egtvedt, Robert B., to Wolverine World Wide, Inc. Friction-type swivel shoe. 3,824,710, Cl. 36-7.5ae.
- Eiffer, Willi; and Finkel, Josef, to Bayer Aktiengesellschaft. Process for the production of polyamines. 3,825,598, Cl. 260-570.00d.
- Einhell, Hans, Firma: See—  
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- Eipeltauer, Eduard; Lauss, Hans-Dietrich; and Spreckelmeyer, Bernhard, to Bayer Aktiengesellschaft. Production of hydrogen fluoride and metal sulfates. 3,825,655, Cl. 423-485.000.
- Eisele, Judith A.: See—  
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- Eisemann, Kurt, to U.S. Philips Corporation. Shut-off device for a record changer. 3,825,269, Cl. 274-10.00r.
- Eisenhardt, Fred W.; and Ellingson, Hartley N., to Alloway Manufacturing, Inc. Tool bar clamp. 3,825,358, Cl. 403-188.000.
- Elbert, Donald L.; and Waldrup, Glen A., to International Business Machines Corporation. Adhesively eradicable transfer medium. 3,825,470, Cl. 161-227.000.
- Electric Machinery Mfg. Company: See—  
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- England, David C., to Du Pont de Nemours, E. I., and Company. Perfluoromethylpropionylketene. 3,825,599, Cl. 260-585.500.
- Engstrom, Keith A., to Illinois Tool Works Inc. Solid state switch structure. 3,825,908, Cl. 340-174.0pm.
- Engstrom, Keith A.; Bernin, Victor M.; and Bury, George J., to Illinois Tool Works Inc. Solid state switch structure. 3,825,909, Cl. 340-174.0pm.
- Enns, Mark K.: See—  
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- Farfaglia, Silvio T.; and Halpin, Robert G., to Phillips Petroleum Company. Hot air heater for carton sealing machine. 3,825,408, Cl. 432-230,000.
- Farrell, Greg; Tsuji, Akira; Hasimoto, Dojun; Koto, Nobuhisa; and Hirai, Nobutake, to Mitsubishi Denki Kahushiki Kaisha. Film scanner. 3,825,679, Cl. 178-7,200.
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- Felsberg, Robert Irving; and Miedema, Hotze, to Bell Telephone Laboratories, Incorporated. Selective distortion compensation circuit. 3,825,843, Cl. 328-163,000.
- Fenton, Donald M., to Union Oil Company of California. Alkylation of heterocyclic compounds. 3,825,545, Cl. 260-283,000.
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- Flarity, Frank O'Dell; and Eustace, Waymon Rhea, to Christensen Diamond Products Company. Drill bit and stabilizer combination. 3,825,083, Cl. 175-394,000.
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- Forster, Friedrich Martin. Magnetic particle flaw detector using an electron beam scanner to generate pulses representative of the image of the flaw projected on the scanner screen. 3,825,821, Cl. 324-38,000.
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- Georges, Claude, to Societe Industrielle du Metal Usine. Driving device for a tubular axle. 3,824,874, Cl. 74-626,000.
- Georgievich, Mikhail: See—  
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- Georgopoulos, Thomas, to GTE Automatic Electric Laboratories, Incorporated. Electrical protectors and methods of assembling the same. 3,825,867, Cl. 337-32,000.
- Geratsdorfer, Edmund, to U.S. Philips Corporation. X-ray apparatus for displaying in slow motion tissues which move with the rhythm of the heart. 3,825,761, Cl. 250-402,000.
- Gerward, Christer: See—  
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- Geschickter Fund for Medical Research: See—  
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- Geselbracht, Thomas H.; and Vinton, David S., to Caterpillar Tractor Company. Hydraulic fluid circuit for vehicle having articulated sections. 3,825,091, Cl. 180-53,000.
- Getscher, Phillip E.; and Hesser, Henry G., said Hesser assor. of 1/2 to Villiers, Elizabeth A. Trochanteric plate. 3,824,995, Cl. 128-92,000.



- Geurts, Melle F.: See—  
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- Goff, Howard G. Faller bar construction. 3,824,651, Cl. 19-129,000.
- Goffe, William L. Envelope opener. 3,824,688, Cl. 30-294,000.
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- Green, B. Sherman; Green, Charles K.; Glancy, Jack L.; Myrick, Floyd J.; Norlander, Carl William; and Smith, Rodney E., to Udico Electric Company. Bacon cooker. 3,824,916, Cl. 99-334,000.
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- Greenwood, Arthur R., to Universal Oil Products Company. Particle disengaging and fines removal. 3,825,116, Cl. 209-141,000.
- Gregory, Gordon Ian; and Weir, Niall Galbraith, to Glaxo Laboratories Limited. 3 $\alpha$ -Hydroxy- $\Delta^4$ -steroids -Hydroxy- U $\Delta$ -steroids of the pregnane series and esters thereof. 3,825,565, Cl. 260-397,400.
- Gresky, Alan T.; Savolainen, Jouko E.; McDuffee, William T., Jr.; and Wischow, Russell P., to United States of America, Atomic Energy Commission. Process for separation of protactinium, thorium and uranium from neutron-irradiated thorium. 3,825,649, Cl. 42-4,000.
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- Grzybowski, Alicja: See—  
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- Grzybowski, Andrzej; and Grzybowski, Alicja. Hand-held amusement device with tethered ball and plural targets. 3,825,262, Cl. 273-97,000.
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- Gueldenfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Simplified conference facility for PBX. 3,825,692, Cl. 179-18,000.
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- Gustison, Robert A.; Bernhardt, Harvey A.; Barber, Eugene J.; and Benton, Samuel T., to United States of America, Atomic Energy Commission. Decontaminating uranium by reaction with CLF and HF and volatilizing the UF product. 3,825,650, Cl. 423-19,000.
- Gyugyi, Laszlo; Stacey, Eric J.; and Strycula, Eugene C., to Westinghouse Electric Corporation. Electrical power system. 3,825,815, Cl. 321-9,000.
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- Habegger, Richard; and Dombrowski, Frank R., to General Electric Company. Apparatus and method for use in coil tying. 3,824,940, Cl. 112-121,200.
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- Hagar, James L.; and Schwartz, Harold E., Jr., to Mobil Oil Corporation. Automatic data retrieval system for pumping wells. 3,824,851, Cl. 73-151,000.
- Hagemann, Guy; and Clemence, Francois, to Roussel Uclaf. Method for treating bacterial toxins. 3,825,664, Cl. 424-316,000.
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- Hajos, Zoltan George; and Oliveto, Eugene Paul, to Hoffmann-La Roche Inc. Synthesis of tricyclic carbocyclic compounds and intermediates thereof. 3,825,569, Cl. 260-340,900.
- Halaunhrenner, Lazarc Nathan. Spat collector. 3,824,957, Cl. 119-4,000.
- Halbich, Frank; and Needleman, Stuart W. Plastic case for glasses. 3,825,110, Cl. 206-6,000.
- Haley, Paul H.; and Enns, Mark K., to Westinghouse Electric Corporation. Hybrid power system modules. 3,825,732, Cl. 235-151,210.
- Halila, Ely E.; and Sterman, Albert P., to General Electric Company. Porous abrasible turbine shroud. 3,825,364, Cl. 415-116,000.
- Hall, Robert N., to General Electric Company. Gamma ray detector with channel limiting means. 3,825,759, Cl. 250-370,000.
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- Hall, Wayne C.; deceased (Hall, Wayne C., Jr.; and Allen, Scott D.; executor). Pipe cleaning apparatus. 3,824,738, Cl. 51-9,000.
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- Hammann, Ingeborg: See—  
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- Hammett & Edison: See—  
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- Hammett, Robert L.; Todd, Ronald H.; and Templeton, Lawrence W., to Hammett & Edison. Signal-to-noise ratio measurement. 3,825,835, Cl. 325-363,000.
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- Hanada, Hiroshi: See—  
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- Hannon, Charles N. Apparatus for forming treaded closures. 3,824,941, Cl. 113-1,000.
- Hanselmann, Dieter; and Prohaska, Hans, to SWF-Specialfabrik fur Autozubehor Gustav Rau GmbH. Switching device for indicating the loading of a vehicle seat. 3,825,707, Cl. 200-85,000.
- Hansen, Kenneth N., to Allis-Chalmers Corporation. Adjustable link with locking wrench for a tractor three-point hitch. 3,825,283, Cl. 280-461,000.
- Hansgen, Klaus; Ridder, Gerhard; and Schuhmann, Bernd, to Mannesmann-Meer Aktiengesellschaft. Actuator for multiple action remote control of a ships drive system. 3,824,879, Cl. 74-878,000.
- Harada, Hiroshi: See—  
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- Harding, John W.; Keller, James P.; and Buntin, Robert R., to Esso Research and Engineering Company. Melt-blowing die for producing nonwoven mats. 3,825,380, Cl. 425-72,000.
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- Harnisch, Heinz: See—  
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- Harris, Rano J., Sr.; and Harris, Rano J., Jr. Automatic fluid injector. 3,824,859, Cl. 73-422,000.
- Harris, Ronald E.; and Cullen, Darrel F., to North American Rockwell Corporation. Process for laser scribing beam lead semiconductor wafers. 3,824,678, Cl. 29-578,000.
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- Harrison, Maurice Clark; and Vancil, Donald Otis, to Reynolds Metals Company. Method of preparing sodium-aluminum fluoride. 3,825,659, Cl. 423-465,000.
- Hart, Joel C.; and Traugbber, Charles W., Jr., to British-American Tobacco Co., Ltd. and Fishburne International, Inc. Method and apparatus for packing compressible material such as tobacco. 3,824,758, Cl. 53-24,000.
- Hartl, Gerhard, to Semperit Aktiengesellschaft. Level crossing structures. 3,825,184, Cl. 238-8,000.
- Hartley, Danny L.; and Hill, Ronald A., to United States of America, Atomic Energy Commission. Light trap. 3,825,325, Cl. 350-294,000.
- Hartmann, John E.; LaCamera, Alfred F.; and Lake, Peter B., to Youngstown Sheet and Tube Company. Production of ductile high strength galvanized steel. 3,825,448, Cl. 148-12,100.
- Hartnell, William John. Rapid lay building bricks. 3,824,755, Cl. 52-314,000.
- Haseltine, Marcus W., Jr.: See—  
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- Maeda, Tsuneo; and Hattori, Masaichi, 3,825,797.
- Haugwitz, Rudiger D.; and Narayanan, Venkatachala Lakshmi, to Squibb, E. R., & Sons, Inc. 1-Thiazolin-2-yl(or thiazin-2-yl)-2-aminobenzimidazoles and derivatives thereof. 3,825,537, Cl. 260-243,000.
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- Hauni-Werke Koerber & Co. KG.: See—  
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- Hayami, Tadao, to Kabushiki Kaisha Koparu. Focal plane shutter. 3,825,940, Cl. 354-241,000.
- Hayasaka, Yoshiyuki: See—  
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- Hayase, Masao; Hayasaka, Yoshiyuki; and Araki, Yozo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method and apparatus for detecting defective seals on bag-shaped articles. 3,825,750, Cl. 250-223.00r.
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- Hayes-Albion Corporation: See—  
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- Hayward, H. Dutton, trustee of the Hilda Trusts: See—  
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- Hecht, Jay R. Engine cooling fan spacer structure. 3,824,807, Cl. 64-6.000.
- Heckle, Manfred. Method and apparatus for measuring the flow rate of fluids such as gases or liquids. 3,824,855, Cl. 73-194.00b.
- Heenan, Richard H., and Litsinger, George M., to Coca-Cola Company, The. Irrigation riser base system. 3,825,186, Cl. 239-280.000.
- Hegler, Wilhelm. Apparatus for cutting apertures in tubes. 3,824,886, Cl. 83-329.000.
- Hehl, Karl. Hydraulic drive means for the mold closing unit of an injection molding or die casting machine. 3,825,384, Cl. 425-137.000.
- Heilhecker, Joe K.; Wood, Donald B.; and Heintz, Karl O., to Esso Production Research Company. Method of mounting and maintaining an electric conductor in a drill string. 3,825,078, Cl. 175-57.000.
- Heilhecker, Joe K., to Esso Production Company. Method for mounting an electric conductor in a drill string. 3,825,079, Cl. 175-57.000.
- Heilmann, Ferry; and Edel, Peter, to Institut für Textilmaschinen. Warp knitting machine. 3,824,811, Cl. 66-84.000.
- Heilmann, Max, to Agfa-Gevaert Aktiengesellschaft. Process for the regeneration of used photographic silver bleaching baths using chlorous acid or its water-soluble salts. 3,825,425, Cl. 96-60.00r.
- Heilmayr, Peter F.; and Kimbrell, Sol B., to Certain-Teed Products Corporation. Apparatus for extruding, embossing, and curving siding. 3,825,390, Cl. 425-325.000.
- Heinen, Harold J.; Eisele, Judith A.; and Fischer, Dennis D., to United States of America, Interior. Recovery of gold from ores. 3,825,651, Cl. 423-44.000.
- Heinrich, Frank-Armin; and Kiefer, Hans-Friedrich, to Bosch, Robert, Photokino GmbH. Motion picture camera having means for simultaneously selecting the film speed and the corresponding aperture size. 3,825,329, Cl. 352-141.000.
- Heins, Pierre: See—  
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- Heller, Laszlo; Forgo, Laszlo; and Horvath, Mihaly, to Transelektro Magyar Villamosági Kulkereskedelmi Vallalat. System for filling and emptying of heat exchangers. 3,825,060, Cl. 165-11.000.
- Heller, Laszlo; Forgo, Laszlo; and Bodas, Janos, to Transelektro Magyar Villamosági Kulkereskedelmi Vallalat. Breathers for liquid operated heat exchangers. 3,825,062, Cl. 165-11.000.
- Helmshrott, Norbert, to Kienzle Apparate GmbH. Servomechanism, particularly a vehicle speedometer or trip-recorder. 3,825,810, Cl. 318-618.000.
- Hemfort, Heinz, Jr.: See—  
Kohlstette, Werner, and Hemfort, Heinz, Jr., 3,825,177.
- Hemfort, Heinz, Jr., to Westfalia Separator AG. Centrifuge for the clarification of liquids. 3,825,176, Cl. 233-20.00r.
- Hemmer, Valentine J., to Bendix Corporation, The. Coaxial cable contact. 3,825,883, Cl. 339-177.00r.
- Hendel, Robert J.; Jamba, Theodore F., Jr.; Keefe, George E.; and Rosier, Laurence L., to International Business Machines Corporation. Magnetic bubble domain system having improved operating margins. 3,825,885, Cl. 340-174.00f.
- Hendershot, William B., III; Wald, David; and Whitlock, Larry K., to Consolidated Video Systems, Inc. High speed thermal duplication of magnetic tape. 3,825,948, Cl. 360-16.000.
- Henderson, Eulas W., to Phillips Petroleum Company. Carbon black pelleter. 3,825,233, Cl. 259-182.000.
- Henderson, Jack A. Automatic multiple fuel tank control valve. 3,825,027, Cl. 137-265.000.
- Hendrick, Fred W.: See—  
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- Henkel & Cie GmbH: See—  
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- Henrick, Clive A.: See—  
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- Henry, Calvin Scott, III, to Winery Systems, Inc. Ripping connector. 3,825,286, Cl. 285-93.000.
- Hensen, Karl A.; and Lunden, Clarence D., to Boeing Company, The. Dynamic proof loading of metal bond structures using pulsed magnetic fields. 3,825,819, Cl. 324-34.00r.
- Herbert, Gary N.: See—  
Pelofsky, Arnold H.; Felix, Dan T.; and Herbert, Gary N., 3,825,480.
- Herman, David; and Friedman, Sidney J., to Coffee-Mat Corporation. Apparatus for cleaning brew head screen. 3,824,913, Cl. 99-29.800.
- Herren, James L.; and Habdas, Edward P., to Universal Oil Products Company. Contact wheel assembly for strand annealing tubing. 3,825,873, Cl. 339-8.00r.
- Herrick, David Burton, to Dresser Industries, Inc. Assembly for centrifugal blowers and the like. 3,825,366, Cl. 415-131.000.
- Herrmann, Walter, to Bosch, Robert, G.m.b.H. Convertible directional control valve. 3,825,028, Cl. 137-270.000.
- Herron, Roger G.; and Hon, Stanley F., to GTE Automatic Electric Laboratories Incorporated. Matrix scanning circuit for testing a multiplicity of circuit paths. 3,825,824, Cl. 324-51.000.
- Hervet, George L., to Universal Oil Products Company. Method for starting up an alkylation system. 3,825,617, Cl. 260-638.480.
- Herzig, Albert M. Automatic closure for containers. 3,825,157, Cl. 222-212.000.
- Hess, Walter F.: See—  
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- Hesse, Kurt. Adapter for current distributor rail. 3,825,879, Cl. 339-21.00r.
- Hesser, Henry G.: See—  
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- Hetherington, Sidney W. Humidifier. 3,824,985, Cl. 126-113.000.
- Hetzler, Lewis R.: See—  
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- Hewlett-Packard Company: See—  
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- Heylen, Paul R.: See—  
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- Hilfman, Lee, to Universal Oil Products Company. Hydrocarbon hydroprocessing catalyst. 3,825,504, Cl. 252-464.000.
- Hilfman, Lee, to Universal Oil Products Company. Hydrocarbon hydroprocessing catalyst. 3,825,505, Cl. 252-466.00j.
- Hill, Ronald A.: See—  
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- Hillier, Edward Francis Herbert Benjamin; and Holmes, Anthony Roger, to Dowty Seals Limited. Production of shaped articles. 3,825,643, Cl. 264-161.000.
- Hills, Marvin S. Snap hook. 3,824,655, Cl. 24-237.000.
- Hilton, Edward W. Joint for an artificial limb. 3,825,357, Cl. 403-161.000.
- Hilton, John Leslie, to Plessey Handel Und Investments A.G. Hand-operated crimping tool. 3,824,669, Cl. 29-203.00t.
- Hines, James W.: See—  
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- Hinley, John James; and Gibson, John, to British Titan Limited. Apparatus for the treatment of pigments. 3,825,388, Cl. 425-222.000.
- Hirai, Kakichi; Hayashi, Hideo; and Hiratsuka, Yoichi, to Nippon Petrochemicals Co., Ltd. Water-soluble sizing agent. 3,825,624, Cl. 260-879.000.
- Hirai, Nobutake: See—  
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- Hirakawa, Hayao: See—  
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- Hiratsuka, Yoichi: See—  
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- Hirrmann, Georg, to Koening, Dr. Ing., AG. Method for closing bores at workpieces and improved plug constructions for the performance of the aforesaid method. 3,825,146, Cl. 220-24.500.
- Hirsch, A. Adler. Sampler-culture apparatus for the detection of coliform bacteria in potable waters. 3,825,476, Cl. 195-127.000.
- Hisada, Eiichi: See—  
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- Hitachi, Ltd.: See—  
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- Kawagoe, Hiroto, 3,825,888.
- Kikuchi, Akira; Agatsuma, Takashi; and Anzai, Akio, 3,825,454.
- Kokura, Satoshi; Taki, Genji; and Watanabe, Kiyoshi, 3,825,716.
- Hoagland, John M.; Tokos, George M.; and Tonn, Edward G. Apparatus for producing multilaminated film. 3,825,383, Cl. 425-131.000.
- Hoagland, John M.; Tokos, George M.; and Tonn, Edward G., to Crown Zellerbach Corporation. Process for producing multilaminated film. 3,825,644, Cl. 264-171.000.

- Hoch, Winton C. Optical system for a stereoscopic motion picture camera. 3,825,328, Cl. 352-60.000.
- Hockham, George Alfred, to International Standard Electric Corporation. Waveguide antenna. 3,825,932, Cl. 343-776.000.
- Hoehn, Hans: See—  
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- Hofer, Kurt; and Tscheulin, Guenther, to Sandoz Ltd. Benzene phosphonates. 3,825,629, Cl. 260-932.000.
- Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert; and Eue, Ludwig, to Bayer Aktiengesellschaft. 2-Chloroethane-(thiono)-poshonic acid amido esters. 3,825,635, Cl. 260-959.000.
- Hoff, Melvern C.: See—  
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- Hoffmann, Hellmut; Behrenz, Wolfgang; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-(1-Substitutes-3-methyl-4-chloropyrazolo) thionophosphoric (phosphonic) acid esters. 3,825,557, Cl. 260-310.00r.
- Hoffmann-La Roche Inc.: See—  
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- Hofschild, Clewell: See—  
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- Hollins, Jesse R. Vehicle internal combustion engine lubricating oil cooling and filtering circulation system. 3,824,980, Cl. 123-196.00b.
- Holmes, Anthony Roger: See—  
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- Honkaranta, Reijo; Jarvenpaa, Kauko; and Shepherd, Kevin, to Suunto Oy. Compass device for sailing. 3,824,947, Cl. 116-114.00r.
- Honma, Takamichi; Igarashi, Shigeru; and Harada, Hiroshi, to Nippon Electric Company, Limited. F-T rada receiver with level discrimination. 3,825,691, Cl. 179-15.00a.
- Hooker Chemical Corporation: See—  
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- Hoover Ball and Bearing Company: See—  
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- Hopf, Wilhelm, to Daimler-Benz Aktiengesellschaft. Lubricating system for axle gear. 3,825,099, Cl. 184-6.120.
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- Horner, Tommy Dean; and Wing, Charles E., Jr. Animal heat or estrus detector. 3,824,989, Cl. 128-2.00h.
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- Houlihan, William J., to Sandoz-Wander, Inc. Bis(trifluoromethyl)benzamides. 3,825,594, Cl. 260-558.00r.
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- Hsiao, Mu-Yue: See—  
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- Hubbard, Leo J. Feed mechanism. 3,825,162, Cl. 226-74.000.
- Hubby, Laurence M., to Texaco Inc. Offshore marine anchoring structure. 3,824,794, Cl. 61-46.000.
- Huck Finn, Inc.: See—  
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- Hudson, Colin M., to United States of America, Army. Mini-caliber firearm for launching hypervelocity projectiles. 3,824,727, Cl. 42-1.00j.
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- Huggins, James A., to Baxter Laboratories, Inc. Disposable humidifier. 3,825,000, Cl. 128-194.000.
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- Hughes, Charles N.: See—  
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- Hughes, David C.; and Sherwood, Henry A., to Lorraine Industries, Inc. Amplifier system. 3,825,847, Cl. 330-13.000.
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- Hunt, Howard D., to Crown Crafts, Inc. Flocking method utilizing in line mixing of adhesive. 3,825,435, Cl. 117-33.000.
- Hunter, Richard F.; and Truitt, Robert B., to General Electric Company. Hermetic sealing system for plastic tank and cover. 3,825,148, Cl. 220-46.00r.
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- Hutchins, Alma A. Piercing of air suction holes in abrasive sheet material. 3,824,689, Cl. 30-368.000.
- Hutchins, Alma A. Suction system for abrading tool. 3,824,745, Cl. 51-170.00t.
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Inoue, Eiichi; Tsujiuchi, Junpei; Kokado, Hiroshi; Yamaguchi, Takashi; Shimizu, Isamu; Sakuma, Hiraku; Hanada, Hiroshi; and Tokunaga, Yukio, to Canon Kabushiki Kaisha. Application of a novel photosensitive member to hologram. 3,825,317, Cl. 96-27,000.

Inoue, Eiichi; Shimizu, Isamu; Kobayashi, Hajime; and Endo, Ichiro, to Canon Camera Kabushiki Kaisha. Recording member of photocolor developing and eliminating material and the recording method. 3,825,427, Cl. 96-90,000.

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Ivanov, Vladimir Prokopievich: *See—*  
Starostin, Jury Stepanovich; Plokhov, Viktor Ivanovich; Erokhov, Veniamin Kuzmich; Ivanov, Vladimir Prokopievich; Krotkov, Vladimir Nikolaevich; Anisimov, Albert Viktorovich; Ajupov, Rustem Nurievich; and Golovinov, Mikhail Fedorovich, 3,824,832.

Ives, Norton C. Apparatus for drying grain. 3,824,705, Cl. 34-170,000.

Ivey, Howard: *See—*  
Pugh, K. O.; Ivey, Howard; and Cobb, Austell C. A., 3,824,927.

Iwasaki, Hiroshi: *See—*  
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,825,561.

Iyoda, Yoshizi: *See—*  
Miura, Takashi; Sugiura, Takashi; and Iyoda, Yoshizi, 3,825,058.

Izawa, Shinichi; Harada, Kazuhiko; Mizushiro, Ken; Ishihara, Miyoko; and Nakanishi, Atsuo, to Asahi-Dow Limited. Manganese-amine chelate catalyzed aromatic polyether formation. 3,825,521, Cl. 260-47,000.

Jablonsky, Erich, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Steering mechanism. 3,824,905, Cl. 92-136,000.

Jackson Communication Corporation: *See—*  
Jackson, Richard L., 3,824,835.

Jackson, George Robert. Method for anchoring a drilling rig in permafrost. 3,825,077, Cl. 175-57,000.

Jackson, Richard L., to Jackson Communication Corporation. Cable bender. 3,824,835, Cl. 72-389,000.

Jackson, Wilbur F.: *See—*  
Jess, Thurman S.; and Jackson, Wilbur F., 3,825,868.

Jacobs, David R.: *See—*  
Spanel, Abram N.; and Jacobs, David R., 3,824,939.

Jacobs, F. L., Co.: *See—*  
Blake, Jack W., 3,825,314.

Jacobs, Melvin A., to GTE Automatic Electric Laboratories, Incorporated. Arrangement and method for detecting faults in a switching network. 3,825,701, Cl. 179-175,230.

Jacobs, Norman H.; and Susor, William C., to Reliance Electric Company. Monitor for moving vehicles. 3,825,734, Cl. 235-151,330.

Jacquot, Christian A., to IBM Corporation. Switchable current generator. 3,825,776, Cl. 307-270,000.

Jaeger, Horst, to Ciba-Geigy AG. Perfluoroalkylalkylmonocarboxylic acid esters. 3,825,575, Cl. 260-408,000.

Jaeger, Wilbert J. Fluid dispensing system. 3,825,154, Cl. 222-136,000.

Jagers, H. Dane, to Lectrasearch Corporation. Apparatus for transmitting the output of a musical instrument for amplification. 3,825,666, Cl. 84-1,010.

Jai, Marlyse Janean Baldwin. Combination drilling and brushing tool in a pipe cleaning machine. 3,824,646, Cl. 15-104,100.

Jamba, Theodore F., Jr.: *See—*  
Hendel, Robert J.; Jamba, Theodore F., Jr.; Keefe, George E.; and Rosier, Laurence L., 3,825,885.

Janelid, Ingvar: *See—*  
Janelid, Ingvar; and Bergdahl, Sven Gunnar (said Bergdahl assors to said), 3,824,911.

Janelid, Ingvar; and Bergdahl, Sven Gunnar, said Bergdahl assors to said Janelid, Ingvar. Ventilation of a tunnel, mine adit or the like. 3,824,911, Cl. 98-50,000.

Janson, David Wenzel Alexander, to ESAB-Hebe Aktiebolag. An apparatus for grit blasting the edge of a plate like member. 3,824,737, Cl. 51-8,000.

Japan Gasoline Co., Ltd.: *See—*  
Ohtsu, Takawo; Nakamura, Yukinobu; and Sekido, Fujihiko, 3,824,838.

Jaquiss, Donald B. G., to General Electric Company. Process for recovering 2,2,4-trimethyl-4-(4-hydroxyphenyl) chroman. 3,825,562, Cl. 260-235,200.

Jarvenpaa, Kauko: *See—*  
Honkaranta, Reijo; Jarvenpaa, Kauko; and Shephard, Kevin, 3,824,947.

Jasper Electronics Manufacturing Company: *See—*  
Welsh, Alan B., 3,825,775.

Jaw-Bar Plastics Corporation: *See—*  
Lind, Willard E., 3,824,933.

Jenkins, Thomas E., to General Electric Company. Dishwasher assembly. 3,825,373, Cl. 417-360,000.

Jenniges, Ernst, to Chemiebau Dr. A. Zieren G.m.b.H., & Co., K.G. Process for the cracking of sulfuric acid. 3,825,657, Cl. 423-540,000.

Jensen, Frederick K.; and Jewell, Gordon W., to Elektro-Ion, Inc. Powder spray booth. 3,824,912, Cl. 98-115,500.

Jensen, Winton D.: *See—*  
Whitehill, Rex G.; Berchenbriter, Gerald D.; and Jensen, Winton D., 3,825,227.

Jerry, Albert; and Baum, Jasper, to Sonotone Corporation, mesne. Articulated hearing aid temple and behind-the-ear hearing aid element. 3,825,700, Cl. 179-107,000.

Jess, Thurman S.; and Jackson, Wilbur F., to Robertshaw Controls Company. Thermally responsive switch. 3,825,868, Cl. 337-112,000.

Jeuken, Josef; Vieregge, Gustav; and Meyer, Konrad, to Rheinstahl AG. Ring rolling mill. 3,824,820, Cl. 72-10,000.

Jewell, Gordon W.: *See—*  
Jensen, Frederick K.; and Jewell, Gordon W., 3,824,912.

Joco, Incorporated: *See—*  
Foxhall, Ollie C., 3,824,849.

Johansson, Sture Ragnar; and Carlsson, Hilding Ake Gerry, to Monark-Crescent AB. Control and security device for burners. 3,825,397, Cl. 431-79,000.

Johnson & Johnson: *See—*  
Bennet, Stanford M.; Smith, William; and Thomas, Joseph J., 3,825,001.

Johnson, Allen M., Jr., to International Business Machines Corporation. Self-checking parity checker for two or more independent parity coded data paths. 3,825,894, Cl. 340-146,100.

Johnson, Claiborne H., Jr.; and Foote, Robert S., to Texas Instruments, Incorporated. Method and apparatus for aerial radioactivity surveying for surface mineral deposits which compensates for the radioactive decay products in the atmosphere of the earth. 3,825,751, Cl. 250-253,000.

Johnson, Earl E.: *See—*  
Zettler, William D.; and Johnson, Earl E., 3,824,890.

Johnson, Lewis T.; and Bull, Willard E., to Phillips Petroleum Company. Nest and stack container. 3,825,114, Cl. 206-507,000.

Johnson, Peter D., to United States of America, Atomic Energy Commission. Fueled moderator composition. 3,825,499, Cl. 252-301,100.

Johnson, Robert L. Fishing rod holder. 3,824,730, Cl. 43-17,000.

Johnson, S. C., & Son, Inc.: *See—*  
Lajiness, Thomas A., 3,825,555.

Johnson, Victor P.: *See—*  
Eynas, John L.; De Cortis, C. John; and Johnson, Victor P., 3,824,865.

Johnston, Byron E., to Mobil Oil Corporation. Oxidation of isoparaffins to tertiary alcohols. 3,825,605, Cl. 260-632,000.

Johnston, Daniel H.; Mannheim, Rudy; Rinkleb, Helfried O.; Walker, Ivan D.; and Kellner, John R., to International Business Machines Corporation. Cartridge and storage apparatus. 3,825,208, Cl. 242-197,000.

Johnston, L. Lyle, to Zimmer Manufacturing Co. Prosthetic joint for total knee replacement. 3,824,630, Cl. 3-1,000.

Johnston, Philip Douglas; Lawton, James; and Mackison, Ian, to Electricity Council, The. Method and apparatus for the production of liquid titanium from the reaction of vaporized titanium tetrachloride and a reducing metal. 3,825,415, Cl. 75-84,500.

Jonsson, Sven Jonas Roland, to Elektriska Svetsningsaktiebolaget. Contact nozzle for a continuous arc welding electrode. 3,825,719, Cl. 219-130,000.

Julian, Randall K., to Sunbeam Plastics Corporation. Childproof medicine vial. 3,825,143, Cl. 215-9,000.

Junghans, Gebrüder, G.m.b.H., Firma: *See—*

Kaiser, Paul; Kaiser, Hans; and Muller, Josef, 3,824,889.

Justice, James W. H., to Westinghouse Electric Corporation. Educational TV branching system. 3,825,674, Cl. 178-5,600.

Kabushiki Kaisha Hattori Tokiten: *See—*  
Miyazato, Takanori; Nakayama, Keiichi; and Fujii, Masao, 3,825,890.

Kabushiki Kaisha Koparu: *See—*  
Hayami, Tadao, 3,825,940.

Murata, Kingo; and Wakabayashi, Kaoru, 3,825,702.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*  
Kobayashi, Hiromasa; Oguchi, Yuzo; and Nakata, Kazuhiko, 3,825,950.

Kabushiki Kaisha Sayama Seikakusho: *See—*  
Takahashi, Toshinao, 3,825,120.

Kabushiki Kaisha Sega Enterprises: *See—*  
Ochi, Shikanosuke, 3,825,256.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*  
Maeda, Tsuneko; and Hattori, Masaichi, 3,825,797.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*  
Mizutani, Yoshiyuki; and Tozawa, Katutoshi, 3,825,416.

Kaczowski, Bernard Ceasar: *See—*  
Baumann, Frederick William; Kaczowski, Bernard Ceasar; Rosenberry, George Mowry, Jr.; and Smith, William R., 3,825,057.

Kafak Aktiebolag: *See—*  
Bergman, Kurt Tage Lennart, 3,825,708.

Kageyama, Hiroo: *See—*  
Tazuke, Hideo; Kitahara, Toshio; and Kageyama, Hiroo, 3,825,559.

Kaiser Aluminum & Chemical Corporation: *See—*  
Gibbs, Francis E., 3,825,712.

Kaiser, Hans: *See—*  
Kaiser, Paul; Kaiser, Hans; and Muller, Josef, 3,824,889.

Kaiser, Nils, to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. Apparatus for determining a substance by an optical radiation. 3,825,347, Cl. 356-107,000.

Kaiser, Paul; Kaiser, Hans; and Muller, Josef, to Junghans, Gebrüder, G.m.b.H., Firma. Time fuze adjustment. 3,824,889, Cl. 89-6,000.

Kalsi, Manmohan S., to ACF Industries, Incorporated. Lined valves. 3,825,030, Cl. 137-375,000.

Kaltenboeck, Karl, to Semperit Aktiengesellschaft. Floor structure. 3,824,960, Cl. 119-28,000.

Kamijo, Hirotaka: *See—*  
Kubota, Koji; Yoshihara, Yasuhiko; Hirakawa, Hayao; Kamijo, Hirotaka; Nosaki, Shigeki; Yoshinaga, Fumihiko; Okumura, Shinji; and Okada, Hiroshi, 3,825,472.

Kamosawa, Katsuya: *See—*  
Aoyama, Taizo; and Kamosawa, Katsuya, 3,825,237.

Kanai, Fumio: *See—*  
Amemiya, Kiyoshi; Kondou, Masakazu; Yamazaki, Kazuhiko; and Kanai, Fumio, 3,825,858.

Kandler, Joachim: *See—*  
Schneider-Arnoldi, Alfred; Gabler, Helmut; and Kandler, Joachim, 3,825,433.

Kaneko, Akira: *See—*  
Seki, Takeo; Kawamura, Shigenori; Maeda, Itsuji; and Kaneko, Akira, 3,825,351.

Kanisawa, Hideo: *See—*  
Furuya, Tetsuo; Ibe, Yoshio; Kanisawa, Hideo; and Sugino, Osakazu, 3,825,429.

Karlsson, Sven: *See—*  
Ramstrom, Sven, 3,825,864.

Karmas, George, to Ortho Pharmaceutical Corporation. Alkyl esters of 2-(lower alkyl)-3-(lower alkyl)-4-aryl-3- or 4-cyclohexenecarbinols 6,260/410,500. 3,825,576, Cl. 1.

Karpis, John J.: *See—*  
Darges, Walter; Karpis, John J.; Petitgout, George L.; and Witbeck, Walter G., 3,825,212.

Kasano, Hiroyuki, to Hitachi, Ltd. Optical semiconductor device and method of manufacturing the same. 3,825,806, Cl. 317-234,000.

Kasprzak, Vincent D., to Arvin Industries, Inc. Television scan converter bandwidth reduction device. 3,825,677, Cl. 178-6,800.

Kasselmann, John T.; Hickner, George B.; Howard, Donald W.; and Needham, James M., to Bendix Corporation. The Adaptive braking system. 3,825,305, Cl. 303-21,000.

Kasselmann, John T.; and Goran, Michael B., to Bendix Corporation. The Proportioning valve control means. 3,825,308, Cl. 303-21,000.

Katchka, Jay R.; Hendrick, Fred W.; and Egger, Michael E., to Robertshaw Controls Company. Plural rate burner with flame enhancement. 3,825,398, Cl. 431-80,000.

Kato, Hiroyuki; Tsuzi, Isao; Azuma, Kishiro; and Tatemichi, Hidemaro, to Toagosei Chemical Industry Co., Ltd. Heat-resistant adhesive compositions containing radical polymerizable alpha-cyanoacrylates. 3,825,580, Cl. 260-465,400.

Katsumata, Mitsuo; Miyamoto, Mitsunori; and Shirai, Kiyoshi, to Kokusan Denki Co., Ltd. Capacitor charge-discharge type ignition system for use in a two-cycle internal combustion engine. 3,824,976, Cl. 123-148,000.

Katz, Carlos; Garcia, Felipe; and Allam, Elsayed, to United States of America, Interior. Connector for use in capacitive graded splices. 3,825,670, Cl. 174-73,000.

Kauffman, John H., to National Engineering Company. Apparatus for treating granular material. 3,825,190, Cl. 241-40,000.

Kawagoe, Hiroto, to Hitachi, Ltd. Decoder circuit. 3,825,888, Cl. 340-347,000.



Kawahara, Takeji; and Terumoto, Masahiro, to Itami Keiran Kako Kabushiki Kaisha. Sterilization and/or cooking apparatus. 3,824,917, Cl. 99-404.000.

Kawamura, Shigenori: See—  
Seki, Takeo; Kawamura, Shigenori; Maeda, Itsuji; and Kaneko, Akira, 3,825,351.

Kawasaki Jukogyo Kabushiki Kaisha: See—  
Tajika, Kazuya; and Shimizu, Hidenori, 3,824,979.

Kazan, Benjamin, to International Business Machines Corporation. Field-effect storage tube. 3,825,791, Cl. 313-398.000.

Kearney & Trecker Corporation: See—  
Osburn, John G.; and Schachte, John J., 3,825,245.

Kehlys, Kestutis A., to Ethyl Corporation. Stabilized halogenated hydrocarbons. 3,825,608, Cl. 260-652.500.

Keefe, George E.: See—  
Hendel, Robert J.; Jamba, Theodore F., Jr.; Keefe, George E.; and Rosier, Laurence L., 3,825,885.

Keil, Alfred A. H.; and Vetter, Michael F., to Massachusetts Institute of Technology. Reinforced structural medium. 3,824,944, Cl. 114-69.000.

Keim, Norbert: See—  
Deck, Fritz; and Keim, Norbert, 3,824,647.

Kelemen, Jozsef W.: See—  
Price, Ronald; and Kelemen, Jozsef W., 3,825,934.

Kelleher, John M.: See—  
McArthur, Ralph F.; Geurts, Melle F.; and Kelleher, John M., 3,825,285.

Kellenbenz, Rolf: See—  
Bergmann, Ewald; Schneider, Franz; Brandstetter, Rudi; and Kellenbenz, Rolf, 3,824,821.

Kellenberger, Stanley R.: See—  
Dunning, Charles E.; and Kellenberger, Stanley R., 3,825,381.

Keller, James P.: See—  
Harding, John W.; Keller, James P.; and Buntin, Robert R., 3,825,380.

Lohkamp, Dwight T.; and Keller, James P., 3,825,379.

Kellner, John R.: See—  
Johnston, Daniel H.; Mannheim, Rudy; Rinklieb, Helfried O.; Walker, Ivan D.; and Kellner, John R., 3,825,208.

Kellwood Company: See—  
Matthews, Robert M.; and Petty, Albert W., 3,824,812.

Kelly, Ian William: See—  
Macard, Douglas; and Kelly, Ian William, 3,824,946.

Kelly, Michael J.; Kobylar, Alex W.; and Rekiere, Bernard J., to GTE Automatic Electronic Laboratories Incorporated. Lossless network junction for PCM digital switching systems. 3,825,690, Cl. 179-15.000.

Kelman, Naomi S.: See—  
Scopa, Paul P.; and Kelman, Naomi S., 3,824,706.

Kempf, Donald F., Duor bumper. 3,824,649, Cl. 16-86.000.

Kendler, Hayden Brian; Ripley, Lionel George; and Woolons, David John, to National Research Development Corporation. Light pen. 3,825,746, Cl. 250-209.000.

Kennard, Jack Frederick: See—  
Warman, Bloomfield James; Elliott, Kenneth Frederick; and Kennard, Jack Frederick, 3,825,800.

Kennard, Thomas J., and Moseman, Lawrence E. Number guessing game device. 3,825,255, Cl. 273-1.000.

Kennedy, John B., Jr.: See—  
Rarey, Kenneth W.; and Kennedy, John B., Jr., 3,824,924.

Kennedy, Melvin R.: See—  
Pitkanen, Alan R.; Kennedy, Melvin R.; Nagel, Dietmar, Gross, William J.; and Bosley, Denis V., 3,825,265.

Kennedy, Ralph C., to Colt Industries Operating Corp. (Firearms Division). Cross bolt safety for single action revolvers. 3,824,728, Cl. 42-66.000.

Kent-Moore Corporation: See—  
Michelsen, Jacob, 3,824,672.

Ker, Robert Alan Cameron, to Castrol Limited. Hydraulic fluids. 3,825,497, Cl. 252-79.000.

Kern, Rene; Poulain, Claude; and Toek, Francois, to Societe Anonyme dite, Aquitaine Total Organico. Process for the preparation of omega laurinolactame. 3,825,532, Cl. 260-239.300.

Kerr-McGee Corporation: See—  
Chappelow, Cecil C., Jr.; and Engel, James F., 3,825,585.

Kessler, Gerald. Nailing clip for plastic siding. 3,824,756, Cl. 52-548.000.

Keyser, Lewis R., to Price Brothers Company. Jacking pipe. 3,825,037, Cl. 138-175.000.

Keystone Consolidated Industries, Inc.: See—  
Orr, John L., 3,824,817.

Kiatipoff, Edmond, to Sauge, Andre and Fremand, Michel. Method of electronically controlling braking of a vehicle and an electronically controlled braking device for a vehicle. 3,825,304, Cl. 303-21.000.

Kiefer, Hans-Friedrich: See—  
Heinrich, Frank-Armin; and Kiefer, Hans-Friedrich, 3,825,329.

Kienzle Apparate GmbH: See—  
Helmschrott, Norbert, 3,825,810.

Kies, Jared R., to Owens-Corning Fiberglass Corporation. Method for producing a film faced product. 3,825,642, Cl. 264-90.000.

Kihlstedt, Per Gudmar, to AB Cold-Bound Pellets. Method for producing cold bound agglomerated from particulate mineral concentrates. 3,825,638, Cl. 264-63.000.

Kikuchi, Akira; Agatsuma, Takashi; and Anzai, Akio, to Hitachi, Ltd. Method of forming interconnections. 3,825,454, Cl. 156-8.000.

Kilkeev, Renat Shakhimardanovich: See—  
Nekrasov, Lev Borisovich; Misnik, Jury Mikhailovich; Tsukernik, Zolya Samuilovich; Kriger, Semen Davidovich; and Kilkeev, Renat Shakhimardanovich, 3,824,718.

Kimberly-Clark Corporation: See—  
Dunning, Charles E.; and Kellenberger, Stanley R., 3,825,381.

Green, Angelica G., 3,824,625.

Kimbrell, Sol B.: See—  
Heilmayr, Peter F.; and Kimbrell, Sol B., 3,825,390.

Kimura, Akio: See—  
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,825,633.

Kinast, Norbert, to Daimler-Benz Aktiengesellschaft. Brake-lining wear-indicator. 3,825,891, Cl. 340-52.000.

King Instrument Corporation: See—  
Gorman, Robert H., 3,825,461.

King, William R., to Sandoz-Wander, Inc. Tracheotomy mask. 3,824,999, Cl. 128-185.000.

Kingsley, William; and Allis, Robert F., to Xerox Corporation. Wrap adjust device for controlling engagement between a web and roller. 3,825,724, Cl. 219-469.000.

Kirchweiger, Karl: See—  
Skatsche, Othmar; Thien, Gerhard; and Kirchweiger, Karl, 3,824,971.

Kirsch, Jerry. Method of making block manifold for fluids control systems. 3,825,647, Cl. 264-277.000.

Kishino, Shigeo; Kudamatsu, Akio; Takase, Iwao; Shiokawa, Kozo; and Yamaguchi, Shini-Ichi, to Bayer Aktiengesellschaft. O-ethyl S-propyl-dithiophosphoric acid phenyl or naphthyl esters. 3,825,636, Cl. 260-964.000.

Kitahara, Toshio: See—  
Tazuke, Hideo; Kitahara, Toshio; and Kageyama, Hiroo, 3,825,559.

Kitson, George Samuel; and Sutton, Julian MacDonald Davison, to State for Defence, The Secretary of. Thrust deflectors for ducted fan gas turbine engines. 3,824,784, Cl. 60-226.000.

Kiuchi, Yoshinori: See—  
Nakamura, Kihei; Yamazaki, Harumichi; Masuda, Hirotosugu; Sato, Takeshi; and Kiuchi, Yoshinori, 3,825,292.

Kivistik, Olev, to General Electric Company. Interlocked push-pull driver circuit. 3,825,773, Cl. 307-255.000.

Kjos, Magne Jarle; and Molleman, Johan Henri, to Burroughs Corporation. Pneumatically controlled bistable reel hub mechanism. 3,825,203, Cl. 242-68.300.

Klein, Gerald I.; Moore, Robert A.; and Payer, Stephen F., to Westinghouse Electric Corporation. Minimum insertion loss yig pulse compression filter transducer. 3,825,859, Cl. 333-30.000.

Kleinke, Bernard L.: See—  
Wright, Thomas C.; and Kleinke, Bernard L., 3,824,803.

Klemm, Ernst. Ski pole. 3,825,275, Cl. 280-11.37n.

Klemm, Kurt; and Langenscheid, Erhard, to BYK Gulden Lomberg Chemische Fabrik GmbH. Production of 2-butyl-N,N'-diphenyl-malononono-hydrazide. 3,825,589, Cl. 260-518.00n.

Kliment, Karel: See—  
Wichterle, Otto; and Kliment, Karel, 3,825,458.

Kmecak, Ronald A.: See—  
Patrick, Ralph R.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,825,503.

Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Alkyl transfer of alkyl aromatics with chromium or vanadium and manganese and tin on mordenite. 3,825,613, Cl. 260-672.000.

Knapp, Charles F.; and Eades, George S., to University of Kentucky Research Foundation, The. Dynamic childbirth simulator for teaching maternity patient care. 3,824,709, Cl. 36-2.000.

Knapsack Aktiengesellschaft: See—  
Mietens, Gerhard; Kohler, Gerd; Haas, Hans; and Roszinski, Hilmar, 3,825,628.

Praisler, Eberhard; Grapentin, Kurt; Harmsen, Ernst; and Harmsch, Heinz, 3,825,652.

Schneider-Arnold, Alfred; Gabler, Helmut; and Kandler, Joachim, 3,825,433.

Knight, Lloyd K., to Galion, Jeffrey, Inc. Feeding mechanism for reduction apparatus. 3,825,192, Cl. 241-186.000.

Knoebel, Gordon W.: See—  
Donahue, Jerome T.; Hess, Walter F.; Knoebel, Gordon W.; and Sydow, Donald E., 3,824,658.

Kobayashi, Hajime: See—  
Inoue, Eiichi; Shimizu, Isamu; Kobayashi, Hajime; and Endo, Ichiro, 3,825,427.

Kobayashi, Hiromasa; Oguchi, Yuzo; and Nakata, Kazuhiko, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Magnetic card reader-recorder. 3,825,950, Cl. 360-109.000.

Kobayashi, Kazuhiko: See—  
Saito, Nagao; Kobayashi, Kazuhiko; and Takagi, Shigeru, 3,825,715.

Kobayashi, Kengo; Manabe, Mitsuo; and Isobe, Shinichi, to Fujitsu Limited. Numerical control system. 3,825,731, Cl. 235-151.110.

Kobayashi, Nobuyuki: See—  
Someya, Teruo; Kobayashi, Nobuyuki; and Goto, Toshinori, 3,825,839.

Kobayashi, Yasushi, to Nissan Motor Company. Method and apparatus for the fabrication of condenser yarns. 3,824,774, Cl. 57-24.000.

Kobe, Inc.: See—

McArthur, Ralph F.; Geurts, Melle F.; and Kelleher, John M., 3,825,285.

Kobylar, Alex W.: See—  
Kelly, Michael J.; Kobylar, Alex W.; and Rekiere, Bernard J., 3,825,690.

Kobylinski, Tadeusz P.; and Taylor, Brian W., to Gulf Research & Development Company. Process for reducing the content of nitrogen oxides in the exhaust gases from internal combustion engines. 3,825,654, Cl. 423-213.700.

Koch, Carl, to Sinar AG Schaffhausen. Photographic focusing screen camera. 3,825,938, Cl. 354-160.000.

Kodama, Yutaka: See—  
Ishimaru, Toshiyasu; and Kodama, Yutaka, 3,825,531.

Koehler, Waldemar: See—  
Schecker, Hans-Georg; Koehler, Waldemar; and Sander, Bruno, 3,825,568.

Koehring Company: See—  
Geis, Warren P., 3,825,139.

Koenig, Dr. Ing., AG: See—  
Hirrmann, Georg, 3,825,146.

Koerner, Ralph J., to Canoga Controls Corporation. Vehicle detection system. 3,825,889, Cl. 340-38.001.

Koga, Koichi: See—  
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,825,561.

Kohler, Gerd: See—  
Mietens, Gerhard; Kohler, Gerd; Haas, Hans; and Roszinski, Hilmar, 3,825,628.

Kohlstedt, Werner; and Hemfort, Heinz, Jr., to Westfalia Separator AG. Self-dumping drum centrifuge for the clarification of liquids, equipped with a paring disk for removing the clarified liquid under pressure. 3,825,177, Cl. 233-20.000.

Koiso, Kazuhiro: See—  
Ojima, Tadato; Koiso, Kazuhiro; and Nakano, Toshihiko, 3,825,877.

Koizumi, Yasumi, to Alps Electric Co., Ltd. Helical resonator. 3,825,862, Cl. 333-83.000.

Kokado, Hiroshi: See—  
Inoue, Eiichi; Tsujiuchi, Junpei; Kokado, Hiroshi; Yamaguchi, Takashi; Shimizu, Isamu; Sakuma, Hiraku; Hanada, Hiroshi; and Tokunaga, Yukio, 3,825,317.

Kokura, Satoshi; Taki, Genzi; and Watanabe, Kiyoshi, to Hitachi, Ltd. Electroslag welding method. 3,825,716, Cl. 219-73.000.

Kokusen Denki Co., Ltd.: See—  
Katsumata, Mitsuo; Miyamoto, Mitsunori; and Shirai, Kiyoshi, 3,824,976.

Kolb, Alfred Reeves, to Brown & Root, Inc. Pile mounted drilling rig and method. 3,825,076, Cl. 175-5.000.

Koleske, Joseph Victor; Roberts, Rene Marie-Joseph; and DelGiudice, Frank Paul, to Union Carbide Corporation. ABA block polymers of polyesters and polyethers. 3,825,620, Cl. 260-873.000.

Kolibas, James A., to Addressograph-Multigraph Corporation. Optical system with selectable feeds. 3,825,338, Cl. 355-50.000.

Komorek, Anthony J.; and Damour, Lawrence R., said Komorek assor. to said Damour, Lawrence R. Expanding mandrel or chuck. 3,825,167, Cl. 229-2.000.

Kondo, Mitsuru: See—  
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,825,561.

Kondo, Ryozo. Air supply device. 3,825,374, Cl. 417-413.000.

Kondou, Masakazu: See—  
Amemiya, Kiyoshi; Kondou, Masakazu; Yamazaki, Kazuhiko; and Kanai, Fumio, 3,825,858.

Konishiroku Photo Industry Co., Ltd.: See—  
Furuya, Tetsuo; Ihe, Yoshio; Kanisawa, Hideo; and Sugino, Osakazu, 3,825,429.

Konorova, Elena Laexandrovna: See—  
Kozlov, Stanislav Fedorovich; and Konorova, Elena Laexandrovna, 3,824,680.

Kontz, Robert F., to Owens-Illinois, Inc. Blow mold latching mechanism including a safety feature. 3,825,396, Cl. 425-450.000.

Korin Limited: See—  
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Korn, Darryl K.: See—  
Peterman, Neil R.; Korn, Darryl K.; and Millard, Stephen, 3,825,844.

Korner, Renzo L.; White, Ralph J.; Shaffer, Robert A.; and Turner, George R., to Westinghouse Electric Corporation. High temperature, high pressure electrical penetration assembly. 3,825,669, Cl. 174-11.000.

Kortman, Joe M., 50% to Hayward, H. Dutton, trustee of the Hilda Trusts and 50% to Schulcin, Joseph, and Schulein, Margarete A. Electrical signal register. 3,825,935, Cl. 346-34.000.

Kosarko, Gerald Julius; Holzhauser, Ronald Charles; and Marvin, Edgar Samuel, to Eastman Kodak Company. Sound motion picture camera. 3,825,327, Cl. 352-29.000.

Kotani, Motoharu: See—  
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Kotera, Hiroaki: See—  
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Koto, Nobuhisa: See—  
Farrell, Greg; Tsuji, Akira; Hasimoto, Dojun; Koto, Nobuhisa; and Hirai, Nobutake, 3,825,679.

Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel - Aktiengesellschaft. Siliceous dioxolane derivatives. 3,825,567, Cl. 260-340.200.

Kovach, Stephen M.: See—  
Kmecak, Ronald A.; and Kovach, Stephen M., 3,825,613.

Patrick, Ralph R.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,825,503.

Kozlov, Stanislav Fedorovich; and Konorova, Elena Laexandrovna, to Ordena Lenina Fizichesky Institut Imeni P.N. Lebedeva. Nuclear radiation detector and method of manufacture same. 3,824,680, Cl. 29-592.000.

Kraals, Ralph. Battery cover. 3,825,447, Cl. 136-166.000.

Kraftwerk Union Aktiengesellschaft: See—  
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Kramell, Hans Peter, to Xerox Corporation. Telephone handset vibrator. 3,825,686, Cl. 179-1.000.

Kramer, Emil; and Vangsgaard, Eigil, to Interessentskabet Nyborg Plast, Fabrikation og handel. Packing assembly and method of its manufacture. 3,825,113, Cl. 206-386.000.

Krause, Richard P.: See—  
Miller, John S., 3,824,829.

Krause, Richard P. Support for metal bar being tapered. 3,825,117, Cl. 209-217.000.

Kress, Edward S. Slag pot carrier. 3,825,135, Cl. 214-313.000.

Krier, Keith N.; Brown, Neil F.; and Waldhauser, Steven J.A., to Tennant Company. Scrubbing machine. 3,824,645, Cl. 15-50.000.

Kruger, Semen Davidovich: See—  
Nekrasov, Lev Borisovich; Misnik, Jury Mikhailovich; Tsukernik, Zolya Samuilovich; Kriger, Semen Davidovich; and Kilkeev, Renat Shakhimardanovich, 3,824,718.

Kristel, Ira B.: See—  
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Krolak, Ronald L.; and Oestmann, Eldon D., to Caterpillar Tractor Co. Track frame reciprocating mechanism for track-type tractors. 3,825,309, Cl. 305-31.000.

Krotkov, Vladimir Nikolaevich: See—  
Starostin, Jury Stepanovich; Plokhov, Viktor Ivanovich; Erokhov, Veniamin Kuzmich; Ivanov, Vladimir Prokopievich; Krotkov, Vladimir Nikolaevich; Anisimov, Albert Viktorovich; Ajupov, Rustem Nurievich; and Golovinov, Mikhail Fedortovich, 3,824,832.

Kruck, Ralph E., to VCA Metal Fabrications, Inc. Sealed hypodermic syringe. 3,825,003, Cl. 128-218.000.

Krumbein, Fritz; and Lieckfeldt, Hans, to Bosch, Robert, Photokino GmbH. Projector with adjustable image reflecting mirror. 3,825,218, Cl. 248-466.000.

Krups, Robert: See—  
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Kubik, Paul P. Revolver loader. 3,824,729, Cl. 42-89.000.

Kubota, Koji; Yoshihara, Yasuhiko; Hirakawa, Hayao; Kamijo, Hirotaka; Nosaki, Shigeki; Yoshinaga, Fumihiro; Okumura, Shinji; and Okada, Hiroshi, to Ajinomoto Co., Inc. Method of producing L-lysine by fermentation. 3,825,472, Cl. 195-29.000.

Kudamatsu, Akio: See—  
Kishino, Shigeo; Kudamatsu, Akio; Takase, Iwao; Shiokawa, Kozo; and Yamaguchi, Shini-Ichi, 3,825,636.

Kudo, Teizo; Ikeda, Saizo; Sonoyama, Yuzo; and Kotani, Motoharu, to Daicel Ltd. Process for producing high impact resistance resins. 3,825,625, Cl. 260-880.000.

Kuhling, Dieter; and Bloching, Helmut, to Henkel & Cie GmbH. N-acylated tetraaza-bicyclo-nonanones and compositions for activating oxygen. 3,825,543, Cl. 260-256.40f.

Kulkarni, Kishor M., to ITT Research Institute. Forging of rigid crystalline plastics. 3,825,648, Cl. 264-322.000.

Kumagai, Henry Yasuo; and McKnight, Hugh Morris, to Western Electric Company, Incorporated. Solid capacitor. 3,825,802, Cl. 317-230.000.

Kunzinger, Charles A.: See—  
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Kureha Kagaku Kogyo Kabushiki Kaisha: See—  
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Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Bis-p-dithiino(2,3-b:2',3'-e) pyridine-2, 3,7,8,10 pentacarboxitrile. 3,825,548, Cl. 260-294.80b.

Kurihara, Osamu: See—  
Ashida, Takao; Kurihara, Osamu; Nawata, Kiyoshi; Shinoki, Takanori; Fujita, Yutaka; Yamashita, Gentaro; and Saiki, Norit-sugu, 3,825,508.

Kurka, Kurt A., to Minnesota Mining and Manufacturing Company. Light-sensitive composition and method. 3,825,430, Cl. 96-115.000.

Kurth, Dieter: See—  
Hussmann, Jurgen; and Kurth, Dieter, 3,825,236.

Kurtz, Leo. Seat fastening means. 3,825,302, Cl. 297-452.000.

La Flair, Ronald Turner, to Polysar Limited. Process for preparing block copolymers of alpha methyl styrene and conjugated diolfin. 3,825,623, Cl. 260-879.000.

La Flame, Frank E.; and Sones, William L., to General Motors Corporation. Fuel supply system with pressure regulator. 3,824,974, Cl. 123-136.000.

La Rue, Mervin W., Jr., to Bell & Howell Company. Viscous sensor. 3,825,207, Cl. 242-191-.

Laakkonen, Launo, to Temet Oy. Lock chamber for protective enclosures. 3,824,934, Cl. 109-1.000.



- Laaue, Robert H. Aerosol valve assembly. 3,825,159, Cl. 222-402.240.
- Labeda, Robert C.: *See—*  
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- Laborit, Henri. 3(Morphocinoethoxy)pyridazines. 3,825,540, Cl. 260-247.50r.
- LaCamera, Alfred F.: *See—*  
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- Laidlaw, H. Gordon, Jr.; and Levin, Berton P., to Sierracin Corporation. The. Impact sensitive security window system. 3,825,918, Cl. 340-274.000.
- Laing, Nikolaus. Method for charging a heat storage vessel. 3,825,059, Cl. 165-1.000.
- L'Air Liquide: *See—*  
Moret, Bernard; and Dufetele, Jean-Louis, 3,824,739.
- Lajiness, Thomas A., to Johnson, S. C., & Son, Inc. 3-Substituted 4-alkanyloxazaspiro insect repellents. 3,825,555, Cl. 260-307.00f.
- Lake, Peter B.: *See—*  
Hartmann, John E.; LaCamera, Alfred F.; and Lake, Peter B., 3,825,448.
- Lale, Peter Gilbert; and Becker, Denis John, to Devices Limited. Implantable cardiac pacemaker with battery voltage-responsive rate. 3,825,016, Cl. 128-419.00p.
- Lalu, Jean-Pierre; and Foulletier, Louis, to Produits Chimiques Ugine Kuhlmann. Method of preparing polyfluorinated sulphonic acids and derivatives. 3,825,577, Cl. 260-435.00r.
- Landis Tool Company: *See—*  
Price, Ralph E.; and Schoonover, Stanley C., 3,824,743.
- Landwer, Donald C., to Teletype Corporation. Rotary disc recording and readout system having capacitance controlled lens positioning means. 3,825,323, Cl. 350-255.000.
- Langenscheid, Erhard: *See—*  
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- Langenstein & Schemann Aktiengesellschaft: *See—*  
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- Langer, Karl, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Flexible printing plate locking device for rotary printing press. 3,824,928, Cl. 101-415.100.
- Langwell, John D., to Alexander, Herman. Shelf display article. 3,824,720, Cl. 40-10.000.
- Langman, Robert W., to Hadady Machining Co., Inc. Center drilling hold-down device. 3,825,363, Cl. 408-124.00Q.
- Lannen Sokeri Oy: *See—*  
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- Lapham, Sidney D. Material handling system. 3,825,130, Cl. 214-16.00b.
- Laran, Roy Joseph: *See—*  
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- Larsen, Dee E.; and Clements Michael R., to Amdahl Corporation. Operand comparator. 3,825,895, Cl. 340-146.200.
- Larson, Russell H.: *See—*  
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- Laser Alignment, Inc.: *See—*  
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- Laserplane Corporation: *See—*  
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- Laudato, Gaetano J., Jr. Water cooler. 3,824,801, Cl. 62-201.000.
- Laughrey, Richard A.: *See—*  
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- Laurence, Robert S.: *See—*  
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- Lauss, Hans-Dietrich: *See—*  
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- Lawlor, John; and Sgombick, John, to Xerox Corporation. Educational device. 3,824,708, Cl. 35-19.00r.
- Lawlor, John; and Sgombick, John, to Xerox Corporation. Educational device. 3,824,711, Cl. 35-19.00r.
- Lawson, William M.: *See—*  
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- Lawton, James: *See—*  
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- Lawton, Richard A., to Electronic Surveillance Corporation Limited. Transmitter control circuit for alarm system. 3,825,897, Cl. 340-147.0lp.
- Lay, Clark M.: *See—*  
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- LeCrenn, George C.: *See—*  
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- Lectrasearch Corporation: *See—*  
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- Lee, Hwalin: *See—*  
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- Lee, Raymond, Organization, Inc., The: *See—*  
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- Lee, Robert G.; and Mitchell, Robert D., to Tennessee Valley Authority. Urea-ammonium polyphosphate production. 3,825,414, Cl. 71-29.000.
- Lefttheris, Basil P., to Grumman, Aerospace Corporation. Method and apparatus for deforming metal. 3,824,824, Cl. 72-56.000.
- Leigh Instruments Limited: *See—*  
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- Lemcke, Robert: *See—*  
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- Lenk, Erich: *See—*  
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- Lenz, Ludwig J.; and Thompson, Robert Stanley, to United States of America, Army. Aiming device for indirect fire guns. 3,824,699, Cl. 33-334.000.
- Lesperance, Lawrence M.; Drewry, Hugh S.; and Vegners, Gunars, to Allis-Chalmers Corporation. Length measuring system having automatic update of roll diameter compensation value. 3,824,694, Cl. 33-141.00r.
- LeVantine, Allan D.; and Curtis, Daniel L. Fingerprinting machine. 3,824,951, Cl. 118-31.500.
- Levin, Berton P.: *See—*  
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- Levin, Berton P.; and Nelson, Roger E., to Sierracin Corporation. The. Laminated security window. 3,825,919, Cl. 340-274.000.
- Levin, Robert E., to GTE Sylvania Incorporated. Lamp unit with controlled-diffusion reflector and method of making the reflector. 3,825,742, Cl. 240-103.00r.
- Levine, Seymour D.: *See—*  
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- Lewelling, James D.: *See—*  
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- Lewis, Geoffrey Arthur, to Lucas Aerospace Limited. Reversible turbine with inlet and brake control system. 3,825,367, Cl. 415-153.000.
- Lewis, George E., to Bear Brand Hosiery Co. Pneumatic package loader. 3,824,763, Cl. 53-255.000.
- Lewis, Keith, to Lucas Electrical Company Limited, The. Electrical switch. 3,825,711, Cl. 200-67.00g.
- Lianza, William J.: *See—*  
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- Licata, William H.: *See—*  
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- Licentia Patent Verwaltungs-G.m.b.H.: *See—*  
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- Licentia Patent-Verwaltungs-G.m.b.H.: *See—*  
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- Scherber, Werner, 3,824,677.
- Lichtenberger, Harold V.; and Ruoss, Christian W., to Combustion Engineering, Inc. Self-closing control rod grippers. 3,825,160, Cl. 226-59.000.
- Lidikay, Lyle M.; and Wilde, Sheldon L., to H-C Industries, Inc. Drive apparatus for metering apparatus. 3,825,044, Cl. 141-187.000.
- Lieberman, Edgar M.; and Snyder, Bobbie L., to Fixtures Mfg. Corporation. Chair and ganging structure. 3,825,300, Cl. 297-248.000.
- Lieckfeldt, Hans: *See—*  
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- Liggett & Myers Incorporated: *See—*  
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- Ligon, Elmer R.; and Reed, Norman D., to Dickey, W. S., Clay Manufacturing Company. Apparatus for forming pipe coupling. 3,825,392, Cl. 425-387.000.
- Ligtenberg, Martinus Adrianus Cornelis; Stevels, Albert Leendert Nicolaas; and De Pauw, Agnes Desiree Maria, to U.S. Philips Corporation. Luminescent screen having a mosaic structure. 3,825,763, Cl. 250-486.000.
- Lilly, Eli, and Company: *See—*  
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- Lincoln Brass Works, Inc.: *See—*  
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- Lincoln Electric Company, The: *See—*  
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- Lind, Willard E., to Jaw-Bar Plastics Corporation. Load bearing pallet and interlock. 3,824,933, Cl. 108-51.000.
- Linder, Donald L., to Motorola, Inc. Small signal amplifier. 3,825,849, Cl. 330-17.000.
- Lindqvist, Stig Ture, to Ingenjorsfirman Vattenanlaggningar. Arrangement in swimming pools. 3,824,634, Cl. 4-172.170.
- Lindsay, Maurice E. Body controlled heat range and extended gap spark plug. 3,825,784, Cl. 313-11.500.
- Linford, Rodney M. F.: *See—*  
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- Lingl Corporation: *See—*  
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- Lion Fat and Oil Company, Ltd.: *See—*  
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- Lipson, Charles S.: *See—*  
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- List, Hans: *See—*

- Skatsche, Othmar; Thien, Gerhard; and Kirchweiger, Karl, 3,824,971.
- Litner, Frank W.; and Childress, Bobby B., to Coltron Industries, Inc. Thermal systems incorporating apparatus and methods for simulating time related temperatures. 3,825,725, Cl. 219-530.000.
- Litsinger, George M.: *See—*  
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- Little, Arthur D., Inc.: *See—*  
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- Litton Industrial Products, Inc.: *See—*  
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- Lloyd, James R.; Williams, Robert E.; Bayless, Jack H.; Orloff, Gerald D.; and Bruce, George H., to Esso Production Research Company. Method and apparatus for drilling in deep water. 3,825,065, Cl. 166-500.
- Lockheed Aircraft Corporation: *See—*  
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- Wirt, Leslie Spencer; and Morrow, Duane Lloyd, 3,824,842.
- Lockheed Missiles & Space Company, Inc.: *See—*  
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- Lockner, Avery: *See—*  
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- Lodge, Fritz: *See—*  
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- Lodge, Wilhelm; Lodge, Fritz; Lucke, Josef; and Luke, Karlheinz. Granulating apparatus. 3,825,193, Cl. 241-187.000.
- Loesch, Claude E.: *See—*  
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- Loesch, Leo J.; and Loesch, Claude E. Drive for bunk feeder. 3,824,871, Cl. 74-422.000.
- Loev, Bernard, to Smithkline Corporation. N-alkenyl and n-alkynyl thioamides. 3,825,547, Cl. 260-294.80e.
- Lohkamp, Dwight T.; and Keller, James P., to Esso Research and Engineering Company. Melt-blowing die using capillary tubes. 3,825,379, Cl. 425-72.000.
- London, Joe F., Jr., to Burlington Industries, Inc. Fabric having improved pick resistance. 3,824,776, Cl. 57-140.00j.
- Long, Martin L., Jr.: *See—*  
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- Long, Robert G., to D.D.I. Communications, Inc. Digital data interface system. 3,825,696, Cl. 179-15.00a.
- Long, Robert Gordon, to D.D.I. Communications, Inc. Digital data interface scanning system. 3,825,695, Cl. 179-15.00a.
- Longenecker, Levi S. Panelized suspended furnace roof and improved feed hole. 3,825,409, Cl. 432-250.000.
- Loomis, Francis B., to St. Lawrence Engine Co. Limited, The. Aircraft ground handling equipment. 3,825,869, Cl. 214-331.000.
- Lorain Products Corporation: *See—*  
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- Loreau, Joseph Andre: *See—*  
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- Lorenz, Gerhard, to Sartorius-Membranfilter GmbH. Method of and apparatus for use in measuring the particle size distribution and/or the concentration of particles in suspension in a gaseous dispersing medium. 3,825,345, Cl. 356-85.000.
- Loro, Alberto, to Microsystems International Limited. Mounting leads and method of fabrication. 3,825,353, Cl. 357-68.000.
- Lorraine Industries, Inc.: *See—*  
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- Lowe, Jere L., to General Tire & Rubber Company, The. Method and apparatus for vacuum assembling of bushings. 3,824,660, Cl. 29-149.5nm.
- Lubbers, Dietrich Werner; Wodick, Reinhard; and Piroth, Dieter, to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. Computing type optical absorption mixture analyzer. 3,825,342, Cl. 356-41.000.
- Lucas Aerospace Limited: *See—*  
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- Skinner, Robert Thomas John, 3,824,786.
- Lucas Electrical Company Limited, The: *See—*  
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- Lucas, Frank L., to Xerox Corporation. Color balance display. 3,825,337, Cl. 355-4.000.
- Lucas, Howard Robert; and Olsen, Robert Nils, to American Cyanamid Company. Process for improving the property profile or rubber-polymer systems. 3,825,515, Cl. 260-31.80m.
- Lucas, Joseph, (Industries) Limited: *See—*  
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- Lucian, Arsene N. Transducer device. 3,825,709, Cl. 200-192.000.
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- Lucky, Clyde L.: *See—*  
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- Lucky, Clyde L., to Sierracin Corporation, The. Security window. 3,825,917, Cl. 340-274.000.
- Luethi, Christian: *See—*  
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- Luke, Karlheinz: *See—*
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- Luley, Wilbert E.: *See—*  
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- Lundberg, Anders; and Axelsson, Rolf, to Stal Refrigeration AB. Compact compressor unit. 3,825,372, Cl. 417-321.000.
- Lunden, Clarence D.: *See—*  
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- Lustenberger, Hans, to Fischer, Georg, Aktiengesellschaft. Device for making nodular cast iron. 3,825,240, Cl. 266-34.00t.
- Lutz, Eugene F., to Shell Oil Company. Ethylene oligomerization process. 3,825,615, Cl. 260-683.15d.
- Lutz, Gerhard: *See—*  
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- Lyshkow, Norman A., to Combustion Equipment Associates, Inc. Gas permeator. 3,824,836, Cl. 73-1.00r.
- Maas, Dieter: *See—*  
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- Macarday, Douglas; and Kelly, Ian William. Water jet propulsion unit. 3,824,946, Cl. 115-12.00r.
- MacCarthy, Richard W. Electrochemical cell with catalyzed acid peroxide electrolyte. 3,825,445, Cl. 136-83.00r.
- MacEwan, George E., to Phillips Petroleum Company. Gable top container. 3,825,168, Cl. 229-179.000.
- Machlanski, Sigmund H. Orchard heating system and burner. 3,825,183, Cl. 236-93.000.
- Machlett Laboratories, Incorporated, The: *See—*  
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- Mackison, Ian: *See—*  
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- Mackrill, David; Carpenter, Denis Cecil John; and Howard, Michael John, to Sheppard Equipment Limited. Vehicle for transporting a container. 3,825,137, Cl. 214-515.000.
- Maeda, Itsuji: *See—*  
Seki, Takeo; Kawamura, Shigenori; Maeda, Itsuji; and Kaneko, Akira, 3,825,351.
- Maeda, Tsuneo; and Hattori, Masaichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Timing holding device for head lamp circuit. 3,825,797, Cl. 315-83.000.
- Magee, Philip S., to Chevron Research Company. N-aralkenyl and N-aralkenyl derivatives of o, S-dihydrocarbylphosphoramidothioates and S, S-dihydrocarbylphosphoramidodithioates. 3,825,634, Cl. 260-956.000.
- Magnaflux Corporation: *See—*  
Flaherty, John J.; and Strauts, Eric J., 3,825,820.
- Magnavox Company, The: *See—*  
Mayle, Louis F., 3,825,838.
- Mahacek, Michael F.: *See—*  
Cary, John M.; and Mahacek, Michael F., 3,825,107.
- Mahon, Roger, to American Standard, Inc. Aircraft instrument shroud. 3,824,853, Cl. 73-181.000.
- Maierson, Theodore, to National Cash Register Company, The. Process for manufacturing a porous, solid, article. 3,825,640, Cl. 264-87.000.
- Malon, Jean-Pierre; and Loreau, Joseph Andre. Device emitting or receiving electrical signals resulting from the movement of a vehicle along the device. 3,825,672, Cl. 174-97.000.
- Maltenieks, Otto J., to Lockheed Aircraft Corporation. Water repellent composition of organosilicon complex. 3,825,578, Cl. 260-448.80r.
- Manabe, Mitsuo: *See—*  
Kobayashi, Kengo; Manabe, Mitsuo; and Isobe, Shinichi, 3,825,731.
- Mandusky, Jack C., to Hoover Ball and Bearing Company. Spring locating apparatus for box spring assemblies. 3,824,639, Cl. 5-260.000.
- Mangiaavacchi, Jacques, to Societe Anonyme: Glaenzer Spicer. Counterbalancing device for coupling shafts for universal joints. 3,824,808, Cl. 64-17.00a.
- Mannesmann-Meer Aktiengesellschaft: *See—*  
Hansgen, Klaus; Ridder, Gerhard; and Schuhmann, Bernd, 3,824,879.
- Mannheimer, Rudy: *See—*  
Johnston, Daniel H.; Mannheimer, Rudy; Rinkleib, Helfried O.; Walker, Ivan D.; and Kellner, John R., 3,825,208.
- Maple, T. Grant: *See—*  
Buchanan, Robert A.; Alves, Ronald V.; Maple, T. Grant; and Sobon, Leon E., 3,825,436.
- Marathon Oil Company: *See—*  
Norton, Charles J.; and Falk, David O., 3,825,068.
- Norton, Charles J.; and Falk, David O., 3,825,069.
- Vestal, Charles R., 3,825,067.
- Marcatili, Enrique Alfredo Jose: *See—*  
Cook, John Stone; and Marcatili, Enrique Alfredo Jose, 3,825,319.
- Marchard, Gustav, to Gebr. Bohler & Co., AG. Stamping knife. 3,824,887, Cl. 83-679.000.
- Marconi Company Limited, The: *See—*  
Davies, Eric, 3,825,930.
- Marendaz, Georges-Andre, to Ateliers des Charmilles S.A. Method and apparatus for controlling the feed of an electrode-tool relative to a workpiece in electrical discharge machining. 3,825,714, Cl. 219-69.00g.



Marinelli, Donald Paul; and Stockton, Thomas Edward, to RCA Corporation. Method of depositing epitaxial layers on a substrate from the liquid phase. 3,825,449, Cl. 148-172.000.

Markhart, Albert H.; and Santer, James O., to Monsanto Company. Electroconductive resins and process of preparation. 3,825,511, Cl. 260-87.50r.

Markovsky, Grigory Fedorovich: See—  
Sinichenko, Anatoly Afanasievich; Romanenko, Anatoly Mikhailovich; Sukhov, Evgeny Alexeevich; and Markovsky, Grigory Fedorovich, 3,824,760.

Marks, Alvin M.; and Marks, Mortimer M. Apparatus for coating television viewing tubes. 3,824,955, Cl. 118-500.000.

Marks, Mortimer M.: See—  
Marks, Alvin M.; and Marks, Mortimer M., 3,824,955.

Marlen Manufacturing and Development Co.: See—  
Fenton, Leonard, 3,825,005.

Maroschak, Ernest J. Fitting for corrugated plastic pipe. 3,825,288, Cl. 285-156.000.

Marquardt, Bernd: See—  
Schober, Helmut; and Marquardt, Bernd, 3,825,765.

Marra, Frank: See—  
Carlick, Daniel J.; Marra, Frank; and Sprenger, Gerhard E., 3,825,479.

Marshall, Robert Howard; and Wallace, Gary Leonard, to Chemetron Corporation. Method and apparatus for producing weight controlled groups of sliced food product. 3,824,885, Cl. 83-19.000.

Martin, Barry Forester; and Roberts, Edward David, to U.S. Philips Corporation. Methods of producing films comprising siliceous material and the article formed thereby. 3,825,466, Cl. 161-113.000.

Martin, Frank Herbert, to Bell Telephone Laboratories, Incorporated. Interlocking joint. 3,825,355, Cl. 403-104.000.

Martin, Gilbert, to Etat Francais, Delegation Ministerielle pour l'Armement. Device for separating electrolyte carried by Hydrogen during recharging of a storage battery. 3,825,444, Cl. 136-6.00p.

Martin, Heinz: See—  
Mosch, Willi; Lutz, Gerhard; and Martin, Heinz, 3,824,679.

Martin, Louis, to Societe Anonyme. Poclain le Plessis-Belleville (Oise). Fluid ram provided with means for braking the ram piston at the end of its stroke. 3,824,895, Cl. 91-401.000.

Martin, Orval J., to Reliance Electric Company. Price computing scale with parity check of price entry. 3,825,085, Cl. 177-3.000.

Martin-Marietta Corporation: See—  
Richards, Edward F.; and Depperman, Warren B., 3,825,739.

Marus, Louis J.: See—  
Marus, Louis J.; and Abernathy, James D. (said Abernathyassor. of 7.4% to), 3,825,921.

Marus, Louis J.; and Abernathy, James D., said Abernathyassor. of 7.4% to Marus, Louis J. and 12.6% to Bogatin, Irvin. Trailer position indicator. 3,825,921, Cl. 340-282.000.

Maruseak, John; and Sine, Dale E., to GTE Automatic Electric Laboratories Incorporated. Building directory. 3,824,722, Cl. 40-64.00r.

Marvin, Edgar Samuel: See—  
Kosarko, Gerald Julius; Holzhauser, Ronald Charles; and Marvin, Edgar Samuel, 3,825,327.

Marzocchi, Alfred, to Owens-Corning Fiberglass Corporation. Method of making multifilament yarns. 3,824,779, Cl. 57-162.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: See—  
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Maschinenfabrik Augsburg-Nurnberg, Aktiengesellschaft Werk Nurnberg: See—  
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Massachusetts Institute of Technology: See—  
Keil, Alfred A. H.; and Vetter, Michael F., 3,824,944.

Massey-Ferguson Inc.: See—  
Gardner, Guy F.; and Boyak, Arnold C., 3,825,073.

Massey-Ferguson Services N.V.: See—  
Muller, Jean Claude, 3,824,864.

Massic, Stephen N., to Universal Oil Products Company. Preparation of ethers. 3,825,603, Cl. 260-612.00d.

Massillon-Cleveland-Akron Sign Company, The: See—  
Friedrichsen, Thomas, 3,824,725.

Miller, Wendell V.; and Friedrichsen, Thomas, 3,824,724.

Mast, Fred, to Gretag Aktiengesellschaft. Illumination system. 3,825,322, Cl. 350-236.000.

Masuda, Hirotugu: See—  
Nakamura, Kihiei; Yamazaki, Harumichi; Masuda, Hirotugu; Sato, Takeshi; and Kiuchi, Yoshinori, 3,825,292.

Masuoka, Fujio, to Tokyo Shibaura Electric Co., Ltd. Field effect semiconductor memory apparatus with a floating gate. 3,825,945, Cl. 357-23.000.

Masygan, Raymond Joseph, to Clark, Alex L., Limited. Photographic developer apparatus. 3,825,943, Cl. 354-331.000.

Mathews, Bernard C.: See—  
Pool, Stuart D., 3,825,138.

Matkovich, Vlado I.: See—  
Economy, James; and Matkovich, Vlado I., 3,825,469.

Matsumura, Yoshihiro, to Sohgo Jidosha Anzen-Kogai Gijutsu Kenkyu Kumiai. Anti-skid control system for vehicles. 3,825,799, Cl. 317-5.000.

Matsushita Electric Industrial Company, Limited: See—  
Ojima, Tadato; Koiso, Kazuhiro; and Nakano, Toshihiko, 3,825,877.

Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; Hayami, Heijiro; and Kotera, Hiroaki, 3,825,678.

Matsushita Seiko Company, Limited: See—  
Ogawa, Masaya, 3,825,339.

Matsuyama, Takashi; Tanaka, Tetsuji; and Tezuka, Toshiro, to Bridgestone Tire Company Limited. Pneumatic rubber tire for off-road vehicles. 3,825,052, Cl. 152-353.000.

Matsuzawa, Katsuto; Matukuma, Akira; Takagishi, Iwao; and Yoshida, Kenji, to Mitsubishi Chemical Industries Limited. Process for preparing catechol and hydroquinone. 3,825,604, Cl. 260-621.00g.

Matsuzawa, Norio: See—  
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; and Nishimura, Hiroshi, 3,825,524.

Mattel, Inc.: See—  
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Pitkanen, Alan R.; Kennedy, Melvin R.; Nagel, Dietmar; Gross, William J.; and Bosley, Denis V., 3,825,265.

Matthews, Hugh B., to Sperry Rand Corporation. Geothermal energy system and method. 3,824,793, Cl. 60-641.000.

Matthews, Robert M.; and Petty, Albert W., to Kellwood Company. Panty garment with high rises at the latera portions of the panty. 3,824,812, Cl. 66-177.000.

Mattox, Robert J.: See—  
Black, James R.; and Mattox, Robert J., 3,825,453.

Matukuma, Akira: See—  
Matsuzawa, Katsuto; Matukuma, Akira; Takagishi, Iwao; and Yoshida, Kenji, 3,825,604.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: See—  
Kaiser, Nils, 3,825,347.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: See—  
Lubbers, Dietrich Werner; Wodick, Reinhard; and Piroth, Dieter, 3,825,342.

Mayberry, Leonard A. Electromagnetic transducer for sensing movement of a thread-like object past a predetermined point. 3,825,818, Cl. 324-34.00r.

Mayle, Louis F., to Magnavox Company. The. Search tune detector circuit. 3,825,838, Cl. 325-470.000.

Mazue, Jack. Indexing workpiece supporting apparatus. 3,824,877, Cl. 74-814.000.

McArthur, Ralph F.; Gcurts, Melle F.; and Kelleher, John M., to Kobe, Inc. Tubing stinger with hold down ring. 3,825,285, Cl. 285-27.000.

McCarthy, John Peter: See—  
Beavitt, Alan Robert; and McCarthy, John Peter, 3,825,801.

McCauly, Ronald J.: See—  
Nudelman, Abraham; and McCauly, Ronald J., 3,825,533.

McClay, Alexander W., Jr. Multiple gauging device. 3,824,695, Cl. 33-137.00r.

McClay, Alexander W., Jr. Multiple gauging device. 3,824,696, Cl. 33-137.00r.

McCrary, Avis L.; and Wilson, David A., to Dow Chemical Company. The. Phenolic aminopolycarboxylic chelants. 3,825,592, Cl. 260-519.000.

McCulloch Corporation: See—  
Winfield, Merle, 3,824,978.

McDonald, Bernard. Surgical apparatus for closing wounds. 3,825,010, Cl. 128-337.000.

McDonald, John C.: See—  
Baichtal, James R.; and McDonald, John C., 3,825,689.

McDuffee, William T., Jr.: See—  
Gresky, Alan T.; Savolainen, Jouko E.; McDuffee, William T., Jr.; and Wischow, Russell P., 3,825,649.

McFarland, Archie Rae, to Beehive Machinery Inc. Twin screw continuous processing machine. 3,825,231, Cl. 259-41.000.

McGaugh, Michael C., to Dow Chemical Company. The. Ethylene polymer composition having enhanced photodegradability. 3,825,627, Cl. 260-897.00a.

McGaugh, Michael Calvin, to Dow Chemical Company. The. Ethylene polymer composition having enhanced photodegradability. 3,825,626, Cl. 260-897.00a.

McGilvray, Bruce L.: See—  
Burk, John L.; Duffy, Daniel M.; Hogan, Spurgeon G., Jr.; Larson, Russell H.; and McGilvray, Bruce L., 3,825,904.

McGlashen, James N.: See—  
Holroyd, Eric; Goodfellow, Anthony G.; and McGlashen, James N., 3,825,457.

McGuire, Martin J. Glide swing. 3,825,254, Cl. 272-85.000.

McKenna, Kerry Charles: See—  
Stafford, Donald Claude; Burns, Gerald Edward; and McKenna, Kerry Charles, 3,824,942.

McKnight, Hugh Morris: See—  
Kumagai, Henry Yasuo; and McKnight, Hugh Morris, 3,825,802.

McLelland, John Douglas. Movement control apparatus. 3,824,900, Cl. 92-8.000.

McMahon, Harvey S. Apparatus for slant hole directional drilling. 3,825,081, Cl. 175-73.000.

McMahon, Joseph F., to Foster Wheeler Corporation. Fluidized bed reactor. 3,825,477, Cl. 196-126.000.

McManus, Walter K.; Bouffard, Joseph T.; and Harris, Lennard D., to Atlantic Service Co., Inc. Hand saw having demountable blade. 3,825,047, Cl. 145-31.00r.

McMurtry, David Roberts; and Agg, Michael John, to Rolls-Royce (1971) Limited. Pitch varying mechanism for variable pitch fan. 3,825,370, Cl. 416-160.000.

Mebus, Henry R.: See—  
Fernandez-Rana; and Mebus, Henry R., 3,825,247.

Medical Alginates Limited: See—  
Franklin, Kenneth John; and Bates, Keith, 3,824,997.

Medico Electronic Inc., mesne: See—  
Morin, Leo G., 3,825,411.

Mee, Robert L. Drill assembly. 3,825,075, Cl. 173-43.000.

Meek, William H., to Ferro Corporation. Carboxylation of phenols. 3,825,593, Cl. 260-521.00c.

Meier, Paul, to Cutler-Hammer, Inc. Microwave transmission line. 3,825,863, Cl. 333-95.00r.

Meinholdt, John W. Sway control for trailers. 3,825,282, Cl. 280-446.00b.

Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., to Little, Arthur D., Inc. Method and apparatus for direct melt synthesis of intermetallic compounds. 3,825,242, Cl. 266-39.000.

Mende, Wilhelm, & Co.: See—  
Ettel, Hubert, 3,825,462.

Mendes, Robert F. Fire ladder extension apparatus. 3,825,096, Cl. 182-86.000.

Menke, Wilhelm, to NSM-Apparatebau GmbH. Cash box with coin counter. 3,825,729, Cl. 235-92.00c.

Menn, Julius J.: See—  
Pallos, Ferenc M.; Lee, Hwalin; and Menn, Julius J., 3,825,602.

Menz, Elsie L., to Xerox Corporation. Image transfer process and also known as D/2888. 3,825,423, Cl. 96-1.400.

Merck & Co., Inc.: See—  
Christensen, Burton G.; and Lianza, William J., 3,825,631.

Novello, Frederick C., 3,825,542.

Meri, Kalju, to Electrospace Corporation. Direct-coupled audio amplifier having unbypassed emitter resistor stages. 3,825,850, Cl. 330-19.000.

Merkle, Frank P., Jr. Basic suspended roof construction for industrial furnaces. 3,824,936, Cl. 110-99.00r.

Merrill, John T., IV 4 United States of America, National Aeronautics and Space Administration: See—  
Ashworth, Billy R.; and Merrill, John T., IV 4 United States of America, National Aeronautics and Space Administration, 3,824,707.

Messina, Richard J.: See—  
Messina, Victor J.; and Messina, Richard J., 3,825,290.

Messina, Victor J.; and Messina, Richard J. Sliding door lock bar apparatus. 3,825,290, Cl. 292-262.000.

Metcalf, Arthur G. B.; Guiffreda, Philip; and Bellows Alfred H., to Electronics Corporation of America. Fuel burner supervisory system. 3,825,913, Cl. 340-228.000.

Metz, Noble C. Self-cleaning tank washer. 3,825,022, Cl. 134-104.000.

Meusel, Wilhelm: See—  
Geheshuber, Johann; and Meusel, Wilhelm, 3,824,843.

Meyer, Konrad: See—  
Jeuken, Josef; Vieregge, Gustav; and Meyer, Konrad, 3,824,820.

Meyers, George Leroy, to American Can Company. Paperboard container and blank therefor. 3,825,169, Cl. 229-34.00a.

MGM Hospital Supplies, Inc.: See—  
Graven, William J., 3,825,013.

Miale, Joseph N., to Mobil Oil Corporation. Method of converting hydrocarbons with manganese nodule catalysts. 3,825,486, Cl. 208-110.000.

Michelsen, Jacob, to Kent-Moore Corporation. Ball stud remover. 3,824,672, Cl. 29-263.000.

Microsystems International Limited: See—  
Loro, Alberto, 3,825,353.

Midland Industrial Computing Limited: See—  
Anderson, John Ernest, 3,825,900.

Miedema, Hotze: See—  
Felsberg, Robert Irving; and Miedema, Hotze, 3,825,843.

Mietens, Gerhard; Kohler, Gerd; Haas, Hans; and Roszinski, Hilmar, to Knapsack Aktiengesellschaft. Pastes containing acid, amines and phosphoric acid esters. 3,825,628, Cl. 260-920.000.

Mikkelsen, Eric, to Bang and Olufsen A/S. Tape recorder driver mechanism. 3,825,209, Cl. 242-201.000.

Mikuni Kogyo Kabushiki Kaisha: See—  
Nishihara, Yoshio; and Ohashi, Isamu, 3,825,238.

Millard, Stephen: See—  
Peterman, Neil R.; Korn, Darryl K.; and Millard, Stephen, 3,825,844.

Miller, Allan, to Phillips Screw Company. Safety lock with provision for key user identification. 3,825,898, Cl. 340-149.00r.

Miller, Harry B., to Industrie-Werke Karlsruhe Augsburg-Aktiengesellschaft. Drive roll for winders of filamentary material. 3,825,195, Cl. 242-18.00d.

Miller, John S., to Krause, Richard P. Rolling mill with shifting cams for shaping bars. 3,824,829, Cl. 72-214.000.

Miller, John T., Jr.: See—  
Parts, Leo P.; and Miller, John T., Jr., 3,825,520.

Miller, Lester F., Jr.: See—  
Ott, Owen J.; Ginn, David W.; and Miller, Lester F., Jr., 3,825,936.

Miller, Richard K., to Goodrich, B. F., Company, The. Initiator emulsion for olefinic polymerization reactions. 3,825,509, Cl. 260-86.300.

Miller, Robert C.: See—  
Carr, Walter J., Jr.; and Miller, Robert C., 3,825,910.

Miller, Roy E., to Blue Bell Inc., mesne. Material edge aligning device. 3,825,250, Cl. 271-250.000.

Miller, Tom B.: See—  
Noponen, Harold W.; and Miller, Tom B., 3,825,147.

Miller, Wendell V.; and Friedrichsen, Thomas, to Massillon-Cleveland-Akron Sign Company, The. Pole sign construction. 3,824,724, Cl. 40-125.00g.

Minegishi, Hiroshi, to Nippon Piston Ring, Ltd. and Toyo Kogyo Company Limited. Process for producing an oil seal to be applied to the rotary piston engine. 3,824,662, Cl. 29-156.600.

Mineri, Pasquale P., to Tenneco Chemicals, Inc. N<sup>1</sup>-(Substituted ethyl) indazoles. 3,825,556, Cl. 260-310.00c.

Minnesota Mining & Manufacturing Company: See—  
Bradford, Robert S.; Richardson, Harvey J.; Dubbe, Richard F.; and Ebbinga, Richard D., 3,825,675.

Minnesota Mining and Manufacturing Company: See—  
Kurka, Kurt A., 3,825,430.

Mino, Hiroshi; and Yano, Satoshi, to Toyo Kogyo Company, Ltd. Method of removing core form diecasting. 3,825,055, Cl. 164-132.000.

Minovitch, Michael A., to Phaser Telepropulsion, Inc. Laser rocket. 3,825,211, Cl. 244-1.05b.

Miraldi, Floro D. Scintillation crystal. 3,825,758, Cl. 250-366.000.

Miranker, Samuel H., to Automatic Steam Products Corp. Seambuster iron. 3,824,719, Cl. 38-77.300.

Misnik, Jury Mikhailovich: See—  
Nekrasov, Lev Borisovich; Misnik, Jury Mikhailovich; Tsukernik, Zolya Samuilovich; Kriger, Semen Davidovich; and Kilkeev, Renat Shakhimardanovich, 3,824,718.

Mitchell, Robert D.: See—  
Lee, Robert G.; and Mitchell, Robert D., 3,825,414.

Mitsubishi Chemical Industries Limited: See—  
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Mitsubishi Denki Kabushiki Kaisha: See—  
Farrell, Greg; Tsuji, Akira; Hasimoto, Dojun; Koto, Nobuhisa; and Hirai, Nobutake, 3,825,679.

Saito, Nagao; Kobayashi, Kazuhiko; and Takagi, Shigeru, 3,825,715.

Mitsubishi Jukogyo Kabushiki Kaisha: See—  
Hayase, Masao; Hayasaka, Yoshiyuki; and Araki, Yozo, 3,825,750.

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Mitsubishi Paper Mills, Ltd.: See—  
Futaki, Kiyoshi; and Motoki, Masaya, 3,825,432.

Mitsui Petrochemical Industries, Ltd.: See—  
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; and Nishimura, Hiroshi, 3,825,524.

Wata, Tadao; Yusawa, Motoyasu; and Sasaki, Juntaro, 3,825,523.

Miura, Takashi; Sugiura, Takashi; and Iyoda, Yoshizi, to Sintokogio, Ltd. Mold prepared by vacuum sealed molding process. 3,825,058, Cl. 164-253.000.

Miyake, Makoto: See—  
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,825,561.

Miyamoto, Mitsunori: See—  
Katsumata, Mitsuo; Miyamoto, Mitsunori; and Shirai, Kiyoshi, 3,824,976.

Miyazato, Takanori; Nakayama, Keiichi; and Fujii, Masao, to Kabushiki Kaisha Hattori Tokiten. Control system for a traffic signalling apparatus. 3,825,890, Cl. 340-40.000.

Mizuno, Masayuki: See—  
Takeda, Isao; Mizuno, Masayuki; Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadaaki, 3,825,660.

Mizushiro, Ken: See—  
Izawa, Shinichi; Harada, Kazuhiko; Mizushiro, Ken; Ishihara, Miyoko; and Nakanishi, Atsuo, 3,825,521.

Mizutani, Yoshiyuki; and Tozawa, Katutoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Self-lubricating iron base alloy. 3,825,416, Cl. 75-123.00a.

Mo, Olav. Platform structure. 3,824,795, Cl. 61-46.500.

Mo, Olav. Drilling platform. 3,824,943, Cl. 114-50d.

Mobil Oil Corporation: See—  
Braid, Milton, 3,825,496.

Givens, Wyatt W., 3,825,753.

Hagar, James L.; and Schwartz, Harold E., Jr., 3,824,851.

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Miale, Joseph N., 3,825,486.

Mochlenpach, Walter G. Method of and apparatus for fabricating wood structures. 3,824,919, Cl. 100-35.000.

Molleman, Johan Henri: See—  
Kjos, Magne Jarle; and Molleman, Johan Henri, 3,825,203.

Mollura, Carlos A. Tubular flexible bag with lap welded ends. 3,825,172, Cl. 229-5.500.

Monark-Crescent AB: See—  
Johansson, Sture Ragnar; and Carlsson, Hilding Ake Gerry, 3,825,397.

Monocah, Inc.: See—  
Dow, Ronald C., 3,825,915.

Monpetit, Louis, to Societe des Procedes Modernes d'Injection Sopromi. Electrical transducer. 3,824,863, Cl. 73-517.00a.

Monroe Belgium N.V.: See—  
van den Berg, Johan H.; and van Eekelen, Alex H. A., 3,824,648.



- Monsanto Company: *See—*  
Ford, Emory A., 3,825,621.  
Markhart, Albert H., and Santer, James O., 3,825,511.  
Monsanto Research Corporation: *See—*  
Patis, Leo P., and Miller, John T., Jr., 3,825,520.  
Montgomery, William Lloyd, to Bell Telephone Laboratories, Incorporated. Pulse code modulation code conversion. 3,825,924, Cl. 340-347.0dd.  
Moon, Francis A., and Halliday, Robert G., to Unimasco, Inc. Painting of interrupted lines on road surfaces. 3,825,185, Cl. 239-150.000.  
Moore, Derek Stanley, to Vickers Limited. Optical devices. 3,825,343, Cl. 356-156.000.  
Moore, Donald Fergus: *See—*  
Samuel, Duncan Roy, and Moore, Donald Fergus, 3,825,025.  
Moore, Gordon E., to Intel Corporation. Method of a semiconductor device wherein film cracking is prevented by formation of a glass layer. 3,825,442, Cl. 117-212.000.  
Moore, Robert A.: *See—*  
Klein, Gerald I.; Moore, Robert A.; and Payer, Stephen F., 3,825,859.  
Morault, Gabriel. Apparatus for the injection of plastic materials. 3,825,155, Cl. 222-146.0he.  
Moret, Bernard, and Dufetele, Jean-Louis, to l'Air Liquide and Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude. Method and apparatus for continuously removing burrs from objects. 3,824,739, Cl. 51-9.000.  
Morgardshammar Aktiebolag: *See—*  
Bock, Nils Erik, 3,824,831.  
Morgardshammar Aktiebolag: *See—*  
Bennet, Tom Joachim; Nordstroem, Knut Lennart; and Polhaell, Karl Olof, 3,824,830.  
Mori, Takasi; Takaku, Sakae; Suzuki, Seikichi; and Tsuda, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Mycophenolic acid derivatives thereof. 3,825,571, Cl. 260-343.300.  
Mori, Yoichi; Okazaki, Nobuo; Otsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train with three planetary gear sets. 3,824,876, Cl. 74-759.000.  
Morimoto, Hiroshi; Watanabe, Masazumi; and Imada, Isuke, to Takeda Chemical Industries, Ltd. 4-Hexenoic compounds. 3,825,584, Cl. 260-484.00r.  
Morin, Leo G., to Medico Electronic Inc., mesne. Reagent and method for bilirubin determination. 3,825,411, Cl. 23-230.00b.  
Moriyama, Inao; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Release switch device for a camera. 3,825,941, Cl. 354-266.000.  
Morris, William F., Jr. Cube ice storage bin with distuber bars. 3,825,158, Cl. 222-238.000.  
Morris, Jerald: *See—*  
Peterson, C. Lynn; and Morris, Jerald, 3,825,125.  
Morrison, Robert A.; and Wagner, John E. Hinge hanger. 3,825,127, Cl. 211-96.000.  
Morrow, Duane Lloyd: *See—*  
Wirt, Leslie Spencer; and Morrow, Duane Lloyd, 3,824,842.  
Morrow, Margaret K.: *See—*  
Duerksen, Walter K.; Holcombe, Cressie E., Jr.; and Morrow, Margaret K., 3,825,653.  
Morton, Harvey L., and Oland, Bradley H., to Tinsley Laboratories, Inc. Light source with high efficiency light collection means. 3,825,741, Cl. 240-41.00r.  
Morton, Ralph B.: *See—*  
Frye, James A.; and Morton, Ralph B., 3,825,230.  
Mosch, Willi; Lutz, Gerhard, and Martin, Heinz, to Siemens Aktiengesellschaft. Method of making semiconductor component with sheet metal connector leads. 3,824,679, Cl. 29-588.000.  
Moseman, Lawrence E.: *See—*  
Kennard, Thomas J.; and Moseman, Lawrence E., 3,825,255.  
Moss, Richard Wallace: *See—*  
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Motoki, Masaya: *See—*  
Futaki, Kiyoshi; and Motoki, Masaya, 3,825,432.  
Motorola, Inc.: *See—*  
Black, James R.; and Mattox, Robert J., 3,825,453.  
Bowman, John L., 3,824,982.  
Braun, William V., 3,825,829.  
Finger, Carl; and Pausche, John W., 3,825,878.  
Linder, Donald L., 3,825,849.  
O'Connor, William W., 3,825,830.  
Schoeff, John A., 3,825,450.  
Schoeff, John A., 3,825,451.  
Moyne, Paul, to Rhone-Poulenc S.A. Apparatus for the batch treatment of solid material. 3,824,703, Cl. 34-130.000.  
MuCulloch Corporation: *See—*  
Brooks, John Hawley, 3,824,867.  
Mueller, Richard: *See—*  
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Mueller, Rudolph C.: *See—*  
Hyosaka, Alfred M.; and Mueller, Rudolph C., 3,824,954.  
Muenger, James R., to Texaco Inc. Exothermic reaction process. 3,825,501, Cl. 252-373.000.  
Mukai, Kunio: *See—*  
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,825,633.  
Mullan, Noel Austin; and Overell, Brian George, to Beecham Group Limited. Allergens reacted with carbodiimides. 3,825,525, Cl. 260-112.00r.  
Mullender, Gernot F. Production of pipe bend sheaths. 3,825,412, Cl. 29-180.0ss.  
Muller, Hans-Martin: *See—*  
Schneider, Rolf; and Muller, Hans-Martin, 3,824,966.  
Muller, Jean Claude, to Massey-Ferguson Services N.V. Belt drives. 3,824,864, Cl. 74-2.15r.  
Muller, Josef: *See—*  
Kaiser, Paul; Kaiser, Hans; and Muller, Josef, 3,824,889.  
Muller, Werner; and Schmalz, Paul, to Muller-Schlenker. Battery-operated miniature alarm clock. 3,824,789, Cl. 58-19.00r.  
Muller, Wolfgang: *See—*  
Fruth, Hans; and Muller, Wolfgang, 3,825,084.  
Muller-Schlenker: *See—*  
Muller, Werner; and Schmalz, Paul, 3,824,789.  
Murakami, Keiichi; Hoshi, Hiroshi; Hirakawa, Michio; and Susuki, Rinnosuke, to Lion Fat and Oil Company, Ltd. Process for preparing hexagonal system prismatic calcium sulfite. 3,825,656, Cl. 423-512.000.  
Murata, Kingo; and Wakabayashi, Kaoru, to Kabushiki Kaisha Koparu. Operating mechanism for twenty four hour cycle digital timer. 3,825,702, Cl. 200-35.00r.  
Murayama, Naohiro; and Fukuda, Makoto, to Kureha Kagaku Kogyo Kabushiki Kaisha. Molding composition containing polyethylene and cement. 3,825,519, Cl. 260-42.130.  
Murphy, David M., to David Manufacturing Company. House trailer hook-up. 3,825,089, Cl. 180-12.000.  
Murphy, Prescott V., to Standard Tool & Manufacturing Co. Chain drive having pivoted drive teeth. 3,824,869, Cl. 74-243.00r.  
Murphy, Robert P.; and Froning, H. Robert, to Amoco Production Company. Log-injected-log system. 3,825,752, Cl. 250-258.000.  
Murray, Brian Desmond Allan, to Normalair-Garrett (Holdings) Limited. High speed rotating machines. 3,825,311, Cl. 308-36.300.  
Murry, Edward J., to Fibra-Sonics, Inc. Ultrasonic band transmission, focusing, measuring and encoding systems. 3,825,887, Cl. 340-15.000.  
Muth, Karl: *See—*  
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Schmidt, Felix Helmut, 3,825,665.  
Myers, Jimmy D., to Caterpillar Tractor Company. Adjustable stabilizer support for vehicles. 3,825,280, Cl. 280-150.500.  
Myers, Thomas Elmar. Method of cutting hair. 3,825,020, Cl. 132-7.000.  
Myrick, Floyd J.: *See—*  
Green, B. Sherman; Green, Charles K.; Glancy, Jack L.; Myrick, Floyd J.; Norlander, Carl William; and Smith, Rodney E., 3,824,916.  
Nadeau, Clarence S. Manually operable pivot pin for a wrist watch band. 3,824,783, Cl. 58-88.0sc.  
Naefe, Gerhard: *See—*  
Soldner, Richard; and Naefe, Gerhard, 3,824,988.  
Nagano, Toshihiro; Suzuki, Mastuo; Sano, Yoshio; Aoshima, Yasuo; and Suzuki, Shozo, to Riken Light Metal Industries Co., Ltd. Finish dip painting device of metal works on mass production basis. 3,824,952, Cl. 118-56.000.  
Nagaoka, Noriyoshi; and Usui, Genichi, to Nippon Kokan Kabushiki Kaisha. Method of rapidly determining the solidus line of molten steel. 3,824,837, Cl. 73-17.00r.  
Nagel, Dietmar: *See—*  
Pitkanen, Alan R.; Kennedy, Melvin R.; Nagel, Dietmar; Gross, William J.; and Bosley, Denis V., 3,825,265.  
Nagoya Metallic Card Clothing Co., Ltd.: *See—*  
Watanabe, Moriichi, 3,824,650.  
Naig, Charley B. Support bracket. 3,824,959, Cl. 119-20.000.  
Naito, Taketosi; and Ito, Masatomo, to Showa Denko Kabushiki Kaisha. Process for preparation of N,N-dialkyl toluamide. 3,825,596, Cl. 260-558.00r.  
Nakamoto, Soichi: *See—*  
Watanabe, Hiroaki; and Nakamoto, Soichi, 3,825,942.  
Nakamura, Bungo: *See—*  
Yamato, Yukio; Terada, Koki; and Nakamura, Bungo, 3,824,935.  
Nakamura, Kihei; Yamazaki, Harumichi; Masuda, Hirotsugu; Sato, Takeshi; and Kiuchi, Yoshinori, to Bridgestone Tire Company Limited. Shock absorber for automobile bumpers. 3,825,292, Cl. 293-71.00r.  
Nakamura, Toshihiko, to Nihon Filter Co., Ltd. Red-ox potentiometer provided with a PH correction circuit. 3,825,483, Cl. 204-195.00r.  
Nakamura, Yukinobu: *See—*  
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Nakanishi, Atsuo: *See—*  
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Nakano, Toshihiko: *See—*  
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Nakata, Kazuhiko: *See—*  
Kobayashi, Hiromasa; Oguchi, Yuzo; and Nakata, Kazuhiko, 3,825,950.  
Nakauchi, Shunsaku; and Hirasawa, Masanori, to Tokyo Magnetic Printing Co., Ltd. Magnetic card reader. 3,825,728, Cl. 235-61.11d.  
Nakayama, Keiichi: *See—*

- Miyazato, Takanori; Nakayama, Keiichi; and Fujii, Masao, 3,825,890.  
Narayanan, Venkatachala Lakshmi: *See—*  
Haugwitz, Rudiger D.; and Narayanan, Venkatachala Lakshmi, 3,825,537.  
Narco Scientific Industries, Inc.: *See—*  
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Naruchi, Tatsuyuki: *See—*  
Fujita, Yutaka; Naruchi, Tatsuyuki; Honda, Yuitsu; Ishimaru, Kenji; and Yoshisato, Eishin, 3,825,570.  
Nasby, Charles L., Jr. Mobile dock structure. 3,824,796, Cl. 61-48.000.  
National Advertising Company: *See—*  
Schubert, Wilfried, 3,824,726.  
National Cash Register Company, The: *See—*  
Maierston, Theodore, 3,825,640.  
Phillips, Paul S., Jr., 3,825,467.  
National Engineering Company: *See—*  
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National Recreation Industries, Inc.: *See—*  
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National Research Development Corporation: *See—*  
Kendler, Hayden Brian; Ripley, Lionel George; and Woollons, David John, 3,825,746.  
National-Standard Company Limited: *See—*  
Birch, Norman John, 3,824,775.  
Navarro, Jose Ros. Collar ornament. 3,824,626, Cl. 2-145.000.  
Nawata, Kiyoshi: *See—*  
Ashida, Takao; Kurihara, Osamu; Nawata, Kiyoshi; Shinoki, Takanori; Fujita, Yutaka; Yamashita, Gentaro; and Saiki, Noritugu, 3,825,508.  
Neale, Charles O., to Voss, Josef, KG, Firma. Cylinder-lock. 3,824,818, Cl. 70-350.000.  
Neary, Ralph E., to Schlage Lock Company. Lock indicator. 3,824,819, Cl. 70-432.000.  
Needham, James M.: *See—*  
Kasselmann, John T.; Hickner, George B.; Howard, Donald W.; and Needham, James M., 3,825,305.  
Needleman, Stuart W.: *See—*  
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Nekrasov, Lev Borisovich; Misnik, Jury Mikhailovich; Tsukernik, Zolya Samuilovich; Kriger, Semen Davidovich; and Kilkeev, Renat Shakhmardanovich. Excavator bucket with electromagnetic field weakening teeth. 3,824,718, Cl. 37-118.00r.  
Nelson, Gerald V.: *See—*  
Coons, William R., Jr.; Colvert, James H.; and Nelson, Gerald V., 3,825,485.  
Nelson, Roger E.: *See—*  
Levin, Berton P.; and Nelson, Roger E., 3,825,919.  
Nelson, Roger E.; and Lucky, Clyde L., to Sierracin Corporation, The. Laminated security window system. 3,825,920, Cl. 340-274.000.  
Neuman, Gordon E., to A-I Engineering, Inc. Injection molding filter. 3,825,123, Cl. 210-232.000.  
Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH: *See—*  
Bauch, Ernst, 3,824,656.  
Neville, Richard E. G., to AMF Incorporated. Rotary dryer. 3,824,704, Cl. 34-134.000.  
Nevin, Charles S.: *See—*  
Drury, Raymond L., Jr.; Hines, James W.; and Nevin, Charles S., 3,825,514.  
New Kon Industrial Co., Ltd.: *See—*  
Otsuka, Katsumi, 3,825,179.  
Newingham, Thomas D.; Reehuite, Alexander D.; Griffith, John O., III; and Haseltine, Marcus W., Jr., to Sun Research and Development Co., mesne. Lubricant for controlled-slip differential. 3,825,495, Cl. 252-32.70e.  
Newport News Shipbuilding & Dry Dock Company: *See—*  
Huebner, H. Douglas, 3,824,845.  
Nicholas, Stephen John. Servo-boosters for vehicle brake systems. 3,824,894, Cl. 91-369.00b.  
Nicholson, James E.; and Lipson, Charles S., to Clinical Technology Incorporated. Pressure garment. 3,824,992, Cl. 128-24.00r.  
Nicoll, Howard C. Reusable umbilical cord clamp for veterinary use. 3,825,012, Cl. 128-346.000.  
Nielsen, Edward G.: *See—*  
Roodvoets, Roger J.; and Nielsen, Edward G., 3,824,666.  
Niepoth, George W.: *See—*  
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Nihon Denshi Kabushiki Kaisha: *See—*  
Someya, Teruo; Kobayashi, Nobuyuki; and Goto, Toshinori, 3,825,839.  
Nihon Filter Co., Ltd.: *See—*  
Nakamura, Toshihiko, 3,825,483.  
Nikolaevich, Robert: *See—*  
Yakovlevich, Otari; Nikolaevich, Robert; Isidorovich, Ivan; and Georgievich, Mikhail, 3,825,718.  
Nilsson, Stig Albert. Guiding device in a machine for manufacturing venetian blinds. 3,824,657, Cl. 29-24.500.  
Nippon Carburetor Co. Ltd.: *See—*  
Aoyama, Taizo; and Kamosawa, Katsuya, 3,825,237.  
Nippon Electric Company, Limited: *See—*  
Honma, Takamichi; Igarashi, Shigeru; and Harada, Hiroshi, 3,825,691.  
Ishiguro, Tatsuo, 3,825,831.  
Takahashi, Sakari, 3,825,455.  
Nippon Gakki Seizo Kabushiki Kaisha: *See—*  
Okamoto, Shimaji, 3,825,668.  
Nippon Kayaku Co., Ltd.: *See—*  
Takenaka, Shigeo; Shimizu, Hitoshi; and Yamamoto, Kenichiro, 3,825,502.  
Nippon Kokan Kabushiki Kaisha: *See—*  
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Suga, Yoshizo, 3,825,405.  
Nippon Petrochemicals Co., Ltd.: *See—*  
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Nippon Piston Ring, Ltd.: *See—*  
Minegishi, Hiroshi, 3,824,662.  
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*  
Ohara, Takashi; Ueshima, Michio; and Yanagisawa, Isao, 3,825,600.  
Nippon Toki Kabushiki Kaisha (Noritake Co., Ltd.): *See—*  
Yoshikawa, Takayuki; Hisada, Eiichi; and Hujii, Tooru, 3,825,460.  
Nishihara, Yoshio; and Ohashi, Isamu, to Mikuni Kogyo Kabushiki Kaisha. Overflow type carburetor. 3,825,238, Cl. 261-36.00a.  
Nishimura, Hiroshi: *See—*  
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; and Nishimura, Hiroshi, 3,825,524.  
Nishizawa, Yoshihiko: *See—*  
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,825,633.  
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Nissan Motor Company, Limited: *See—*  
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Saito, Shigeru, 3,824,665.  
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Nisshin Steel Co. Ltd.: *See—*  
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Nisula, Pentti Samuel, to Lannen Sokeri Oy. Device for the manufacture of peat band rolls. 3,825,199, Cl. 242-55.000.  
Nobuo, Shirae, to Tiger Vacuum Bottle Industrial Company, Limited. Automatic liquid pouring device for vacuum bottle. 3,825,156, Cl. 222-183.000.  
Nomarski, Georges; and Roblin, Gerard, to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Process of optical path modulation and modulator for implementation of the same. 3,825,348, Cl. 356-107.000.  
Nomarski, Georges, to Etablissement Public: Agence Nationale de Valorisation de la Recherche Anvar. Point reference interferometry. 3,825,349, Cl. 356-107.000.  
Noponen, Harold W.; and Miller, Tom B., to Gencler Motors Corporation. Filler cap. 3,825,147, Cl. 220-44.00a.  
Nordstroem, Knut Lennart: *See—*  
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Norick, William B.: *See—*  
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Normalair-Garrett (Holdings) Limited: *See—*  
Murray, Brian Desmond Allan, 3,825,311.  
Norquist, Bernard W. Portable centrifugal drier for small articles. 3,824,701, Cl. 34-58.000.  
North American Rockwell Corporation: *See—*  
Harris, Ronald E.; and Cullen, Darrel F., 3,824,678.  
Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Carboxy vinyl polymer and sulfonated alkyl acrylamide polymer mobility control agent and process. 3,825,068, Cl. 166-305.00r.  
Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Carboxy vinyl polymer and partially hydrolyzed polyacrylamide mobility control agent and process. 3,825,069, Cl. 166-305.00r.  
Nosaki, Shigeki: *See—*  
Kubota, Koji; Yoshihara, Yasuhiko; Hirakawa, Hayao; Kamijo, Hirotaka; Nosaki, Shigeki; Yoshinaga, Fumihiro; Okumura, Shinji; and Okada, Hiroshi, 3,825,472.  
Nothen, Gunther: *See—*  
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Novello, Frederick C., to Merck & Co., Inc. 2-Hetero substituted 4 (3H)-quinazolinones. 3,825,542, Cl. 260-256.50r.  
NSM-Apparatebau GmbH: *See—*  
Menke, Wilhelm, 3,825,729.  
Nudelman, Abraham; and McCaully, Ronald J., to American Home Products Corporation. N-carboxymethyl-n-substituted glycinate esters of 3-hydroxy-1,4-benzodiazepin-2-ones. 3,825,533, Cl. 260-239.30d.  
Nutter, Benjamin P., to Schlumberger Technology Corporation. Pressure controlled test valve system for offshore wells. 3,824,850, Cl. 73-151.000.  
Nutting Truck and Caster Company: *See—*  
Biessener, Richard M., 3,824,930.



Obenhaus, Robert E., to Texas Instruments Incorporated. Computer input/output interface systems using optically coupled isolators. 3,825,896, Cl. 340-147.00r.

Ochi, Shikanosuke, to Kabushiki Kaisha Sega Enterprises. Device for simulating a running animal. 3,825,256, Cl. 273-1.00e.

O'Connor, William W., to Motorola, Inc. Offset oscillator system for radio transmitter and receiver. 3,825,830, Cl. 325-20.000.

Oconomowoc Mfg. Corporation: See—  
Donahue, Jerome T.; Hess, Walter F.; Knoebel, Gordon W.; and Sydow, Donald E., 3,824,658.

O'Donnell, John R., to EG & G, Inc. Coaxial line to strip line connector. 3,825,861, Cl. 333-33.000.

Oehninger, Jurg, to Sulzer Brothers Limited. Apparatus for the storage of elongate material. 3,825,198, Cl. 242-55.000.

Oestmann, Eldon D.: See—  
Krolak, Ronald L.; and Oestmann, Eldon D., 3,825,309.

Ogawa, Masaya, to Matsushita Seiko Company, Limited. Surface exposure device for copying apparatus. 3,825,339, Cl. 355-51.000.

Ogawa, Taizo: See—  
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,825,633.

Oguchi, Yuzo: See—  
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Ohara, Takashi; Ueshima, Michio; and Yanagisawa, Isao, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for the preparation of unsaturated carbonyl compounds. 3,825,600, Cl. 260-604.00r.

Ohashi, Isamu: See—  
Nishihara, Yoshio; and Ohashi, Isamu, 3,825,238.

Ohmae, Tadayuki: See—  
Sonoda, Ruyichi; and Ohmae, Tadayuki, 3,825,610.

Ohsawa Manufacturing Co., Ltd.: See—  
Ohsawa, Yoichi, 3,825,189.

Ohsawa, Yoichi, to Ohsawa Manufacturing Co., Ltd. Burner valve nozzle arrangement for liquid gas lighter. 3,825,189, Cl. 239-590.000.

Ohtsu, Takawo; Nakamura, Yukinobu; and Sekido, Fujihiko, to Japan Gasoline Co., Ltd. Process gas chromatographic apparatus. 3,824,838, Cl. 73-23.100.

Oi, Hidesaburo: See—  
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; and Nishimura, Hiroshi, 3,825,524.

Ojima, Tadato; Koiso, Kazuhiro; and Nakano, Toshihiko, to Matsushita Electric Industrial Company, Limited. Printed circuit assembly and method for fabrication thereof. 3,825,877, Cl. 339-17.00e.

Oka, Atsutaka, to Yuasa Battery Company Limited. Lead-zinc primary battery. 3,825,446, Cl. 136-114.000.

Okada, Hiroshi: See—  
Kubota, Koji; Yoshihara, Yasuhiko; Hirakawa, Hayao; Kamijo, Hirotsuka; Nosaki, Shigeki; Yoshinaga, Fumihiko; Okumura, Shinji; and Okada, Hiroshi, 3,825,472.

Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument capable of providing a third type of musical tones by operation of two keyboards in addition to the ordinary melody and chord tones. 3,825,668, Cl. 84-1.170.

Okazaki, Nobuo: See—  
Mori, Yoichi; Okazaki, Nobuo; Otsuka, Kunio; and Iijima, Tetsuya, 3,824,876.

Okumura, Shinji: See—  
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Okuno, Yositosi: See—  
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Oland, Bradley H.: See—  
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Olin Corporation: See—  
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Reilly, Dennis E., 3,825,443.

Oliveto, Eugene Paul: See—  
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Olsen, Frederick C.: See—  
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Olsen, Robert Nils: See—  
Lucas, Howard Robert; and Olsen, Robert Nils, 3,825,515.

Olsson, Sven-Gunnar Sigvard, to Siemens Aktiengesellschaft. Device for producing gas flows. 3,824,902, Cl. 92-40.000.

Omark Industries, Inc.: See—  
Hughes, James S., Jr., 3,825,717.

O.M.V. S.p.A.: See—  
Padovani, Pietro, 3,825,166.

O'Neill, Gerald J.; Simons, Charles W.; and Billings, Charles A., to Grace, W. R. & Co. Fluorocyclopropanes as inhalation anesthetics. 3,825,606, Cl. 260-648.00f.

Ono, Yoshio; Sekine, Chiu; Takaoka, Naotoshi; and Asai, Nobuyoshi, to Takamatsu Electric Works Ltd. Fuse element and a high voltage current-limiting fuse. 3,825,870, Cl. 337-159.000.

Onufer, George R.: See—  
Beller, Herbert R.; and Onufer, George R., 3,824,791.

Ooba, Shigehiro: See—  
Fujimoto, Keimei; Hirano, Masachika; Takeda, Hisami; and Ooba, Shigehiro, 3,825,579.

Oppenlaender, Knut: See—  
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Orb, Inc.: See—  
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Ordona Lenina Fizicheskoy Institut Imeni P.N. Lebedeva: See—  
Kozlov, Stanislav Fedorovich; and Konorova, Elena Laexandrova, 3,824,680.

Ormerod, Philip Austin, to Imperial Chemical Industries Limited. Weft selecting apparatus. 3,825,038, Cl. 139-122.00w.

Orr, John L., to Keystone Consolidated Industries, Inc. Removable cylinder lock. 3,824,817, Cl. 70-81.000.

Ortho Pharmaceutical Corporation: See—  
Karmas, George, 3,825,576.

Ortloff, Gerald D.: See—  
Lloyd, James R.; Williams, Robert E.; Bayless, Jack H.; Ortloff, Gerald D.; and Bruce, George H., 3,825,065.

Osborne, Thomas E., to Hewlett-Packard Company. Calculator with provision for efficiently manipulating factors and terms. 3,825,736, Cl. 235-168.000.

Osburn, John G.; and Schachte, John J., to Kearney & Trecker Corporation. Workpiece changer mechanism for a machine tool. 3,825,245, Cl. 269-30.000.

Osta, Francesco. Device for controlling the launching of a reel of web in an unwinder with automatic reel change. 3,825,201, Cl. 242-58.100.

Otsuka, Katsumi, to New Kon Industrial Co., Ltd. Electric mark perforator. 3,825,179, Cl. 234-51.000.

Otsuka, Kunio: See—  
Mori, Yoichi; Okazaki, Nobuo; Otsuka, Kunio; and Iijima, Tetsuya, 3,824,876.

Ott, Owen J.; Ginn, David W.; and Miller, Lester F., Jr., to Data Interface, Inc. Toner applicator for magnetic printing system. 3,825,936, Cl. 346-74.0mp.

Otto, Carl L. Electrically powered submerged pump, power circuit therefor, and oceanographic monitoring apparatus and method employing same. 3,824,852, Cl. 73-170.00a.

Otto Engineering, Inc.: See—  
Roeser, John O., 3,825,723.

Overell, Brian George: See—  
Mullan, Noel Austin; and Overell, Brian George, 3,825,525.

Owen, Harold D. Step assembly apparatus for use on ski boat or the like. 3,825,097, Cl. 182-91.000.

Owen, Thomas G., Jr. Pivotal refuse cart dumping apparatus with horizontally movable and spreadable arms. 3,825,133, Cl. 214-148.000.

Owens-Corning Fiberglas Corporation: See—  
Finn, Lawrence R.; and Smith, Richard L., 3,824,759.

Kies, Jared R., 3,825,642.

Marzocchi, Alfred, 3,824,779.

Owens-Illinois, Inc.: See—  
Amberg, Ralph G., 3,824,840.

Aust, John J.; and Gray, Charles D., 3,825,170.

Kontz, Robert F., 3,825,396.

Wojcik, Gerald E.; and Lawson, William M., 3,825,468.

Oxy Metal Finishing Corporation: See—  
Claus, Richard J.; Tomaszewski, Thaddeus W.; and Brown, Henry, 3,825,478.

Ozaki, Toshiaki: See—  
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,825,633.

Pac-Craft Products, Inc.: See—  
Clark, Albert L., 3,825,095.

Paccar Inc.: See—  
Saunders, James W.; and Stephens, Donald L., 3,825,295.

Padovani, Pietro, to O.M.V. S.p.A. Container having an open top surrounded by a lip. 3,825,166, Cl. 229-1.50b.

Paige, Anthony Thomas, to Amalgamated Dental Company, The. Cartridge syringe and crimped needle assembly. 3,825,002, Cl. 128-218.0da.

Pallos, Ferenc M.; Lee, Hwalin; and Menn, Julius J., to Stauffer Chemical Company. Certain geranyl phenyl ethers and their epoxides and their use in controlling insects. 3,825,602, Cl. 260-609.00r.

Pallos, Ferenc M., to Stauffer Chemical Company. Phosphorus-containing amidines. 3,825,632, Cl. 260-944.000.

Palmer, George L. Apparatus for practicing basketball throws. 3,825,257, Cl. 273-1.50a.

Papiau, Guy, to Societe Anonyme D.B.A. Fluid pressure unbalance indicator with plural pistons. 3,825,706, Cl. 200-82.00d.

Paquette, Richard N.: See—  
Winfield, Merle, 3,824,978.

Par-Way Mfg. Co.: See—  
Doering, Beauford C., 3,825,188.

Parady, Victor G., Jr., to Sea-Land Service, Inc. Livestock container. 3,824,958, Cl. 119-10.000.

Paramonoff, Elpidifor; Olsen, Frederick C.; and Labeda, Robert C., to Standum, Inc. Wiper seal for apparatus such as metallic can body formers. 3,825,270, Cl. 277-15.000.

Parkinson, James R. Two sensor torque measuring apparatus with compensation for shaft misalignment. 3,824,848, Cl. 73-136.00a.

Parts, Leo P.; and Miller, John T., Jr., to Monsanto Research Corporation. Smoke-retardant styrene polymer compositions containing a metal phthalocyanine. 3,825,520, Cl. 260-45.75r.

Passien, Renold R. Magnetic discboard. 3,825,927, Cl. 340-373.000.

Patel, Arvind M.: See—  
Bossen, Douglas C.; Hong, Se J.; Hsiao, Mu-Yue; and Patel, Arvind M., 3,825,893.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH: See—  
Pfau, Johannes; and Schmidt, Jochen, 3,825,788.

Patrick, Bruce R.; and Timms, Herbert, to Timms, Herbert W. Solid state automatic fluid dispensing means. 3,825,153, Cl. 222-14.000.

Patrick, Ralph R.; Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Hydrogen transfer catalyst. 3,825,503, Cl. 252-462.000.

Patterson, Charles B.: See—  
Fisher, William T.; Patterson, Charles B.; and Dahl, Stanley M., 3,824,923.

Paulukonis, Richard S. Energy conserving directional valve-cylinder combination. 3,824,898, Cl. 91-416.000.

Pausche, John W.: See—  
Finger, Carl; and Pausche, John W., 3,825,878.

Paxton, Thomas R.: See—  
Berens, Alan R.; and Paxton, Thomas R., 3,825,434.

Payer, Stephen F.: See—  
Klein, Gerald I.; Moore, Robert A.; and Payer, Stephen F., 3,825,859.

Pecorari, Piercelestino. Apparatus for transporting and mixing concrete. 3,825,232, Cl. 259-177.00r.

Pelly, Brian R., to Westinghouse Electric Corporation. Active filter for the input harmonic current of static power converters. 3,825,814, Cl. 321-9.00a.

Pelofsky, Arnold H.; Felix, Dan T.; and Herbert, Gary N. Sonic energy exhaust filter. 3,825,480, Cl. 204-193.000.

Pelosi, Michael H., Jr.: See—  
Horneff, James P.; and Pelosi, Michael H., Jr., 3,824,909.

Peng, Yao, to Avco Corporation. Cooled turbine rotor cylinder. 3,825,365, Cl. 415-117.000.

Penicaud, Etienne, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Conversation detector for a telephonic channel concentrator. 3,825,694, Cl. 179-15.0as.

Pennwalt Corporation: See—  
Tuccillo, Joseph J., 3,825,419.

Pepe, Anthony Enrico, to Stauffer Chemical Company. Curable organopolysiloxanes. 3,825,618, Cl. 260-827.000.

Peripherals General, Inc.: See—  
Petherman, Neil R.; Korn, Darryl K.; and Millard, Stephen, 3,825,844.

Perkins, Jerry K.: See—  
Wickam, Irwin Edward; and Perkins, Jerry K., 3,825,106.

Perrilla, Donald J.; and Dolfini, Joseph E., to Squibb, E. R., & Sons, Inc. Bis-cephalosporins. 3,825,536, Cl. 260-243.00c.

Peruglia, Marco, to FIAT Societa per Azioni. Automatic unidirectional throttle. 3,825,032, Cl. 137-496.000.

Pester, William B.: See—  
Holland, Andrew M.; and Pester, William B., 3,825,268.

Petherman, Neil R.; Korn, Darryl K.; and Millard, Stephen, to Peripherals General, Inc. System for recovering phase shifted data pulses. 3,825,844, Cl. 329-104.000.

Petersen, Carsten Georg Otto; and Giversen, Svend, to Danfoss A/S. Valve arrangement for fluid pressure motor or pump. 3,825,376, Cl. 418-61.00b.

Peterson, C. Lynn; and Morris, Jesard, to Peterson Filters and Engineering Company. Filter and guide apparatus. 3,825,125, Cl. 210-401.000.

Peterson Filters and Engineering Company: See—  
Peterson, C. Lynn; and Morris, Jesard, 3,825,125.

Peterson, Kenneth L., to Anderson Corporation. Apparatus and method for reducing the occurrence of bowing in wooden window rails. 3,825,046, Cl. 144-142.000.

Peterson, Stuart R. Anti-glare system for motor vehicles. 3,825,296, Cl. 296-97.00d.

Petigara, Ramesh B.: See—  
Yale, Harry Louis; and Petigara, Ramesh B., 3,825,549.

Petitgout, George L.: See—  
Darges, Walter; Karpis, John J.; Petitgout, George L.; and Witbeck, Walter G., 3,825,212.

Petrant, Robert G. Multi-purpose work holding means. 3,824,744, Cl. 51-217.00a.

Petrofina Canada Ltd.: See—  
Redford, David Arthur, 3,825,066.

Petrova, Nina Vladimirovna. Charging pipe union. 3,825,222, Cl. 251-149.600.

Petty, Albert W.: See—  
Matthews, Robert M.; and Petty, Albert W., 3,824,812.

Peverill, William J., to International Telephone and Telegraph Corporation. Electrical connector. 3,825,874, Cl. 339-14.00r.

Pezot, Jacques, to Commissariat a l'Energie Atomique. Laser generator for single transverse mode operation. 3,825,856, Cl. 331-94.50c.

Pfau, Johannes; and Schmidt, Jochen, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. High pressure metal vapor discharge lamp with tubular current lead including filler release construction. 3,825,788, Cl. 313-174.000.

Pfeiffer, John C. Device for testing semiconductors and other electrical components. 3,825,828, Cl. 324-158.00t.

Phaser Trepropulsion, Inc.: See—

Minovitch, Michael A., 3,825,211.

Philippaerts, Herman Adelbert: See—  
Pollett, Robert Joseph; Philippaerts, Herman Adelbert; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, 3,825,426.

Phillips, Paul Creighton, to RCA Corporation. Balanced line driver, line receiver system. 3,825,682, Cl. 178-69.00g.

Phillips, Paul S., Jr., to National Cash Register Company, The. Pressure-sensitive record sheet material. 3,825,467, Cl. 161-159.000.

Phillips Petroleum Company: See—  
Chapman, Charles C., 3,825,616.

Erdman, J. Gordon, 3,824,858.

Faraglia, Silvio T., 3,824,702.

Faraglia, Silvio T.; and Halpin, Robert G., 3,825,408.

Henderson, Eulas W., 3,825,233.

Johnson, Lewis T.; and Bull, Willard E., 3,825,114.

MacEwan, George E., 3,825,168.

Phillips, Ralph E., Jr.: See—  
Sadler, Keith A.; and Phillips, Ralph E., Jr., 3,825,872.

Phillips Petroleum Company: See—  
Rostler, Fritz S., 3,825,513.

Phillips Screw Company: See—  
Miller, Allan, 3,825,898.

Photo-Control Corporation: See—  
Van Wandelen, Henri, 3,825,748.

Piccione, Nicholas E. System and apparatus for underground transformer installation. 3,825,866, Cl. 337-17.000.

Pichal, Henri T., to Honeywell Information Systems Inc. Amplifier with substantially zero distortion products. 3,825,854, Cl. 330-149.000.

Pichowicz, John R. Perma land bound stake device. 3,824,748, Cl. 52-103.000.

Piecuch, Richard Wm.: See—  
Salerno, Paul G.; Sikorcin, John; and Piecuch, Richard Wm., 3,825,026.

Pietrowiak, Fritz. Installation for the manufacture of finished components. 3,825,394, Cl. 425-404.000.

Pilato, Louis A.: See—  
Robeson, Lloyd M.; Pilato, Louis A.; and Godlewski, Robert E., 3,825,622.

Pinckaers, B. Hubert, to Honeywell Inc. Control system comprising differential amplifier with dual current comparator having two outputs separated by a deadband. 3,825,852, Cl. 330-30.00d.

Pipitone, Ralph M.: See—  
Brown, Wendell W.; Davis, Michael I.; and Pipitone, Ralph M., 3,825,902.

Pipkins, David D., to Valspar Corporation, The. Container containing a carbonated product. 3,825,111, Cl. 206-84.000.

Pirchl, Gerhard, to Romay AG. Visual display apparatus with character matrix. 3,825,923, Cl. 340-336.000.

Pirhonen, Ilpo M. J.: See—  
Forss, Kaj G.; and Pirhonen, Ilpo M. J., 3,825,526.

Piroth, Dieter: See—  
Lubbers, Dietrich Werner; Wodick, Reinhard; and Piroth, Dieter, 3,825,342.

Pitkanen, Alan R.; Kennedy, Melvin R.; Nagel, Dietmar; Gross, William J.; and Bosley, Denis V., to Mattel, Inc. Amusement machine. 3,825,265, Cl. 273-126.00r.

Pitre, Davide: See—  
Felder, Ernst; and Pitre, Davide, 3,825,591.

Pitroda, Satyan G.; and Rekiere, Bernard J., to GTE Automatic Electric Laboratories Incorporated. Line variation compensation system for synchronized PCM digital switching. 3,825,683, Cl. 178-69.50r.

Pitzalis, Mario: See—  
Vargiu, Silvio; Giovanni, Sesto S.; and Pitzalis, Mario, 3,825,522.

Pivar, Stewart, to Rototron Corporation. Apparatus for molding hollow plastic articles. 3,825,395, Cl. 425-435.000.

Plessey Handel und Investments A.G.: See—  
Beavitt, Alan Robert; and McCarthy, John Peter, 3,825,801.

Hilton, John Leslie, 3,824,669.

Plokhov, Viktor Ivanovich: See—  
Starostin, Jury Stepanovich; Plokhov, Viktor Ivanovich; Erokhov, Veniamin Kuzmich; Ivanov, Vladimir Prokopovich; Krotkov, Vladimir Nikolaevich; Anisimov, Albert Viktorovich; Ajupov, Rustem Nurievich; and Golovinov, Mikhail Fedortovich, 3,824,832.

Pohl, Siegfried; and Nothen, Gunther, said Pohl, assor. to said Nothen, Gunther. Flower pot grate-tray. 3,825,126, Cl. 211-71.000.

Pokorny, William C. Transmission line audible noise and corona reducing device. 3,825,671, Cl. 174-40.00r.

Polaroid Corporation: See—  
Reynolds, Robert, 3,825,335.

Reynolds, Robert, 3,825,336.

Polhaell, Karl Olof: See—  
Bennet, Tom Joachim; Nordstroem, Knut Lennart; and Polhaell, Karl Olof, 3,824,830.

Pollett, Robert Joseph; Philippaerts, Herman Adelbert; Vandenberghe, Antoon Leon; and Willems, Jozef Frans, to Agfa-Gevaert N.V. Development of exposed photographic silver halide elements. 3,825,426, Cl. 96-76.00r.

Polysar Limited: See—  
La Flair, Ronald Turner, 3,825,623.

Pommerening, Uwe A.: See—  
Gueldenfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,825,692.

Pontello, Anthony P., to United States of America, Navy. Fuel filter testing apparatus. 3,824,823, Cl. 73-432.00r.



- Pool, Stuart D., to Mathews, Bernard C. Unloader for the grain bin of a combine. 3,825,138, Cl. 214-522.000.
- Popov, Vitaly Fedorovich. Gas fuel blowpipe for burning reaction gas mixtures. 3,825,400, Cl. 431-160.000.
- Pott, Heinrich, to Siemens Siegener Maschinenbau G.m.b.H. Molding hollow articles. 3,825,389, Cl. 425-324.00b.
- Poulain, Claude: See—  
Kern, Rene; Poulain, Claude; and Tock, Francois, 3,825,532.
- Powell, Charles W. Art sculpture. 3,824,712, Cl. 35-26.000.
- Prada, Luis E., to General Electric Company. Combination ice cube and crushed ice dispenser selector means. 3,824,805, Cl. 62-320.000.
- Preisler, Eberhard; Grapentin, Kurt; Harmsen, Ernst; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Production of manganese (II) salt solutions. 3,825,652, Cl. 423-50.000.
- Preload Technology, Inc.: See—  
Shelander, Charles, 3,824,751.
- Presley, Robert W. Fish brooder or refuge. 3,824,956, Cl. 119-3.000.
- Price Brothers Company: See—  
Keyser, Lewis R., 3,825,037.
- Price, Ralph E., and Schoonover, Stanley C., to Landis Tool Company. Machine tool control system. 3,824,743, Cl. 51-165.071.
- Price, Ronald; and Kelemen, Jozsef W., to Leigh Instruments Limited. Scratch strain recorder. 3,825,934, Cl. 346-7.000.
- Pritchard, David William; and Wiseman, Thomas James, to British Titan Limited. Manufacture of pigments. 3,825,438, Cl. 117-100.00b.
- Procop, Alex J., and Boultinghouse, Ace, to Target Systems Corporation. Projection lamp carrier. 3,825,331, Cl. 352-198.000.
- Procter & Gamble Company, The: See—  
Barbera, Melvin A., 3,825,588.  
Buell, Kenneth B., 3,824,652.  
Buell, Kenneth B., 3,825,194.
- Produits Chimiques Ugine Kuhlmann: See—  
Lalu, Jean-Pierre; and Foulletier, Louis, 3,825,577.
- Prohaska, Hans: See—  
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- Protocol Engineering Limited: See—  
Billows, Leonard Kay; and Gosling, Raymond John, 3,824,828.
- Prouty, Robert E., and Graf, Robert E., to Essex International, Inc. Electromagnetic relay. 3,825,865, Cl. 335-128.000.
- Pugh, K. O.; Ivey, Howard; and Cobb, Austell C. A., to Ruralist Press, Inc. Laminated magnetic printing roll assembly. 3,824,927, Cl. 101-382.0m.
- Pugh, Robert E.: See—  
Connor, John S.; and Pugh, Robert E., 3,825,766.
- Puhahn, Werner, to Standardwerk Eugen Reis, GmbH. Mechanism for mounting roll paper. 3,825,200, Cl. 242-57.000.
- Pullman Incorporated: See—  
Carr, George W., 3,825,294.  
Hutchison, John W., 3,824,931.
- Pungs, Wolfgang: See—  
Schneider, Johannes; and Pungs, Wolfgang, 3,825,516.
- Purcell, Robert J.: See—  
Stedman, Robert N.; and Purcell, Robert J., 3,825,074.
- Pure Way Corporation: See—  
Bach, Bert; and Lemcke, Robert, 3,824,632.
- Purex Corporation, Ltd.: See—  
Fisher, William T.; Patterson, Charles B.; and Dahl, Stanley M., 3,824,923.
- Puzynya, Leonid Vasilievich: See—  
Smirnov, Mikhail Dmitrievich; Ershov, Boris Alexandrovich; Savitsky, Vladimir Nikolaevich; Brevev, Boris Dmitrievich; Arkarsky, Anatoly Alexandrovich; Shadakov, Svyatoslav Viktorovich; Sinajuk, David Aronovich; Stukalov, Vladimir Nikolaevich; and Puzynya, Leonid Vasilievich, 3,824,642.
- Pyles, Gerald Dee, to RCA Corporation. Delayed alarm and drowse for clock receivers. 3,825,836, Cl. 324-396.000.
- Pyles, Gerald Dee, to RCA Corporation. Cartridge changer with cartridge sensing means. 3,825,949, Cl. 360-91.000.
- Pylon, Incorporated: See—  
Burns, Robert G., 3,824,721.
- R. S. Reciprocating Trainer Enterprises, Inc.: See—  
Soderberg, Raymond Henry, Sr., 3,824,994.
- Radford, David L., to Vital Assists Inc. Blood port assembly and method. 3,825,492, Cl. 210-22.000.
- Radun Controls Limited: See—  
Samuel, Duncan Roy; and Moore, Donald Fergus, 3,825,025.
- Rallis, Theodore. Toothbrush adapter for aerosol container. 3,825,354, Cl. 401-119.000.
- Ralph Harold J. Diaper garment with interleaved liner having non-wicking protective panels. 3,825,006, Cl. 128-287.000.
- Ralph, John Ernest, to U.S. Philips Corporation. Channel plate display device having positive optical feedback. 3,825,922, Cl. 340-324.00m.
- Ramey, Robert M., to Teledyne, Inc. Submersible pool heater. 3,824,986, Cl. 126-360.000.
- Ramsden, Paul S., Jr., to Sanders Associates, Inc. Surveillance system. 3,825,676, Cl. 178-6.800.
- Ramstrom, Sven, to Karlskronavarvet AB. Aerial tuning device. 3,825,864, Cl. 334-39.000.
- Rand, Robert W. Pledgets. 3,825,007, Cl. 128-296.000.
- Rapid S.A.: See—  
Duchatelier, Bernard Charles, 3,825,884.
- Rappaport, Richard A., to Sybron Corporation. Digital system including a pulse counter for selectively interconnecting a source of energy and a plurality of energizable elements. 3,825,841, Cl. 328-70.000.
- Rarey, Kenneth W., and Kennedy, John B., Jr., to Continental Can Company, Inc. Electrostatic screen printing and cleaning. 3,824,924, Cl. 101-114.000.
- Rawson, Edward B.: See—  
Worthington, Harvey R., Jr.; Rawson, Edward B.; and Schwarzkopf, Daniel, 3,825,730.
- Raytheon Company: See—  
Barrett, Harrison H.; and Horrigan, Frank A., 3,825,757.
- RCA Corporation: See—  
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Amodei, Juan Jose, 3,825,316.  
Belohoubek, Erwin Franz; and Stevenson, David Michael, 3,825,805.  
Davidson, Edmund Benjamin, 3,825,428.  
Dietz, Wolfgang Friedrich Wilhelm, 3,825,793.  
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Marinelli, Donald Paul; and Stockton, Thomas Edward, 3,825,449.  
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- Recchuitte, Alexander D.: See—  
Newingham, Thomas D.; Recchuitte, Alexander D.; Griffith, John O., III; and Haseltine, Marcus W., Jr., 3,825,495.
- Redfern, John T., to United States of America, Navy. High-pressure optical bulkhead penetrator. 3,825,320, Cl. 350-96.00b.
- Redford, David Arthur, to Petrofina Canada Ltd. Process for developing interwell communication in a tar sand. 3,825,066, Cl. 166-261.000.
- Redington, Rowland W., and Van Heerden, Pieter J., to General Electric Company. Photoconductive camera tube and methods of manufacture. 3,825,795, Cl. 315-10.000.
- Reed, Norman D.: See—  
Ligon, Elmer R.; and Reed, Norman D., 3,825,392.
- Reichelt, Walter: See—  
Bacal, Martha; and Reichelt, Walter, 3,825,790.
- Reichhold Chemicals, Inc.: See—  
Ficarra, Bartholomew M., 3,825,517.
- Reilly, Dennis E., to Olin Corporation. Coiled tube blowout process and apparatus. 3,825,443, Cl. 134-24.000.
- Reilly, James J., and Wiswall, Richard H., Jr., to United States of America, Atomic Energy Commission. Alloys for isolation of hydrogen. 3,825,418, Cl. 75-159.000.
- Reiter, William M.; Cooper, James E.; and Sheth, Krishnakant K., 1/2 to Sumitomo Chemical Company, Ltd. and 1/2 to Universal PVC Resins, Inc. Process for polymerizing vinyl chloride using a reflux condenser. 3,825,512, Cl. 260-92.80w.
- Rekiere, Bernard J.: See—  
Kelly, Michael J.; Kobylar, Alex W.; and Rekiere, Bernard J., 3,825,690.  
Pitroda, Satyan G.; and Rekiere, Bernard J., 3,825,683.
- Reliance Electric Company: See—  
Jacobs, Norman H.; and Susor, William C., 3,825,734.  
Martin, Orval J., 3,825,085.
- Remanc, Roger, to Societe Anonyme: "Application des Gaz." Needle plug cock. 3,825,224, Cl. 251-205.000.
- Renfrew, Andrew Hunter Morris: See—  
Boyd, Violet; Evans, Ronald Arthur; Holt, Kenneth Anthony; and Renfrew, Andrew Hunter Morris, 3,825,507.
- Rennick, Leonard E., to Sun Oil Company. Hydroformylation of internal olefins. 3,825,601, Cl. 260-604.0hf.
- Rettedal, Cecil D. Golf ball picker and collector. 3,825,136, Cl. 214-350.000.
- Reval, Hardev, to C.A.V. Limited. Thyristor chopper circuits. 3,825,817, Cl. 321-45.00c.
- Rexon, George F.: See—  
Bittner, Charles W.; and Rexon, George F., 3,825,393.
- Reynolds, Delbert Daniel; and Cossar, Bernard Calvin, to Eastman Kodak Company. Oxazines and mono (secondary aminomethyl) hydroquinones and process for their preparation. 3,825,538, Cl. 260-244.00r.
- Reynolds Metals Company: See—  
Harrison, Maurice Clark; and Vancil, Donald Otis, 3,825,659.
- Reynolds, Richard W., to Huck Finn, Inc. Beer keg. 3,825,145, Cl. 220-1.00r.
- Reynolds, Robert, to Polaroid Corporation. Variable color photographic lighting system. 3,825,335, Cl. 355-1.000.
- Reynolds, Robert, to Polaroid Corporation. Variable color photographic lighting source. 3,825,336, Cl. 355-1.000.
- Rheinstahl AG: See—  
Jeuken, Josef; Vieregge, Gustav; and Meyer, Konrad, 3,824,820.
- Rhone-Poulenc S.A.: See—  
Moyne, Paul, 3,824,703.
- Rhudy, Ralph Gene, to General Electric Company. Method for reducing corona in a dynamoelectric machine. 3,824,683, Cl. 29-596.000.
- Rice, Eldred A. Spark-ignition internal combustion engine carburetors. 3,825,239, Cl. 261-50.00r.
- Rice, Leonard M., to Geschickter Fund for Medical Research. Silicon and germanium substituted azapiranes. 3,825,546, Cl. 260-293.660.
- Richards, Edward F., and Depperman, Warren B., to Martin-Marietta Corporation. High speed fluidic devices. 3,825,739, Cl. 235-201.0pf.

- Richards, Gary E.: See—  
Scherer, Carl A.; and Richards, Gary E., 3,824,802.
- Richardson, Harvey J.: See—  
Bradford, Robert S.; Richardson, Harvey J.; Dubbe, Richard F.; and Ebbinga, Richard D., 3,825,675.
- Richardson, Raymond C. Power feed sander. 3,824,740, Cl. 51-33.00r.
- Richardson, Rolland A., to Canon, Inc. Programming system for press brakes or the like. 3,824,822, Cl. 72-36.000.
- Richardson, William D., to Tuthill Pump Company. Connecting plug for testing tubes and with internal valve therein. 3,825,223, Cl. 251-149.600.
- Ridder, Gerhard: See—  
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- Riken Light Metal Industries Co., Ltd.: See—  
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- Riley, Arthur F., to Teletype Corporation. High-speed printer having improved ribbon driving, reversing and tensioning mechanism. 3,825,103, Cl. 197-164.000.
- Riley, Frank E. C., 20% to Lee, Raymond, Organization, Inc., The. Multi-changeable lampshade. 3,825,743, Cl. 240-144.000.
- Rinkleib, Helfried O.: See—  
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- Ritze, Arno, to Computur-Werk Gesellschaft mit beschränkter Haftung & Co. Telephone answering apparatus with system failure detection means. 3,825,688, Cl. 179-6.00r.
- Rixon Electronics, Inc.: See—  
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- Rizzo, Frank J., Jr.: See—  
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- Ro, Jai G.: See—  
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- Roberts, Stuart J.; Rosenbaum, Harold; and Inspector, Sol, to Rosenbaum, Harold and said Roberts, Stuart J. assor. to said Inspector, Sol. Animated operator for electrical switches. 3,825,710, Cl. 200-331.000.
- Robertshaw Controls Company: See—  
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- Robitaille, Kenneth L.: See—  
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- Roeser, John O., to Otto Engineering, Inc. Temperature and humidity test apparatus. 3,825,723, Cl. 219-401.000.
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- Schoeff, John A., to Motorola, Inc. Method for fabricating polycrystalline structures for integrated circuits. 3,825,451, Cl. 148-175.000.
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- Shafer, Jon L., to Shafer Valve Company. Spring return for piston operator. 3,824,901, Cl. 92-13.600.
- Shafer Valve Company: See—  
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- Shaffer, Robert A.: See—  
Korner, Renzo L.; White, Ralph J.; Shaffer, Robert A.; and Turner, George R., 3,825,669.
- Shandel, Frederick. Camping tool. 3,824,641, Cl. 7-14.550.
- Shanks, Howard R.: See—  
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- Shapland, James T., to United States Steel Corporation. Apparatus for introducing gas to hot metal in a bottom pour vessel. 3,825,241, Cl. 266-38.000.
- Shardakov, Svyatoslav Viktorovich: See—  
Smirnov, Mikhail Dmitrievich; Ershov, Boris Alexandrovich; Savitsky, Vladilen Nikolaevich; Breev, Boris Dmitrievich; Atkarsky, Anatoly Alexandrovich; Shadakov, Svyatoslav Viktorovich; Sinajuk, David Aronovich; Stukalov, Vladimir Nikolaevich; and Puzynya, Leonid Vasilievich, 3,824,642.
- Shaw, Robert; and Robinson, Charles C., to American Optical Corporation. Neodymium glass laser having room temperature output at wavelengths shorter than 1060 nm. 3,825,500, Cl. 252-301.40f.
- Shelander, Charles, to Preload Technology, Inc. Precast concrete wall structure for waste treatment tanks. 3,824,751, Cl. 52-173.000.
- Shell Oil Company: See—  
Davies, John H.; and Davis, Royston H., 3,825,552.  
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- Shenodoah Plastics Corporation: See—  
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- Sheth, Krishnakant K.: See—  
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- Shields, Marvin L., to Sarkes Tarzian, Inc. Rectifier assembly. 3,825,767, Cl. 307-100.000.
- Shiley, Donald P. Pivoted discoid heart valve having a changing pivot axis. 3,824,629, Cl. 3-1.000.
- Shimizu, Hidenori: See—  
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- Shimizu, Hitoshi: See—  
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- Shimizu, Isamu: See—  
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- Inoue, Eiichi; Shimizu, Isamu; Kobayashi, Hajime; and Endo, Ichiro, 3,825,427.
- Shimajima, Yukiji: See—  
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- Shingler, Thomas M., to Cyclops Corporation, mesne. Hanging scaffolding. 3,825,098, Cl. 182-106.000.
- Shinoki, Takanori: See—  
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- Shiroyama, Kaisuke; and Yokoyama, Takeo, to Furukawa Company Limited. The submarine cable-burying devices. 3,824,798, Cl. 61-72.400.
- Sholler, Robert L. Wire grip. 3,824,653, Cl. 24-134.0kb.
- Shook, Russel W. Apparatus for controlling flow of blood. 3,825,008, Cl. 128-327.000.
- Short, Lot W. Drilling bit for earth formations. 3,825,080, Cl. 175-65.000.
- Short, Melvin G.: See—  
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Sinichenko, Anatoly Afanasievich; Romanenko, Anatoly Mikhailovich; Sukhov, Evgeny Alexeevich; and Markovsky, Grigory Fedorovich. Method and installation for fabricating, filling and sealing sacks made from thermoplastic material. 3,824,760, Cl. 53-29.000.

Sintokogio, Ltd.: See—  
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Skatsche, Othmar; Thien, Gerhard; and Kirchweiger, Karl, to List, Hans. Internal combustion engine with two intake and two exhaust valves. 3,824,971, Cl. 123-75.00b.

Skinner, Robert Thomas John, to Lucas Aerospace Limited. Fuel control apparatus for gas turbine engine. 3,824,786, Cl. 60-243.000.

Smirnov, Mikhail Dmitrievich; Ershov, Boris Alexandrovich; Savitsky, Vladilen Nikolaevich; Brev, Boris Dmitrievich; Atkarsky, Anatoly Alexandrovich; Shadakov, Svyatoslav Viktorovich; Sinajuk, David Aronovich; Stukalov, Vladimir Nikolaevich; and Puzynya, Leonid Vasilievich. Machine for pulling over and cement lasting of the forepart of a shoe upper. 3,824,642, Cl. 12-10.500.

Smith, Eastman. Instrument for improved eyesight-refraction testing. 3,825,326, Cl. 351-32.000.

Smith, Floyd Reid. Stook inverter. 3,825,140, Cl. 214-768.000.

Smith, Forest D., to Electric Machinery Mfg. Company. Temperature measuring system for rotating machines. 3,824,857, Cl. 73-351.000.

Smith, Herman W.; and Berka, Paul H., to Aluminum Company of America. System and method for monitoring a press load. 3,825,811, Cl. 318-646.000.

Smith, Horace L., Jr., to Smith Industries, Inc. Valves for roasting apparatus and other applications. 3,825,221, Cl. 251-62.000.

Smith, Ian F.; and Scroggs, Dennis I., to Savin Business Machines Corporation. Centrifugal mill for contact transfer electrostatic copier. 3,825,191, Cl. 241-46.110.

Smith, John F., to Narco Scientific Industries, Inc. Audio threshold leveler with noise level suppressor. 3,825,851, Cl. 330-29.000.

Smith, Joseph W.; and Hollencamp, Eugene A., to Carrier Corporation. Hydraulic valve seat expander. 3,824,667, Cl. 29-200.00b.

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Smith Industries, Inc.: See—  
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Smithline Corporation: See—  
Loev, Bernard, 3,825,547.

Smolka, Carl M. Automatic antenna coupler utilizing system for measuring the real part of the complex impedance or admittance presented by an antenna or other network. 3,825,825, Cl. 324-57.00r.

Snyder, Bobbie L.: See—  
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Societa Italiana Resine S.I.R. S.p.A.: See—  
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Societe Anonyme Automobiles Citroen: See—  
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Societe Anonyme D.B.A.: See—  
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Societe Anonyme de Recherches de Mecanique Appliquee: See—  
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Societe Anonyme des Usines de Callenelle en abregé Salu: See—  
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Societe Anonyme dite: Aquitaine Total Organico: See—  
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Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—  
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Societe Anonyme: "Application des Gaz": See—  
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Soligny, Marcel Robert; and Bouiller, Jean Georges, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Gas ducted fan engines. 3,824,785, Cl. 60-226.00a.

Someya, Teruo; Kobayashi, Nobuyuki; and Goto, Toshinori, to Nihon Denshi Kabushiki Kaisha. Constant current field emission electron gun. 3,825,839, Cl. 328-9.000.

Sommer, Richard, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Crankshaft with hardened transition portions and its manufacture. 3,824,659, Cl. 29-149.50r.

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- Swanson, Marvin C.; and Swanson, Harold R. Charcoal grill conversion apparatus, 3,824,984, Cl. 126-25,00r.
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- SWF-Specialfabrik fur Autozubehor Gustav Rau GmbH: See—  
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- Takabayashi, Teruo, to Korin Limited. Connector or an adjuster, 3,824,654, Cl. 24-198,00.
- Takada, Takezo, to Takata Kojyo Co. Ltd. Motor vehicle safety devices, 3,825,205, Cl. 242-107,400.
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- Takagishi, Iwao: See—  
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- Ura, Junichi: See—  
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- van Eekelen, Alex H. A.: See—  
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- Van Heerden, Pieter J.: See—  
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 Yablonski, Robert E.; Hager, George S.; and Campbell, William G., Jr., to Electronic Engineering Co. Of Calif. Computer tape sprocket drive with 40% pin and 60% frictional transmission. 3,824,870, Cl. 74-243.00r.  
 Yabuta, Keiichi, to Nissan Motor Company Limited. Fluid pressure regulating device for automotive braking systems. 3,825,303, Cl. 303-6.00c.  
 Yakovlevich, Otari; Nikolavich, Robert; Isidorovich, Ivan; and Georgievich, Mikhail. Plasmatron. 3,825,718, Cl. 219-121.00p.  
 Yale, Harry Louis; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. Certain dihydropyrido [2,1-b][1,3] benzodiazepines and benzodiazocines. 3,825,549, Cl. 260-294.80b.  
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 Yamazaki, Harumichi: See—  
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 Yoshikawa, Takayuki; Hisada, Eiichi; and Hujii, Tooru, to Nippon Toki Kabushiki Kaisha (Noritake Co., Ltd.). Thin-walled carbonaceous honeycomb structures and process for making same. 3,825,460, Cl. 156-296.000.  
 Yoshinaga, Fumihiko: See—  
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 Zettler, William D.; and Johnson, Earl E. Chip guard for machine tools. 3,824,890, Cl. 90-11.00r.  
 Zillinger, Adam J., Jr. Adapter for a mig welder. 3,825,720, Cl. 219-130.000.  
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Price, Ralph E., to Landis Tool Co. Means for adjusting the angular relation between a workpiece to be ground and a tool. Re. 28,082, 7-23-74, Cl. 51-165.  
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Cordell, Carl R., Jr. Boat storage compartment lid. 232,167, 7-23-74, Cl. D12-70.  
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**ISSUED JULY 23, 1974**

NOTE.—First number, class; second number, subclass; third number, patent number

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145	3,824,625			255	3,824,763	285	3,824,832	411A	3,824,897	114R	3,824,947
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		137R	3,824,695		3,824,764	389	3,824,835				
1	CLASS 3		3,824,696	1	CLASS 55			2	CLASS 92	CLASS 117	
109	3,824,629	141R	3,824,694	20	3,824,765	1R	3,824,836	8	3,825,289	33	3,825,435
172.17	3,824,630	252	3,824,697	48	3,824,766	17R	3,824,837	13.6	3,824,900	33.5R	3,825,436
187A	3,824,631	277	3,824,698	223	3,824,768	23.1	3,824,838	40	3,824,902	100B	3,825,438
213		334	3,824,699	407	3,824,769	40.7	3,824,839	48	3,824,903	106R	3,825,439
	CLASS 4	379	3,824,700	279	3,824,770	45.3	3,824,840	128	3,824,904		3,825,440
12	3,824,632			429	3,824,771	61.4	3,824,841	136	3,824,905	119	3,825,441
109	3,824,633					69	3,824,842			212	3,825,442
172.17	3,824,634	58	3,824,701		CLASS 56	71.5US	3,824,843	1C	3,824,906	CLASS 118	
172.18	3,824,635	104	3,824,702	7	3,824,772	73	3,824,844	1R	3,824,907	14	3,824,950
213	3,824,636	130	3,824,703	369	3,824,773	88.5R	3,824,845	8VB	3,824,908	31.5	3,824,951
		170	3,824,705				3,824,846			56	3,824,952
181	CLASS 5			24	3,824,774	100	3,824,847			75	3,824,953
260	3,824,638	CLASS 35	3,824,706	58.52	3,824,775	132	3,824,848	CLASS 96	3,825,422	429	3,824,954
334C	3,824,639	9C	3,824,707	140J	3,824,776	136A	3,824,849	1PE	3,825,423	500	3,824,955
	3,824,640	12E	3,824,708	149	3,824,777	146.8	3,824,850	1R	3,825,424		
14.55	CLASS 7	17	3,824,709	157TS	3,824,778	151	3,824,851	48PD	3,825,425	CLASS 119	
	3,824,641	19R	3,824,710	162	3,824,779	170A	3,824,852	60R	3,825,426	3	3,824,956
10.5	CLASS 12	26	3,824,711			181	3,824,853	76R	3,825,427	4	3,824,957
67K	3,824,642			19R	3,824,789	185	3,824,854	90PC	3,825,428	10	3,824,958
27	CLASS 14	CLASS 36	3,824,710	23D	3,824,780	194EM	3,824,855	91N	3,825,429	20	3,824,959
	3,824,644	2.5AE	3,824,713	23R	3,824,781	194B	3,824,856	108	3,825,428	28	3,824,960
50C	CLASS 15	7.1R	3,824,715	38	3,824,782	351	3,824,857	115R	3,825,430	29	3,824,961
104.1R	3,824,645	32R	3,824,716	88SC	3,824,783	421R	3,824,858			61	3,824,962
248R	3,824,646			226A	3,824,784	422C	3,824,859	CLASS 98	3,824,910	CLASS 123	
250.32	3,824,648	118R	3,824,718	243	3,824,785	431	3,824,860	40A	3,824,909	8.45	3,824,968
		77.3	3,824,719	248	3,824,786	432R	3,824,861	40C	3,824,910	8.47	3,824,963
86A	CLASS 16			274	3,824,788	480	3,824,862	1155B	3,824,912	32EA	3,824,966
	3,824,649			299	3,824,790	517A	3,824,863				3,824,967
114	CLASS 19	10	3,824,720	303	3,824,791			298	3,824,913		3,824,968
129R	3,824,650	32	3,824,721	411	3,824,792	5.6D	3,824,865	302R	3,824,914	32R	3,824,983
156.3	3,824,651	64R	3,824,722	641	3,824,793	61	3,824,866	329RT	3,824,915	45R	3,824,975
		106.1	3,824,723			230.17E	3,824,867	334	3,824,916	75B	3,824,971
230B	CLASS 23	125G	3,824,724	46	3,824,794	235	3,824,868	452	3,824,917	119B	3,824,973
230R	3,825,411			46.5	3,824,795	242.15R	3,824,869			136	3,824,974
	3,825,410	132R	3,824,726	48	3,824,796	243R	3,824,869	CLASS 100	3,824,919	139AC	3,824,975
				53.5	3,824,797	411	3,824,872	53	3,824,920	148E	3,824,976
134KB	CLASS 24			72.4	3,824,798	422	3,824,871				3,824,977
198	3,824,654	1J	3,824,727	123	3,824,799	462	3,824,873	19	3,824,921	179S	3,824,978
237	3,824,655	66	3,824,728	186	3,824,800	626	3,824,874	45	3,824,922	185A	3,824,979
		89	3,824,729	201	3,824,801	656GA	3,824,875	114	3,824,923	196AB	3,824,980
1.3	CLASS 28			217	3,824,802	759	3,824,876			CLASS 124	
24.5	3,824,656	17	3,824,730	226	3,824,803	814	3,824,877	212	3,824,925	11R	3,824,981
148.4A	3,824,658	17.5	3,824,731	238	3,824,804	866	3,824,878	378	3,824,926	16	3,824,982
149.5NM	3,824,660	42.05	3,824,732	320	3,824,805						
149.5R	3,824,659	54.5R	3,824,733	374	3,824,806	84.5	3,825,415	415.1	3,824,928	CLASS 126	
155C	3,824,661	121	3,824,734			123AA	3,825,416			25R	3,824,984
156.6	3,824,662			6	3,824,807	128A	3,825,417	74	3,824,929	113	3,824,985
157.4	3,824,663			17A	3,824,808	159	3,825,418			360	3,824,986
180SS	3,824,664					165	3,825,419	CLASS 104	3,824,930		
	3,825,412	17	3,824,736	CLASS 65	3,825,413	171	3,825,420	CLASS 105	3,824,931	CLASS 128	
200B	3,824,665			61	3,825,413			369B	3,824,931	1R	3,824,987
200P	3,824,666	8	3,824,737	CLASS 66	3,824,809	52.4R	3,824,880			2H	3,824,989
202D	3,824,668	9	3,824,738	50R	3,824,810	62.4R	3,824,881	CLASS 106	3,825,431	2V	3,824,990
203HT	3,824,669	33R	3,824,740	76	3,824,811	401	3,824,882	20	3,825,432	2.06G	3,824,991
203H	3,824,670	50PC	3,824,741	84	3,824,812			21	3,825,433		3,824,992
211R	3,824,671	54	3,824,742	177	3,824,812	1.2	3,824,883	38.23	Re.28,080	25R	3,824,994
263	3,824,672					30	3,824,884	89	3,825,433		3,824,999
403	3,824,673	165R	Re.28,082	12R	3,824,813					92B	3,824,996
407	3,824,674	165.71	3,824,743	18R	3,824,814	19	3,824,885	51	3,824,933	156	3,824,997
445	3,824,675	170T	3,824,745			329	3,824,886	CLASS 109	3,824,934	157	3,824,998
450	3,824,676	217A	3,824,746	18	3,824,815	679	3,824,887	.01R	3,824,934	185	3,824,999
571	3,824,677	245	3,824,746					CLASS 110		194	3,825,000
578	3,824,678			25	3,824,816			13	3,824,935	214.4	3,825,001
588	3,824,679	11	3,824,749	81	3,824,817	1.01	3,825,666	99R	3,824,936	218DA	3,825,002
592	3,824,680	79	3,824,750	358	3,824,818		3,825,667	102	3,824,937	218NV	3,825,003
593	3,824,681	103	3,824,748	432	3,824,819	1.17	3,825,668			275.1	3,825,004
596	3,824,682	173	3,824,751					CLASS 112		283	3,825,005
	3,824,683	206	3,824,752	29	3,825,414	47	3,824,888	70	3,824,938	287	3,825,006
603	3,824,684	173	3,824,753	10	3,824,820	6	3,824,889	79FF	3,824,939	296	3,825,007
628	3,824,685	228	3,824,754	20	3,824,821			121.2	3,824,940	327	3,825,008
	3,824,686	239	3,824,747	36	3,824,822	CLASS 89	3,824,890			334R	3,825,009
43.92	CLASS 30	314	3,824,755	56	3,824,824	CLASS 90	3,824,891	CLASS 113	3,824,941	337	3,825,010
294	3,824,687	546	3,824,756	60	3,824,825	11A	3,824,891	ID	3,824,941	346	3,825,011
368	3,824,689	758D	3,824,757	77	3,824,826	11R	3,824,890	CLASS 114			
				123	3,824,827	58B	3,824,892	.5D	3,824,943	349B	3,825,012
14A	CLASS 32	29	3,824,760	181	3,824,828	62A	3,824,893	.5T	3,824,944	400	3,825,013
	3,824,690	41	3,824,761	214	3,824,829			69	3,824,945	410P	3,825,015
				249	3,824,830	CLASS 91	3,824,894	235WS	3,824,945	360	3,825,016
						369B	3,824,895	12R	3,824,946	622	3,825,017



CLASS 130	111	3,825,062	CLASS 198	54	3,825,149	138A	3,825,213	256.5R	3,825,542
30H	146	3,825,063	20C	63R	3,825,150	CLASS 246	3,825,244	268PC	3,825,544
CLASS 132	179	3,825,064	101	94R	3,825,151	CLASS 247	3,825,245	283R	3,825,545
7	5	3,825,065	139	1	3,825,152	CLASS 248	3,825,246	293.66	3,825,546
88.7	261	3,825,066	204	14	3,825,153	CLASS 249	3,825,247	294.8B	3,825,548
CLASS 133	275	3,825,067	219	136	3,825,154	CLASS 250	3,825,248	294.8E	3,825,547
117A	305R	3,825,068	35R	146HE	3,825,155	CLASS 251	3,825,249	302SD	3,825,551
CLASS 134	306	3,825,069	46	183	3,825,156	CLASS 252	3,825,250	302R	3,825,552
24	308	3,825,070	56R	212	3,825,157	CLASS 253	3,825,251	302S	3,825,550
104	308	3,825,071	61.79	238	3,825,158	CLASS 254	3,825,252	306.7	3,825,553
117	7	3,825,072	67G	402.24	3,825,159	CLASS 255	3,825,253	307A	3,825,554
CLASS 135	710	3,825,073	82D	30	3,824,964	CLASS 256	3,825,254	307F	3,825,555
5AT	803	3,825,074	85A	59	3,825,160	CLASS 257	3,825,255	310C	3,825,556
20R	43	3,825,075	144B	67	3,825,161	CLASS 258	3,825,256	310R	3,825,557
CLASS 136	11R	3,825,076	146R	74	3,825,162	CLASS 259	3,825,257	325	3,825,558
6P	40R	3,825,077	192	5	3,825,163	CLASS 260	3,825,258	326.14T	3,825,559
83R	73R	3,825,078	331	37	3,825,164	CLASS 261	3,825,259	326.45	3,825,560
114	120SR	3,825,079	176	50	3,825,165	CLASS 262	3,825,260	332.3P	3,825,561
166	97	3,825,080	41	338	3,825,166	CLASS 263	3,825,261	335	3,825,566
CLASS 137	271	3,825,081	159.23	339	3,825,167	CLASS 264	3,825,262	340.2	3,825,567
219	375	3,825,082	195M	343	3,825,168	CLASS 265	3,825,263	340.9	3,825,569
265	392	3,825,083	216	366	3,825,169	CLASS 266	3,825,264	343.3	3,825,571
270	480	3,825,084	307	372	3,825,170	CLASS 267	3,825,265	343.5	3,825,572
271	496	3,825,085	65	402	3,825,171	CLASS 268	3,825,266	343.9	3,825,573
375	625.66	3,825,086	73	458	3,825,172	CLASS 269	3,825,267	345.2	3,825,574
392	30	3,825,087	211	486	3,825,173	CLASS 270	3,825,268	345.5	3,825,575
480	104	3,825,088	394	495	3,825,174	CLASS 271	3,825,269	372	3,825,564
496	175	3,825,089	65	563	3,825,175	CLASS 272	3,825,270	397.4	3,825,565
625.66	122W	3,825,090	78	62	3,825,176	CLASS 273	3,825,271	408	3,825,576
CLASS 138	93A	3,825,091	3	149.6	3,825,177	CLASS 274	3,825,272	410.5	3,825,577
30	CLASS 140	3,825,092	5.4HE	205	3,825,178	CLASS 275	3,825,273	435R	3,825,578
104	CLASS 141	3,825,093	5.6	363	3,825,179	CLASS 276	3,825,274	448.8R	3,825,579
175	CLASS 142	3,825,094	6.7A	37	3,825,180	CLASS 277	3,825,275	453R	3,825,580
CLASS 139	1	3,825,095	8.8	51	3,825,181	CLASS 278	3,825,276	465.4	3,825,581
122W	95	3,825,096	7.1	61	3,825,182	CLASS 279	3,825,277	465.7	3,825,582
CLASS 140	147	3,825,097	7.2	78	3,825,183	CLASS 280	3,825,278	471C	3,825,583
93A	187	3,825,098	7.3R	330	3,825,184	CLASS 281	3,825,279	479R	3,825,584
CLASS 141	198	3,825,099	23R	22	3,825,185	CLASS 282	3,825,280	484R	3,825,585
CLASS 142	31R	3,825,100	69G	23	3,825,186	CLASS 283	3,825,281	500.5H	3,825,586
CLASS 143	50E	3,825,101	69.5R	97	3,825,187	CLASS 284	3,825,282	501.16	3,825,587
CLASS 144	12.1	3,825,102	151.21	104	3,825,188	CLASS 285	3,825,283	501.2	3,825,588
CLASS 145	172	3,825,103	151.33	132	3,825,189	CLASS 286	3,825,284	513R	3,825,589
CLASS 146	175	3,825,104	168	134	3,825,190	CLASS 287	3,825,285	518R	3,825,590
CLASS 147	38	3,825,105	186	138	3,825,191	CLASS 288	3,825,286	519	3,825,591
CLASS 148	353	3,825,106	197	232	3,825,192	CLASS 289	3,825,287	521C	3,825,592
CLASS 149	3	3,825,107	201PF	330	3,825,193	CLASS 290	3,825,288	525R	3,825,593
CLASS 150	147	3,825,108	CLASS 236	401	3,825,194	CLASS 291	3,825,289	564E	3,825,594
CLASS 151	244	3,825,109	CLASS 237	15AT	3,825,195	CLASS 292	3,825,290	570D	3,825,595
CLASS 152	296	3,825,110	CLASS 238	15AT	3,825,196	CLASS 293	3,825,291	585.5	3,825,596
CLASS 153	502	3,825,111	CLASS 239	15AT	3,825,197	CLASS 294	3,825,292	604HF	3,825,597
CLASS 154	582	3,825,112	CLASS 240	15AT	3,825,198	CLASS 295	3,825,293	609R	3,825,598
CLASS 155	328	3,825,113	CLASS 241	15AT	3,825,199	CLASS 296	3,825,294	612D	3,825,599
CLASS 156	36	3,825,114	CLASS 242	15AT	3,825,200	CLASS 297	3,825,295	621G	3,825,600
CLASS 157	67	3,825,115	CLASS 243	15AT	3,825,201	CLASS 298	3,825,296	632C	3,825,601
CLASS 158	112	3,825,116	CLASS 244	15AT	3,825,202	CLASS 299	3,825,297	648F	3,825,602
CLASS 159	147	3,825,117	CLASS 245	15AT	3,825,203	CLASS 300	3,825,298	652.5R	3,825,603
CLASS 160	159	3,825,118	CLASS 246	15AT	3,825,204	CLASS 301	3,825,299	654R	3,825,604
CLASS 161	161	3,825,119	CLASS 247	15AT	3,825,205	CLASS 302	3,825,300	658R	3,825,605
CLASS 162	172	3,825,120	CLASS 248	15AT	3,825,206	CLASS 303	3,825,301	667	3,825,606
CLASS 163	227	3,825,121	CLASS 249	15AT	3,825,207	CLASS 304	3,825,302	668A	3,825,607
CLASS 164	32	3,825,122	CLASS 250	15AT	3,825,208	CLASS 305	3,825,303	668D	3,825,608
CLASS 165	132	3,825,123	CLASS 251	15AT	3,825,209	CLASS 306	3,825,304	672T	3,825,609
CLASS 166	253	3,825,124	CLASS 252	15AT	3,825,210	CLASS 307	3,825,305	674A	3,825,610
CLASS 167	274	3,825,125	CLASS 253	15AT	3,825,211	CLASS 308	3,825,306	683.15D	3,825,611
CLASS 168	292	3,825,126	CLASS 254	15AT	3,825,212	CLASS 309	3,825,307	683.48	3,825,612
CLASS 169	1	3,825,127	CLASS 255	15AT	3,825,213	CLASS 310	3,825,308	827	3,825,613
CLASS 170	70	3,825,128	CLASS 256	15AT	3,825,214	CLASS 311	3,825,309	857PG	3,825,614
CLASS 171			CLASS 257	15AT	3,825,215	CLASS 312	3,825,310	873	3,825,615
CLASS 172			CLASS 258	15AT	3,825,216	CLASS 313	3,825,311	876B	3,825,616
CLASS 173			CLASS 259	15AT	3,825,217	CLASS 314	3,825,312	878R	3,825,617
CLASS 174			CLASS 260	15AT	3,825,218	CLASS 315	3,825,313	879	3,825,618
CLASS 175			CLASS 261	15AT	3,825,219	CLASS 316	3,825,314	880R	3,825,619
CLASS 176			CLASS 262	15AT	3,825,220	CLASS 317	3,825,315	897A	3,825,620
CLASS 177			CLASS 263	15AT	3,825,221	CLASS 318	3,825,316	920	3,825,621
CLASS 178			CLASS 264	15AT	3,825,222	CLASS 319	3,825,317	932	3,825,622
CLASS 179			CLASS 265	15AT	3,825,223	CLASS 320	3,825,318	938	3,825,623
CLASS 180			CLASS 266	15AT	3,825,224	CLASS 321	3,825,319	941	3,825,624
CLASS 181			CLASS 267	15AT	3,825,225	CLASS 322	3,825,320	944	3,825,625
CLASS 182			CLASS 268	15AT	3,825,226	CLASS 323	3,825,321	956	3,825,626
CLASS 183			CLASS 269	15AT	3,825,227	CLASS 324	3,825,322	959	3,825,627
CLASS 184			CLASS 270	15AT	3,825,228	CLASS 325	3,825,323	964	3,825,628
CLASS 185			CLASS 271	15AT	3,825,229	CLASS 326	3,825,324	CLASS 261	3,825,637
CLASS 186			CLASS 272	15AT	3,825,230	CLASS 327	3,825,325	35	3,825,638
CLASS 187			CLASS 273	15AT	3,825,231	CLASS 328	3,825,326	36A	3,825,639
CLASS 188			CLASS 274	15AT	3,825,232	CLASS 329	3,825,327	50R	3,825,640
CLASS 189			CLASS 275	15AT	3,825,233	CLASS 330	3,825,328	CLASS 262	3,825,641
CLASS 190			CLASS 276	15AT	3,825,234	CLASS 331	3,825,329	55	
CLASS 191			CLASS 277	15AT	3,825,235	CLASS 332	3,825,330	63	
CLASS 192			CLASS 278	15AT	3,825,236	CLASS 333	3,825,331	72	
CLASS 193			CLASS 279	15AT	3,825,237	CLASS 334	3,825,332	87	
CLASS 194			CLASS 280	15AT	3,825,238	CLASS 335	3,825,333	104	
CLASS 195			CLASS 281	15AT	3,825,239	CLASS 336	3,825,334	122	
CLASS 196			CLASS 282	15AT	3,825,240	CLASS 337	3,825,335	151	
CLASS 197			CLASS 283	15AT	3,825,241	CLASS 338	3,825,336	188	
CLASS 198			CLASS 284	15AT	3,825,242	CLASS 339	3,825,337	192	
CLASS 199			CLASS 285	15AT	3,825,243	CLASS 340	3,825,338	294	
CLASS 200			CLASS 286	15AT	3,825,244	CLASS 341	3,825,339	CLASS 400	
CLASS 201			CLASS 287	15AT	3,825,245	CLASS 342	3,825,340	68	3,825,362
CLASS 202			CLASS 288	15AT	3,825,246	CLASS 343	3,825,341	104	3,825,363
CLASS 203			CLASS 289	15AT	3,825,247	CLASS 344	3,825,342	CLASS 401	
CLASS 204			CLASS 290	15AT	3,825,248	CLASS 345	3,825,343	116	3,825,364
CLASS 205			CLASS 291	15AT	3,825,249	CLASS 346	3,825,344	117	3,825,365
CLASS 206			CLASS 292	15AT	3,825,250	CLASS 347	3,825,345	131	3,825,366
CLASS 207			CLASS 293	15AT	3,825,251	CLASS 348	3,825,346	153	3,825,367
CLASS 208			CLASS 294	15AT	3,825,252	CLASS 349	3,825,347	199A	3,825,368
CLASS 209			CLASS 295	15AT	3,825,253	CLASS 350	3,825,348	CLASS 402	
CLASS 210			CLASS 296	15AT	3,825,254	CLASS 351	3,825,349	19	3,825,649
CLASS 211			CLASS 297	15AT	3,825,255	CLASS 352	3,825,350	44	3,825,651
CLASS 212			CLASS 298	15AT	3,825,256	CLASS 353	3,825,351	50	3,825,652
CLASS 213			CLASS 299	15AT	3,825,257	CLASS 354	3,825,352	213.7	3,825,654
CLASS 214			CLASS 300	15AT	3,825,258	CLASS 355	3,825,353	383	3,825,658
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3,825,873	3,824,994	3,825,484	3,825,208	3,825,186	3,825,514
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3,825,100	3,825,010	3,825,513	3,825,364	3,825,578	3,825,603
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3,825,335	3,825,031	3,825,548	3,825,671	3,824,945	3,825,614
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3,825,452	3,825,081	3,825,634	3,824,746	3,824,727	3,825,673
3,825,453	3,825,087	3,825,644	3,824,781	3,824,750	3,825,683
5 : 3,824,733	3,825,093	3,825,675	3,825,003	3,824,803	3,825,690
3,824,763	3,825,094	3,825,677	3,825,160	3,824,806	3,825,701
3,824,961	3,825,101	3,825,681	3,825,313	3,824,817	3,825,723
3,824,962	3,825,107	3,825,689	3,825,354	3,824,836	3,825,781
3,825,324	3,825,110	3,825,712	3,825,365	3,824,868	3,825,812
3,825,326	3,825,127	3,825,720	3,825,419	3,824,885	3,825,820
3,825,666	3,825,128	3,825,736	3,825,420	3,824,924	3,825,830
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3,824,635	3,825,157	3,825,754	3,825,762	3,824,954	3,825,868
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3,824,649	3,825,185	3,825,794	3,825,787	3,824,964	3,825,887
3,824,653	3,825,188	3,825,818	3,825,796	3,824,982	3,825,908
3,824,670	3,825,197	3,825,833	3,825,845	3,825,000	3,825,909
3,824,678	3,825,203	3,825,835	3,825,881	3,825,026	3,825,936
3,824,681	3,825,211	3,825,844	3,825,936	3,825,074	3,824,636
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3,824,689	3,825,259	3,825,874	3,825,474	3,825,091	3,824,772
3,824,717	3,825,262	3,825,882	3,825,586	3,825,103	3,824,792
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3,824,745	3,825,268	3,825,895	3,825,611	3,825,116	3,824,929
3,824,757	3,825,270	3,825,907	3,824,914	3,825,135	3,824,931
3,824,765	3,825,285	3,825,916	3,824,932	3,825,138	3,824,940
3,824,769	3,825,295	3,825,917	3,825,042	3,825,207	3,824,969
3,824,807	3,825,315	3,825,918	3,825,178	3,825,223	3,824,977
3,824,815	3,825,320	3,825,919	3,825,214	3,825,249	3,824,984
3,824,819	3,825,325	3,825,920	3,825,290	3,825,253	3,825,044
3,824,822	3,825,328	3,825,927	3,825,411	3,825,261	3,825,082
3,824,841	3,825,331	3,825,928	3,825,739	3,825,280	3,825,133
3,824,842	3,825,360	3,825,946	3,825,769	3,825,287	3,825,143
3,824,844	3,825,383	3,825,948	3,825,824	3,825,309	3,825,291
3,824,867	3,825,385	3,825,985	3,825,829	3,825,323	3,825,356
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3,824,916	3,825,399	3,825,019	3,825,902	3,825,479	3,825,482
3,824,923	3,825,436	3,825,067	3,825,903	3,825,481	3,825,562
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3,825,775	3,824,904	3,825,529	3,825,756	3,825,647	3,825,649
3,825,836	3,824,912	3,825,530	3,825,759	3,825,698	3,825,653
3,825,838	3,824,920	3,825,536	3,825,772	3,825,721	3,825,735
3,825,865	3,824,933	3,825,537	3,825,777	3,825,755	3,825,921
3,825,949	3,824,948	3,825,549	3,825,789	3,825,758	3,824,638
19 : 3,824,699	3,824,972	3,825,566	3,825,791	3,825,808	3,824,646
3,824,705	3,824,973	3,825,569	3,825,795	3,825,823	3,824,692
3,824,959	3,825,017	3,825,574	3,825,807	3,825,827	3,824,732
3,825,012	3,825,073	3,825,576	3,825,825	3,824,731	3,824,771
3,825,072	3,825,090	3,825,594	3,825,841	3,824,767	3,824,794
3,825,089	3,825,109	3,825,605	3,825,850	3,824,791	3,824,850
3,825,215	3,825,147	3,825,622	3,825,859	3,824,849	3,825,030
3,825,227	3,825,183	3,825,630	3,825,863	3,824,851	3,825,053
3,825,272	3,825,195	3,825,631	3,825,866	3,824,858	3,825,065
20 : 3,825,106	3,825,251	3,825,682	3,825,883	3,825,008	3,825,070
3,825,187	3,825,279	3,825,709	3,825,885	3,825,013	3,825,078
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3,825,663	3,825,378	3,825,798	3,825,906	3,825,616	3,825,380
21 : 3,824,639	3,825,402	3,825,798	3,825,914	3,825,752	3,825,485
3,824,709	3,825,459	3,825,805	3,825,929	3,824,738	3,825,485
3,824,753	3,825,478	3,825,847	3,825,933	3,824,937	3,825,490
3,824,805	3,825,647	3,825,924	3,824,684	3,825,131	3,825,573
3,825,373	3,825,734	3,825,947	3,824,741	3,825,286	3,825,592
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3,825,828	3,824,723	3,824,683	3,824,906	3,824,686	3,825,641
22 : 3,824,859	3,824,796	3,824,688	3,825,148	3,824,729	3,825,733
3,824,882	3,824,857	3,824,690	3,825,158	3,824,743	3,825,751
3,825,260	3,824,871	3,824,702	3,825,174	3,824,747	3,825,753
3,825,476	3,824,930	3,824,708	3,825,182	3,824,749	3,825,816
23 : 3,825,119	3,825,046	3,824,711	3,825,266	3,824,823	3,825,886
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3,825,104	3,825,277	3,824,720	3,825,725	3,825,029	3,825,124
3,825,493	3,825,296	3,824,751	3,825,857	3,825,051	3,825,125
3,825,546	3,825,430	3,824,799	3,824,862	3,825,056	3,825,231
3,825,740	3,825,541	3,824,800	3,825,358	3,825,098	3,825,492
3,825,834	3,825,726	3,824,802	3,825,117	3,825,202	3,824,848
3,825,837	3,825,852	3,824,816	3,824,652	3,825,212	3,825,014
3,825,840	3,825,926	3,824,824	3,824,667	3,825,212	51 : 3,824,695
3,825,899	3,824,919	3,824,941	3,824,693	3,825,225	3,824,696
25 : 3,824,643	3,825,168	3,824,941	3,824,724	3,825,226	3,824,707
3,824,706	3,825,284	3,824,955	3,824,725	3,825,229	3,824,758
3,824,742	3,825,300	3,824,970	3,824,736	3,825,241	3,824,761
3,824,783	3,825,443	3,824,980	3,824,756	3,825,246	3,824,845
3,824,793	3,825,448	3,824,981	3,824,759	3,825,247	3,824,854
3,824,797	3,825,585	3,824,983	3,824,773	3,825,248	3,824,896
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3,824,839	3,825,766	3,824,996	3,825,263	3,825,250	3,825,115
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3,824,953	3,825,995	3,825,024	3,824,835	3,825,368	3,825,258
3,824,965	3,825,028	3,825,050	3,824,881	3,825,409	3,825,307
3,824,992	3,825,057	3,825,057	3,824,883	3,825,417	3,825,619
3,825,108	3,825,651	3,825,096	3,824,891	3,825,428	3,825,773
3,825,033	3,825,141	3,825,141	3,824,898	3,825,449	3,825,773
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3,825,132	3,825,391	3,825,164	3,825,142	3,824,922	3,824,852
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## PATENT OFFICE NOTICES

### Use of Metric System of Measurements in Patent Applications

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research prior art search documents, all patent applications are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Système International d'Unités," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,  
Commissioner of Patents.

July 1, 1974.

### Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before August 19, 1974.

Bizot, Hyland A., 2702 Harmon Road, Silver Spring, Md. 20902  
Franchini, Paolo, Montedison S.p.A., Pat. & Licensing Dept., Largo Donegani 1-2, Milan, Italy 20121  
Gellner, Michael Law, Ampex Corp., Patent Dept., 401 Broadway, Redwood City, Calif. 94063  
Mannix, John G., Army Corp of Engineers, Office Chief of Engineering, 1000 Independence Ave. SW., Washington, D.C. 20314  
Pasqualetti, Adriano, Montedison S.p.A., Pat. & Licensing Dept., Largo Donegani, 1-2, Milan, Italy 20121  
Schenck, Paul F., 1934 Miramonte Ave., Mountain View, Calif. 94040.

LUTRELLE F. PARKER,  
Chairman, Committee on Enrollment.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,441,900, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; 2,567,500, same; 2,700,007, same; Re. 24,165, same, filed Oct. 31, 1962, D.C. Del. (Wilmington), Doc. 2519, *Technograph Printed Circuits, Ltd. et al. v. Radio Corporation of America*. Action dismissed with prejudice, Dec. 4, 1973.

2,534,149, R. E. Vanderhilde, AUTOMATIC DRILLING MACHINE, filed Oct. 2, 1973, D.C., N.D. Ohio (Cleveland), Doc. C-73-1025, *Robert E. Vanderhilde v. Brown & Sharpe Manufacturing Co., Inc.* Memorandum and order, summary judgment is entered in favor of defendant, dismissing plaintiff's complaint, Jan. 22, 1974.

2,567,500. (See 2,441,900.)

2,700,007, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; Re. 24,165, same, filed Jan. 21, 1963, D.C. Del. (Wilmington), Doc. 2553, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Incorporated*

*v. The Magnavox Company*. Parties agreed that action be dismissed with prejudice, Dec. 10, 1973.

2,700,007. (See 2,441,900.)

2,733,713, H. H. Kabnick, ORAL IRRIGATOR, filed in the Court of Claims (District of Columbia), Doc. 55-73, *Interdent Corporation v. The United States*. Defendant's motion for partial summary judgment is granted to extent plaintiff seeks recovery for infringement under 28 U.S.C. 1498 for use or sale of Defense Department Post Exchanges which are non-appropriated fund activities, Dec. 19, 1973.

2,790,362, Higonnet and Moyroud, PHOTO COMPOSING MACHINE; 3,332,017, same, TYPE COMPOSING APPARATUS, filed Sept. 18, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2278, *Photon, Inc. v. Compugraphic Corp. and Ottawa Publishing Co.* Enter order for entry of consent decree and order for Injunction pursuant to agreement of all parties, Sept. 13, 1971.

2,835,247, L. M. Stabholz, LUMBAR TRACTION APPARATUS, filed Jan. 25, 1974, D.C., E.D.N.Y. (Brooklyn), Doc. 74C131, *Dr. Ludwik M. Stabholz v. Lawrence H. Fischer*.

2,843,075, R. M. Geraghty, ALARM DEVICE, filed Jan. 11, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c104, *E. D. Bullard Company v. Tripp Manufacturing Company*.

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed Dec. 20, 1973, D.C. Del. (Wilmington), Doc. 4780, *Anthony P. Catanzaro v. International Telephone & Telegraph et al.*

2,984,416, N. B. Johnson, HOT AIR HEATING METHODS, filed Oct. 19, 1973, D.C. Minn. (St. Paul), Doc. 3-73-313-C, *Rheem Manufacturing Company v. Johnson Heater Corporation*. Memorandum and order granting defendant's motion for dismissal on grounds of lack of jurisdiction over defendant and that venue is improperly laid in this judicial district, Jan. 24, 1974.

3,142,300, O. Erteszek, ELASTICIZED PANTY GIRDLE; 3,142,301, same, ELASTICIZED PANTY GARMENT, filed Oct. 27, 1967, D.C., S.D.N.Y., Doc. 67-C-4181, *Vanity Fair Mills Inc. v. Olga Company (Inq.)*. Complaint for a declaratory judgment is dismissed, defendant's counterclaim is sustained, judgment consented and entered, Jan. 24, 1974.

3,142,301. (See 3,142,300.)

3,253,103, A. J. Fister, PROTECTORS FOR ELECTRIC CIRCUITS; 3,267,240, T. E. L. Fitzgerald, same, filed Dec. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3179, *McGraw-Edison Company v. Federal Pacific Electric Company*.

3,257,253, E. R. Hoyt, LAMINATED CELLULAR PANEL; 3,413,177, same, APPARATUS FOR MAKING LAMINATED CELLULAR PANEL, filed Dec. 14, 1973, D.C. Mass. (Boston), Doc. CA 73-4203-F, *Hescl Corporation v. Rice Barton Corporation*.

3,267,240. (See 3,253,103.)

3,332,017. (See 2,790,362.)

3,343,052, Moore and Davidson, FOLDING BOOM AERIAL WATER DELIVERY APPARATUS FOR MOBILE FIRE FIGHTING EQUIPMENT; 3,590,722, Davidson and Morris, REMOTELY CONTROLLABLE FIRE FIGHTING APPARATUS; 3,675,721, Same, FIRE FIGHTING APPARATUS WITH TELESCOPING BOOM, filed Dec. 5, 1973, D.C., E.D. Mich. (Detroit), Doc. 74-10767, *Snorkel Fire Equipment Co. v. Ward LaFrance Truck Corp. and Reading Techmatic Corporation*.

3,411,424, W. W. Buechner, CYLINDRICAL CARRIER FOR PHOTOGRAPHIC SHEET MATERIALS; 3,523,700, same, METHOD AND DEVICE FOR THE TREATMENT OF PAPER-BACKED PHOTOGRAPHIC SHEET MATERIALS, filed Dec. 19, 1973, D.C. (District of Columbia), Doc. 2198-73, *Werner W. Buechner v. Eastman Kodak Company*.

3,413,177. (See 3,257,253.)

3,439,950, A. Kunevicius, RESILIENT BUMPER STRIP, filed July 31, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-789, *Custom Trim Products, Inc. v. The Standard Products Co.* Stipulation and order dismissing action, Jan. 23, 1974.

JULY 30, 1974

U. S. PATENT OFFICE

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3,496,911, A. Chmelar, ELECTROSTATIC FLOCKING; 3,551,178, same METHOD AND APPARATUS FOR ELECTROSTATIC FLOCKING, filed Feb. 16, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16205, *Velvetex Industrial Corporation v. Universal Textures, Inc.* Stipulation and order of voluntary dismissal entered dismissing complaint, defensive pleadings and counterclaims without prejudice, Nov. 28, 1973.

3,528,760. (See 3,411,424.)

3,551,178. (See 3,496,911.)

3,560,998, R. S. Walton, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; 3,576,099, same, SOLID STATE TIME PIECE HAVING ELECTRO-OPTICAL TIME DISPLAY; 3,664,118, same, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; 3,672,155, Bergey and Walton, SOLID STATE WATCH; 3,707,071, R. S. Walton, SOLID STATE TIMEPIECE; 3,714,867, B. M. Dargent, SOLID STATE WATCH INCORPORATING LARGE-SCALE INTEGRATED CIRCUITS; 3,760,584, same, INTEGRATED

CIRCUIT SOLID STATE WATCH, filed Oct. 17, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-2433 WPG, *Time Computer, Inc. v. Hughes Aircraft Company*.

3,576,099. (See 3,560,998.)

3,599,722. (See 3,346,052.)

3,664,118. (See 3,560,998.)

3,667,435, R. M. Bygdnes, VEHICULAR ENGINE BRAKE ASSEMBLY, filed June 25, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1453-RJK, *Rocky Cycle Co. Inc. and Richard M. Bygdnes v. Ralph D. Milligan*. Filed consent judgment and order thereon enjoining defendant from infringing plaintiff's patent, entered Jan. 25, 1974.

3,672,155. (See 3,560,998.)

3,675,721. (See 3,346,052.)

3,707,071. (See 3,560,998.)

3,714,867. (See 3,560,998.)

3,760,584. (See 3,560,998.)

Re. 24,165. (See 2,441,900.)



## Certificates of Correction for the Week of July 30, 1974

3,686,727	3,774,011	3,787,954	3,797,885
3,710,036	3,774,580	3,788,331	3,797,927
3,732,659	3,774,752	3,788,616	3,798,040
3,747,917	3,774,991	3,789,057	3,798,076
3,748,731	3,775,113	3,789,589	3,798,085
3,748,826	3,775,685	3,789,916	3,798,137
3,750,213	3,776,003	3,789,934	3,798,166
3,750,248	3,776,253	3,790,183	3,798,206
3,750,305	3,776,603	3,790,514	3,798,250
3,750,381	3,776,634	3,790,635	3,798,306
3,751,512	3,777,468	3,790,715	3,798,522
3,751,754	3,777,922	3,790,924	3,798,538
3,751,805	3,778,373	3,791,132	3,798,659
3,751,819	3,778,479	3,791,796	3,798,686
3,753,862	3,779,136	3,791,939	3,798,710
3,754,169	3,779,188	3,792,134	3,799,231
3,755,386	3,779,521	3,792,253	3,799,452
3,756,943	3,779,559	3,792,887	3,799,678
3,757,282	3,780,067	3,793,021	3,799,857
3,758,823	3,780,134	3,793,048	3,799,896
3,758,929	3,780,442	3,793,102	3,800,232
3,758,974	3,780,597	3,793,706	3,800,391
3,759,136	3,780,959	3,794,050	3,800,550
3,759,721	3,781,234	3,794,082	3,800,585
3,759,790	3,781,472	3,794,565	3,800,716
3,759,804	3,781,605	3,794,635	3,800,877
3,760,903	3,781,770	3,794,875	3,801,114
3,761,267	3,781,985	3,795,086	3,801,526
3,761,528	3,782,661	3,795,394	3,801,641
3,761,852	3,783,450	3,795,551	3,801,648
3,762,460	3,783,754	3,796,396	3,801,818
3,763,098	3,784,047	3,796,799	3,801,856
3,766,498	3,784,319	3,797,175	3,801,877
3,766,728	3,784,559	3,797,233	3,802,238
3,767,773	3,785,269	3,797,265	3,802,363
3,767,828	3,785,492	3,797,329	3,802,545
3,770,661	3,785,684	3,797,343	3,802,582
3,771,545	3,785,973	3,797,410	3,802,679
3,771,638	3,786,057	3,797,421	3,802,718
3,772,682	3,786,070	3,797,432	3,802,805
3,772,755	3,786,963	3,797,452	3,802,877
3,773,004	3,787,016	3,797,499	3,802,978
3,773,178	3,787,125	3,797,559	3,805,056
3,773,927	3,787,399	3,797,724	

## National Technical Information Service

## GOVERNMENT-OWNED INVENTIONS

## Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

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DOUGLAS J. CAMPION,  
Patent Program Coordinator,  
National Technical Information Service.

DEPARTMENT OF THE AIR FORCE  
AF/JACP, Washington, D.C. 20314

- Patent application 310,613. Barrier Ring Injector. Filed Nov. 29, 1972. PC \$4/MF \$1.45.
- Patent application 314,623. Overload Clutch With Zero Parasitic Torque. Filed Dec. 13, 1972. PC \$4/MF \$1.45.
- Patent application 315,744. Radioactive Preionization Method and Apparatus for Pulsed Gas Lasers. Filed Dec. 15, 1972. PC \$4/MF \$1.45.
- Patent application 315,767. Coating for Lightning Protection of Structural Reinforced Plastics. Filed Dec. 15, 1972. PC \$4/MF \$1.45.
- Patent application 326,208. Portable Etching System for Holes Drilled in Metals. Filed Jan. 24, 1973. PC \$4/MF \$1.45.
- Patent application 332,539. Apparatus for the Direct Measurement of Thermal Stresses. Filed Feb. 14, 1973. PC \$4/MF \$1.45.
- Patent application 336,584. Thermal Stabilization of Polybenzimidazole Fiber Fabrics. Filed Feb. 28, 1973. PC \$4/MF \$1.45.
- Patent application 344,787. Thermally Stable Phenylated Heterocyclic Aromatic Polymers and Method of Synthesis. Filed Mar. 26, 1973. PC \$4/MF \$1.45.
- Patent application 365,908. Dual Mode Auxiliary Power Unit. Filed June 1, 1973. PC \$4/MF \$1.45.
- Patent application 366,908. Multi-Component Flow Probe. Filed June 4, 1973. PC \$4/MF \$1.45.
- Patent application 371,089. Benzothienophenodioxidesquinoxaline Polymers and Method for Synthesizing Same. Filed June 18, 1973. PC \$4/MF \$1.45.
- Patent application 375,557. Angle Data Processor for Reciprocating Narrow Scanning Beams. Filed Aug. 2, 1973. PC \$4/MF \$1.45.
- Patent application 379,024. Vacuum Brazing Tantalum Alloys. Filed July 13, 1973. PC \$4.25/MF \$1.45.
- Patent application 379,029. Method and Means for Determining Fatigue Damage and Surface Stress. Filed Aug. 13, 1973. PC \$4/MF \$1.45.
- Patent application 386,923. Method for Preparing Lead Lanthanum Zirconate-Titanate Powders. Filed Aug. 9, 1973. PC \$4/MF \$1.45.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
National Institutes of Health, Chief, Patent Branch,  
Westwood Building, Bethesda, Md. 20014

- Patent application 445,665. Method of Purifying Enzymes Using Boronic Acids Covalently Bonded to an Insoluble Support. Filed Feb. 25, 1974. PC \$4.25/MF \$1.45.
- Patent 3,799,672. Oximeter for Monitoring Oxygen Saturation in Blood. Filed Sept. 15, 1972. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR  
Branch of Patents, 18th and C sts. NW.,  
Washington, D.C. 20242

- Patent application 453,140. Process for the Preparation of a Stable Salt Form of a Sulfonated Polyarylether Sulfone. Filed Mar. 20, 1974. PC \$4/MF \$1.45.
- Patent application 457,309. Method of Distributing Feed in an HTME Distillation Plant. Filed Apr. 2, 1974. PC \$4.75/MF \$1.45.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
Assistant General Counsel for Patent Matters, NASA—  
Code GP-2, Washington, D.C. 20546

- Patent 3,799,149. Metabolic Analyzer. Patented Mar. 26, 1974. Not available NTIS.
- Patent 3,799,475. Airflow Control System for Supersonic Inlets. Patented Mar. 26, 1974. Not available NTIS.
- Patent 3,800,227. Pulse Code Modulated Signal Synchronizer. Patented Mar. 26, 1974. Not available NTIS.
- Patent 3,802,779. Method and Apparatus for Optically Monitoring the Angular Position of a Rotating Mirror. Patented Apr. 9, 1974. Not available NTIS.
- Patent 3,803,393. A Synchronous Binary Array Divider. Patented May 3, 1974. Not available NTIS.
- Patent 3,803,445. Rotating Raster Generator. Patented Apr. 9, 1974. Not available NTIS.
- Patent 3,805,303. Reduced Gravity Fecal Collector Seat and Urinal. Patented Apr. 23, 1974. Not available NTIS.
- Patent 3,806,815. Decision Feedback Loop for Tracking a Polypase Modulated Carrier. Patented Apr. 23, 1974. Not available NTIS.
- Patent 3,806,816. Pulse Code Modulated Signal Synchronizer. Patented Apr. 23, 1974. Not available NTIS.

## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JULY 6, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-19-73
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	6-18-73
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director.....	11-15-73
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director.....	8-23-73
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.....	7-3-73
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	11-28-74
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	2-1-73
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	11-1-73
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.....	4-11-73
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	12-10-73
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—C. D. QUARFORTH, Director.....	1-12-73
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director.....	1-2-74
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	10-17-73
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director.....	11-2-73
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director.....	9-10-73
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear- ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director.....	11-1-73
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during July 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1964 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,797,414 to 2,801,413, inclusive  
Plant Patents..... Numbers 1,612 to 1,623, inclusive



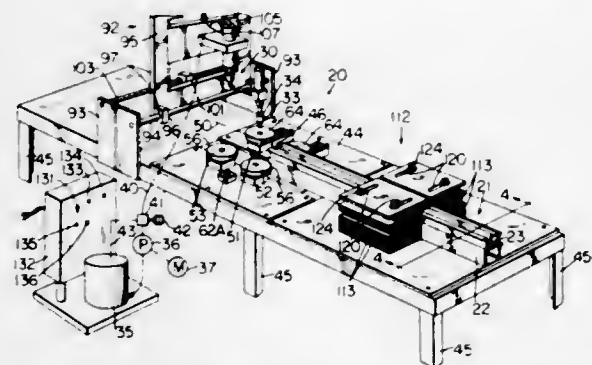
# REISSUES

JULY 30, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

## 28,084 APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION

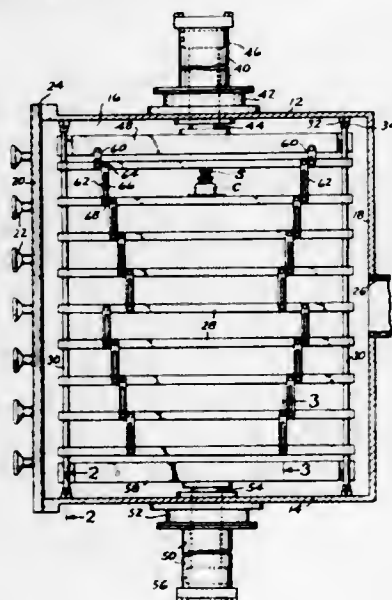
Layle B. Barker, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.  
Original No. 3,624,885, dated Dec. 7, 1971, Ser. No. 877,212, Nov. 17, 1969. Application for reissue Sept. 25, 1973, Ser. No. 400,618  
Int. Cl. B23p 17/00, 19/00  
U.S. Cl. 29—200 A 16 Claims



A head assembly having a nozzle for dispensing a thermal insulating material is supported at a dispensing station and a dual-purpose device is provided and used for supporting and moving straight rigid members in a rectilinear path past the dispensing station so that an open channel in each member may be filled by gravity with the thermal insulating material. A guide assembly is also provided and adjusted so that members of irregular cross-sectional configuration may be easily guided along the rectilinear path.

## 28,085 CONTAINER STOPPERING APPARATUS

Leonard C. Costello, Warminster, and Karl H. Wiegmann, Huntingdon Valley, Pa., assignors to Hull Corporation, Hatboro, Pa.  
Original No. 3,537,233, dated Nov. 3, 1970, Ser. No. 660,717, Aug. 15, 1967. Application for reissue Aug. 7, 1972, Ser. No. 278,183  
Int. Cl. B30b 7/02; B65b 7/28, 31/02  
U.S. Cl. 53—102 7 Claims

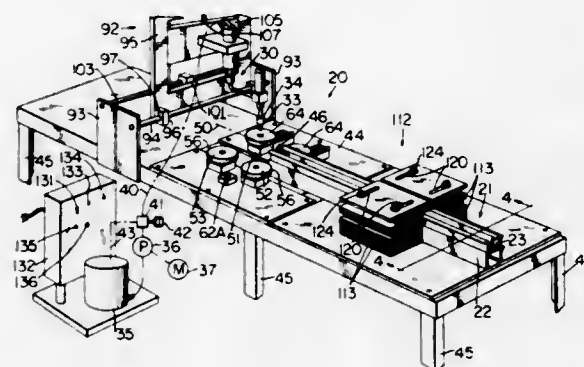


A housing adapted to be evacuated has top and bottom fluid pressure piston-cylinder units between which are posi-

tioned a plurality of shelves movable vertically relative to each other upon activation of the units. In one embodiment the shelves are interconnected by vertically slotted links, the top shelf being secured to the piston rod of the top piston-cylinder unit, with the lower shelves suspended therefrom. In another embodiment the shelves are interconnected by threaded bolts in place of the slotted links. In still another embodiment the shelves are supported in spaced apart relation resiliently by springs encircling guide rods.

## 28,086 APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION

William H. Holliday and Layle B. Barker, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.  
Original No. 3,624,885, dated Dec. 7, 1971, Ser. No. 877,212, Nov. 17, 1969. Application for reissue Sept. 25, 1973, Ser. No. 400,533  
Int. Cl. B23p 17/00, 19/00  
U.S. Cl. 29—200 A 11 Claims



A head assembly having a nozzle for dispensing a thermal insulating material is supported at a dispensing station and a dual-purpose device is provided and used for supporting and moving straight rigid members in a rectilinear path past the dispensing station so that an open channel in each member may be filled by gravity with the thermal insulating material. A guide assembly is also provided and adjusted so that members of irregular cross-sectional configuration may be easily guided along the rectilinear path.

## 28,087 APPARATUS FOR WINDING AND PLACING COILS IN THE SLOTS OF A STATOR

Donald E. Hill and Stanley D. Payne, Fort Wayne, Ind., and Robert G. Walker, Brighton, Mich., assignors to Industra Products Inc., Fort Wayne, Ind.  
Original No. 3,625,261, dated Dec. 7, 1971, Ser. No. 845,804, July 29, 1969. Application for reissue July 3, 1972, Ser. No. 268,864  
Int. Cl. H02k 15/00, 15/06  
U.S. Cl. 29—205 D 26 Claims

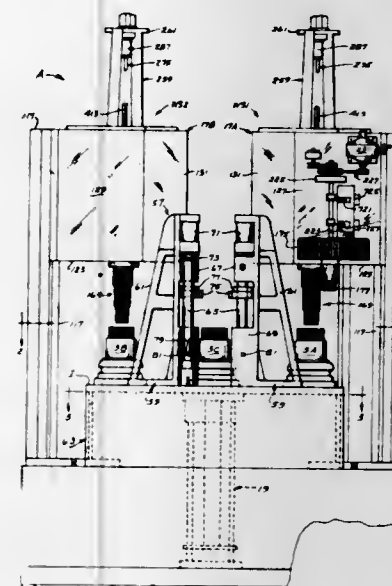
Apparatus for winding and placing coils in the slots of a stator comprising a rotary index table carrying three sets of placer fingers spaced at 120° intervals, each set being adapted to hold a plurality of pole windings for a stator. The table is adapted to be indexed successively to

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bring each set of placer fingers from a first winding station to a second winding station, thence to a placing station, and thence back to the first winding station, with a dwell at each station. At each of the winding stations, there is provided a coil winding and transfer mechanism including a coil form, a flyer for winding coils on the coil form, and means for transferring coils from the coil form to the set of placer fingers at the respective winding station. Each set of placer fingers is indexable during its dwell at each winding station for reception of successive sets of coils in proper position for placement of the coils in the stator.



After the winding of coils and their transfer to the set of fingers at the first winding station, the table is indexed to bring this set of fingers with the coils thereon to the second winding station. After the winding of additional coils and their transfer to the set of fingers at the second station, the table is indexed to bring the set of fingers with the coils thereon to the placing station, where a stator is placed on the fingers and the coils are pushed into the slots of the stator. The stator with the coils in its slots is then removed, and the table indexed to bring the set of fingers to the first winding station to start another cycle.

## 28,088 METHOD OF FORMING A RECTANGULAR HEAT DUCT

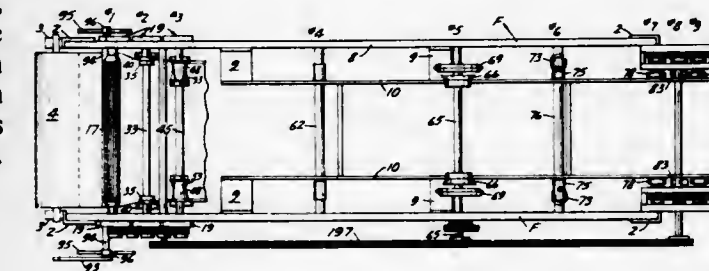
Leroy E. Anderson and Gerald J. Munn, Detroit Lakes, Minn., assignors to Manufacturers Systems, Inc., Detroit Lakes, Minn.

Original No. 3,722,443, dated Mar. 27, 1973, Ser. No. 205,843, Dec. 8, 1971, which is a division of application Ser. No. 12,663, Feb. 19, 1970, now Patent No. 3,636,903. Application for reissue June 6, 1973, Ser. No. 367,581

Int. Cl. B21d 39/02 34 Claims  
U.S. Cl. 113—54

A machine designed to continuously progress a pair of elongated flat sheets of metal longitudinally through a plurality of cooperative dies which progressively in sequential steps gradually shape the two sheets into a duct having a rectangular cross-sectional configuration. The machine utilizes cooperative rotary dies to shape and form the duct in a continuous operation to a length equal to that of the sheets so that rectangular ducts of any desired length can be produced in an automatic operation by merely inserting into the machine a pre-prepared roll

comprised of a pair of sheets of metal of the desired length, the sheets entering the machine at one end and



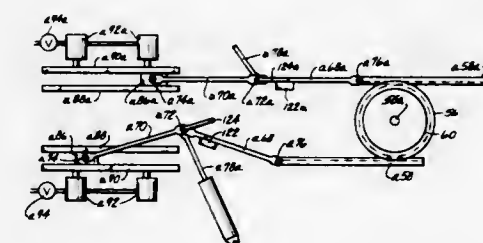
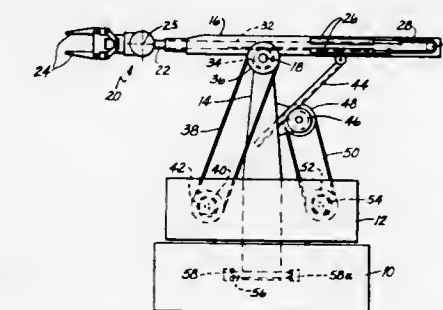
leaving the same at the other end in the form of a continuous rectangular duct.

## 28,089 CONTROLLED TOGGLE MECHANISMS

George C. Devol, 990 Ridgefield Road, Wilton, Conn. 06897

Original No. 3,535,952, dated Oct. 27, 1970, Ser. No. 755,210, Aug. 26, 1968. Application for reissue Oct. 25, 1972, Ser. No. 300,437

Int. Cl. G05g 1/04 35 Claims  
U.S. Cl. 74—520



A mechanism for operating a work element from one selected position to other selected positions in succession is described, utilizing the special property of toggles so that the end position is reached with smooth deceleration and without overtravel. Multiple toggles are used in a few embodiments, where each toggle has an input end that is adjustable while that toggle is buckled to correspond to the desired position that the work element will reach when a power actuator erects the toggle. One toggle is used for driving the work element in one direction and another toggle is used when the work element is to be driven in the opposite direction. Four toggles allow for drive in either direction by one toggle while another toggle is available for adjustment in controlling the next motion in either direction. This saves time, enabling each stroke to follow



another without delay for adjustments. The selectively used toggles can be compactly arranged side-by-side at the same side of a work shaft but connected to opposite sides of the shaft, to rotate the shaft in either required operating direction. Similarly, a common adjusting unit can be used for all the toggles, utilizing extensible and contractable couplings between the adjusting unit and the adjustable toggle ends.

28,090

## DIFFUSER

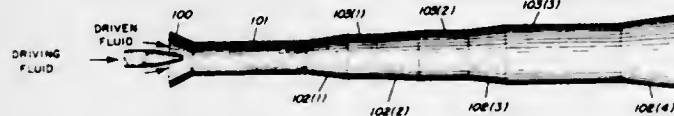
Douglas M. Glantz, Campbell, Calif., assignor to General Electric Company

Original No. 3,494,296, dated Feb. 10, 1970, Ser. No. 737,066, June 14, 1968. Application for reissue Jan. 31, 1972, Ser. No. 222,389

Int. Cl. F04f 5/44

U.S. Cl. 417-196

23 Claims



An improved diffuser for converting fluid momentum into static pressure. Typically, a generally conical diffuser is provided with one or more spaced intermediate approximately cylindrical recovery sections. This multistage diffuser is capable of improved momentum conversion efficiency.

28,091

## PROTEIN FIBER FORMING

Wilhelmus Heusdens, Wilmette, Ill., and Christopher W. Frederiksen, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Original No. 3,662,671, dated May 16, 1972, Ser. No. 825,973, May 19, 1969. Application for reissue Oct. 30, 1972, Ser. No. 302,054

Int. Cl. A23j 3/00; A23j 1/20

U.S. Cl. 426-148

32 Claims

A process of continuously forming tender textured protein structures is disclosed. The structures are formed from an aqueous slurry of a proteinaceous material having a solids content of up to about 35 percent by weight. The proteinaceous slurry is formed into textured filaments or fibers by continuously heating the slurry under pressure and cooling the slurry.

28,092

## CASSETTE TAPE READ OUT DEVICES

Nardino Righi, Milan, Italy, assignor to Ri-El Ricerche Elettroniche S.R.L., Cologno, Monzese, Italy

Original No. 3,752,488, dated Aug. 14, 1973, Ser. No. 132,669, Apr. 9, 1971. Application for reissue Nov. 16, 1973, Ser. No. 416,418

Claims priority, application Italy, Apr. 14, 1970, 23,275/70

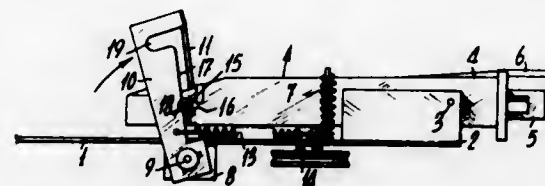
Int. Cl. G11b 5/86

U.S. Cl. 274-4 E

7 Claims

A cassette tape read out device comprising a cartridge support frame which may be rotated by a slight down-

ward manual pressure to the removal position for a previously inserted cartridge; the device also comprising a



spring-biased hooking swinging member, serving to stop the frame in its operating positions.

28,093

## WOUND-HEALING CARTILAGE POWDER

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescardien Ltd., Goshen, N.Y.

No Drawing. Original No. 3,400,199, dated Sept. 3, 1968, Ser. No. 435,693, Feb. 26, 1965, which is a continuation-in-part of abandoned application Ser. No. 176,443, Feb. 28, 1962. Application for reissue Aug. 13, 1970, Ser. No. 63,669

Int. Cl. A61k 17/00

U.S. Cl. 424-95

22 Claims

The invention pertains to wound-healing compositions comprising finely divided animal cartilage which is free of an interposition effect and which is characterized as having a substantially average maximum particle size of about 70 microns and an average particle size of between about 1 micron and about 40 microns. The invention also relates to methods of use of such material in a wound-healing method.

28,094

## BEARING ARRANGEMENT FOR ELECTRIC MOTORS

Clinton A. Boyd, Tulsa, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.

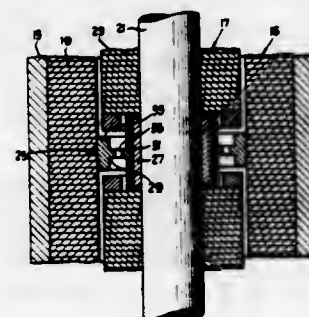
Original No. 3,506,861, dated Apr. 14, 1970, Ser. No. 574,093, Aug. 22, 1966. Application for reissue May 21, 1973, Ser. No. 362,026

Int. Cl. H02k 5/16

U.S. Cl. 310-90

5 Claims

An elongated electric motor having a stator comprising a plurality of magnetic laminations. A rotor including a plurality of segments and a supporting shaft disposed within the stator. The rotor is supported by a plurality of spaced apart bearing assemblies which include a stationary journal supported by the stator and a sleeve which rotates with the shaft. The journal is made



of a non-magnetic material having a resistivity of at least 100 microhms/cm.<sup>3</sup> when measured at 20 degrees centigrade.

28,095

## WATER DISTRIBUTING HOSE

Richard D. Chapin, 368 N. Colorado Ave., Watertown, N.Y. 13601

Original No. 3,698,195, dated Oct. 17, 1972, Ser. No. 40,138, May 25, 1970. Application for reissue Mar. 15, 1973, Ser. No. 341,763

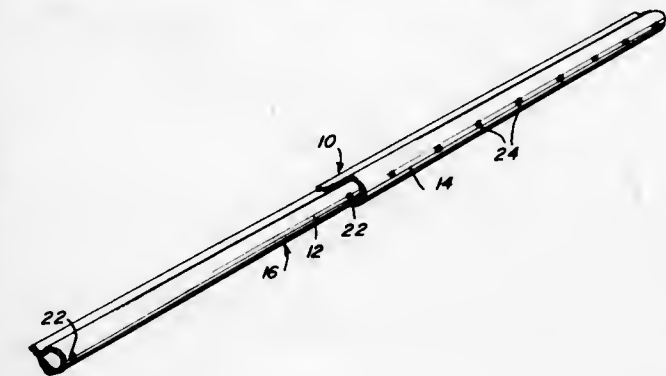
Int. Cl. A01g 25/02; E02b 13/00

U.S. Cl. 61-12

17 Claims

A water distributing hose for use in trickle irrigation comprising an outer tubular wall and an inner wall spaced interiorly from the outer wall and defining an inner tubular member fixed to the outer tubular wall for generally line contact therewith along the full length thereof. Both walls are perforated, normally in opposed relation to the line contact therebetween with the outer wall having a substantially greater number of openings. The inner tube functions so as to carry water along the full length of the hose and maintain, to a substantial degree, the pressure thereof. The water discharges through

the inner wall openings and subsequently flows to and through the outer wall openings immediately adjacent to



each inner wall opening for a trickle-like discharge therefrom.



# PATENTS

GRANTED JULY 30, 1974

## GENERAL AND MECHANICAL

### 3,825,952 SKIRTED HELMET

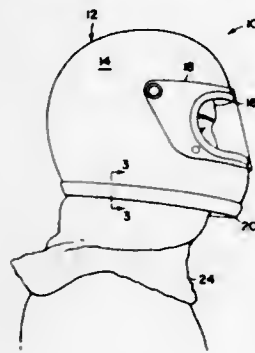
Roscoe Louis Pershing, Moline, and Bernard Edwin Romig, East Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Sept. 21, 1973, Ser. No. 399,411

Int. Cl. A42b 3/00

U.S. Cl. 2-3 R

3 Claims



A helmet of a type adapted for covering the entire head of a wearer has a flexible skirt releasably secured to the periphery of the inside of the helmet adjacent the opening therein. For releasably attaching the skirt, one edge thereof is provided with a male strip of material of the type having the trademark name of VELCRO while the inside of the helmet is provided with a female strip of VELCRO-type material.

### 3,825,953 ANTI-FOGGING DEVICE FOR EYE SHIELDS

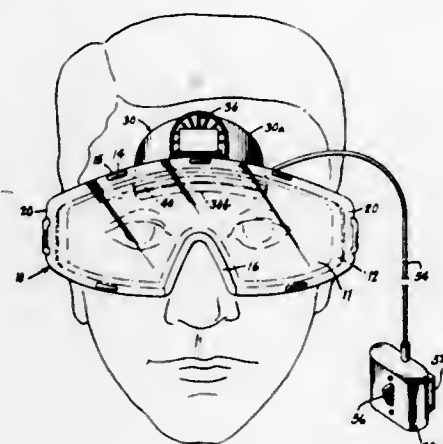
Robert R. Hunter, 234 Stockbridge Rd., Lenox, Mass. 01240

Filed June 20, 1973, Ser. No. 371,897

Int. Cl. A61f 9/00

U.S. Cl. 2-14 K

6 Claims



For use with a ski goggle or the like, an anti-fogging device including a housing adapted to be positioned and retained between the top transverse portion of a conventional goggle frame and a wearer's forehead, and defining a passage for conducting air from the exterior into the space between the goggle lens and the wearer's face so that the air is directed toward the inner surface of the lens. A fan, having a motor carried by the housing, is mounted in the passage for forcing air therethrough. Power may be supplied to the motor from batteries carried in a case secured to the wearer's clothing.

### 3,825,954 SPORT SHIRT

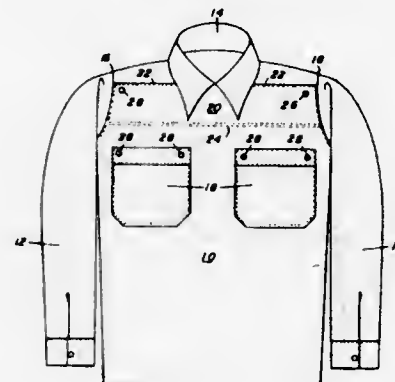
Vera Naumovaki, 60 Roseland Dr., Toronto, Ontario, Canada

Filed Mar. 2, 1973, Ser. No. 337,499

Int. Cl. A41d 3/00

U.S. Cl. 2-115

1 Claim



A sport shirt including a foldable flap on the upper portion of said shirt body adapted to be folded in either an upward or downward position thereby changing the appearance of the shirt and presenting a different design and impact to the viewer. In one embodiment the flap is relatively wide at the top and the bottom. In a second embodiment the flap is triangular in shape.

### 3,825,955 DEVICE FOR SIMULATING KNOT IN NECKTIE OR THE LIKE

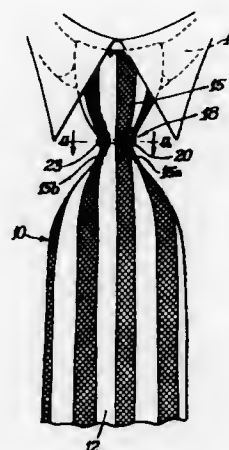
Herbert W. Penzel, 5255 N. LaPorte Ave., Chicago, Ill. 60630

Filed Apr. 26, 1973, Ser. No. 354,494

Int. Cl. A41d 25/02

U.S. Cl. 2-150

5 Claims



The large end of a necktie is wrapped about the small end with the large end then being laid down over the wrap. A pin extends through the two sides of this overlying part of the large end and has abutments on the end to pinch the two sides toward each other. The pin extends behind the wrap and the small end so that the size of the neck loop of the tie can be adjusted without disturbing the simulated knot.

JULY 30, 1974

GENERAL AND MECHANICAL

1113

### 3,825,956 HEART VALVE WITH TWO-PART BASE

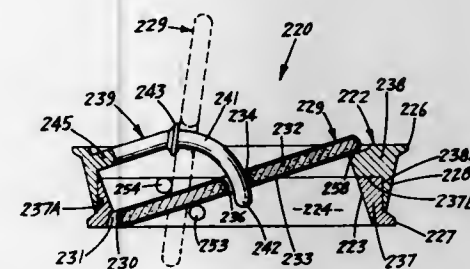
Francis W. Child, Maple Plain, Minn., assignor to Medical Incorporated, Minneapolis, Minn.

Filed July 13, 1972, Ser. No. 271,549

Int. Cl. A61f 1/22

U.S. Cl. 3-1

8 Claims U.S. Cl. 4-240



A heart valve having a free-floating pivoting disc for controlling the flow of blood. The disc is located within a passage in the base of the valve. Inwardly directed proximal and distal pivots control the pivoting movement of the disc. The pivots are offset from a diameter of the disc so that the disc pivots between its open and closed positions between its center and outer peripheral edge of the disc. The disc is held in free-floating assembled relation with the pivots and base with a curved retaining rod having a curved end projected through a central hole in the disc. The base has two joined members. The pivots are on one base member and retaining rod is on the other base member.

### 3,825,957 PIVOTING DISC HEART VALVE WITH ROD GUIDE

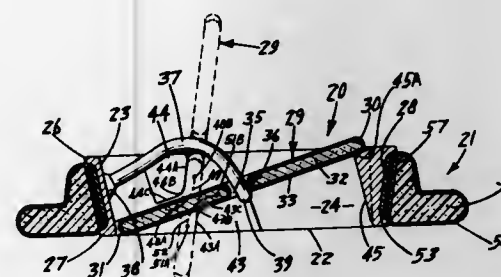
Robert L. Kaster, 15 Parkwood Rd., Trumbull, Conn. 06611

Filed Aug. 22, 1972, Ser. No. 282,706

Int. Cl. A61f 1/22

U.S. Cl. 3-1

12 Claims



A heart valve having a held pivoting disc for controlling the flow of blood. The disc is located within a passage in the base of the valve. Inwardly directed proximal and distal pivots control the pivoting movement of the disc. The pivots are offset from a diameter of the disc so that the disc pivots between its open and closed positions between its center and an outer peripheral edge of the disc. The disc is held in free-floating assembled relation with the pivots and base with a curved retaining rod having a curved end projected through a central hole in the disc. A suture collar surrounds and is mounted on the outer portions of the base. A low friction sleeve interposed between the base and the collar permits rotation of the valve relative to the suturing collar after the collar has been attached to the heart tissue.

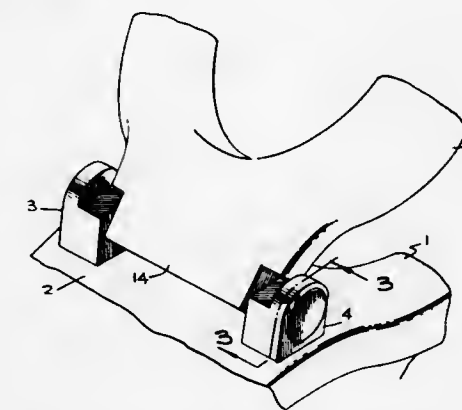
### 3,825,958 SELF-RAISING SEAT

Bernard E. Higginson, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Miss.

Filed Feb. 15, 1972, Ser. No. 226,618

Int. Cl. A47k 13/00, 13/12

1 Claim



A self-raising seat for water closets, wherein the seat is fixedly mounted upon a hinge tube, with the tube ends hingedly held in hinge posts secured to the closet bowl. A torsion spring composed of a bundle of leaf springs has one end attached to one end of the hinge tube and its opposite end projecting beyond the opposite end of the tube. A spring holder rotatably mounted in a hinge post is fitted over the projecting end of the spring bundle, and an adjustment screw through the hinge post and in contact with an abutment on the spring holder biases the spring to establish an at rest, raised position of the seat. In another form of the invention, the projecting end of the spring bundle seats in a recess of similar cross-section in the hinge post, providing a fixed anchor for the spring end but no means for spring adjustment.

### 3,825,959 SEATING DEVICE CONVERTIBLE INTO A BED

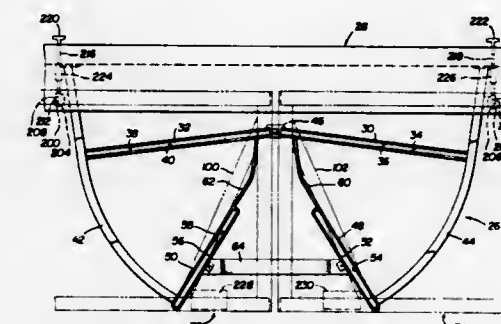
Martin Shankman, 4750 Alhambra Cir., Coral Gables, Fla. 33146

Filed Mar. 16, 1973, Ser. No. 341,906

Int. Cl. A47c 17/14, 17/40

U.S. Cl. 5-8

10 Claims



The seating device includes a first frame supported horizontally, and a seating means movable arcuately on the first frame, the seating means including a second frame mounted on the first frame, a support mounted on the second frame and movable longitudinally of the second frame, and a pair of superposed cushions mounted on the support. The support can be extended to expose part of the second frame, and one of the cushions can be placed on the exposed frame to form with the other cushion a bed mattress. In this composite structure, the first frame includes two horizontal trackways, and the second frame includes a pair of pins extending through the trackways respectively and projecting downward below the trackways to terminate slightly above floor level. The pins are upwardly removable from the trackways to permit the entire



seat means to be removed from the first frame and to rest on the pins which then act as floor engaging legs for the seat means.

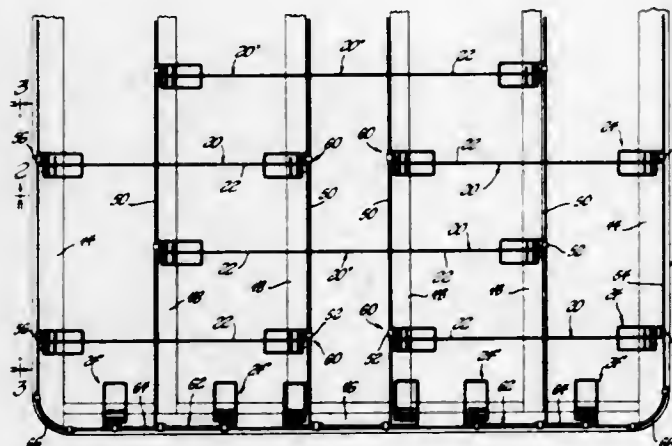
### 3,825,960 NEW BOX SPRING

Harold W. Inman, Birmingham; Zygmunt M. Surletta, Detroit, and Chester E. Klickl, Warren, all of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.

Filed Jan. 18, 1973, Ser. No. 324,722  
Int. Cl. A47c 23/04, 25/00

U.S. Cl. 5-247

35 Claims



A box spring assembly including a wooden frame with a plurality of spring members arranged on the frame to define a load-supporting area having side and end marginal edges. Each of the spring members is defined by an integral wire having a straight section with a fishmouth section at each end thereof. The spring members are disposed with the straight sections thereof perpendicular to the side marginal edges, and each spring member is disposed in isolated non-contacting relationship with all of the remaining spring members. Various species are illustrated showing the individual spring members in various patterns; but in each pattern, each of the spring members is isolated and not contacting any other spring member. Connecting means such as wires or grids are utilized for interconnecting the spring member.

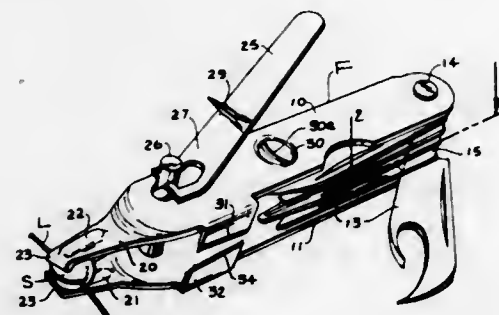
### 3,825,961 FISHERMAN'S TOOL

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020  
Filed Nov. 15, 1972, Ser. No. 306,577

Int. Cl. B25f 1/00

U.S. Cl. 7-1 H

5 Claims



A tool, which may be used as a fisherman's tool, having an elongated handle which includes parallel cantilevered members extending from one end and lever means arranged to flex the members toward each other. The members are provided with surfaces for crushing or cutting fishing leader material and crimping split shot sinkers. Various blades are mounted within the handle similar to a jackknife for performing other useful functions.

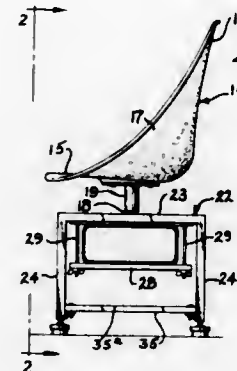
### 3,825,962 CONVERTIBLE CHAIR FOR FISHERMAN & CAMPERS

Harry C. Grounds, 477 S. Cretin, St. Paul, Minn. 55105, and Eugene W. Otto, 2415 Cavell Ave. South, St. Louis Park, Minn.

Filed June 4, 1973, Ser. No. 366,787  
Int. Cl. B63b 29/00

U.S. Cl. 9-7

7 Claims



A plate-like base has a moulded chair seat mounted thereon for rotation about a vertical axis. Laterally spaced supports are mounted on the base to straddle a boat seat. Clamping bars are mounted on the base to secure the base and chair seat to a boat seat and the laterally spaced supports are provided with leg portions which adjust the length of the laterally spaced supports to engage the hull of the boat to provide added support for the chair seat.

### 3,825,963 METHOD AND APPARATUS FOR CASING BOOKS AND PRODUCT THEREOF

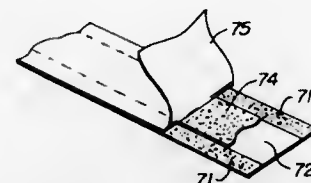
William H. Abildgaard, Los Altos Hills, and Charles T. Grosz, III, Los Altos, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 146,648, May 25, 1971, Pat. No. 3,749,422. This application Sept. 22, 1972, Ser. No. 291,206

Int. Cl. B42c 11/00

U.S. Cl. 11-1 R

2 Claims



In one form of the invention, a case for a book has a spine strip of cover material coated with pressure-sensitive adhesive in the spine area and initially separate covers on either side of the spine area. A pad of resilient material such as polyurethane foam is positioned in the center of the spine area of the case and is coated on its exposed surface with pressure-sensitive adhesive initially protected by release paper, which is removed prior to attachment of an uncased book thereto. The spine strip overlaps the spine edges of the covers and is secured thereto by the pressure-sensitive material. The uncased book is preferably provided with end leaves having pressure-sensitive adhesive initially protected with release paper fabricated in a manner to facilitate stripping off the release paper. Apparatus used to case the book has a table on which the case is positioned and clamps pivoted to the table, and movable relative to each other depending on the thickness of the uncased book. In a preferred form of the invention, edge guides for the covers move inward and outward in relation to movement of the clamps toward and away from each other to

center the covers relative to the uncased book. The method consists in pivoting the clamp to bring the spine edge of the uncased book into contact with the pressure-sensitive spine pad of the case and then to strip away the release paper from the end leaves so that the latter adhere to the insides of the top and bottom covers of the case.

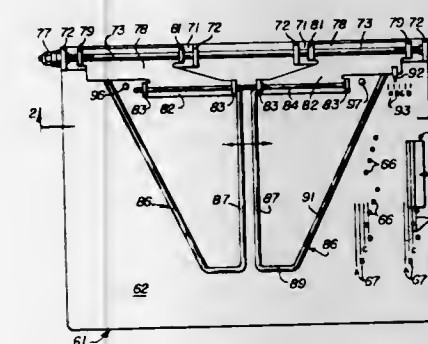
### 3,825,964 DEVICE AND METHOD FOR CASING BOOKS

Charles T. Grosz, III, Los Altos, and Danilo P. Buan, Pleasanton, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Apr. 17, 1973, Ser. No. 351,879  
Int. Cl. 42c 11/00

U.S. Cl. 11-3

3 Claims



An uncased book, such as shown in U.S. Pat. No. 3,596,929 having end leaves fabricated with pressure sensitive adhesive and protected by release paper is attached to a case of the type having a spine pad also fabricated with pressure sensitive adhesive by the device. A table supports various adjustable members including locators which first gauge the thickness of the uncased book to indicate a case of proper spine width to be selected. The case is placed on the table and centered by use of side and top edge guides. The locators are adjusted so that the spine edge of the uncased book may be guided to contact the center of the spine pad. A guide rod positions the top edge of the uncased book a predetermined distance below the top edge of the case. The uncased book spine now permanently adheres to the case spine. The book covers are closed around the book and the end leaf release paper stripped away, permitting the end leaf adhesive to secure the end leaves to the insides of the covers.

### 3,825,965 APPARATUS FOR CLEANING TIRE INNER-LINERS

Glenn M. Root, Snyder; Ronald G. Root, Glenwood; Alvin L. Parenti, Buffalo, and Arthur J. Sullivan, Staten Island, all of N.Y., assignors to Esso Research and Engineering Company, Linden, N.J.

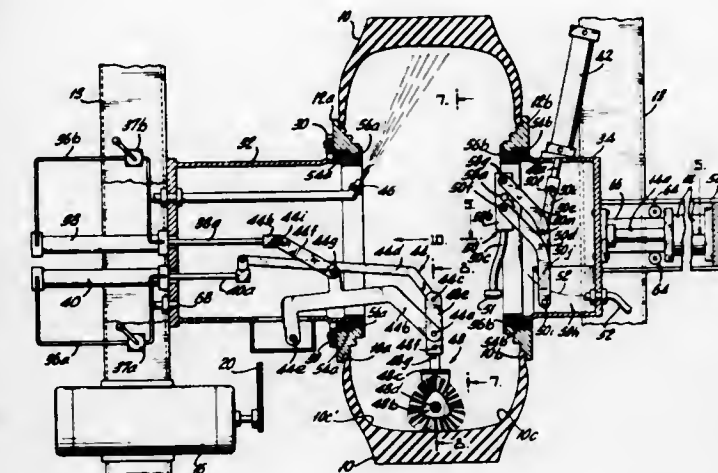
Filed Apr. 9, 1973, Ser. No. 349,394  
Int. Cl. A46b 13/04

U.S. Cl. 15-21 D

10 Claims

An apparatus for cleaning the interior of tubeless tires employs a combination of solvent and brushing action, applied while the inflated tire is being rotated. The tire is rotated and cleaned for a predetermined period of time sufficient to remove residual mold release agents and other contaminants, thus preparing the tire interior for the subsequent application of a liquid air barrier coating or another treating requiring a

clean interior surface. After cleaning, the solvent is forced out by the air pressure within the tire through a solvent removal



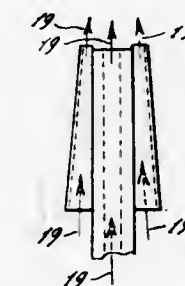
system, following which the casing is rinsed by clean solvent prior to deflation and removal of the tire from the apparatus.

### 3,825,966 VENTURI WINDSHIELD WIPER BLADE

Everett J. Hall, 13962 Ordner Dr., Strongsville, Ohio 44136  
Filed Oct. 26, 1972, Ser. No. 300,985  
Int. Cl. B60s 1/46

U.S. Cl. 15-250.04

1 Claim



An improved blade for a windshield wiper, and which is designed to incorporate a venturi effect so to create a suction force inside the blade, thus providing a uniform contact on the windshield throughout the blade length; the device consisting of two wedge-shaped rubber blades enjoined to provide a central hollow space between the blades, the hollow space being closed at opposite ends by a bottom insert and a top insert, the bottom insert including a tubular nipple for connection to a flexible hose from a washer fluid tank.

### 3,825,967 BRUSH CONTROL DEVICE FOR VEHICLE CLEANING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Aichi-ken, Japan

Filed Apr. 25, 1973, Ser. No. 354,501  
Claims priority, application Japan, May 19, 1972, 47-49715  
Int. Cl. B60s 3/06

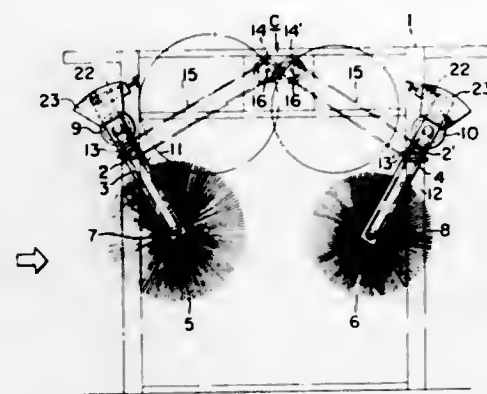
U.S. Cl. 15-21 D

1 Claim

This invention relates to a control device for vehicle top cleaning apparatus of the type having first and second rotatable brushes horizontally supported on a portal frame structure by first and second brush arms mounted on the frame for swinging movement back and forth thereof. A first support shaft is associated with the first brush arm for rotation therewith and a second supported shaft is associated with the second brush arm for rotation therewith, and a clutch mechanism is arranged between said first and second support shafts. The clutch mechanism is engagable to cause said



second brush arm to swing upwardly with the upward swing of said first brush arm and disengagable to allow said first and



second brush arms to swing downwardly independently from each other.

3,825,968

## GUTTER BROOM SUSPENSION

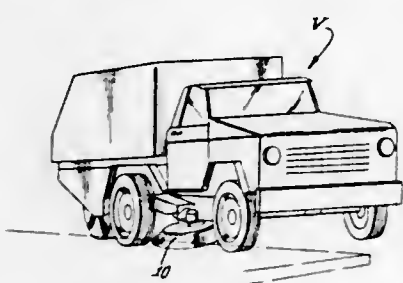
Gregory J. Larsen, Claremont, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Sept. 27, 1971, Ser. No. 183,826

Int. Cl. E01h 1/05

U.S. Cl. 15—87

13 Claims



A street sweeper rotary gutter broom is mounted to a vehicle frame for fore and aft swinging movements by way of a parallel linkage pivoted to the frame, the combination of a spring and hydraulically powered cylinder coacting to effect lowering and raising of the broom to and from ground contact.

3,825,969

## FRICTION WASHES

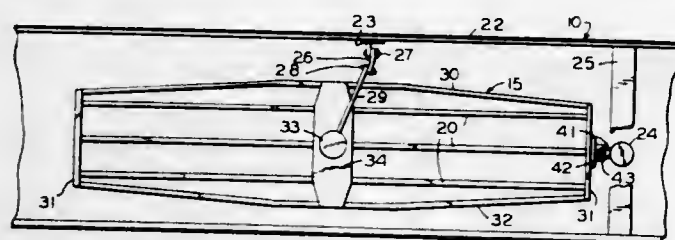
Jeff R. Welter, Vancouver, Wash., assignor to Daniel C. Hanna, Portland, Oreg.

Filed Jan. 8, 1973, Ser. No. 321,680

Int. Cl. B60s 3/00

U.S. Cl. 15—97 R

12 Claims



Curtains of ribbon portions suspended into a path of a car from a frame are reciprocated edgewise and oscillated facewise by a hinge suspension of the central portion of the frame and a crank drive connected to one end of the frame to cause gentle slapping and scraping actions of the ribbon portions on the car.

### 3,825,970 PAINT ROLLER FRAME WITH SPRAY SHIELD AND CLEAN-UP MEANS

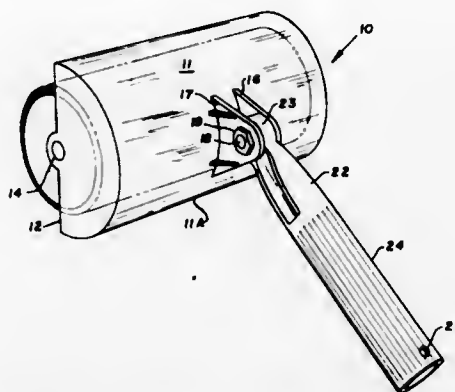
Robert I. Hanssen, 116 Sibley Memorial Hwy., St. Paul, Minn. 55118

Filed Oct. 10, 1972, Ser. No. 296,235

Int. Cl. B44d 3/28

U.S. Cl. 15—230.11

8 Claims



A paint roller retaining frame having an integral spray shield which is also arranged to accommodate clean-up of the used paint roller, with the frame being arranged to releasably retain or suspend cylindrical paint-applying rollers therein. The device comprises structural features providing, in combination; frame means for achieving releasable roller retention, a generally semi-cylindrical casing shell or enclosure having a pair of end plates and forming a substantial portion of the frame means and including means for retaining a roller receiving end cup therewithin for releasable roller retention. The integral frame and shield structure is preferably generally transparent so as to assist the user in viewing the action of the roller on the surface being painted and is also provided with a support edge surface which assists in guiding a flow of water to clean the roller after use. The end cups retain the paint-applying roller with its end or edge closely adjacent the end plate, so as to maximize the area capable of being covered with the roller. A centrally mounted pivotally adjustable handle is provided, the handle being centrally located on the outer circumference of the shield portion so as to provide a central pressure point to equalize pressure on both ends of the roller during use.

3,825,971

## WIPER FOR WIPING ADJACENT SURFACES

Eckhard Ursel, Buhl, and Horst Seibicke, Altschweier, both of Germany, assignors to Robert Bosch, GmbH, Stuttgart, Germany

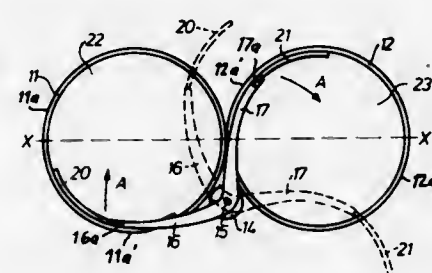
Filed June 7, 1972, Ser. No. 260,386

Claims priority, application Germany, June 28, 1971, 247535; Feb. 16, 1972, 2207103

Int. Cl. B60s 1/28

U.S. Cl. 15—250.27

12 Claims



A wiper for simultaneously wiping two adjacent circular surfaces, has a shaft spaced from a plane passing through the axes of the two surfaces. The shaft is parallel to the plane and supports a bell crank whose two levers form an angle of less

than 180° with each other and which constitute two wiper arms to which wiper blades are connected. An oscillatory drive means rotates the shaft between two angular end positions to sweep the surfaces which are simultaneously wiped by the wiper blades.

3,825,972

## SHAG RUG FLUFFER

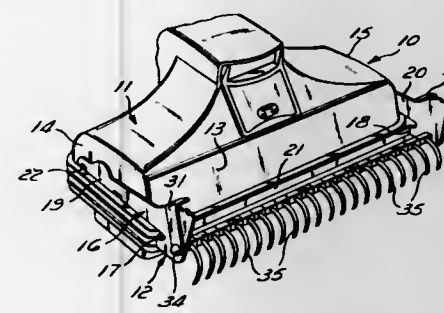
Charles H. MacFarland, Cleveland, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Apr. 23, 1973, Ser. No. 353,246

Int. Cl. A47I 9/06

U.S. Cl. 15—373

7 Claims



A shag rug rake attachment for a vacuum cleaner nozzle is disclosed. The attachment includes a U-shaped racket which clips to the vacuum cleaner nozzle so that a shaft pivotally connected to the bracket extends across the forward end of the nozzle and is substantially normal to the directions of movement of the nozzle along the rug. A plurality of laterally spaced, arcuate tines project outwardly and downwardly from the shaft and then inwardly toward the nozzle. A releasable lock is provided to lock the shaft in any one of a plurality of positions so that, as to at least some of those positions, the tine ends extend beyond the plane of the bottom of the cleaner nozzle when the bottom of the cleaner nozzle is off the rug. When the cleaner nozzle is applied to the rug, the tines are flexed so that tangents at tine-rug contact locations define acute angles with the rug and the measure of the angles is inversely related to the extent of tine extension beyond the plane. Increased flexure of the tines provides more rigid tines and increases the hooked configuration of the tines to more effectively comb deep pile shag rugs.

3,825,973

## ADJUSTABLE DOOR HINGE CONTAINING COIL SPRING

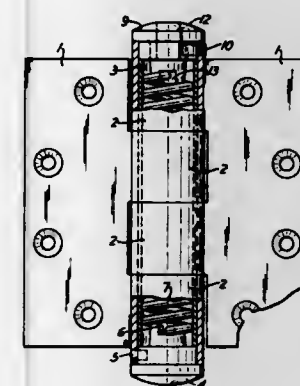
Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKenney Manufacturing Company, Scranton, Pa.

Filed Jan. 18, 1973, Ser. No. 324,819

Int. Cl. E05f 1/12

U.S. Cl. 16—189

6 Claims



A tubular pivot pin inside the barrel of a pair of hinge leaves contains a coil spring. Mounted in the opposite ends of the barrel are plugs, one of which is provided with an axial passage

through it having an adjustment member therein provided with an outer portion rotatably mounted in the passage and an inner portion projecting from the inner end of the plug. The ends of the spring are connected to the plugs. Releasable interengaging means normally prevent rotation of the adjustment member in the plug passage, but the outer end of that member has means for receiving a tool for turning it in the passage to adjust the tension on the spring when the interengaging means are disengaged.

3,825,974

## APPARATUS FOR IMPREGNATING TEXTILE FIBERS

Werner Naegeli, Winterthur, Switzerland, assignor to Pavana AG, Basel, Switzerland

Continuation of Ser. No. 187,966, Oct. 12, 1971, abandoned.

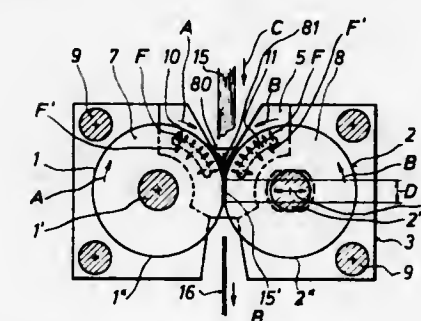
This application Apr. 2, 1973, Ser. No. 347,351

Claims priority, application Switzerland, Oct. 12, 1970, 15070/70

Int. Cl. D01b 3/04

U.S. Cl. 19—66 R

14 Claims



An apparatus for continuously impregnating a throughpassing textile fiber arrangement with liquid, comprising a pair of discs rotatably supported in a machine frame and arranged with circumferential surfaces opposite to each other for throughpassing the fiber arrangement between said circumferential surfaces. Two cover plates are provided, each of which is laterally arranged at face sides of said pair of discs and having a surface opposite to said face sides of said pair of discs, said cover plates covering said face sides with a small clearance between said surface and said face sides and being located in the machine frame. The discs and the cover plates are arranged shiftable relative to each other, as viewed in the direction of axes of rotation of the discs, and openings are provided in the cover plates and arranged at a region of the cover plates opposite to said face sides of said pair of discs for supplying under pressure impregnating liquid to said face sides.

3,825,975

## APPARATUS FOR FORMING A SLIVER FROM A FIBER WEB PRODUCED IN A CARD

Paul Staeheli, Wilen, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 95,619, Dec. 7, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,650

Claims priority, application Switzerland, Dec. 12, 1969, 18499/69; Nov. 19, 1970, 17167/70

Int. Cl. D01h 15/46

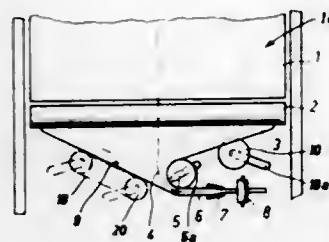
U.S. Cl. 19—150

1 Claim

A method of forming a sliver from a fiber web produced in a card which comprises the steps of subjecting the formed web immediately after it is withdrawn to a precondensing action or preliminary condensation by laterally collecting the web towards the middle thereof, and subsequently condensing such web into a sliver by means of a known type of condensing device to essentially complete the formation. The invention also pertains to apparatus for forming a sliver in accordance with the aforesaid inventive method wherein a sliver condensing device is arranged after a web take-off device of the card, and between the web take-off device and the sliver condensing device there is provided movable precondensing



means in the form of at least one substantially cylindrical-type roller or having at least one substantially cylindrical circumferential precondensing surface disposed in a plane which is in



substantially perpendicular relationship with respect to the plane in which the web moves for forming a precondensed strand of fibers by laterally collecting the fiber web.

### 3,825,976 WRITING INSTRUMENT

Lou Moore, 400 Island Dr., Merrit Island, Fla. 32952  
Filed Sept. 2, 1971, Ser. No. 177,333  
Int. Cl. B43k 25/00

U.S. Cl. 24—11 F

1 Claim



There is described a writing instrument of the ball point type having a clip member extending away from the writing tip. The lower end of the instrument body has a recess into which the clip member is received when the instrument is used. In one version, the clip member consists of a spring ring to which is attached a clip and the instrument body is tapered to allow sliding of the ring and the clip in the recess. In another, the clip is integral with a plate displaceable on the feed element.

### 3,825,977

#### SLIDE FASTENER HAVING A FILLING CORE

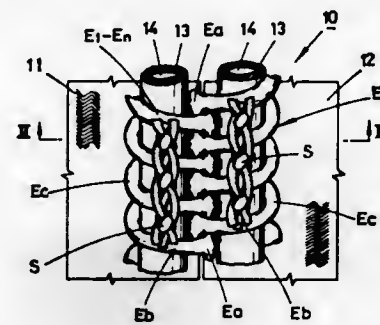
Ikuno Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Oct. 31, 1973, Ser. No. 411,223  
Claims priority, application Japan, Nov. 6, 1972, 47-128131  
Int. Cl. A44b 19/12

U.S. Cl. 24—205.1 C

4 Claims

A slide fastener is provided with a reinforcing core or filler extending through a helical structure of a continuous row of

fastener elements for stabilizing the position of the latter when sewn onto a carrier tape. The core or filler is a tubular struc-



ture designed to flexibly yield itself and fit snugly into the coil of each element.

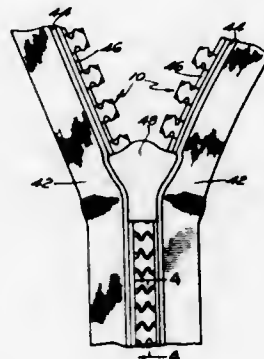
### 3,825,978

#### ZIPPER CONSTRUCTION

Vytautas S. Sakalys, Providence, R.I., assignor to Brier Manufacturing Company, Providence, R.I.  
Filed Mar. 13, 1972, Ser. No. 233,972  
Int. Cl. A44b 19/06

U.S. Cl. 24—205.13 R

4 Claims



An ornamented plastic zipper construction comprising integrally molded plastic elements having front and rear portions with the side edges of the rear portion being undulated or of zigzag configuration whereby to define outwardly extending teeth and inwardly extending recesses, said teeth extending outwardly of the adjacent side edge of the front portion, and said recesses extending inwardly thereof, whereby when said zipper elements are interlocked, the teeth of one element extend into the recesses of the next-adjacent elements, the outermost portion of said teeth underlying the front portions of the adjacent elements whereby there is a simultaneous interlocking and overlapping between adjacent elements so as to resist pull-apart, shear, and flexural forces on the closed zipper. A further feature of the present invention resides in the fact that adjacent zipper elements, when interlocked, form a straight line with the abutting edges of adjacent elements in close adjacency to each other.

### 3,825,979

#### MULTIPLE POINT BUCKLE

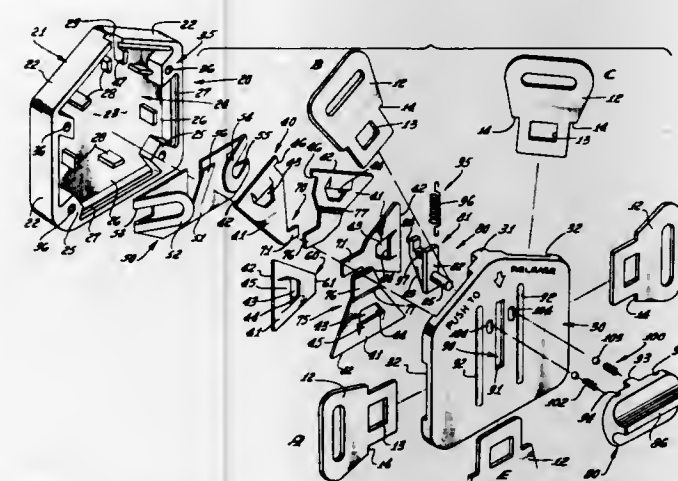
Hans Jakob, Sherman Oaks, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.  
Continuation of Ser. No. 95,178, Dec. 4, 1970, abandoned.  
This application June 26, 1972, Ser. No. 266,408  
Int. Cl. A44b 11/25

U.S. Cl. 24—205.19

24 Claims

A five-point buckle has five ratchets, each for lockingly receiving a respective connector on the end of any one of two shoulder belts, two lap belts, or a crotch belt, the end connectors being insertable into the buckle in random sequence, with the two shoulder belt ratchets having overlying tabs, and the crotch belt and left lap belt ratchets having overlying tabs ad-

jacent the overlying tabs of the shoulder belt ratchets, and with a slidable shoe adapted to sequentially engage and depress the adjacent sets of tabs upon manual movement of the shoe to thereby sequentially release first the shoulder belts simultaneously and then the left lap belt and crotch belt simul-



aneously from the buckle. Detents indicate the position of the shoe to permit release of the shoulder belts only, a spring biases the shoe to a non-tab engaging position, and a blocking plate may be inserted into the buckle to convert the five-point buckle to a four-point or three-point buckle.

### 3,825,980

#### RETAINING AND RELEASE ASSEMBLY

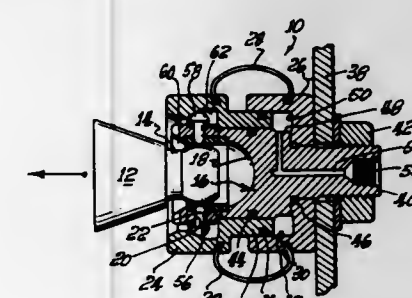
Daniel M. Moore, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1972, Ser. No. 298,318

Int. Cl. A44b 11/25, 17/00

U.S. Cl. 24—230 AN

8 Claims



An apparatus for releasing an elongated body which has an annular recess near one end thereof including a piston means wherein one end of the piston means has a cavity for receiving the elongated body and its recess. The piston means has a plurality of openings into the cavity and a plurality of reciprocable elements are provided which are slidably disposed within the openings for retaining the body when the elements are depressed into the recess and for releasing the body when moved away from the recess. Cylinder means are disposed about the piston means and slidable between first and second positions relative to the piston means for retaining the elements depressed in the body recess when the cylinder means is in the first position and freeing the elements from the body recess when the cylinder means is in a second position. Spring means biases the cylinder means to the first position and a means is provided for applying a fluid pressure to the cylinder means for moving the cylinder means from the first position to the second position. With such an arrangement an application of fluid pressure to the cylinder means causes the elongated body to be released.

### 3,825,981

#### CARTRIDGE-TYPE CUTOFF AND GROOVING TOOL

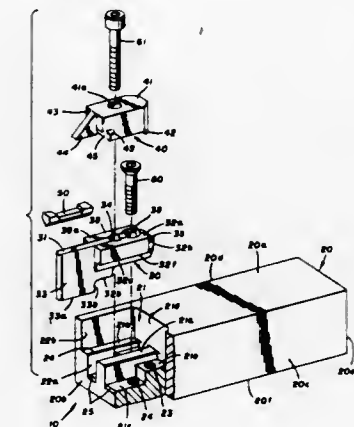
Burton L. Cochran, North Canton, and William B. Stein, Barberton, both of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Nov. 13, 1972, Ser. No. 306,363

Int. Cl. B26d 1/00

U.S. Cl. 29—96

7 Claims



An improved cutoff or grooving tool of the cartridge type is disclosed, including a cartridge assembly which comprises a support member, a clamping member, and a cutting insert, all of which are receivable in one or more pockets opening into the front and top faces of an elongate tool-holder body. The support member is mounted in the pocket in such a way that it is drawn down and into the pocket to provide the maximum rigidity to the forces encountered in the operation of the instrument. The assembly is releasably received in the pocket so that the entire assembly can be readily and quickly removed for replacement due to damage, change of size of cut, etc., without the necessity of providing special tooling in most instances.

### 3,825,982

#### METHOD OF MAKING LOW FRICTION BEARINGS AND BEARINGS MADE THEREFROM

Pierre De Lacroix De Lavalette, Paris; Daniel Hein, Cholsy-Le-Roi; Georges Boudet, Tours; Jean-Claude Meyer, Tours; Alain Neron, Tours; Alain Blanunier, Semblancay; Alain Blaiberg, Mettray; Jean Louis Nouveau, Noizay; Jacques Georges Charpentier, Tours, and Alain Jacquot, Tours, all of France, assignors to SKF Compagnie D'Applications Mecaniques, Clamart, France

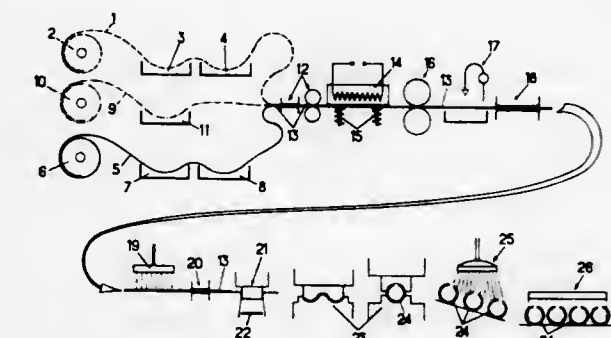
Filed Jan. 12, 1973, Ser. No. 323,321

Claims priority, application France; Jan. 19, 1972, 72.01767

Int. Cl. B23p 11/00, 3/00; F16c 33/28

U.S. Cl. 29—149.5 NM

21 Claims



Bearing material comprises strip of cloth having upper surface of fluorocarbon resin threads and lower surface comprising metallic threads soldered to a metallic supporting strip. Fluorocarbon threads are embedded in a resin layer which is partially hardened before the material is cut and shaped, but completely hardened only after shaping has been completed.



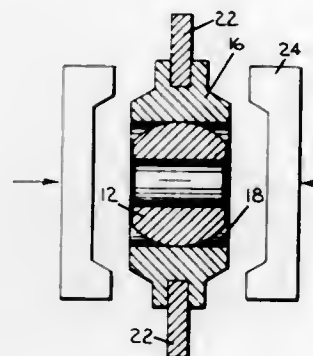
3,825,983

**METHOD FOR MANUFACTURING SPHERICAL BEARING ASSEMBLIES**

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.  
Filed Feb. 12, 1973, Ser. No. 331,500  
Int. Cl. B23p 11/00; B21d 53/10

U.S. Cl. 29—149.5 B

1 Claim



Method of manufacturing a spherical bearing assembly comprising the steps of expanding an outer race member into mechanical interlocking engagement with a machine element or apparatus, inserting a spherical ball within the so mechanically interlocked outer race member, deforming by use of the die means a portion of spherical outer race member around said ball to form an integral spherical bearing assembly.

3,825,984

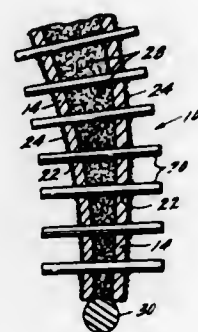
**METHOD FOR FABRICATING A HOLLOW BLADE**

Peter J. Linko, and William D. Treece, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 2, 1972, Ser. No. 231,156  
Int. Cl. B21k 3/04; B23p 15/04

U.S. Cl. 29—156.8 H

5 Claims



In the fabrication of a hollow fluid flow apparatus blade, such as a turbine blade or vane, there is provided a pair of spaced apart metallic walls defining the trailing edge portion of the blade airfoil, each of the walls having an inner and an outer surface. Each of the walls is perforated with a plurality of openings which are located from wall to wall in pairs of aligned openings. A pin is positioned through each pair of aligned openings while maintaining the walls in spaced apart relationship. Then the pins are joined to the walls through a metallic bond, one example of which is brazing through application of a brazing alloy to the wall outer surface.

3,825,985

**DEVICE FOR INSULATEDLY ASSEMBLING A COMPONENT FOR ELECTRICALLY DRIVEN TIMEPIECES**

Heinz Meltinger, Theodor-Heuss-Str. 16, D-7075 Mutlangen, Germany

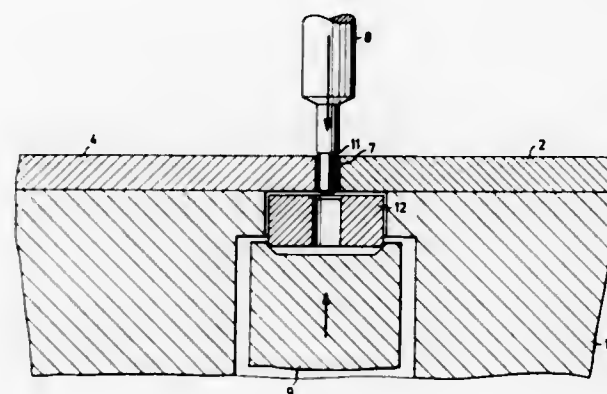
Filed Dec. 15, 1972, Ser. No. 315,612

Claims priority, application Germany, Dec. 27, 1971, 2164677

Int. Cl. G04d 1/06; B23p 11/02

U.S. Cl. 29—178

9 Claims



Device which allows to position an insulated roller on the staff of a balance wheel oscillator of a timepiece. The insulation itself is achieved by a small plate of plastic material which is formed into a tube-like part and is inserted into the hole of the aforementioned insulated roller by the help of the special tool.

3,825,986

**CRIMPING TOOL**

Walter Karl, Lugarno, New South Wales, Australia, assignor to Utilux Pty. Limited, New South Wales, Australia

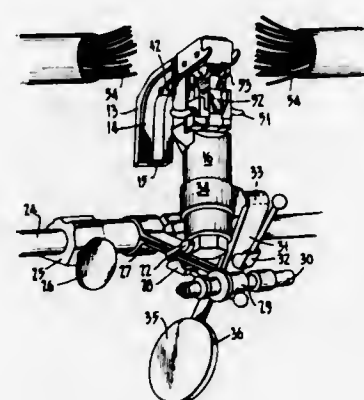
Filed Dec. 27, 1972, Ser. No. 318,731

Claims priority, application Australia, Dec. 31, 1971, 2577/71

Int. Cl. H01r 43/04

U.S. Cl. 29—203 DT

4 Claims



A crimping tool for use in crimping connectors on wires such as telephone cable wires in which the connectors are fed into engagement with a fixed anvil and the wires are thereafter positioned in the anvil and the connector crimped around the wires by means of a punch member. The anvil and punch have cooperating members which sever the unwanted ends of the wires and trim any excess insulation on the connector.

3,825,987

**WIRE CONNECTOR PRESSER TOOL**

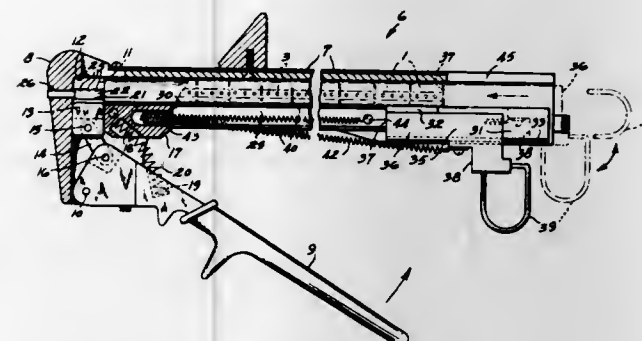
Donald Tolman Smith, Norcross, Ga., and William Robert Spenninger, Morris Twp., Morris County, N.J., assignors to Western Electric Company Incorporated, New York, N.Y., by said Spenninger and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Smith

Filed Apr. 9, 1973, Ser. No. 349,348

Int. Cl. H01r 43/04; B23q 7/10; B23p 17/00

U.S. Cl. 29—203 H

12 Claims



Plier-like tool, for compressing connectors about wires to be electrically connected, has toggle-operated presser and opposed anvil with a space therebetween to receive unpressed connectors from a magazine supply. A fixed gauge is provided on either side of the space, which gauge is separated from the anvil by a distance equal to the height of a properly pressed connector. Hinged plates, each with a series of spaced semicircular grooves adapted to register with apertures in the connector, are provided adjacent the fixed gauges, whereby wires laid in the grooves will automatically register with their respective apertures in the connector. The hinged plates pivot against the force of a spring to permit withdrawal of the pressed connector from the tool. The rear of the magazine has an open slot adapted to receive pressure-sensitive tape attached to a series of unpressed connectors, the connectors being loaded into the magazine by feeding the tape into the slot and then pulling the tape to strip it from the connectors.

3,825,988

**LATCH INSTALLATION MACHINE**

Aldin Hardick; Delbert House, and Alvin M. Martin, all of Muskegon, Mich., assignors to Questor Corporation, Toledo, Ohio

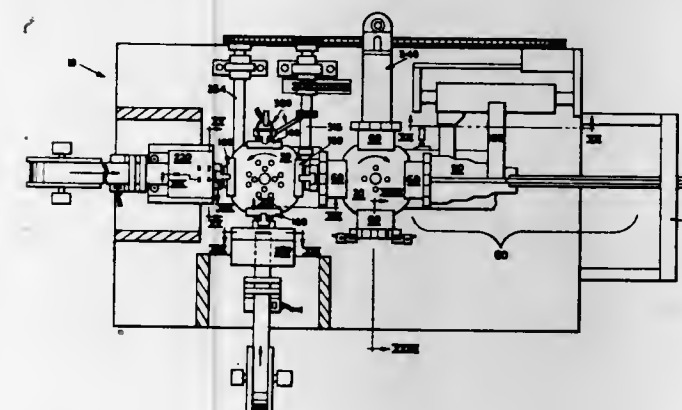
Division of Ser. No. 153,941, June 17, 1970, Pat. No.

3,742,575. This application Feb. 21, 1973, Ser. No. 334,470

Int. Cl. B23p 19/04

U.S. Cl. 29—208 R

38 Claims



A pair of adjacent, rotating turrets are indexed to stop at various assembly stations, spaced circumferentially about each turret. Four ring holders are mounted on one turret for holding split rings. Four parts nests are mounted on the other

turret for holding lock tabs and latches which are to be inserted into the rings. A ring loader is positioned at one work station adjacent the first turret for loading a piston ring onto a ring holder. Located at work stations adjacent the second turret are a lock tab loader and a latch loader for loading lock tabs and a latch, respectively, into a parts nest. The two turrets then share a common work station at which a ring holder and a parts nest are in alignment. At this point, a lifter pushes the lock tabs and latch out of the parts nest and into engagement with the ring whereby assembly of the ring and latch is facilitated. A ring unloader is located at yet another work station adjacent the first turret for unloading the completed rings. A clearing station is located at a work station adjacent the second turret for clearing the parts nest of any lock tabs and/or latch which might be left in the parts nest as a result of a defective assembly.

3,825,989

**DEVICE FOR FASTENING IDENTIFICATION MEMBERS**

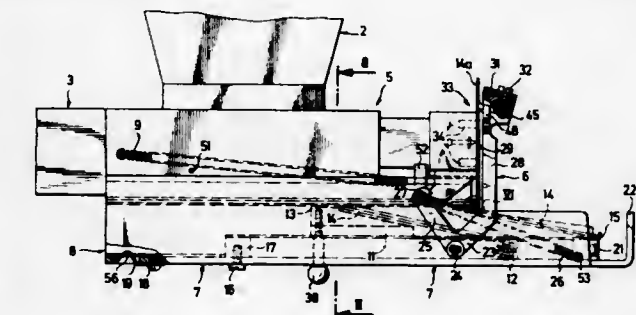
Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft

Filed Jan. 15, 1973, Ser. No. 323,816

Int. Cl. B23q 7/10

U.S. Cl. 29—211 D

16 Claims



In a device for fastening identification members, such as plates, to a hard receiving material by means of bolts, a bolt setting gun is mounted on a support frame for movement between a firing position where its muzzle is spaced from the receiving material and a fired position where the muzzle is located adjacent the receiving material. Supported from the gun is a storage element in which a plurality of identification members are held ready to be moved, one at a time, from an open end of the storage element to a location in front of the muzzle in the firing position. An angle lever pivotally attached to the storage element and moves the identification members from the storage element into position in front of the muzzle. The angle lever is spring biased into position for withdrawing an identification member from the storage element. The gun has a nose adjacent its muzzle and as the muzzle returns from the fired position to the firing position, the nose contacts the angle lever and pivots it, against the spring biasing action, so that an identification member is moved in front of the muzzle. When the gun is fired, the nose moves toward the receiving material and releases the angle lever. In its released condition, the angle lever, due to the spring biasing action, moves into position to pick up another identification member. Accordingly, during each firing cycle, as one identification member is fastened to the hard receiving material, another identification member is automatically moved in position in front of the muzzle of the gun.

3,825,990

**SCALPEL IMPLEMENT**

Donald F. Shields, 2541 Ramshorn Dr., Manasquan, N.J. 08736

Filed July 26, 1972, Ser. No. 275,335

Int. Cl. B23p 19/04

U.S. Cl. 29—268

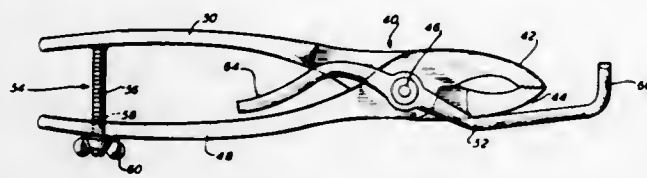
5 Claims

A scalpel implement for removing a flexible, linearly slotted surgical blade mounted on a linear supporting key, the blade



having a cutting end and a heel, including means for gripping the cutting end of the surgical blade and means for applying

resilient members, assembling the resilient members within the housing and securing the resilient members thereto, and cutting a circumferential groove in the housing coincident



force to the heel of the blade to facilitate removal of the blade off of the linear supporting key.

3,825,991

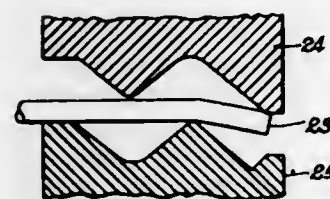
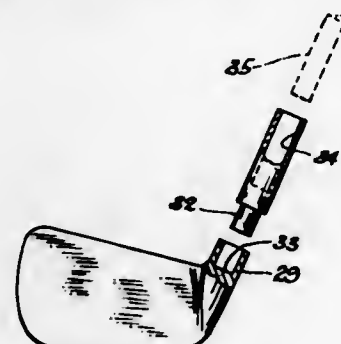
## METHOD OF MAKING GOLF CLUB HEAD

Alveria M. Cornell, Hinsdale, Ill., assignor to Cornell Forge Company, Chicago, Ill.

Continuation-in-part of Ser. No. 169,942, Aug. 9, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,575 Int. Cl. B23p 17/00

U.S. Cl. 29-412

5 Claims



A golf club iron head is made in two pieces instead of as a single piece forging in order to make possible appreciable economies in the forging of the head. The partition is made in the hosel, a short stub next to the blade of the club being made as a forging integrally with the blade and the remainder of the hosel being machined from a bar with an automatic screw machine. Alternatively the remainder of the hosel can be made from tubing suitably finished and cut off to length. The two parts are united by a permanent bonding procedure to form a substantially "standard" iron club head.

3,825,992

## METHOD OF MAKING AN ECCENTRIC FLEXURAL PIVOT

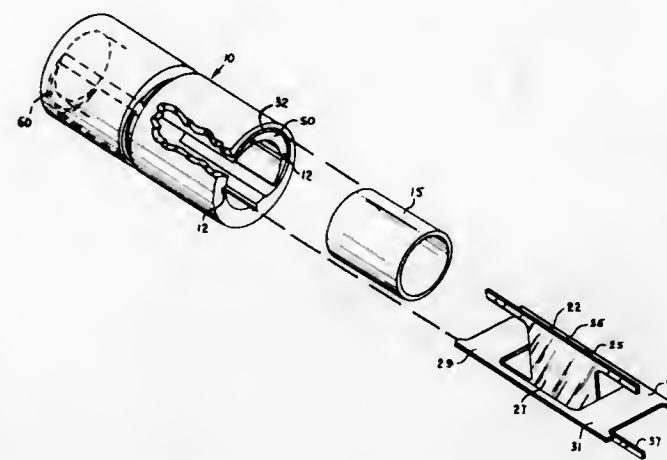
Henry Troeger, Cooperstown, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 8, 1972, Ser. No. 287,298 Int. Cl. B23p 11/00

U.S. Cl. 29-436

9 Claims

The method of manufacturing a flexural pivot device comprising the sequential steps of forming a cylindrical housing, milling (such as by electrochemical or electrical discharge means) two diagonally-opposite arcuate annular spaces eccentric to the axis of the housing at each end of the housing thereby forming diametrically opposed and overlapping inwardly-projecting eccentric arcuate structure, forming a plu-



with the overlapping arcuate structure so that limited relative rotation of one arcuate structure relative to the other may occur upon flexing of the resilient means.

3,825,993

## METHOD OF PROVIDING ARTICLE FROM CLAD ALUMINUM BASE ALLOY

Michael K. McGinnis, Lower Burrell, and Paul F. Wallace, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 147,624, May 27, 1971, abandoned, which is a continuation of Ser. No. 787,523, Dec. 27, 1968, abandoned. This application July 6, 1972, Ser. No. 269,475 Int. Cl. B23k 31/02

U.S. Cl. 29-472.9

2 Claims



A composite clad sheet product made up of an aluminum base alloy containing about 2.5 to 6% zinc, about 0.4 to 3% magnesium, about 0.2 to 1% manganese, and balance essentially aluminum, clad with a magnesium-free aluminum base alloy containing about 0.5 to 1.8% manganese. The product may have an outside porcelain enamel finish and an inside cured organic resin finish and be in the form of a cooking utensil.

3,825,994

## METHOD OF SOLDERING CIRCUIT COMPONENTS TO A SUBSTRATE

Clyde Franklin Coleman, Crawfordsville, Ind., assignor to RCA Corporation

Filed Nov. 15, 1972, Ser. No. 306,839 Int. Cl. B23k 31/02, 35/24

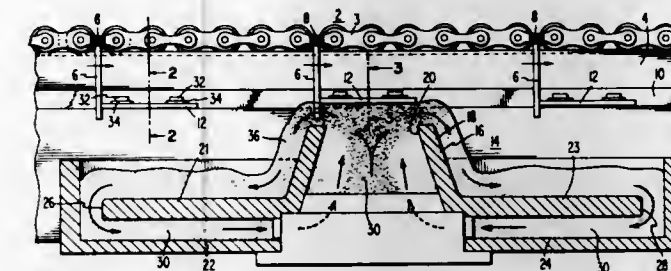
U.S. Cl. 29-498

6 Claims

A method of batch soldering components of hybrid circuits to substrates comprising advancing the substrates having mounted thereon solder paste layers or preforms on which the components are resting in unsoldered state, along a path which leads through a wave of hot, dense liquid, such that the

substrates float free on the liquid wave for a period long enough to melt the solder paste or preform, and then moving

spaced from the JFET gate diffused regions and reverse-biased so that depletion regions extend down to the substrate. The close spacing of the gate and isolation diffusion regions results in the gate and isolation depletion regions joining upon



the substrates out of contact with the liquid wave to cool the assemblies which now have the components soldered down to them.

3,825,995

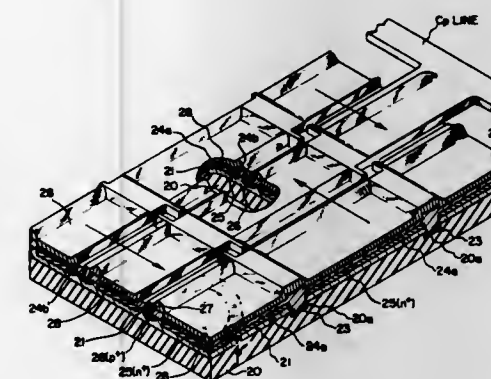
## DIELECTRIC STRIP ISOLATION FOR JFET OR MESFET DEPLETION-MODE BUCKET-BRIGADE CIRCUIT

Bruno Kurz, Schenectady; Mark B. Barron, and Walter J. Butler, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 295,835, Oct. 10, 1972, Pat. No. 3,784,847. This application Sept. 27, 1973, Ser. No. 401,200 Int. Cl. B01j 17/00

U.S. Cl. 29-571

6 Claims



Undesired coupling of JFET or MESFET bucket-brigade stages through the epitaxial layer in a monolithic integrated bucket-brigade circuit is prevented by isolating adjacent stages by strips of thick oxide dielectric material such as SiO<sub>2</sub>. The dielectric strips are formed by selective oxidation to obtain local conversion of the n-type silicon epitaxial layer to SiO<sub>2</sub>. In a second embodiment, elongated spaced-apart mesas of the SiO<sub>2</sub> are formed on the substrate prior to forming the patterned n-type silicon epitaxial layer. The storage capacitors of the bucket-brigade stages are MOS devices formed by metal layers overlapping the drain electrode regions of the JFETs or MESFETs diffused in the epitaxial layer with the dielectric material being a SiO<sub>2</sub> layer therebetween.

3,825,996

## GATE-DIFFUSION ISOLATION FOR JFET DEPLETION-MODE BUCKET BRIGADE CIRCUIT

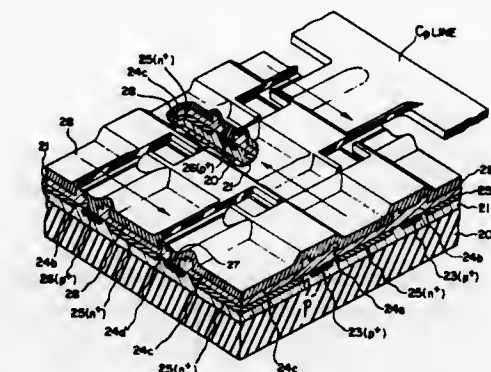
Mark B. Barron, and Walter J. Butler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 295,872, Oct. 10, 1972, Pat. No. 3,790,825. This application Sept. 27, 1973, Ser. No. 401,201 Int. Cl. B01j 17/00

U.S. Cl. 29-571

2 Claims

Undesired coupling of JFET bucket-brigade stages through the epitaxial layer in a monolithic integrated bucket-brigade circuit is prevented by isolation diffusion regions formed in the epitaxial layer along the two sides of a row of bucket-brigade stages. The isolation diffusion regions are slightly



application of voltage to the gate to pinch off the transistor. The storage capacitors of the bucket-brigade stages are MOS devices formed by metal layers overlapping the JFET drain electrode regions diffused in the epitaxial layer with the capacitor dielectric being a dielectric layer therebetween.

3,825,997

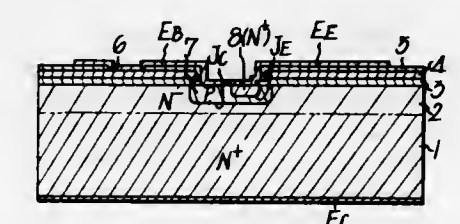
## METHOD FOR MAKING SEMICONDUCTOR DEVICE

Kinji Wakamiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 77,282, Oct. 1, 1970, abandoned. This application May 22, 1972, Ser. No. 255,328 Claims priority, application Japan, Oct. 2, 1969, 44-78785 Int. Cl. B01j 17/00

U.S. Cl. 29-578

8 Claims



A method for constructing planar type semiconductor devices in which PN junctions of the device are exposed through an opening formed in a first insulating layer on the surface of the device and is then covered with a low resistivity polycrystalline semiconductor layer which is then covered with a second insulating layer such that voltage may be applied to the polycrystalline layer to provide a planar semiconductor substrate which has high break-down voltage.

3,825,998

METHOD FOR PRODUCING DIELECTRICALLY COATED WAVEGUIDES FOR THE H<sub>01</sub> WAVE

Helmut Oberbeck, Backnang, Germany, assignor to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 27, 1972, Ser. No. 318,936 Claims priority, application Germany, Dec. 30, 1971, 2165553

U.S. Cl. 29-600

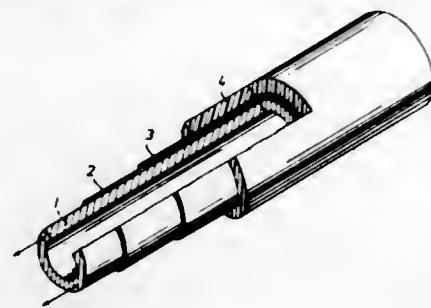
Int. Cl. H01p 11/00

4 Claims

A waveguide for transmitting H<sub>01</sub> waves is produced by applying a separating layer to the cylindrical outer surface of a steel mandrel; applying a copper coating to the separating layer; applying a layer of glass saturated with self-hardening



plastic to the copper layer; causing the glass fibers to form a bond with the copper layer; removing the steel mandrel thus to form a pear-shaped enlargement or nodule tapering toward the opposite end of the conductor. Heating of the conductor



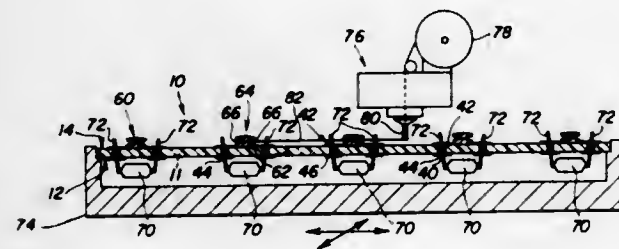
leaving a resulting tubular structure; and applying a dielectric layer to the interior surface of the resulting tubular structure.

3,825,999

**METHOD OF CONNECTING ELECTRICAL COMPONENT**  
Ulysses Ray Rubey, Lewisville, Tex., assignor to United Wiring and Manufacturing Co., Inc., Garland, Tex.  
Filed Dec. 26, 1972, Ser. No. 318,589  
Int. Cl. H05k 3/32

U.S. Cl. 29—626

14 Claims



A circuit board employs solder pads plated onto the reverse side of an insulative board in an orthogonal array and connected to aligned conductive areas on the obverse side by plated-through holes. Wire guides including upstanding fingers mount on the reverse side of the board with conductive pins from electrical components extending through the holes in the board from the obverse side to the reverse side.

Insulated wire is threaded around the pins of the electrical components and guide in accordance with a predetermined pattern of component interconnections. For interconnections between points on the board, wire is threaded substantially orthogonally. Where wire is to be severed, it is threaded angularly relative to the orthogonal array. After wire threading, the wire is selectively soldered to contact areas while evaporating locally the insulation thereon and component pins are soldered in plated-through holes. All angularly arrayed segments of the wire are cut and loose portions removed leaving only wire segments which form desired interconnections.

3,826,000

**TERMINATING OF ELECTRICAL CONDUCTORS**  
Gideon A. Du Rocher, and Ellsworth S. Miller, both of Mt. Clemens, Mich., assignors to Essex International, Inc., Ft. Wayne, Ind.

Filed May 18, 1972, Ser. No. 254,530  
Int. Cl. H01r 9/00

U.S. Cl. 29—630 R

23 Claims

Terminating of a metallic, electrical conductor is accomplished by heating an end of the conductor until the metal becomes molten and forms a homogeneous mass followed by cooling and solidification of the mass and subsequent shaping of the mass, if desired, to form a terminal having any one of a number of different configurations. That end of the conductor which is to be terminated preferably is supported in a vertical plane with the free end of the conductor lowermost whereupon the surface tension of the molten metal causes the latter

preferably occurs in an inert atmosphere to prevent oxidation of the molten metal.

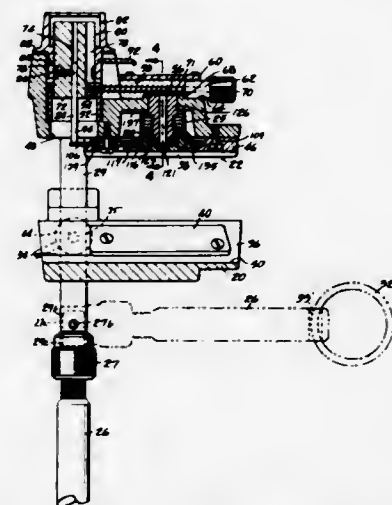
3,826,001

**CABLE STRIPPING TOOL**  
Robert A. Billbre, Orinda, and Walter J. Maytham, Los Altos, both of Calif., assignors to Speed Systems, Inc., Los Altos, Calif.

Filed Apr. 30, 1973, Ser. No. 355,957  
Int. Cl. H02g 1/12

U.S. Cl. 30—90.1

16 Claims



A tool for removing insulation from cables includes a means for supporting cables of differing diameters in the tool while permitting rotation of the tool relative to the cable. The tool includes a main insulation cutting blade whose depth of cut may be selectively varied and whose angular disposition relative to the cable may be selectively changed so the blade will cut a track through the insulation without the application of any axial pressure. The tool further has a scribing blade whose depth of cut and disposition may also be varied for scribing portions of the insulation known as the semiconductor layer. Means are also provided for rendering one of the blades inoperative when the other is being used.

3,826,002

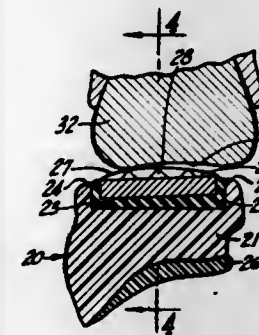
**DENTURES AND TEETH FOR DENTURES AND METHODS OF MAKING THE SAME**  
Henry H. Faust, 319 E. First St., and Peter J. Faust, 1800 Rickety Ln., both of Tyler, Tex. 75701  
Filed Sept. 22, 1972, Ser. No. 291,300  
Int. Cl. A61c 13/00

U.S. Cl. 32—2

16 Claims

Teeth for dentures having shock absorbing and cushioning agents incorporated therein and dentures made from such teeth, providing a yieldable resilient cushioning support for a hard occlusal biting surface on the teeth for minimizing the

shocks of chewing and preventing or relieving destruction of underlying tissues and bone formations beneath the dentures. The posterior teeth are formed with a resiliently mounted



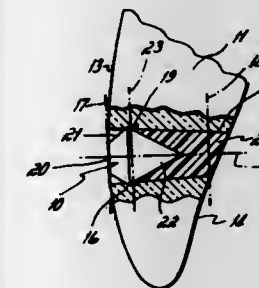
movable hard occlusal surface which yields under biting pressure to stabilize the denture plate base and prevent shifting thereof from proper centric position on the support ridges of the mouth of the wearer.

3,826,003

**FALSE TOOTH CONSTRUCTION**  
Raymond Thenot, Hamilton, Ohio, assignor to Bales Jewelry, Inc., Fairfield, Ohio  
Filed Mar. 12, 1973, Ser. No. 340,093  
Int. Cl. A61c 13/00

U.S. Cl. 32—8

2 Claims



A false tooth construction that incorporates a jewel in combination with the tooth. The tooth is provided with a hole therethrough from the tooth's front face to the tooth's rear face, the hole having a cross-sectional configuration that generally conforms with the peripheral configuration of the jewel's girdle. An annular recess, concentric with the hole, is provided interiorly of the tooth adjacent the front face thereof. The jewel's girdle is seated in the annular recess, the jewel's table thereby being located substantially flush with the tooth's front face since the recess is adjacent the front face. A clear filler material is used to fill up the hole in the tooth between the jewel and the tooth's rear face once the jewel is seated in the annular recess. This mechanically locks the jewel in its recess because the hole's cross-sectional area lessens throughout its axial length from the tooth's front face to the tooth's rear face. Further, the clear filler allows light to pass through the jewel for giving it visual brilliance.

3,826,004

**DENTAL PROPHYLAXIS INSTRUMENT**  
Joseph A. Graceffo, 60 Cayuga St., Seneca Falls, N.Y. 13148  
Filed Apr. 17, 1972, Ser. No. 244,546  
Int. Cl. A61c 3/06

U.S. Cl. 32—58

16 Claims

A dental handpiece for cleaning teeth by means of cleaning paste carried by a flexible cup to which rotary motion is imparted by structure entirely within the handpiece. In the disclosed embodiment, a small rotor is powered by the available compressed air supply and the cup is secured to the rotor for rotation thereby. Reciprocal rotary motion is preferably im-



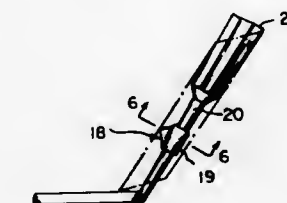
the rotor, and mechanism may also be provided for feeding the cleaning paste directly from a dispenser into the cup from the inside. The actuating member controlling on-off operation is also conveniently located on the handpiece.

3,826,005

**DENTAL MIRROR APPARATUS FOR HOLDING EXPENDABLE DEMISTING SLEEVES**  
Ronald P. Spinello, 372 Post Ave., Westbury, N.Y. 11590  
Filed Mar. 23, 1973, Ser. No. 344,271  
Int. Cl. A61c 3/00

U.S. Cl. 32—69

6 Claims



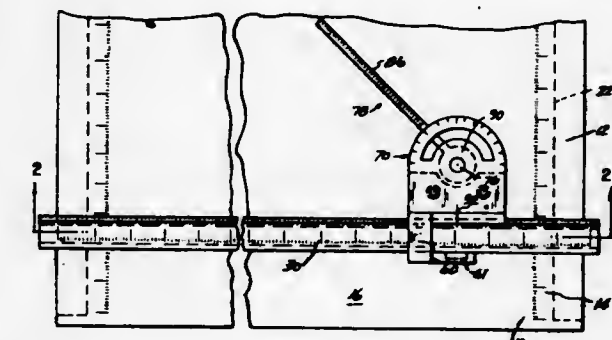
There is disclosed a dental mirror assembly which is adapted to receive and securely position expendable demisting sleeves which are adapted to be slid downwardly over the handle to a point of contact with the mirror surface. The narrow stem portion by means of which the mirror head is attached to the thicker handle portion, has attached thereto a sleeve-deforming member which projects radially outwardly from the stem to distort the surrounding sleeve into an oval configuration for frictionally securing the sleeve against both rotation and sliding movement.

3,826,006

**TRI-SQUARE DRAWING BOARD**  
Eugene Rushin, 3988 Sheridan, Detroit, Mich. 48214  
Continuation-in-part of Ser. No. 143,212, May 13, 1971, abandoned. This application Sept. 18, 1973, Ser. No. 398,307  
Int. Cl. B43i 13/02

U.S. Cl. 33—76 R

6 Claims



This invention relates to new drawing board apparatus and drafting tools. A straight edge member slides within slots along the sides of a drawing board and is held in position selectively by magnets. The slideable member slides along the straight edge. A magnet holds this slideable member in position along the straight edge. A protractor is attached to the slideable



member. An arm is rotated on the center of the protractor and held in place by magnets. Scales are provided on the drawing board, straight edge, and arms for measurement and drafting.

3,826,007

**DRAWING APPARATUS FOR PERSPECTIVE VIEWS**

Haruzo Senshu; Masao Koenuma, both of Tokyo, and Yoshitaka Gibu, Niza, all of Japan, assignors to Fuji Sokyokai Seizo Kabushiki Kaisha and Yugen Kaisha Senshu Sekkei Jimusho, both of Tokyo, Japan

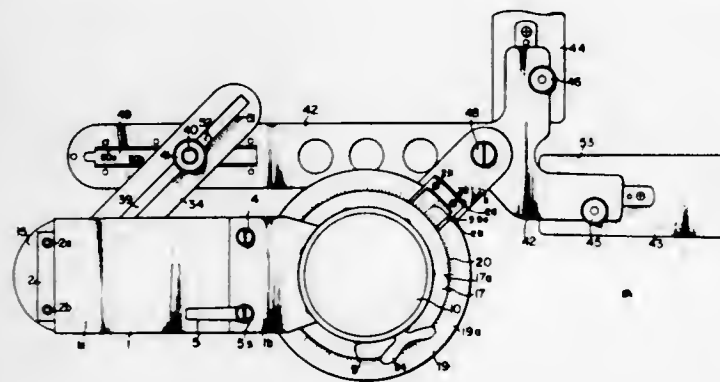
Filed Aug. 29, 1973, Ser. No. 392,626

Claims priority, application Japan, Sept. 2, 1972, 47-102530

Int. Cl. B43I 13/14

U.S. Cl. 33-77

5 Claims



A drawing apparatus for preparing perspective views is described herein which includes a mechanism for adjusting the position of a straight edge to draw perspective lines having vanishing points throughout the range of from zero to infinity. In addition, a combination of mechanisms is disclosed for moving the straight edge to various positions on a drawing surface to draw perspective lines having a single vanishing point.

3,826,008

**SNAP SLIDE CALIPERS**

Shingo Nishina, 1-128, Sakado, Kawasaki, Japan

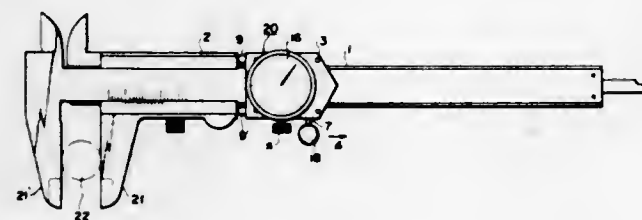
Filed Apr. 2, 1973, Ser. No. 346,873

Claims priority, application Japan, Apr. 8, 1972, 47-41810

Int. Cl. G01b 5/02

U.S. Cl. 33-147 F

5 Claims



Repeated measurements of similar values with rapid speed are achieved by link means connecting a rigid frame freely mounted to slide on the bar of a caliper and a vernier plate slider, screw means which sets the position of the rigid frame on the bar of the caliper, means which resiliently biases the vernier plate slider away from the rigid frame and reading means actuated by relative movement between said frame and vernier plate slider.

3,826,009

**LENGTH GAUGING APPARATUS**

Johann Meier, Casa Clarissa CH-6645, Brione Spora Minusio, Switzerland

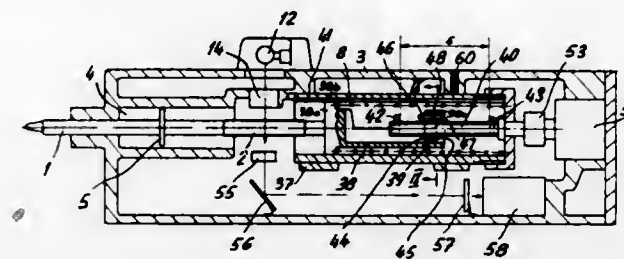
Filed Dec. 30, 1971, Ser. No. 214,255

Claims priority, application Switzerland, Jan. 28, 1971, 1295/71

Int. Cl. G01b 5/20

U.S. Cl. 33-169 R

6 Claims



The invention relates to a length gauging apparatus of the type in which a gauge pin is displaceable in its longitudinal direction and has a scale or grid connected to it, and involve the concept of pneumatically cushioning the gauge pin to prevent an unwanted displacement speed when displaced in the direction of measurement.

3,826,010

**ADJUSTABLE INDICATOR GAGING UNIT**

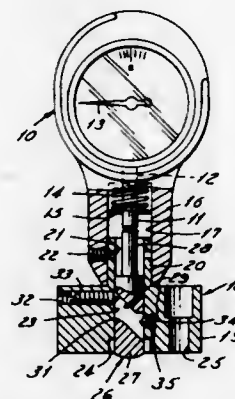
James Finley, Livonia, Mich., assignor to Hanlo Gage and Engineering Company, Detroit, Mich.

Filed Feb. 28, 1973, Ser. No. 336,430

Int. Cl. G01b 3/22

U.S. Cl. 33-169 R

4 Claims



An indicator gaging unit having a body member with a mounting shaft at its upper end for operative attachment to an indicator gage. A vertical bore is formed through the body member and the mounting shaft. A gage pin is slidably mounted in said bore and has an upper end adapted for operative engagement by an indicator stem and a lower end adapted for operative engagement with a workpiece. The gage pin is provided with an angular bore therethrough which is disposed at an acute angle relative to the longitudinal axis of the gage pin. A pair of set screws are mounted transverse to the longitudinal axis of the gage pin and have cone ends which operatively engage the angular surface of said angular bore for adjusting the longitudinal movement of the gage pin.

3,826,011

**PRE-SETTING TOOL GAUGE FOR SPINDLE MACHINES**

Liborio Lee D'Aniello, 627 Tunxis Hill Rd., Fairfield, Conn.

Filed Jan. 5, 1973, Ser. No. 321,146

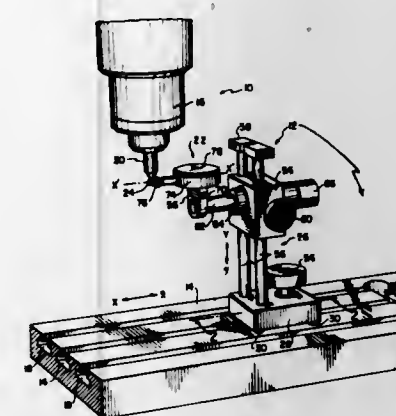
Int. Cl. B27g 23/00

U.S. Cl. 33-185 R

7 Claims

Apparatus and method for locating the true rotational axis of a spindle on a machine and for setting the tool cutting

radius therefrom particularly where interchangeability and expedient use is desired on many different machines. The apparatus includes simplified fastening means which provides for immediate alignment along a coordinate axis of any machine having a mounting table with standard T-slots. A gauge probe and a measurement indicator are interfaced along the coordinate axis to measure spindle eccentricities therealong. The



indicator is adapted with a specially configured pickup to compensate for interfacing misalignments along the coordinate axis. Positional adjustments for the indicator are provided by which the interface and/or reference settings may be established without disturbing the table settings of the machine. By setting the cutting radius after the tool is secured in the spindle, the method achieves precision with a single apparatus setup.

3,826,012

**DIRECT READING GUN SIGHT ADJUSTMENT**

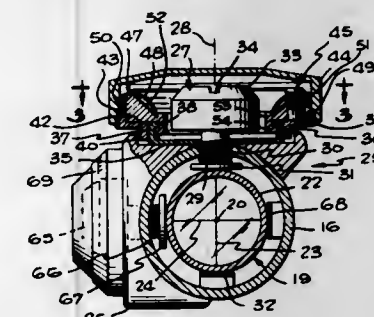
Frank A. Pachmayr, 2845 Medill Pl., Los Angeles, Calif. 90064

Filed Dec. 28, 1971, Ser. No. 212,929

Int. Cl. F41g 1/16, 1/38, 11/00

U.S. Cl. 33-246

12 Claims



A gun sight which is adjustable to introduce a variable 'elevation' correction into the sighting of a target, and which has a scale or scales reading directly in terms of the proper gun to target distance for any particular setting of the sight.

3,826,013

**COMBINED LEVEL, SQUARE AND PLUMB TOOL**

Bernard H. Baber, 52 E. High St., Avon, Mass. 02322

Filed Dec. 13, 1972, Ser. No. 314,715

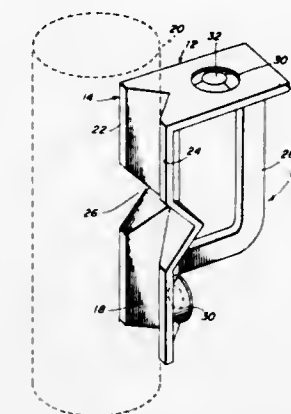
Int. Cl. G01c 9/28, 9/36

U.S. Cl. 33-390

3 Claims

A measuring instrument is disclosed to level, square and plumb adjacent and opposite surfaces of cylindrical, curved, inclined and planar shaped objects. A body member having right-angular arms with mutually perpendicular included-angle grooves for accommodating the contacted object surfaces being measured is an embodiment of the invention. Means to indicate the degree of level in the horizontal and ver-

tical planes throughout 360° are provided in each arm and include liquid or "bulls-eye" target vials. Alternatively, a single



level means may be utilized in either right-angular arm member.

3,826,014

**SHUTTER MECHANISM FOR RADIATION-CURING LAMP**

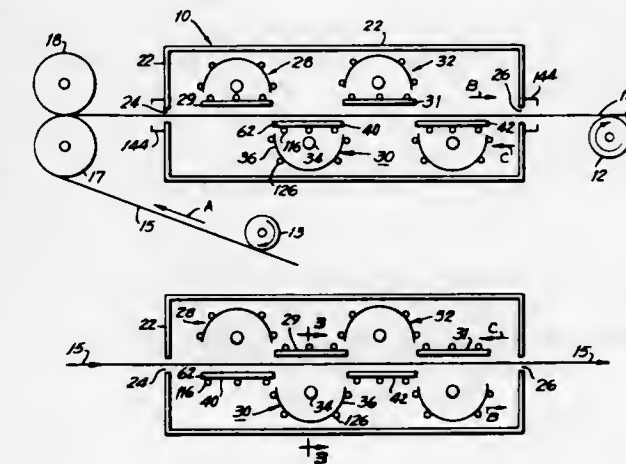
Norman A. Holding, Chicago, Ill., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 19, 1973, Ser. No. 342,816

Int. Cl. F26b 3/34

U.S. Cl. 34-1

25 Claims



Apparatus for ultra-violet light curing of solvent-free ink by photopolymerization. The web carrying the ink to be cured is conveyed along a feed path. Lamps are arrayed along the feed path. A reflector behind each lamp directs radiation toward the web. In front of each lamp is a light absorbing shutter. When closed, the shutter blocks radiation from impinging upon the web. When opened, that shutter unblocks its own reflector. Means are provided for moving the shutters from their open to their closed positions. In one form of the invention, the lamps are arrayed along opposite sides of the web. In this embodiment, when a shutter opens, it not only unblocks its own reflector, but it also moves to a position opposed to the reflector of the neighboring lamp on the other side of the conveyor, whereby illumination from that lamp which passes the web impinges upon the open shutter. Means are also provided for opening the housings in which the lamps are contained and for shutting the housings. Air duct means are also provided in the lamp and reflector housings for cooling the lamp terminals and drawing off ozone and heated gases in the vicinity of the lamps.

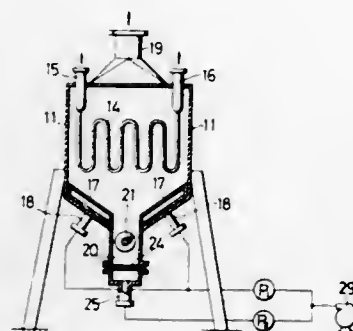


**3,826,015**  
**DEVICE FOR CONTINUOUS COOLING OF HOT POWDER**

Shigefumi Kuroyama; Masaki Kaneda, and Hiroshi Tamura, all of Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan  
Filed May 24, 1973, Ser. No. 363,586  
Claims priority, application Japan, June 13, 1972, 58196-47  
Int. Cl. F26b 17/10

U.S. Cl. 34—57 R

6 Claims



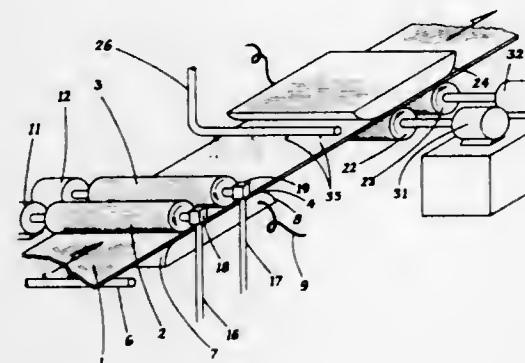
In cooling a hot powder containing coarse grains or lumps by a fluidizing method, the coarse grains or lumps spontaneously accumulate at the bottom portion of the fluidizing device in use and impede the fluidization of the powder, making it necessary to remove the accumulated coarse grains or lumps from the device. This invention provides an improved device wherein the bottom is inclined and a groove incorporating a rotary screw and having at one end thereof a coarse grain discharge means is formed at the base of the inclined bottom. This device provides continuous cooling of the hot powder and at the same time permits discharge of coarse grains or lumps.

**3,826,016**  
**APPARATUS FOR IMPROVING PRINTING SURFACE OF PRINTING MATERIAL**

James Kagey Anderson, 924 Exmoor, Louisville, Ky. 40223  
Filed Dec. 6, 1972, Ser. No. 312,561  
Int. Cl. B24b 39/00

U.S. Cl. 34—152

6 Claims



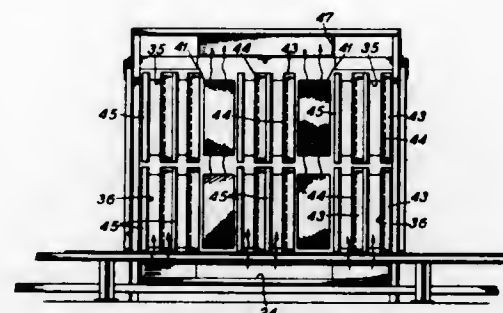
An apparatus for improving the printing surface of a sheet of printing material including means to apply moisture and means to compress the sheet of material against a smooth heated surface.

**3,826,017**  
**HEATING SYSTEM**

Robert E. Kostur, 11 Brighton Ln., Oak Brook, Ill. 60521  
Filed July 27, 1972, Ser. No. 275,558  
Int. Cl. F26b 25/06

U.S. Cl. 34—225

1 Claim



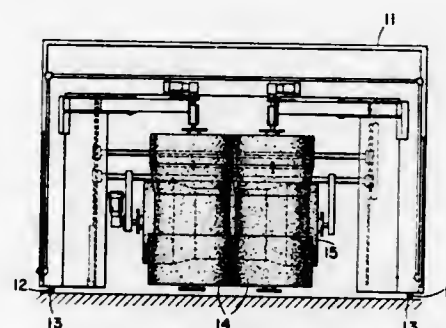
Shrink wrap apparatus includes a heating chamber, an heater mounted alongside thereof and a forced air recirculation system for blowing hot air into the bottom of said chamber and extracting cool air from the top.

**3,826,018**  
**VEHICLE WASHER**

Shigeyoshi Koketsu, Fujinomiya, Japan, assignor to Yasui Sangyo Company Limited, Shizuoka-ken, Japan  
Filed Feb. 9, 1973, Ser. No. 331,063  
Int. Cl. F26b 19/00

U.S. Cl. 34—229

6 Claims



A vehicle washer having a top nozzle adapted to inject a flow of air against the upper surface of the vehicle body. The top nozzle is automatically adjusted in position relative to the configuration and height of the upper surface of the vehicle body.

**3,826,019**  
**DYNAMIC CHILDBIRTH SIMULATOR FOR TEACHING MATERNITY PATIENT CARE**

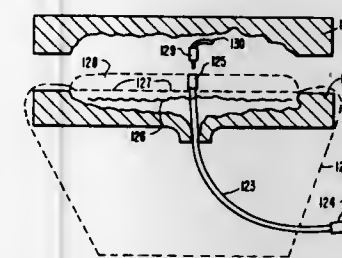
Charles F. Knapp, and George S. Eades, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.  
Division of Ser. No. 308,542, Nov. 21, 1972. This application Nov. 5, 1973, Ser. No. 412,757  
Int. Cl. G09b 23/32

U.S. Cl. 35—17

3 Claims

A programmable patient simulator for teaching maternity patient care includes a life size manikin with a pelvis, vaginal canal, uterus, placenta, umbilical cord, and a fetal doll from which heart sounds are emitted. A programmable electro-pneumatic system controls the simulated uterine contractions, position of the uterus, rupture of membranes, expulsion of

fetal doll, and fetal heart rate during labor and delivery sequence. The invention described herein was made in the



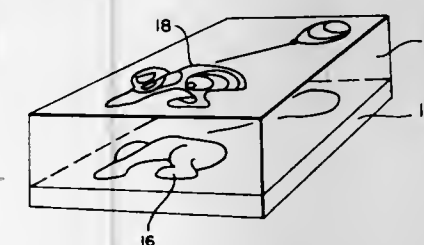
course of work under a grant or award from the Department of Health, Education and Welfare.

**3,826,020**  
**DEVICE FOR TEACHING SCULPTURING**

Joseph Zutz, 1447 S. Holt Ave., Los Angeles, Calif. 90035  
Filed Sept. 24, 1970, Ser. No. 75,004  
Int. Cl. G09b 19/10

U.S. Cl. 35—26

6 Claims



A device for teaching sculpturing including a block of material on plural surfaces of which are printed topographical representations of a figure to be sculpted; the topographical representation is in the form of areas having the projected shape of portions of the figure at particular elevations from a datum, with the areas representing the same elevation having similar indicating means, such as numbers, letters or colors. A set of sculpturing tools is provided, with a coding indication correlated to the indicating means on the areas of the block.

**3,826,021**  
**DEVICE FOR DEMONSTRATING AND CALCULATING TRIGONOMETRIC FUNCTIONS**

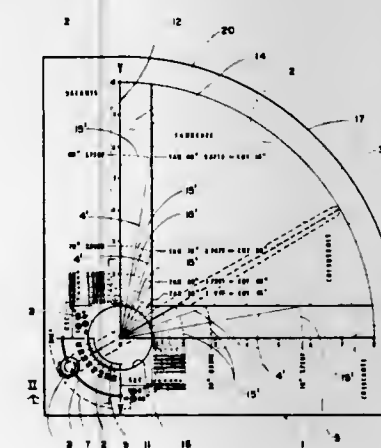
Joseph D. De Andrea, 349 S. Aiken Ave., Pittsburgh, Pa. 15232

Filed June 14, 1973, Ser. No. 369,915

Int. Cl. G09b 23/04

U.S. Cl. 35—34

8 Claims



A device for demonstrating and calculating trigonometric functions comprising a planar member having a unit circle in-

scribed thereon and an angular scale associated therewith to indicate the angle of an arc measured thereon. The planar member also includes a vertically extending, ordinate corridor, defined by the ordinate axis and tangent line and a horizontally extending, abscissa corridor defined by the abscissa axis and cotangent line. The corridors extend outwardly from the unit circle and have numerical indicia associated therewith, linearly calibrated along said corridors wherein the radius of the unit circle is the value 1. A transparent cursor member having a radius vector hairline is pivotally mounted at the origin of the unit circle with the hairline passing through the origin and extending a length at least as great as that of said corridors. The tangent, cotangent, secant and cosecant functions for a given angle inscribed by the radius vector hairline within the unit circle may be demonstrated and calculated by visual observation of the radius vector hairline as it is moved within the corridors. The numerical values for the tangent, cotangent, secant and cosecant functions are determined by the points of intersection of the radius vector hairline with the tangent and cotangent lines and the corresponding numerical indicia associated therewith. A further embodiment of my invention is disclosed wherein the planar member also includes means for indicating sine and cosine functions within the unit circle to permit the demonstration and calculation of all of the trigonometric functions on a single device.

**3,826,022**

**SKI BOOT CLEANING DEVICE**

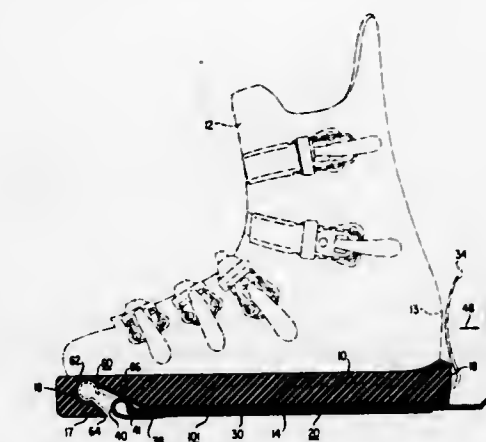
Joseph Leonard Grzech, 16 Cornhollow Rd., Roxbury Twp., N.J. 07876

Filed Oct. 24, 1973, Ser. No. 409,267

Int. Cl. A43b 00/00

U.S. Cl. 36—2.5 AL

13 Claims



Apparatus for cleaning foreign substances such as snow and ice from the sole of a ski boot includes a track mounted within a groove in the sole. A slider having a scraper on one end thereof and a handle on the other end thereof is slideably mounted in the track. The slider can be moved through the track by the handle thereby moving the scraper along the sole of the boot to remove the foreign substances therefrom. The track, slider and scraper can be recessed below the surface of the sole when not in use.

**3,826,023**  
**WAVE MOTION COMPENSATING ASSEMBLY FOR SUCTION DREDGER**

Jan De Koning, 20, Soetendaal, Amsterdam, and Romke Van Der Veen, Prof. Dr. Hesselaan 21, Jutphaas, both of Netherlands

Filed Jan. 29, 1973, Ser. No. 327,875

Claims priority, application Netherlands, Jan. 28, 1972, 7201216

Int. Cl. E02f 3/90; B66d 1/50

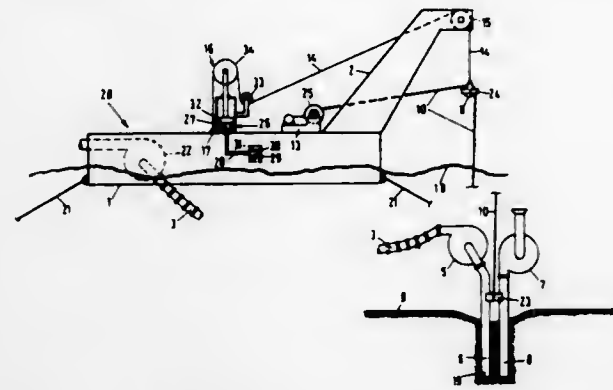
U.S. Cl. 37—58

13 Claims

A Suction dredger, comprising a vessel and a conduit suspended on the vessel by means of at least one lifting cable



guided over a guide pulley beared in a support, the lifting cable being connected via a dashing compensator comprising a cable length variator with a winch mounted on the vessel is improved for considerably reducing the wear of the expensive



lifting cable. To this aim the support of the guide pulley of the lifting cable is suspended on the vessel by means of a support cable connected to the vessel through the cable length variator.

3,826,024

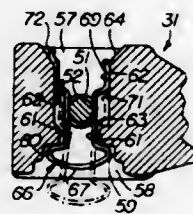
**EXCAVATOR TOOTH, HOLDER AND RETAINER**

Gerald Alger Petersen, Chemin des Salles Villa Pengopia, 06 Vence, France

Continuation-in-part of Ser. No. 215,739, Jan. 6, 1972, Pat. No. 3,751,834. This application Feb. 6, 1973, Ser. No. 330,050 Int. Cl. E02f 9/28

U.S. Cl. 37—142 A

6 Claims



An excavating tooth holder has a recess receiving the proximal, non-circular end of a tooth formed with a groove to provide a circular spindle forward of a shoulder. A staple-shaped retainer in the holder has an inwardly disposed stretch which fits into the groove and locks the tooth in place when the retainer is operative. When the retainer is retracted, the inward stretch is lifted from the groove, permitting the tooth to be removed. The shape of the retainer and the opening in the holder in which it fits permit lifting of retainer with removal of the retainer from the holder.

3,826,025

**GROUND ENGAGING UNIT FOR BALLAST TAMPING MACHINES**

William A. Elliott, 8020 S.W. Mapleleaf, Portland, Oreg. 97223

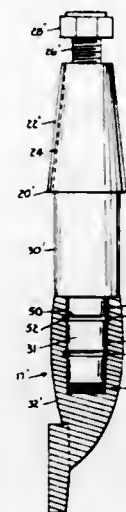
Continuation-in-part of Ser. No. 23,953, March 30, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,932 Int. Cl. E02f 9/28

U.S. Cl. 37—142 R

2 Claims

The ground engaging unit of the invention includes a stem or shaft having an upper tapered portion for connection to a supporting arm of a tamping machine and also having a lower shouldered tapered portion for receiving a replaceable shoe. The shoe has a top opening socket and a lower blade portion. The socket in the shoe is tapered inwardly toward its lower end for receiving the lower tapered portion of the stem. In a first embodiment, the socket receives the stem in a wedging fit. In another embodiment, the stem and socket are held

together by a thermoplastic adhesive. Horizontal aligned grooves are provided in the stem and socket of the second em-



bodiment and excess adhesive gathers therein to form connecting rings when hardened.

3,826,026

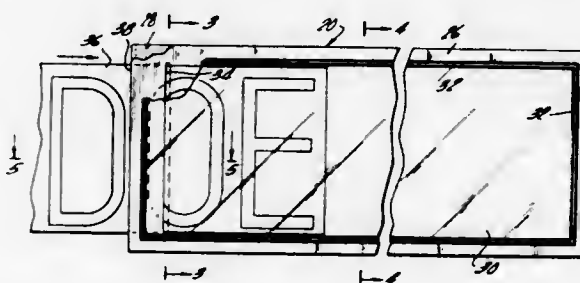
**DISPLAY DEVICE**

Brian Bevan, 356 Gilbert St., Ridgewood, N.J. 07450

Filed Sept. 25, 1972, Ser. No. 291,591 Int. Cl. G09f 3/18

U.S. Cl. 40—10 B

3 Claims



A display sign which has a plurality of endless strings of an automobile, bus, truck and the like including a mounting sheet and a transparent sheet heat-sealed to each other. The mounting sheet includes magnetic means for detachably securing the display device to any metallic surface such as that of a vehicle, door or metallic surface of a building. The mounting sheet also is provided with a slot bearing for insertion or removal of an indicia sheet which may be visually observed through the face sheet.

3,826,027

**MULTI-FACED DISPLAY SIGN**

Pieter Abbema, 6562 E. Bayberry St., Agoura, Calif. 9130

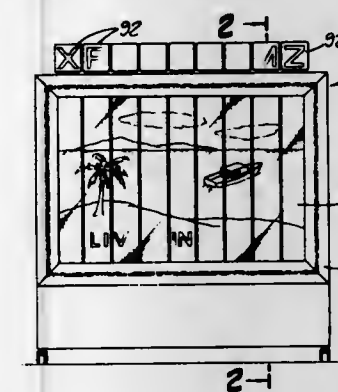
Filed Nov. 3, 1972, Ser. No. 303,533 Int. Cl. G09f 11/02

U.S. Cl. 40—32

8 Claims

A display sign which has a plurality of endless strings of planar elements. An element of one string cooperates with corresponding elements of the strings to form an advertising or other display panel when such elements are placed side by

side in a common frontal plane. The strings of elements are supported by vertically disposed shafts which are



synchronously rotated to bring the elements into proper alignment.

3,826,028

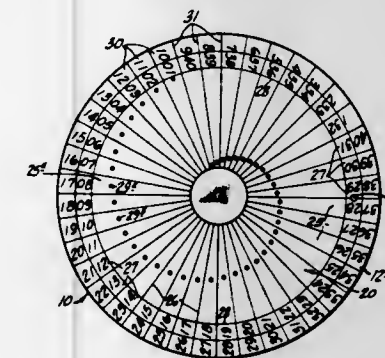
**INFORMATION STORAGE AND RETRIEVAL SYSTEM AND APPARATUS**

Keith E. Shaw, 1206 Skyline, Tyler, Tex. 75701

Filed July 24, 1970, Ser. No. 57,984 Int. Cl. G09f 11/04

U.S. Cl. 40—70

5 Claims

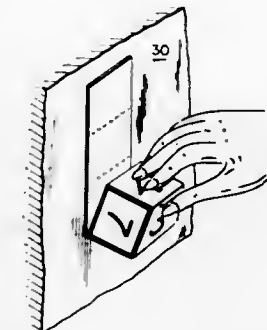


An Information Storage and Retrieval System and Apparatus utilizing two relatively movable members, each carrying a series of indicia alignable in various combinations, one member having an aperture or read-out area formed therein for each of the indicia, each of said apertures having a location different or spaced from all the others; the other member having an information record carrying area for each of the indicia on the two members, each such area having a location different from the locations of the other indicia of such members. The indicia on the two members are moved into registry to dispose the read-out aperture or area of said one member at a particular point with respect to the information record carrying area of the other member, whereby the information record on said other member is visible and readable through said aperture or area, the apertures or areas of said one member are each so disposed that no other can be positioned to read-out the information record contained on the information carrying area of the particular indicia on the record carrying member. The members may be concentric discs which are rotatable relative to one another, or strips which are slidable relative to one another, or a strip with a lateral guide movable transversely relative to the strip for locating the separate information carrying area for each indicia combination of the two members. The size and location of the apertures or read-out areas in the one member relating to each indicia bearing area on said member and the record areas on the other member may be arranged to reduce the size of the members and yet provide large readily readable indicia on the members.

3,826,029  
**CALENDAR ARRANGEMENT**  
Jerry Lieberman, 211 W. Olive, Long Beach, N.Y. 11561  
Filed Jan. 22, 1973, Ser. No. 325,626  
Int. Cl. G09f 1/06

U.S. Cl. 40—107

1 Claim



Forming a calendar by a unique manner of cutting and folding a material into a geometric form having adhesive faces and which may be unfolded to show various successive surfaces having dates or advertising material thereon. As the geometric form is unfolded to show a new date that surface formerly showing the date or descriptive material may be adhered to the wall or surface to which the calendar is mounted. On the back surface of each folded dated surface or advertising surface there appears a fragmented portion of an overall pictorial representation so that when the calendar is completely unfolded and the formerly exposed surfaces are adhered to the wall there will be shown a pictorial representation in its completed form, which is comprised of all the back surfaces.

3,826,030  
**EARTAGS**

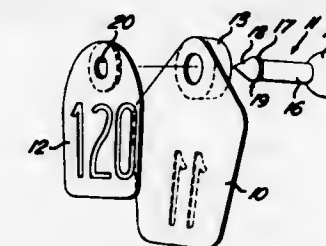
Arthur Read, Lymm, England, assignor to Universal Tag Company Limited, Aylesbury, Buckinghamshire, England  
Filed Apr. 30, 1973, Ser. No. 355,457

Claims priority, application Great Britain, May 8, 1972, 21440/72

U.S. Cl. 40—301

Int. Cl. G09f 3/12

15 Claims



A animal identification eartag comprises a male member having a tab and spike and a female member with an aperture which can be forced over the head of the spike. The male member is formed with the spike joined to the tab by a universal joint formed by a part spherical end on the spike resiliently retained in a socket in the tab, so permitting not only rotation of the tab about the axis of the spike but also limited angular movement about any transverse axis. The socket has an open end so that the jaw of an applicator can bear directly against the part spherical end of the spike so that the spike is held located when applying the tag to an animal.



3,826,031

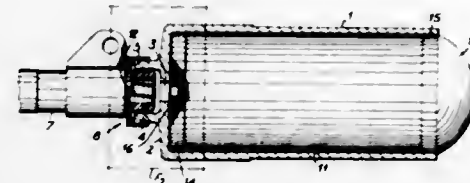
**PROJECTILE LAUNCHERS TO BE MOUNTED ON THE MUZZLE OF A FIRE-ARM**

Andre Joseph Christian Gabriels, Reinpadsstraat, 3600 Genk, Belgium

Filed Nov. 24, 1972, Ser. No. 309,369  
Int. Cl. F41c 27/06; F42b 11/42

U.S. Cl. 42-1 F

12 Claims



Projectile launchers of the type comprising a projectile encased within a housing having its centrally perforated base prolonged by a tubular socket to be fitted around the muzzle of a fire-arm according to which said socket is provided with a connection piece designed for induced deterioration, said piece being taken away during the ejection of said projectile thereby facilitating the separation of the launcher from the fire-arm.

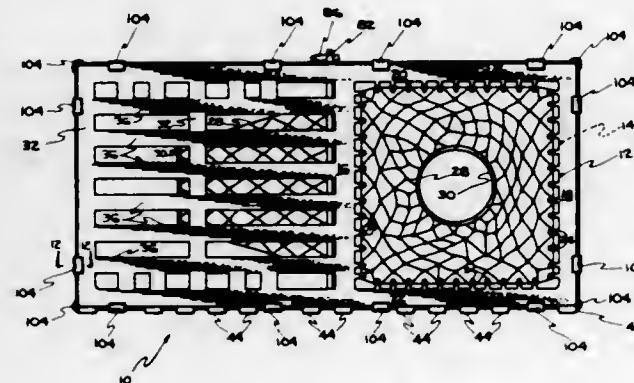
3,826,032

**APPARATUS FOR TRAPPING CERTAIN CRUSTACEANS AND THE LIKE**Frank Axel Tornegren, 47 West St., Attleboro, Mass. 02703  
Filed Jan. 31, 1973, Ser. No. 328,316

Int. Cl. A01k 69/08

U.S. Cl. 43-100

20 Claims



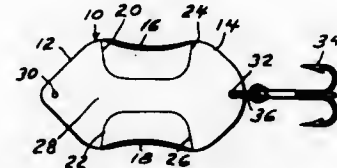
A trap made of plastic wall segments all formed in a single mold is shaped generally as a parallelepiped. An entrance to an antechamber is located in each of two side walls in alignment with each other with netting extending from a side wall opening to a relatively small ring located in the interior to form a generally frustoconical section through which crustaceans of a desired size can crawl into the trap but once in the trap cannot crawl out. A frame separates the antechamber from a parlor section by mounting another generally frustoconical netting allowing ingress but not egress of the crustaceans. The frame also supports the top side of the trap including a door section and provides means for locking the door section. A plurality of foot elements are located in the bottom side to militate against movement of the trap along the ocean floor. Two forms of clip members are shown for fastening adjacent wall segments together.

3,826,033  
FISH LUREEwell J. Harris, Route No. 3, Box 135A, Adrian, Mich. 49221  
Filed Apr. 21, 1972, Ser. No. 264,721

Int. Cl. A01k 85/00

U.S. Cl. 43-42.5

8 Claims



A fishing lure made of sheet material having a longitudinally extending generally planar center portion with opposite side contoured portions which are beveled to deflect water to the same side of the plane of the center portion and which causes a continually reversing direction of roll about a generally longitudinal axis as the lure is pulled through water.

3,826,034

**FISHING HOOK ASSEMBLY**

Edward W. Herek, 12030 1/2 Magnolia Blvd., Los Angeles, Calif. 91600

Filed July 23, 1973, Ser. No. 381,732

Int. Cl. A01k 91/04

U.S. Cl. 43-44.83

6 Claims



A fishing hook assembly including a hook having a straight stem or shank having a barb on the curved end thereof and a plurality of barbs carried on the shank which downwardly extend in fixed spaced apart parallel relationship. The assembly further includes an elongated, flexible sleeve having an internal bore for insertably receiving the barbed shank of the hook via an open end of the sleeve. The opposite end of the sleeve incorporates an eye to which the end of the fishing line may be tied. The barbs embed themselves into the wall of the sleeve for retention between the sleeve and the hook.

3,826,035

**METHOD OF EXTERMINATING INSECT AND ANIMAL AGRICULTURAL PESTS FROM INFECTED OBJECTS SUCH AS PLANTS**

Juan Garcia Paniagua, Alejandria 01609, Colony Residencial Victoria, Guadalajara 5, Jal, Mexico

Filed Sept. 13, 1972, Ser. No. 288,885

Int. Cl. A01m 7/00, 19/00

U.S. Cl. 43-98

7 Claims

A novel method of exterminating insect and animal agricultural pests from infected objects such as plants is disclosed. In the preferred inventive embodiment, and as applied to exter-

3,826,037

**FLYING TOY AND CATAPULT FOR VERTICAL LAUNCHING THEREOF**

Gunter Migowski, Rothschild-Allee 61, Frankfurt am Main, Germany

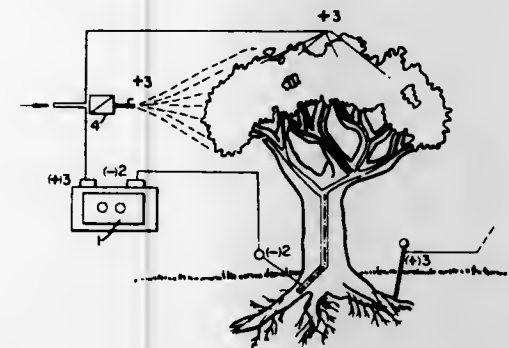
Filed July 7, 1972, Ser. No. 269,893

Claims priority, application Germany, July 8, 1971, 2134080; July 9, 1971, 2134201

Int. Cl. A63h 27/14

U.S. Cl. 46-84

7 Claims



a hose which is coupled to a pneumatic water pressure system. The continuous flow of water contacts the positive pole and touches the branches, leaves and trunk which have been made previously wet in order to form a good negative circuit, and an electric discharge takes place through the water and surface of the tree to thereby eliminate pests within the tree while not damaging the tree.

A catapult and flying body wherein the catapult has a handle and a guide which receives a cooperative slide rail of a flying body. The body has a pair of pivotable fins and a pulling member and means for applying tension to a tensioning member in the guide. The toy also includes resilient means connecting the rail and fins for causing the fins to swing out when the flying body has reached the maximum altitude of its flight path. For catapulting the body to higher altitudes a very large, ground-mounted catapult may be used.

3,826,038

**BICYCLE TOY WHICH CAN BE EITHER MANUALLY OPERATED OR REMOTE CONTROLLED BY MEANS OF A WIRE CONTROL OR BY RADIO CONTROL**

Augusto Gentilini, Via del Mille 36, Rome, Italy

Filed Dec. 13, 1972, Ser. No. 314,903

Int. Cl. A63I 23/10

U.S. Cl. 43-131

6 Claims

U.S. Cl. 46-96

7 Claims



A model of two wheel vehicle with aligned wheels, the latter being rendered more heavy with respect to the other parts of the vehicle, while maintaining unaltered the shape relationship, provided with means for hauling (or pushing) and for its guide. An articulated puppet can be connected to the pedals and to the handle bar in order to imitate the movements of a cyclist. In case the toy is operated by a motor, the equilibrium changes required for the drive in curve are originated by the displacement of said puppet or other ballast.

3,826,039

**FIGURED TOY VEHICLE**

Harry Diako, Chicago; Alan A. Hicks, Wilmette, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass &amp; Associates, Chicago, Ill.

Filed May 23, 1973, Ser. No. 362,884

Int. Cl. A63h 5/00

U.S. Cl. 46-98

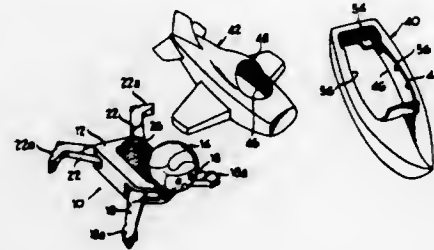
13 Claims

A toy wheeled vehicle combination having a chassis defining a human-form body. The body has a human-form head

An insecticidal device is described which is made up of an insecticidal composition coated on to a substrate which is supported in a cage that may be either suspended or mounted on a horizontal surface. The insecticidal composition is made up of an insect attractant and a non-volatile, contact poison or stomach poison. The one-piece, hinged device has interconnected planar members with large openings, and edge stiffener strips defining side openings. Means are mounted on each stiffener strip to join the interconnected members in abutting relation to support the substrate therebetween.



pivotaly attached thereto, pivotal legs with feet portions, and pivoted arms with hand portions. A plurality of shell members defining different vehicle shapes are interchangeably, releasably mountable onto the human-form body through open bottoms in the shell members, with the head member protruding through a top shell opening. The arms and legs are engageable with blocking portions in the shells to releasably



lock the chassis within any one of the shells. The wheeled chassis can be used alone as a roll toy by a child, giving the child amusement and a basis for fantasies involving a motorized human being. The wheel means comprises a solitary flywheel and the feet are weighted to stabilize the vehicle. The chassis normally is used in combination with one of the shells to give the appearance of a human being occupying a vehicle such as an automobile, airplane or boat.

3,826,040

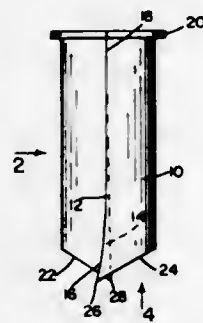
## PLANT STEM PROTECTOR

Joseph Normand Roberts, both of 404 Mountain Rd., North Wilbraham, 01067, and Walter Lovell, both of North Wilbraham, Mass.

Filed Oct. 10, 1972, Ser. No. 296,080  
Int. Cl. A01g 13/00, 17/12

U.S. Cl. 47-30

1 Claim



A plant stem protector comprising a one-piece generally tubular member made of self-sustaining but deformable plastic in the general form of a cylinder slit from end to end thereof, said cylinder having open ends with an outstanding flange at one end and at the opposite end it is cut into a concave arcuate conformation providing relatively sharp points adjacent to the slit. These points form entry end edges that overlap each other slightly.

3,826,041

## FLORAL ACCESSORY

James M. King, 10515 Tabor St., Los Angeles, Calif. 90034  
Continuation of Ser. No. 156,879, June 25, 1971, abandoned.  
This application July 20, 1973, Ser. No. 381,216

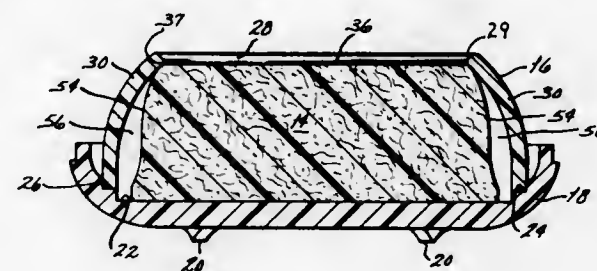
Int. Cl. A07g 5/00

U.S. Cl. 47-41.12

9 Claims

A floral accessory having a water absorbent filler material disposed in a relatively non-absorbent container. Both the container and filler material are capable of being pierced by

the stems of cut flowers. Confronting surface portions of the filler and container are configured to define a collar-like chan-



nel around the filler, such that insertion of the stem into the filler is unobstructed by any container material.

3,826,042

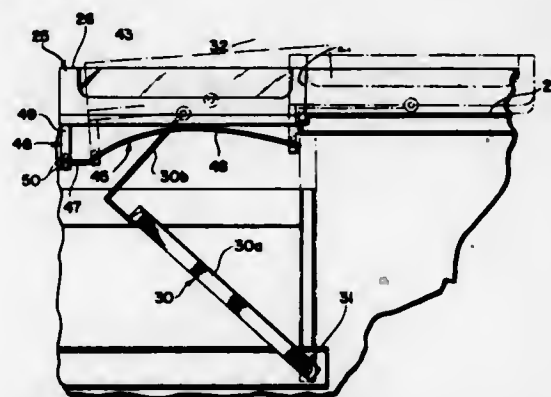
## OUTSIDE PLUG DOOR SYSTEM

Kristupas Daugirdas, Wilmette, and Redreddy Sukumar Reddy, Chicago, both of Ill., assignors to V.A.C. Industries, Inc.

Filed July 6, 1972, Ser. No. 269,446  
Int. Cl. E05d 15/10

U.S. Cl. 49-213

20 Claims



A door system for high-speed rapid transit and railroad passenger car applications including a mechanism for supporting one or more doors and for driving the doors through a compound movement between open and closed positions. The doors, when in open position, are situated outside the vehicle and along one side of the door opening, and during the closing cycle plug into the opening from the outside.

3,826,043

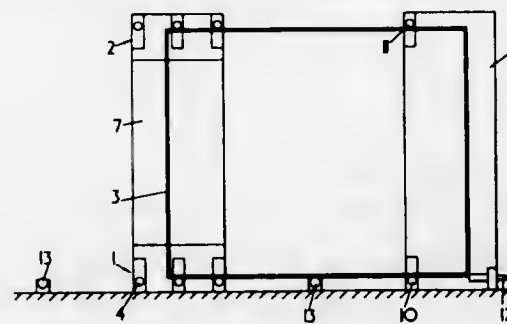
## DOOR INSTALLATIONS

Koh Chew Seng, 108 Joo Chiat Ter., Singapore City, Singapore

Filed June 6, 1972, Ser. No. 260,103  
Int. Cl. E05f 11/54

U.S. Cl. 49-360

3 Claims



An installation having a slidable door in which there is provided preferably two fixed side elements which are horizon-

tally spaced, with the slidable door being movable between the side elements on rollers which are mounted on said side elements to grip top and bottom portions of the door. Balancing rollers on ground level also support the door.

3,826,044

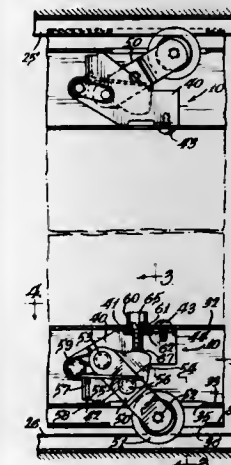
## ROLLER ASSEMBLY

Henry P. Armstrong, Islington, Ontario, Canada, assignor to Truth Incorporated, Owatonna, Minn.

Filed Jan. 26, 1973, Ser. No. 326,969  
Int. Cl. A47h 15/00

U.S. Cl. 49-420

2 Claims



A roller assembly for a sliding closure which is a self-contained unit for simple insertion into the frame of a sliding closure and wherein the roller is carried by a pivotally-mounted arm yieldably urged outwardly through an opening in the frame. The inward limit position of the roller can be adjusted by optionally usable structure which is in plain view for ease of adjustment. The mounting base for the roller assembly is insertable through the frame opening and is held in wedged relation with the interior of the frame by a single fastening member.

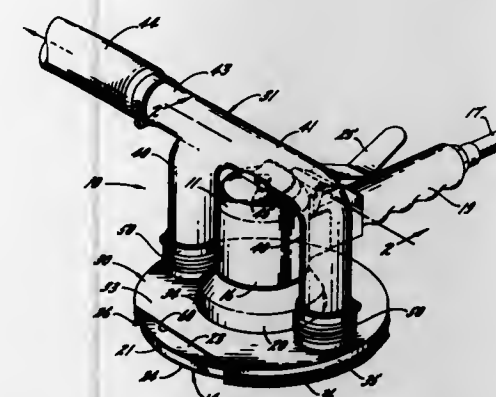
3,826,045

ABRADING MACHINE WITH DUST COLLECTING UNIT  
Roy J. Champayne, c/o National Detroit, Inc., 2810 Auburn St., Rockford, Ill.

Filed Sept. 14, 1973, Ser. No. 397,260  
Int. Cl. B24b 23/00

U.S. Cl. 51-170 T

6 Claims



A vacuum unit removes abrading dust through a suction line communicating with a dust confining shroud which overlies and extends around the abrading pad of the machine. The shroud is telescoped rotatably over the motor unit of the machine and is suspended from the suction line which, in turn, is pivotally supported on top of the motor unit and is adapted to be turned relative to the handle of the machine to enable

maneuvering of the machine without interference from the suction line.

3,826,046

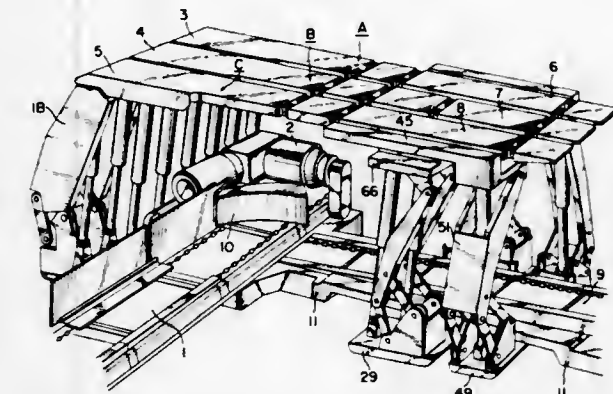
## POWER TOOL ATTACHMENT

Vincent J. Dourian, Algonquin, and William M. Bassett, Highland Park, both of Ill., assignors to New Concepts Co., Inc., Algonquin, Ill.

Filed Dec. 8, 1973, Ser. No. 313,329  
Int. Cl. B24b 23/00

U.S. Cl. 51-170 TL

11 Claims



A power tool attachment which is particularly adapted to be mounted on a saber saw to provide a positive reciprocating motion in a direction other than the direction of motion of the saber saw output. The attachment includes a housing which is adapted for releasably mounting on a saber saw. A linkage is mounted in the housing and is adapted for connection to the output of the saber saw. A clutch is drivingly connected to the input linkage. An arm drive is drivingly connected to the clutch to be driven thereby. An output arm is connected to the arm drive to be reciprocated in a direction other than the direction of reciprocation of the saber saw output.

3,826,047

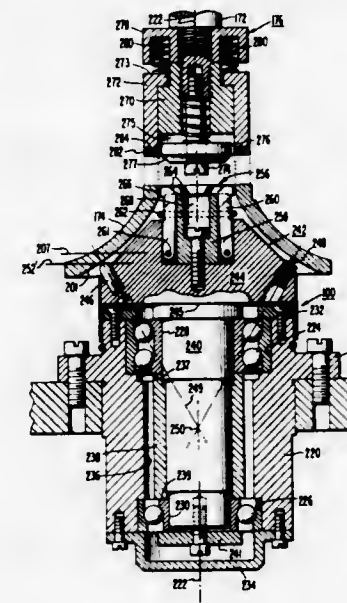
## DEVICE FOR MOUNTING AND ORIENTING A WORKPIECE

Wolfgang Max Binder, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,009  
Int. Cl. B24b 1/00; B23b 25/06; B23q 3/14

U.S. Cl. 51-277

35 Claims



A grinding machine provides for the automatic aligning of the mean axis of an irregular surface of revolution on a work-



piece to a machine axis and for indexing the aligned workpiece to a plurality of work-stations including first and second indexing tables for grinding planar surfaces and surfaces of revolution on the workpiece with respect to the mean axis.

3,826,048

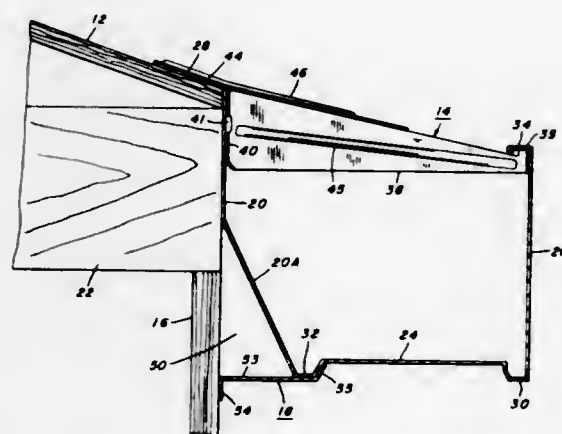
**COMBINED GUTTER, FASCIA, SOFFIT ARRANGEMENT**  
Bill C. Merkin; Michael J. Tobias, both of Pittsburgh; Richard C. Ray, Lower Burrell, and Robert L. La Barge, Ben Avon, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 17, 1972, Ser. No. 281,326

Int. Cl. E04d 13/00

U.S. Cl. 52-11

1 Claim



An arrangement and combination in which an elongated unitary gutter, fascia and soffit structure is provided in the form of a structural eave for a building, such as a dwelling house, originally constructed without the customary eave overhang. The unitary gutter, fascia and soffit structure comprises a rear wall having means for attaching the structure to the roof, a horizontal bottom wall forming the soffit, and a front wall forming the fascia, the rear, bottom and fascia walls, in turn, forming the gutter. This eave structure is attached to the roof by unitary, high strength brackets each having a main body portion extending in a vertical plane and traversing the structure, a forward end portion adapted to engage the front fascia wall of the eave, and a roof anchoring portion extending from the rear of the bracket, and integral with the main body portion. Along the front and rear edges of the soffit wall are provided elongated downwardly directed steps.

3,826,049

**LOADING DOCK SHELTER WITH INDEPENDENTLY MOVABLE HEAD CURTAIN**

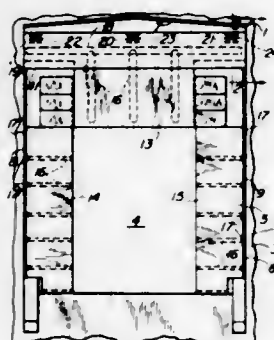
Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed Feb. 7, 1973, Ser. No. 330,213

Int. Cl. E06b 1/04; E04f 10/04; E04b 1/343

U.S. Cl. 52-173

11 Claims



A loading dock shelter embodying a head curtain which is independently, and automatically retractable and extensible.

3,826,050

**JAMB CONSTRUCTION**

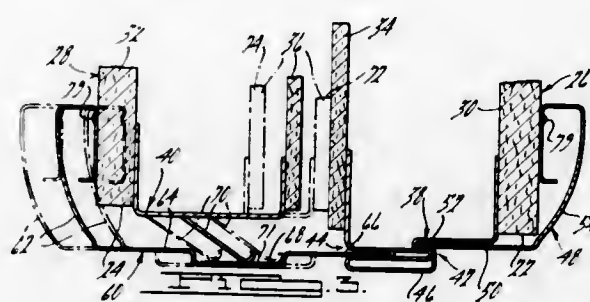
Robert B. Schwartz, Harper Woods; Tara N. Banerjee, Warren, and Donald B. Stinson, Jr., Farmington, all of Mich., assignors to Fruehauf Corporation, Detroit, Mich.

Filed Mar. 14, 1973, Ser. No. 341,142

Int. Cl. E06b 1/20; E04c 3/40

U.S. Cl. 52-212

5 Claims



A jamb construction which can be readily installed around approximately aligned openings in adjacent partitions in spite of variations in the orientation of one opening relative to the other opening and which provides an attractive finished appearance when installed.

3,826,051

**WALL STRUCTURE**

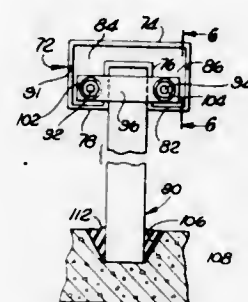
Charles H. Miller, 54-065 Avenida Carranza, La Quinta, Calif. 92253, and Jose A. Mayri, Centenario 1222 San Pedro Garza, N. Leon, Mexico

Continuation-in-part of Ser. No. 191,276, Oct. 21, 1971. This application June 7, 1972, Ser. No. 260,640

Int. Cl. E04c 3/10, 3/26

U.S. Cl. 52-227

1 Claim



A wall member of generally slab-like configuration is formed of a foamed polymer dispersed throughout a cementitious matrix between a pair of side panels and includes elongate reinforcing members secured under tension and rigid in the depth dimension of the slab. One end of the wall member is positioned in a groove formed in a floor, the floor normally being made of concrete material. Adjacent widths of the wall members may be interconnected in tandem by aligning hollow tubular members in each of the wall members and securing a structural metal rod through the hollow tubular members. Alternatively, a hollow channel member may be positioned on the top ends of the aligned tandem wall members. Structural rods are positioned through openings in the channel member and are used to secure the wall members together. In addition, an environmental seal formed of a gasket-like material may be positioned between abutting ends of the wall members.

3,826,052

**COMPOSITE WALL PANEL FOR BUILDING CONSTRUCTION**

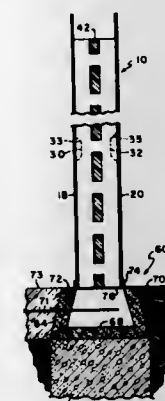
Carlos A. Tenorio, 3009 Catherine Dr., Fort Michell, Ky. 41017

Filed Oct. 16, 1972, Ser. No. 297,975

Int. Cl. E04c 2/10; E04b 2/42

U.S. Cl. 52-293

13 Claims



A wall panel comprising an upright core of plastic insulating material with skins overlying opposed faces of the core and extending beyond its top edge to form a continuous upper trough. Sets of generally vertical grooves extend from the continuous upper trough adjacent the skins to the bottom of the core. Additional sets of passages interconnect with the vertical passages to form a network of passages. The passages and open trough are filled with concrete to form a continuous upper beam supported by an integral open web type of construction. Panels may be placed end to end to form perimeter and other walls of a building.

3,826,053

**READILY ASSEMBLED JOINT**

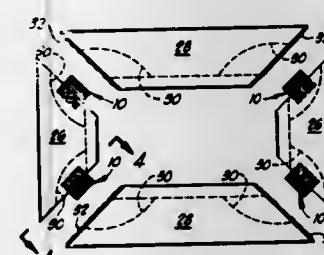
William R. Cameron, 4424 N.W. 13th St., Oklahoma City, Okla. 73107

Filed Jan. 19, 1972, Ser. No. 218,902

Int. Cl. F16b 7/04

U.S. Cl. 52-309

1 Claim



A fastening device for fastening or joining two pieces of relatively rigid material to each other. The fastening device includes a substantially monoplanar base plate having projecting from each of the opposite sides thereof, a plurality of vanes arranged in two sets. The sets of vanes are spaced from each other, and individual vanes in each set are spaced from each other by a lesser distance than the spacing of the sets of vanes. Each of the vanes projects from the respective surface of the base plate at an angle of about 15° with respect to a plane extending normal to the base plate. The vanes are made of a deformable, relatively elastic material. The pieces or parts to be joined by the fastening device have slots formed in the facing surfaces at which the joint is to be located, and the fastening device is pressed into the slots by resilient deformation of the vanes of the fastening device.

3,826,054

**BUILDING INSULATION AND SHEATHING**

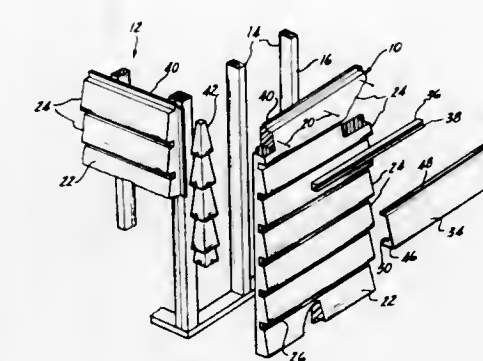
Bertram C. Culpepper, Jr., 14508 Susanna, Livonia, Mich. 48154

Filed May 15, 1972, Ser. No. 253,152

Int. Cl. E04c 2/10; E04d 1/20

U.S. Cl. 52-309

6 Claims



A building sheathing having insulating qualities and adapted to be attached to the outside surfaces of the building studding to form a permanent insulation for the building. In one embodiment, the outer surface of the sheathing is so contoured as to mate with a building exterior wall finish such as an aluminum or vinyl siding; and in addition to providing a snap-on attachment of the siding to the sheathing, support and proper alignment of the exterior wall siding is provided. In a second embodiment, the sheathing has an outer surface contoured to mate with a mounting sheet, fabricated from a suitable material, such as aluminum, having a plurality of horizontally disposed, vertically spaced channels adapted to support a face brick.

3,826,055

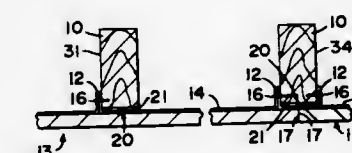
**SURFACE PANEL AND MOUNTING MEANS THEREFOR**  
James E. Bobzin, Clearwater, and David P. Kasprzak, Largo, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 84,044, Oct. 26, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,521

Int. Cl. E04b 2/72

U.S. Cl. 52-483

3 Claims



A surface panel is secured to a frame by means of flaps or tabs to form a structural unit without face-exposed fasteners in its field area. If desired surface-exposed fasteners may even be eliminated from the peripheral area of the panel. In a further improved version a complete vapor barrier which also acts as a field securing means is provided.



3,826,056

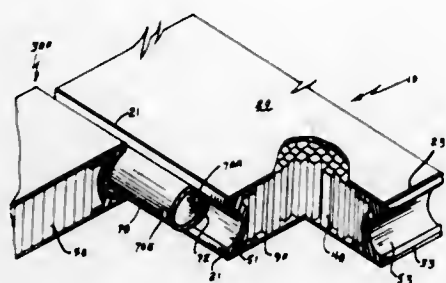
**MODULE CONSTRUCTION SYSTEM**

Harold D. Smith, Lincoln, and Richard E. Chambers, Canton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 7, 1972, Ser. No. 260,567  
Int. Cl. E04c 1/10; E04b 2/10

U.S. Cl. 52—584

3 Claims



A module construction system which can be used, and can be adapted to be used, to meet varying structural requirements for different construction applications, including use as an aircraft runway and as other surfaces for aircraft, including taxiways and ramps. The system includes: a plurality of identical load bearing structural modules, wherein each identical load bearing structural module is shaped in the form of a rectangular solid, and comprises an aluminum honeycomb core bonded to and between parallel flat skins of epoxy-fiberglass having a polyurethane coating, and molded fiberglass reinforced plastic edges having an outwardly facing semi-cylindrical surface configuration; means for releasably connecting in coplanar relationship, a plurality of the identical adjacent load bearing structural modules side edge-by-side edge and end edge-to-end edge; and means for releasably connecting, in layered relationship a plurality of the identical adjacent load bearing structural modules. Therefore, the system permits the use of a load bearing structural module singly or in an assembly of a plurality of the modules, and either in a single layer or stacked, to form a larger, or thicker, structural unit which is of the desired size, shape, strength, and stiffness.

3,826,057

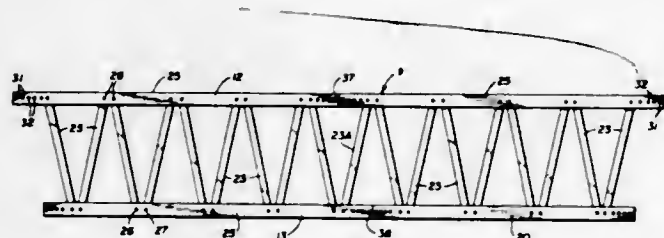
**TRUSS SYSTEM**

James W. Franklin, P.O. Box 3646, Albuquerque, N. Mex. 87110

Filed Jan. 3, 1972, Ser. No. 214,699  
Int. Cl. E04b 1/32; E04c 3/38

U.S. Cl. 52—641

13 Claims



A composite truss system useful in building applications for form work or permanent installation. Full section chords,

struts, couplers, connectors and brace components of tubing are provided in standard sizes for cooperative interconnection and use to provide trusses of various length, height and inclination. Fastener elements may be used at selected positions or openings to provide desired adaptability for various job site requirements. Close interfit and telescoping of elements assures efficient load transfer, assembly and shipment. Job site handling of sectional deck forms is aided through use of a plurality of joined together truss sections mounted on roller or jack units providing height adjustment and form release features.

3,826,058

**METHOD AND APPARATUS FOR INTERLEAVING A STRIP OF MATERIAL BETWEEN SUPERPOSED PACKETS**

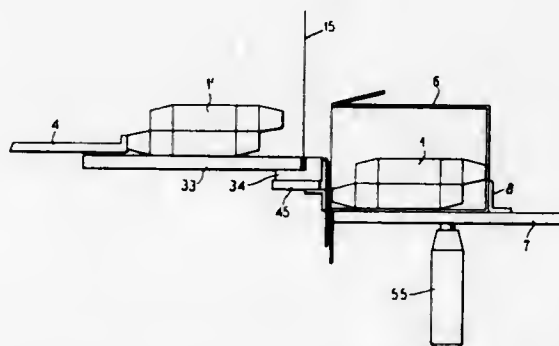
Roland Preisig, Yens, Switzerland, assignor to J. Bobst & Fils S.A.

Filed May 21, 1973, Ser. No. 362,005  
Claims priority, application Switzerland, May 24, 1972, 7750/72

Int. Cl. B65b 5/10, 61/20

U.S. Cl. 53—14

11 Claims



A method and apparatus for inserting packets of articles into a container characterized by positioning a strip of thin material in front of at least one of the packets, gripping a marginal edge of the material so that the insertion of the packet causes bending of the material adjacent the marginal edge and draws the remaining portion of the material into the box to be disposed along the side of the packet. Preferably, the method and apparatus is utilized for interleaving a strip of thin material between a pair of packets disposed in a container. The device utilizes a table having a strip guideway adjacent one edge formed by the gripping device and a tong device which is carried by a moveable stop along the strip guideway. The strip of thin material is preferably provided from a roll and the apparatus includes the cutting device which severs the portion of the strip, which was drawn into the guideway by the tongs, from the remaining portion.

3,826,059

**METHOD OF PACKAGING RADIOACTIVE MATERIALS**

Howard Novitch, Walnut Creek, Calif., assignor to New England Nuclear Corporation, Boston, Mass.  
Division of Ser. No. 190,490, Oct. 19, 1971. This application Oct. 16, 1972, Ser. No. 297,791

Int. Cl. B65b 29/00, 3/04, 53/00

U.S. Cl. 53—27

3 Claims

A dually sealable, non-leaking vial for shipping liquid radioactive materials, particularly sterile radioactive materi-

3,826,061

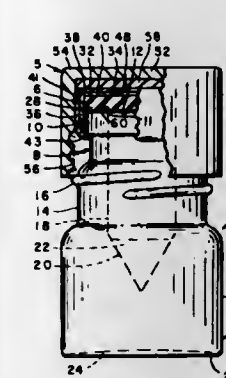
**BAG MAKING AND FILLING MACHINE**

Donald Arthur Hunter, Mississauga, Ontario, Canada, assignor to Delamere & Williams Company, Limited, Toronto, Canada

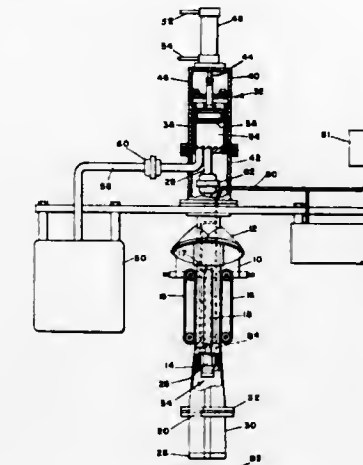
Division of Ser. No. 253,128, May 15, 1972, Pat. No. 3,788,245. This application Aug. 27, 1973, Ser. No. 391,648  
Int. Cl. B65b 9/12, 39/04

U.S. Cl. 53—182

11 Claims



The capped and septum-sealed loaded vial is placed in a heat shrinkable plastic envelope having a bottom end wall and an upstanding cylindrical wall of greater height than the capped, septum-sealed vial and of lesser thickness than the bottom end wall and the envelope is heat shrunk circumferentially, tightly and sealably around the capped septum-sealed vial with the upper part of the envelope being shrunk circumferentially and downwardly tightly over the margin of the upper surface of the cap to securely seal the capped septum-sealed vial.



A bag making and liquid filling machine characterized by a drip-free structure whereby to prevent contamination of the bag making material in an area where a heat seal is to be made.

3,826,062

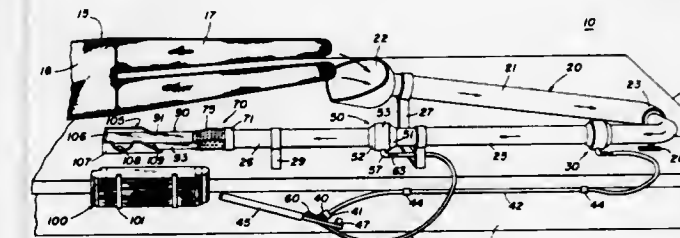
**PNEUMATIC PACKAGE LOADER**

George E. Lewis, Albert W. Brown, and Harris Dean Osborne, all of Fayetteville, Ark., assignors to Bear Brand Hosiery Co., Chicago, Ill.

Filed May 10, 1973, Ser. No. 359,100  
Int. Cl. B65b 1/04, 1/00

U.S. Cl. 53—255

15 Claims



Packaging apparatus for garments such as pantyhose includes a cylindrical conduit having an entry end and an exit end and spaced apart Venturi air chests on the conduit for establishing a stream of air in the conduit to draw the garment into the conduit at the entry end and accelerate the garment through the conduit and eject the garment into a container at the exit end. A nozzle at the exit end of the conduit has a plurality of apertures or orifices extending through the wall to permit air to exit therefrom to allow the garment to be ejected into the container and maintained therein without being discharged therefrom by the stream of air.

3,826,063

**ELECTROSTATIC AGGLOMERATION APPARATUS**

Theodor Festner, 16 Ridge Rd., Upper Saddle River, N.J. 07458

Filed May 21, 1973, Ser. No. 362,141  
Int. Cl. B03c 3/00

U.S. Cl. 55—128

3 Claims

An electrostatic agglomeration apparatus for an air filtering and conditioning system, comprising an air duct having a pair

3,826,060

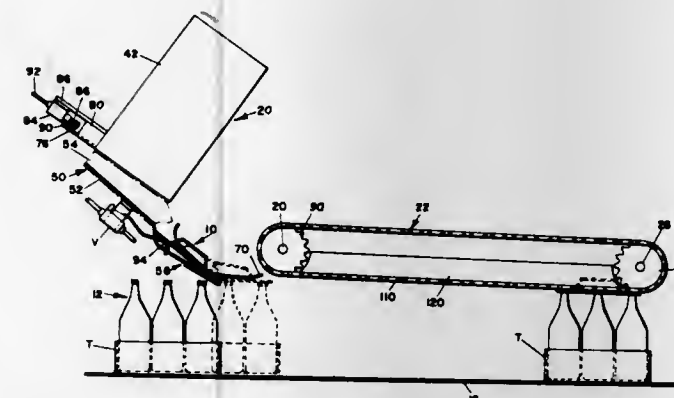
**APPARATUS FOR APPLYING CARRYING GRIDS TO BOTTLES**

Robert W. Vergobbi, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Nov. 24, 1972, Ser. No. 308,964  
Int. Cl. B65b 21/14, 27/04

U.S. Cl. 53—48

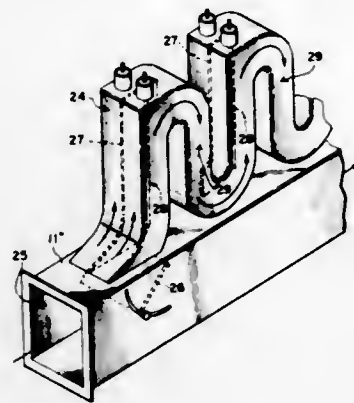
9 Claims



Apparatus for applying carrying grids to the tops of groups of bottles, the grids being of the kind having neck encircling elements adapted to be expanded over the caps onto the necks, comprising a conveyor arranged to move groups of bottles of the desired number of bottles along a predetermined path, a hopper supported above the conveyor near one end for supporting a stack of carrying grids for automatically delivering a grid to each successive group of bottles on the conveyor, and pressure-applying means for progressively pushing the grids downwardly over the caps of the bottles onto the necks.



of channels disposed either within the duct or adjacent thereto and opening into the duct at both ends. A plurality of electrically conductive rods are disposed in the channels and are charged electrically positive in one channel and negative in



the other channel so that particulate matter flowing into the channels is ionized by the charges on the electrical rods and agglomerates to form larger particulate masses which are more easily filterable from the air flowing through the system.

3,826,064

## VAPOR-LIQUID SEPARATOR

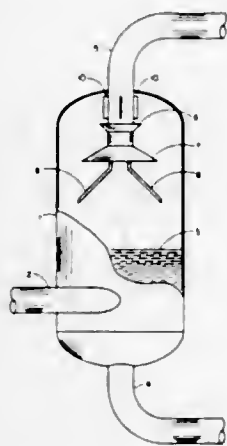
James O. Nye, Friendswood; Miguel A. Salabarría, Texas City, and David H. Westmoreland, Alvin, all of Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 12, 1973, Ser. No. 350,456

Int. Cl. B01d 19/00

U.S. Cl. 55-204

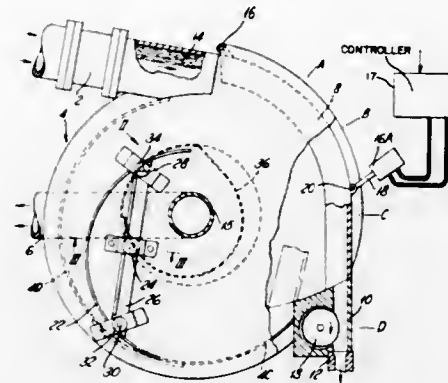
9 Claims



An improved vapor-liquid separator includes a vertically mounted cylindrical vessel having a tangential fluid inlet means such as to produce a vortex or swirling effect of the fluid being introduced into the vessel. A liquid withdrawal conduit is disposed in the lower portion of the vessel to withdraw substantially vapor-free liquid product from the vessel. A vapor withdrawal conduit is disposed in the upper portion of the vessel and extends downwardly into the vessel, along the axis of the vessel, with an upwardly inclined annular catch-pan on the outside of the vapor withdrawal conduit between the upper end of the vessel and the lower open end of the vapor withdrawal conduit. A downwardly inclined annular drip skirt is located below the upwardly inclined catch-pan. Conduits drain the liquid collected in the annular channel formed by the junction of the catch-pan with the outer wall of the vapor withdrawal conduit to a point substantially removed from the open end of the vapor withdrawal conduit.

3,826,065  
AIR SEPARATOR FOR TOBACCO FEED SYSTEMS  
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Moline Limited, London, England  
Filed July 27, 1972, Ser. No. 275,800  
Claims priority, application Great Britain, July 28, 1971, 35516/71

Int. Cl. B01d 45/12  
U.S. Cl. 55-309 13 Claims

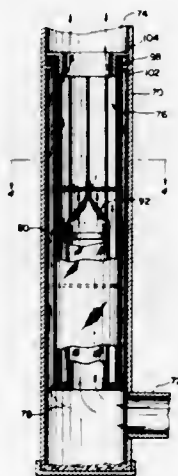


Apparatus for pneumatically feeding tobacco to a cigarette making machine includes an air separator comprising a chamber having an inlet of given cross-sectional area for receiving a flow of tobacco carried by air, a deflector which deflects the tobacco along a curved path towards a tobacco outlet, and an air outlet remote from the deflector, the tobacco outlet having a smaller cross-sectional area than the inlet, and the deflector being so shaped that it progressively reduces the transverse dimensions of the tobacco stream with the aid of centrifugal force to enable the tobacco to pass out through the tobacco outlet.

3,826,066  
DOUBLE-WALL FILTER BAG CONSTRUCTION  
Frank Higgins, Millington, N.J., assignor to Summit Filter Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 178,563, Sept. 8, 1971, abandoned. This application June 15, 1973, Ser. No. 370,515

Int. Cl. B01d 46/02  
U.S. Cl. 55-379 4 Claims



A double-wall dust and the like filter bag including an inner bag surrounded coaxially by an outer bag, the bags consisting of gas permeable and solid retention type of fabric, there being an annular space between the bags, the flow direction of contaminant laden gases through the filter bag being such that both the interior surface of the inner bag and the exterior surface of the outer bag are exposed to the contaminant laden gases. Solids are retained by these two surfaces with clean gas flowing into the annular space to exit from an open

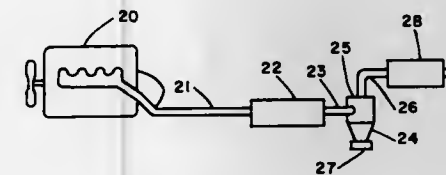
top of the construction. In a preferred form a double-wall cartridge consists of a wire cage supporting the inner and outer filter bags and providing the annular space between them. The construction very substantially increases effective filter area for cartridge dimensions and collective capacity; pressure drop across the bag is reduced and the decreased strain improves fabric life and efficiency, and the cartridges are readily adaptable to reverse pulse and reverse air dust collectors.

3,826,067  
FILTER

Harry D. Wilder, Midlothian, and Homan B. Kinsley, Jr., Richmond, both of Va., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 5, 1972, Ser. No. 241,150  
Int. Cl. B01d 27/06

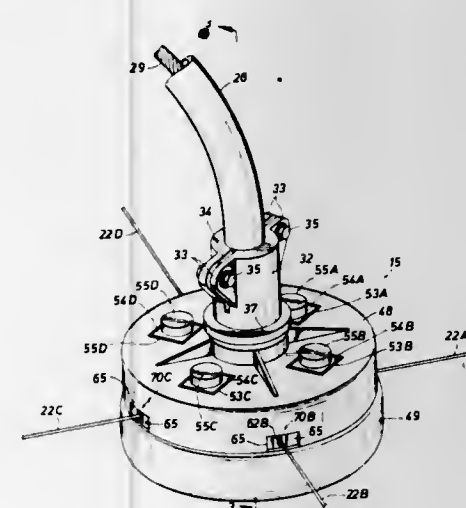
U.S. Cl. 55-524 14 Claims



Described herein is a porous filter mat comprising glass fibers and a quaternary ammonium silicate binder. Optionally, the mat contains asbestos or micro-glass fibers which reduce the porosity of the mat to the level required for the particular filtration. Filter elements made from the mat have good structural integrity even at high temperatures. The filter mat is used to remove particulates from the exhaust of an internal combustion engine.

3,826,068  
ROTARY CUTTING ASSEMBLY  
George C. Ballas, 5146 Richmond Ave., Houston, Tex. 77027, and Thomas N. Geist, Houston, Tex., assignors to said Ballas by said Geist  
Continuation-in-part of Ser. No. 207,198, Dec. 13, 1971, Pat. No. 3,708,967. This application Jan. 8, 1973, Ser. No. 321,580  
Int. Cl. A01d 55/18

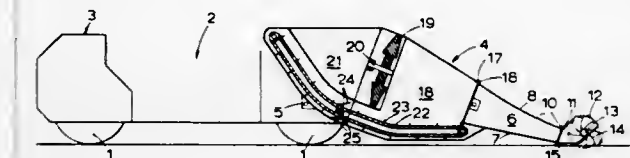
U.S. Cl. 56-12.7 11 Claims



Apparatus is provided with a plurality of flexible non-metallic cutting members for cutting and trimming vegetation, and the like, in a manner to reduce or eliminate the chance of injury or damage to adjacent persons or property. Maximum cutting effectiveness is achieved with a minimum sacrifice of safety by rotating the cutting members at a tip velocity which is a function of the cross sectional diameters.

3,826,069  
APPARATUS FOR COLLECTING CROPS  
George Robert Tuthill, Wardington House, Wardington, Banbury, Oxfordshire; Julian Harold Vazeille Temperley, and Humphrey Peter Neville Temperley, both of Pass Vale Farm, Burrow Hill, Kingsbury, Martock, Somerset, all of England  
Filed June 13, 1972, Ser. No. 262,318  
Claims priority, application Great Britain, June 17, 1971, 28557/71

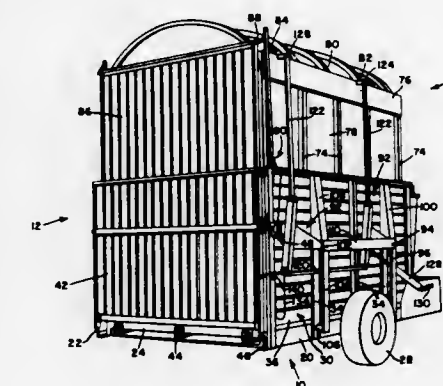
Int. Cl. A01d 51/00  
U.S. Cl. 56-328 R 3 Claims



An apparatus is provided for collecting crop elements from the surface of the ground, particularly cider apples and perry pears which are allowed to fall to the ground before collection, and for separating the crop elements from debris. The apparatus includes an elongate duct having an inlet at one end for crop elements and debris. Draught inducing means for example, a fan, are provided to draw the crop element and debris into the duct in a generally horizontal direction. The crop elements are drawn along the duct adjacent the floor thereof, and the debris is drawn through the duct. Means are provided for directing the crop element and debris to separate destinations.

3,826,070  
PRESS OPERATING MECHANISM FOR STACK-FORMING MACHINE  
William Robert Wood, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.  
Filed June 14, 1973, Ser. No. 370,152  
Int. Cl. A01d 89/00

U.S. Cl. 56-344 13 Claims



Mechanism for raising and lowering the press or roof on a mobile stack-forming machine, the mechanism including a fore-and-aft pair of cranks mounted on each side of the machine for vertical swinging movement above horizontally coplanar transverse axes, a longitudinally extending horizontal link connecting each pair of cranks, a vertically extending link connecting each crank with the roof, and means for swinging the first crank in each fore-and-aft pair about its transverse axis, the longitudinally extending links serving to simultaneously swing the rear crank in each pair about its axis, and the vertically extending links connecting each of the cranks to the roof serving to raise and lower the roof as the cranks are swung about their axis, the parts being so arranged and constructed that the roof remains level as it is raised and lowered relative to the body of the machine.

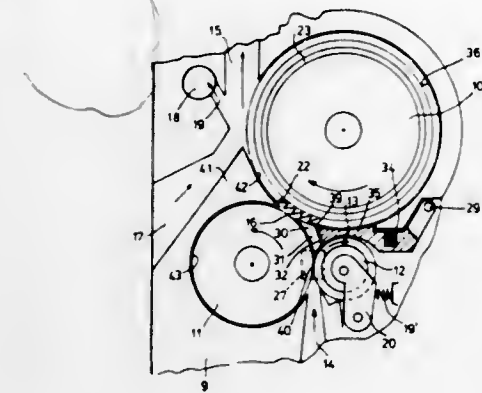


### 3,826,071 APPARATUS FOR OPENING SLIVERS OF TEXTILE FIBERS

Gerhard Grau, Ebersbach, Germany, assignor to Zinser-Textilmaschinen GmbH, Ebersbach, Germany  
Filed June 21, 1972, Ser. No. 264,953  
Claims priority, application Germany, June 21, 1971, 2130658

Int. Cl. D01h 11/00, 11/12, 13/02  
U.S. Cl. 57—56

18 Claims



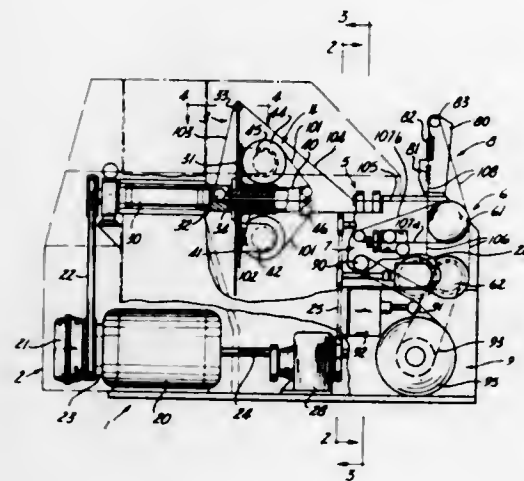
In an open-end spinning device there is provided an opening apparatus for separating slivers into single fibers which are forwarded to a spinning rotor, also forming part of the spinning device. The opening apparatus includes, in a housing, a very rapidly rotating, peripherally toothed opening roll to which the sliver is advanced by an oppositely rotating feed roll spaced at a radial distance of maximum 0.5 mm from the teeth of the opening roll. The working zone of the opening roll is bounded by a peripheral portion of the feed roll.

### 3,826,072 DOUBLE BEND STRANDED WIRE MAKING MACHINE

Erhart Fischer, 6349 Friedrichstrasse 17, Merkenbach/Dillkreis, Germany  
Filed Oct. 10, 1972, Ser. No. 295,910  
Int. Cl. D07b 3/02

U.S. Cl. 57—58.57

14 Claims



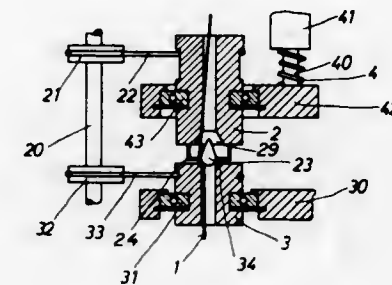
A stranded wire making machine having two twisting stations and constructed so that reversal of the delivery spools is not necessary. The tendency of the preformed stranded wire to untwist is eliminated by an added twisting device which deforms the strands beyond their elastic limit so that a neutral stranded wire is obtained.

### 3,826,073 ROTATABLE SLIDING-THREAD CLAMP FOR TEXTILE MACHINES

Gerhard Hoerber, Ingolstadt, and Hans Landwehrkamp, Gerolting, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany  
Filed Mar. 20, 1972, Ser. No. 236,304  
Claims priority, application Germany, Mar. 30, 1971, 2115225

Int. Cl. D01h 7/92; D02g 1/04; D01h 13/04  
U.S. Cl. 57—77.33

7 Claims

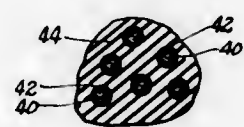


Thread or yarn extending through a pair of thread guides is automatically released and subsequently automatically slidably clamped against the mouth of a passage through one of such thread guides, which mouth is adjacent to the other thread guide. The two thread guides are normally urged toward each other by a spring to maintain the clamping element in its thread-clamping position. The spring force may be overcome by positive mechanical, hydraulic, or pneumatic displacing devices to create a pressure differential to override the spring force and effect thread-releasing relative displacement of the thread guides. The clamping element may be fixed to one of the thread guides, or it may be a free ball movable into and out of thread-clamping position by gravitational force, by wedging action of cooperating inclined surfaces, or by an air stream as the thread guides are moved toward and away from each other, respectively. The thread guides are mounted for conjoint rotation to create rotation of the clamped thread and thereby impart twist to the thread.

### 3,826,074 GLASS FIBER REINFORCED ELASTOMERS

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio  
Filed Mar. 1, 1972, Ser. No. 230,724  
Int. Cl. B32b 3/18; B29h 17/28; C08d 9/10  
U.S. Cl. 57—140 G

23 Claims



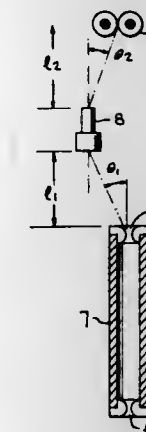
This invention is addressed to the treatment of glass fibers for use as reinforcement with elastomeric materials, and particular compositions used in the treatment of glass fibers, wherein the composition contains a resorcinol-aldehyde resin, an incompatible wax and a graft polymer formed of a monomer of vinyl chloride, vinylidene chloride, chloroprene and combinations thereof grafted onto a vinyl pyridine-butadiene-styrene terpolymer backbone.

### 3,826,075 PROCESS FOR PRODUCING A BULKY YARN

Fumihige Maruyama; Toshiyuki Yasui, and Kaoru Asada, all of Komatsu, Japan, assignors to Teijin Limited, Osaka and Teijin Modern Yarn Co., Ltd., Komatsu-shi, Ishikawa-ken, both of Japan  
Filed Dec. 17, 1971, Ser. No. 209,115  
Claims priority, application Japan, Dec. 19, 1970, 45-114882

Int. Cl. D02j 1/20  
U.S. Cl. 57—157 TS

20 Claims



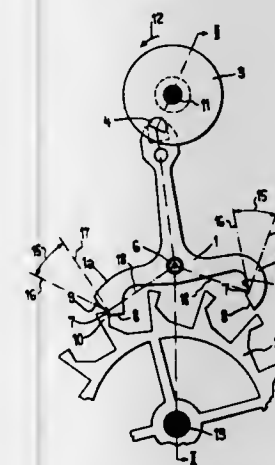
A method of producing a bulky yarn having a controlled residual torque, which comprises subjecting a thermoplastic synthetic filament yarn to a series of twisting, heat-setting on a first heater, and untwisting, feeding the yarn into a second heater while rotating it by means of a fluid nozzle and re-heat-setting the yarn in the second heater, the yarn being maintained in a substantially relaxed state during the rotation by the fluid nozzle and the re-heat-setting by the second heater.

### 3,826,076 ANCHOR ESCAPEMENT FOR TIME-MEASURING INSTRUMENTS

Paul Tuety, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland  
Filed June 19, 1973, Ser. No. 371,412  
Claims priority, application Switzerland, July 19, 1972, 10826/72

Int. Cl. G04b 15/00  
U.S. Cl. 58—116 R

11 Claims

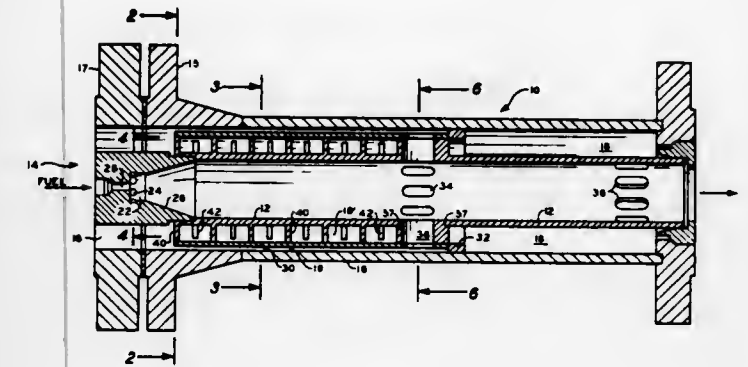


An anchor escapement without safety pin, anchor horns and banking means on the anchor and without a small roller on the balance, the improvement of the locking faces of the anchor being prolonged by return faces allowing the anchor in the case of knocking and overbanking an additional angular movement to guarantee an unobjectionable working of the escapement even in the case of shocks and knocking.

### 3,826,077 METHOD OF INTRODUCING THREE STREAMS OF AIR INTO A COMBUSTOR WITH SELECTIVE HEATING

Harold T. Quigg, and Robert M. Schirmer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.  
Continuation-in-part of Ser. No. 208,102, Dec. 15, 1971, abandoned. This application Mar. 27, 1972, Ser. No. 238,317  
Int. Cl. F02c 1/00

U.S. Cl. 60—39.02  
19 Claims

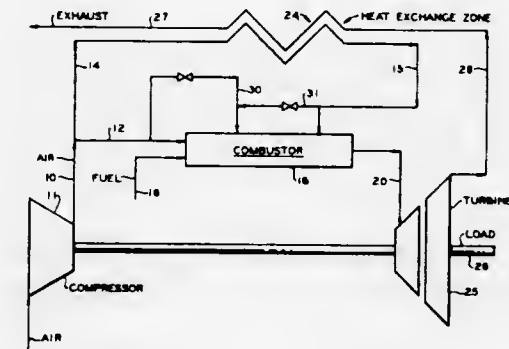


New combustors, and methods of operating same, which produce lower emissions, particularly lower emissions of nitrogen oxides. Methods and means are provided for supplying separate streams of air to primary and secondary combustion zones of a combustor, for removing heat from said primary combustion zone, and reintroducing said heat into the combustor at a region spaced apart and downstream from said primary and secondary combustion zones.

### 3,826,078 COMBUSTION PROCESS WITH SELECTIVE HEATING OF COMBUSTION AND QUENCH AIR

Harold T. Quigg, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Continuation-in-part of Ser. No. 208,245, Dec. 15, 1971, abandoned. This application Mar. 27, 1972, Ser. No. 238,318  
Int. Cl. F02c 1/04

U.S. Cl. 60—39.02  
22 Claims



A new combustion process wherein combustion efficiency is retained while reducing inlet air temperature to the combustor so as to obtain reduced nitrogen oxides emissions. A new combustor, and a new combination of combustion apparatus and heat utilization apparatus are also provided.



3,826,079

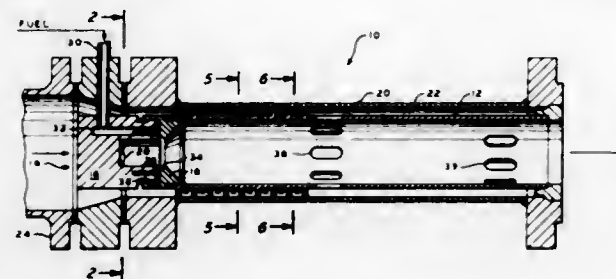
**COMBUSTION METHOD WITH SELECTIVE COOLING AND CONTROLLED FUEL MIXING**

Harold T. Quigg, and Robert M. Schirmer, both of Bartlesville, Okla., assigns to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 15, 1971, Ser. No. 208,247  
Int. Cl. F02c 7/26

U.S. Cl. 60—39.06

6 Claims



New combustors, and methods of operating same, which produce lower emissions, particularly lower emissions of nitrogen oxides. Method and means are provided for reducing the flame temperature in a primary combustion zone of said combustors.

3,826,080

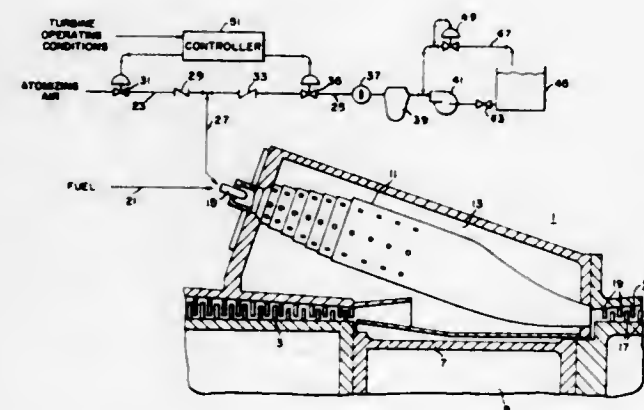
**SYSTEM FOR REDUCING NITROGEN-OXYGEN COMPOUND IN THE EXHAUST OF A GAS TURBINE**

Serafino M. De Corso, Media; Charles E. Hussey, Jr., Glenolden, both of Pa., and Michael J. Ambrose, Woodbury, N.J., assigns to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1973, Ser. No. 341,643  
Int. Cl. F02c 7/16, 9/14

U.S. Cl. 60—39.55

8 Claims



To reduce nitrogen-oxygen compounds in the exhaust of a gas turbine water is supplied to a fuel injection nozzle via the atomizing air passages disposed therein providing a coolant fluid directly to the primary combustion zone.

3,826,081

**VALVE FOR EXTERNAL COMBUSTION MOTOR**

Gilbert Lucien Van Avermaete, 20 Rue de l'Europe, B-67 Arlon, Belgium

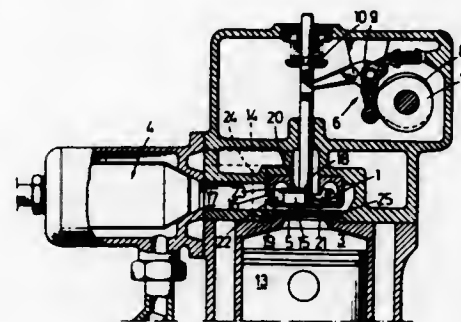
Filed Mar. 28, 1972, Ser. No. 238,769  
Int. Cl. F01p 1/08; F02g 3/00

U.S. Cl. 60—39.63

3 Claims

The invention relates to an inlet valve of a cylinder wherein expands a pressurized fluid of a piston motor of the kind comprising at least two cylinders inbetween which is provided a combustion chamber at constant pressure wherein the said fluid pressurized in the compressor cylinder is subjected to an increase of pressure.

The seat of the inlet valve is fitted so that the latter shall be opened towards the outside of the cylinder, by means of direct control, without pressure compensation, such valve comprising a cooling device substantially provided by a skirt surrounding the valve over at least part of the periphery thereof. The layout of this valve permits to dispense with a system of pressure compensation and assures an excellent cooling of the valve.



ing the valve over at least part of the periphery thereof. The layout of this valve permits to dispense with a system of pressure compensation and assures an excellent cooling of the valve.

3,826,082

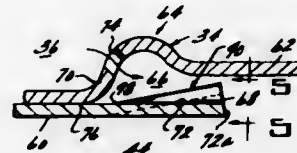
**COMBUSTION LINER COOLING SLOT STABILIZING DIMPLE**

Robert J. Smuland, Fairfield, and Richard K. Ward, Maineville, both of Ohio, assigns to General Electric Company, Cincinnati, Ohio

Filed Mar. 30, 1973, Ser. No. 346,595  
Int. Cl. F02c 7/18

U.S. Cl. 60—39.65

9 Claims



A combustor liner film cooling slot, of the variety including an annular space extending circumferentially of the liner which space is defined between overlapping portions of telescoping liner segments, a cooling fluid plenum substantially circumscribing the liner, means for transferring cooling fluid from the plenum to the space, means for exhausting fluid from the space onto the liner, and an overhanging lip extending substantially axially downstream of the space for facilitating attachment of the fluid to the liner in a protective film barrier, is provided with a plurality of circumferentially spaced stabilizing dimples disposed within the overhanging lip. Each dimple includes a radially depressed portion which has a larger circumferential width at its upstream extremity than its downstream extremity. The depression is disposed toward the associated cooler liner segment and is provided with a geometry which enhances stress relief of the lip as well as cooling fluid attachment as a protective film barrier upon the heated side of the liner downstream from the lip.

3,826,083

**RECIRCULATING COMBUSTION APPARATUS JET PUMP**

Harold J. Brandon, St. Louis, Mo., and Wilson C. Spicer, Plainfield, Ind., assigns to General Motors Corporation, Detroit, Mich.

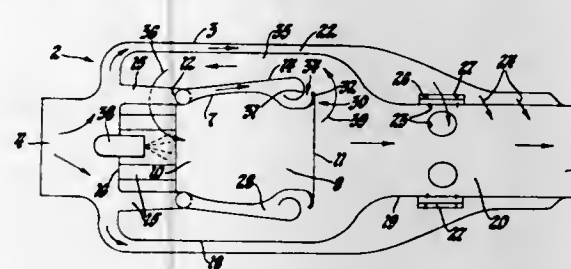
Filed July 16, 1973, Ser. No. 379,448  
Int. Cl. F02c 3/00

U.S. Cl. 60—39.65

1 Claim

A combustion apparatus for a gas turbine engine includes a Coanda effect jet pump by which air introduced for combustion recirculates combustion products into the combustion

zone of the apparatus. The jet pump is effective to improve the recirculation ratio while maintaining an acceptably low pressure drop in the combustion apparatus. The combustion air flows through the interior of the body of the Coanda nozzle



and over a wall which terminates in a lip converging toward the radial surface of the Coanda nozzle body. A ring of vanes bridges the nozzle and aligns the nozzle walls. The vanes are at an angle to the radial direction to impart swirl to the primary air and improve jet pump performance.

3,826,084

**TURBINE COOLANT FLOW SYSTEM**

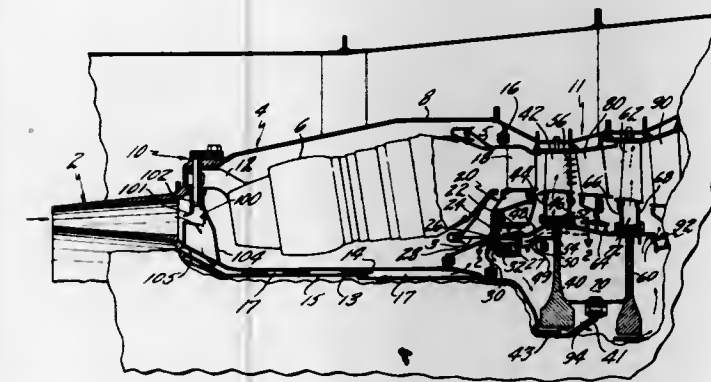
Bruce R. Branstrom, Riviera Beach, and Frank W. Huber, Palm Beach Gardens, both of Fla., assigns to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 32,687, April 28, 1970, abandoned.  
This application Oct. 30, 1973, Ser. No. 411,124

Int. Cl. F02c 7/18

U.S. Cl. 60—39.66

4 Claims



In a turbine engine compressed air is delivered through a diffuser to a burner section and then through a turbine section. A portion of the compressed air from said diffuser is removed by an annular center body manifold and directed by hollow struts inwardly to an annular passageway where the compressed air flow is taken to the forward part of the turbine section. The flow from the annular passageway is then directed into a passageway having directing vanes for imparting a desired velocity and direction to the existing flow so as to be compatible with the rotating turbine disk onto which it flows. This air is then directed to cool blades on that disk and also passed through that disk to be directed to turbine blades on the next disk. The invention herein described was made in the course of or under a contract with the Department of the Air Force.

3,826,085

**CYCLONIC TURBINE ENGINES**

Michael Dworski, 112 Greystone Ln., Rochester, N.Y. 14618  
Division of Ser. No. 13,557, Feb. 28, 1970, Pat. No. 3,692,421.

This application Aug. 2, 1972, Ser. No. 277,172

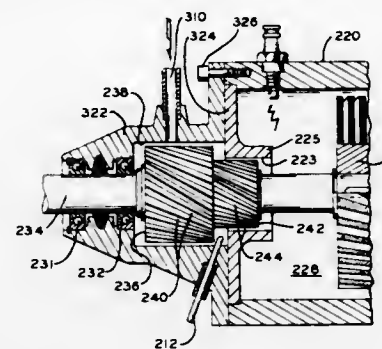
Int. Cl. F02c 3/16

U.S. Cl. 60—39.75

1 Claim

A turbine engine having a power rotor with fuel injection and ignition means on one side thereof and a plurality of helical, torque developing slots formed therein. A compressor for

supplying compressed air to the combustion chamber is provided and includes a pair of rotors of different diameters having external helical grooves. A disclosed embodiment includes



a two stage compressor with means for adding fuel between the stages and providing an air-fuel mixture to the combustion chamber.

3,826,086

**HEAT ENGINE**

Milorad Milisavljevic, 181 Promenade des Anglais 06-Nice, Nice, France

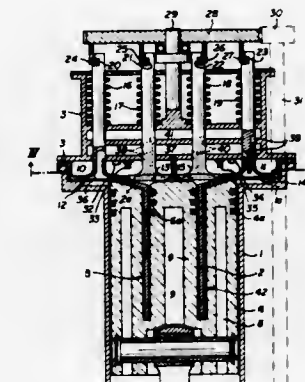
Filed Sept. 7, 1972, Ser. No. 287,091

Claims priority, application Switzerland, Sept. 8, 1971, 13155/71

Int. Cl. F02g 3/02

U.S. Cl. 60—39.62

10 Claims



A thermodynamic engine of the external-combustion type, including a motor unit with a driving cylinder and a pair of combustion chambers communicating with that cylinder during alternate downstrokes of its driving piston, further comprises an air compressor having a reciprocating piston synchronised with the driving piston to supply fresh compressed air to the chambers during alternate upstrokes preparatorily to injection of a fresh fuel charge and ignition of the resulting fuel-air mixture in one or the other chamber. After the end of every downstroke, during which the burning mixture from one of the combustion chambers enters the driving cylinder to exert a thrust upon its piston, communication between that chamber and the cylinder is maintained for a fraction of the immediately following upstroke whereby the fresh air now introduced into the chamber by the compressor also enters the driving cylinder to help purge it of combustion residues. The driving and compressor cylinders are coaxially disposed, as are the associated pistons which are concentric portions of a unitary body separated by an annular recess accommodating the inner or driving cylinder; the cylinders terminate in a head provided in a common transverse plane with a set of ports leading to the associated combustion chambers, the ports being controlled by respective valves actuated by a cam carrier which rotates about the cylinder axis.



3,826,087

## GAS ROCKET SYSTEM

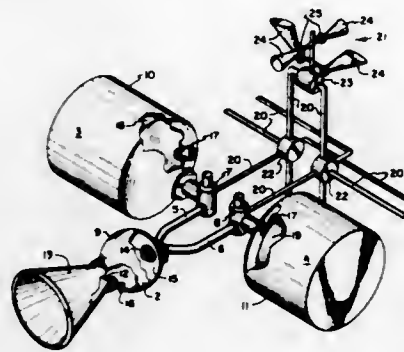
Allan J. McDonald, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 11, 1971, Ser. No. 197,708

Int. Cl. F02k

U.S. Cl. 60-200

2 Claims



In the invention, a fuel gas generator has an orificed pressure vessel, an igniter, and a solid propellant that produces fuel-rich gas on combustion; an oxidizer gas generator has an orificed pressure vessel, an igniter, and a solid propellant that produces oxidizer-rich gas on combustion; a reaction motor is connected to each gas generator by duct means, with valves in the ducts to meter and proportion the gases as desired into the reaction motor where they are burned for thrust. Gases from the gas generator are relatively cool and can be ducted through conventional valves and other devices to reaction motors for attitude and roll control, as well as for thrust of the vehicle.

3,826,088

## GAS TURBINE ENGINE AUGMENTER COOLING LINER STABILIZERS AND SUPPORTS

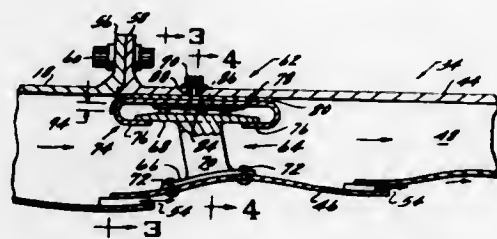
Dudley O. Nash, Forest Park, and Charles S. Lyons, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 1, 1973, Ser. No. 328,769

Int. Cl. F02k 3/10; F16J 21/00

U.S. Cl. 60-261

9 Claims



A stabilizing and support system for an augmentor cooling liner of a gas turbine engine is shown to include a plurality of stabilizers circumferentially spaced around, and mounted to, the liner. Each of the stabilizers is captured on its outer end by a stabilizer guide which permits relative thermal expansion to take place between the cooling liner and the exhaust duct to which the liner is mounted. The stabilizer guides are mounted to a positioning band which, in turn, mounts to the inside of the exhaust duct. The positioning band is provided with a gap which permits the band and stabilizer guides to flex to a diameter smaller than the internal diameter of the exhaust duct to permit easy assembly of the liner into the exhaust duct.

3,826,089

## AIR-POLLUTION PREVENTIVE ARRANGEMENT

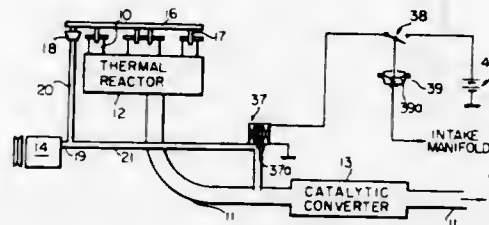
Yasuo Nakajima, Yokosuka; Takeji Oguri, Yokohama, and Hiroshi Kwloda, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed July 7, 1971, Ser. No. 160,278

Int. Cl. F02b 75/10; F01n 3/14

U.S. Cl. 60-290

5 Claims



An air-pollution preventive arrangement for use with an internal combustion engine for motor vehicles, adapted to reduce the concentrations of noxious compounds such as unburned hydrocarbons and carbon-monoxides contained in the engine exhaust gases. The arrangement comprises a thermal reactor for primarily re-combusting the exhaust gases and a catalytic converter for secondarily recombusting the exhaust gases passed from the thermal reactor so as to oxidize the residual unburned compounds. An air injection unit supplies additional air which is admixed, in a limited proportion, to the exhaust gases entering the thermal reactor to aid in the primary re-combustion of the exhaust gases therein. The noxious unconsumed hydrocarbons and carbon-monoxides are thus converted into innocuous compounds at efficiencies which are far higher than those attained where the thermal reactor or the catalytic converter is employed independently. Such additional air may also be admixed to the exhaust gases entering the thermal reactor, whereby the re-combustion efficiencies of the reactor and converter are maintained at high levels throughout varying driving conditions of the motor vehicle. The arrangement may also comprise a second catalytic converter which is adapted to reduce nitrogen oxides in the exhaust gases.

3,826,090

## VARIABLE PRESSURE HYDRAULIC SYSTEM

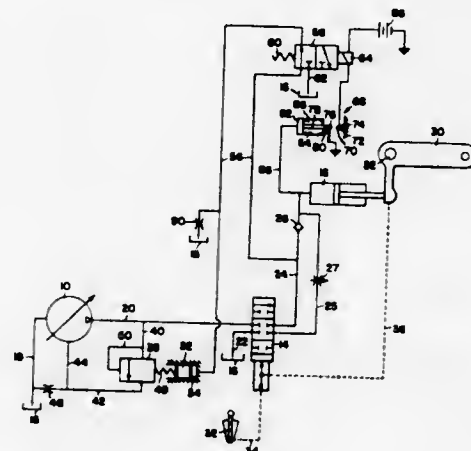
James Melvin Bahl, Waterloo, Iowa, assignor to Deere &amp; Company, Moline, Ill.

Filed July 25, 1973, Ser. No. 382,516

Int. Cl. F16h 39/46

U.S. Cl. 60-445

12 Claims



A variable pressure hydraulic system in which a motor is operated by a variable displacement pump whose displacement is regulated by a control valve which is sensitive to the pressure at the hydraulic motor to maintain the pump outlet pressure higher than the motor pressure. A normally open solenoid-controlled valve is movable upon actuation of the solenoid to a closed position in which it blocks communication between the control valve and the hydraulic motor. The electrical circuit for the solenoid valve includes a pressure sensitive switch responsive to the fluid pressure at the hydraulic motor so that when the fluid pressure at the hydraulic motor reaches a predetermined value, the solenoid is activated to close the solenoid-controlled valve and block communication between the control valve and the hydraulic motor. In this manner, the maximum pressure of the system is limited.

3,826,091

## PROCESS FOR CONVERTING HEAT PRODUCED BY A NUCLEAR REACTOR TO ELECTRICAL ENERGY

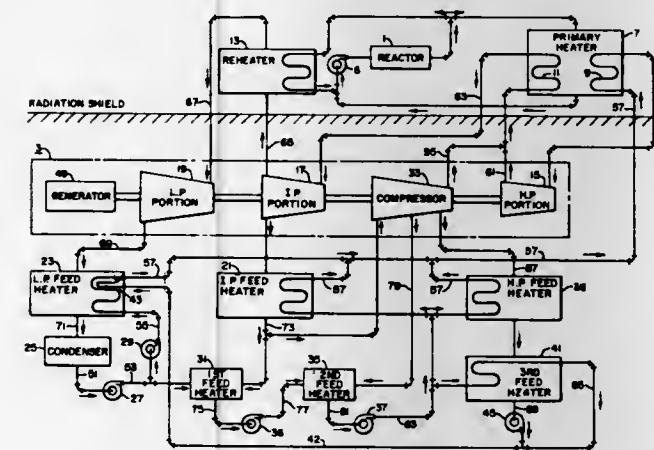
William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corporation, Philadelphia, Pa.

Filed May 24, 1971, Ser. No. 146,239

Int. Cl. F01k 25/00

U.S. Cl. 60-644

6 Claims



A thermodynamic process for converting heat produced by a nuclear reactor to electrical energy utilizing a liquid metal as a primary fluid and sulfur dioxide as a secondary fluid. The sulfur dioxide is expanded in a turbo-generator set, condensed and recycled through a closed secondary fluid loop.

3,826,092

## CLOSED CYCLE ENERGY CONVERSION SYSTEM

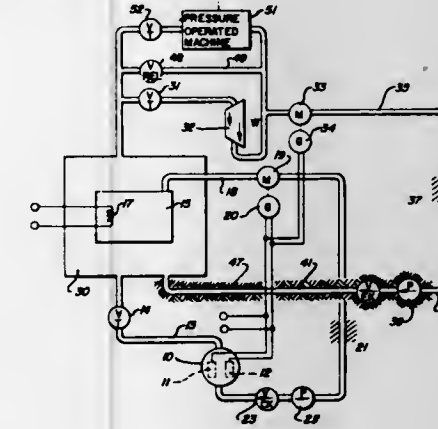
Thomas L. Cosby, 10713 S. Michigan Ave., Chicago, Ill. 60643

Filed Sept. 18, 1972, Ser. No. 289,953

Int. Cl. F01k 25/00

U.S. Cl. 60-643

16 Claims



A system for utilizing heat energy to perform work has closed cycle fuel and power subsystems.

In the fuel subsystem water is disassociated by electrolysis in a generator chamber. The hydrogen and oxygen are burned in a combustion chamber, evaporating a working fluid in an evaporator chamber of the power subsystem. The temperature of the combustion chamber is such that water is discharged as steam under pressure and operates an air motor to drive a generator. The steam is then condensed and pumped back to the fuel generating chamber.

In the power subsystem the evaporated working fluid drives a turbine to perform work. The discharge from the turbine operates a low pressure motor to drive a second generator. The working fluid is cooled in a heat exchanger to the liquefaction temperature, liquefied by a compressor and returned to the evaporator.

Both generators supply electrical energy to the fuel generator and additional electrical energy is supplied as needed from an outside source.

3,826,093

## REHEAT VAPOR GENERATOR

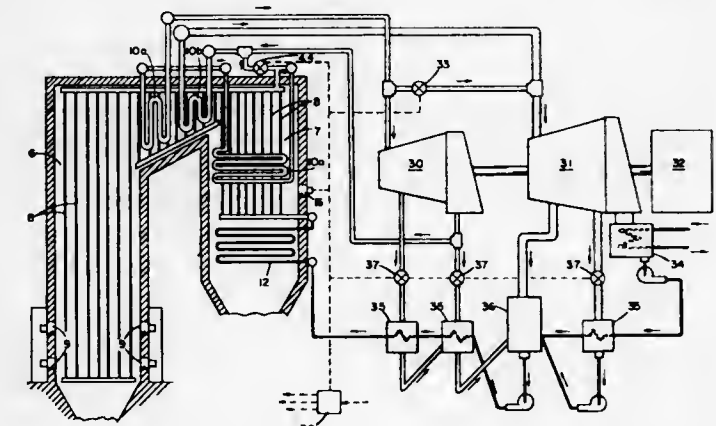
Emmanuel Stephen Millaras, 12 Mount Pleasant St., Winchester, Mass. 01890

Filed Apr. 10, 1973, Ser. No. 349,790

Int. Cl. F01d 13/02; F01k 21/00

U.S. Cl. 60-665

5 Claims



This invention relates to a method for increasing the superheated output flow of a reheat type vapor generator by apportioning additional saturated vapor flow between the superheater and resuper-heater and sizing each accordingly rather than sizing each for the total increase in saturated vapor flow. Such vapor generators can be utilized for example in reheat type steam generators supplying turbines of high, intermediate and low pressure sections for the purpose of meeting short duration electrical demand.

3,826,094

## SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH INDEPENDENT OVERSPEED PROTECTION ESPECIALLY ADAPTED FOR A NUCLEAR REACTOR POWERED STEAM TURBINE

Joseph D. Conrad, Jr., Glen Mills; Wilmer C. Gangloff, Jr., Murrysville, and Michael C. Luongo, Brookhaven, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,226

Int. Cl. F01k 7/16

U.S. Cl. 60-686

27 Claims

In a steam turbine an overspeed protection system and method is provided which operates completely independently of the conventional steam valve controller or governor. Existing hydraulically actuated valves such as stop valves, governor valves, interceptor valves, etc., are deactivated by draining hydraulic control fluid from the aforementioned through the action of specially provided dump valves. A pair of dump valves is provided for each of the steam flow valves.





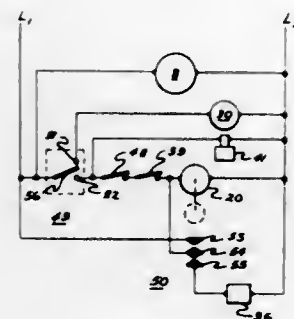


**3,826,102**  
**REFRIGERATOR INCLUDING AUTOMATIC ICE MAKER AND WATER RESERVOIR**

Julius B. Horvay, and Frank A. Schumacher, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed June 21, 1973, Ser. No. 372,185  
Int. Cl. F25c 1/04

U.S. Cl. 62-137



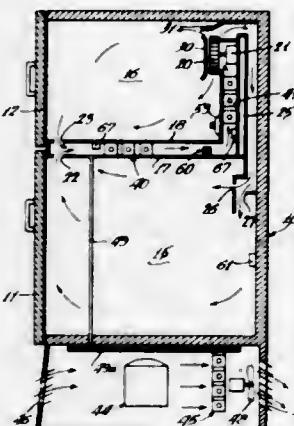
A refrigerator particularly adapted for the manufacture and storage of ice pieces comprising a below-freezing compartment containing an automatic ice maker and an above-freezing compartment containing a water reservoir. The ice maker control circuitry for controlling the operation of the ice maker through an ice discharging and water fill cycle includes a switch means associated with the reservoir for interrupting the ice maker operation when the water level is low but assuring operation of the ice maker through the water fill step.

**3,826,103**  
**APPLIANCE DEFROSTING SYSTEM AND SWITCH MEANS**

Phillip D. Grover, 3507 Glenwood Ave., Two Rivers, Wis. 54241

Filed Aug. 7, 1972, Ser. No. 278,524  
Int. Cl. F25d 21/02

U.S. Cl. 62-140



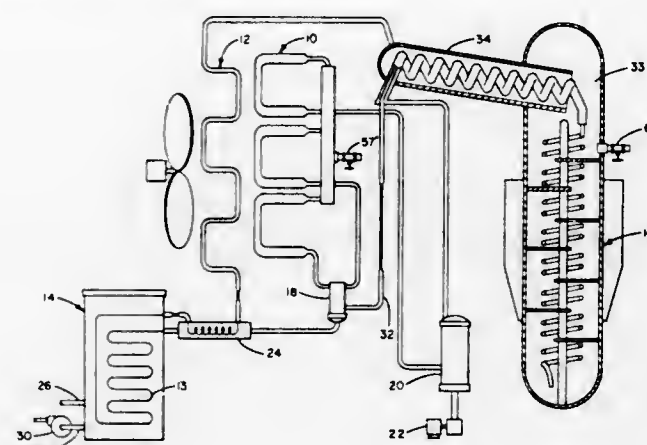
A defrosting system for an appliance having circulating air-flow over cooling coils and means for supplying coolant to the coils, selectively operable means for defrosting the appliance including switch means responsive to a reduction of airflow within the appliance because of frost buildup on the cooling coils to initiate the defrost cycle, and additional switch means responsive to the temperature within the appliance to discontinue the defrosting operation and place the appliance back in condition for normal operation. Switch means are provided for use in the circuit which are uniquely responsive to airflow and which have other structural features uniquely adapting them to their application in a defrosting system.

**3,826,104**  
**APPARATUS FOR CHARGING ABSORPTION REFRIGERATION SYSTEMS**

Jimmy W. Lamb, and Richard A. English, both of Indianapolis, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed June 30, 1972, Ser. No. 267,744  
Int. Cl. F25b 45/00

2 Claims U.S. Cl. 62-149



An apparatus for automatically adding and removing solution from an ammonia-water absorption refrigeration system to provide a proper charge in the machine which is especially adapted for use under field service conditions. The apparatus includes a solution tank and control means connected to the system for alternately withdrawing excess solution from the analyzer and adding refrigerant vapor at the evaporator or for withdrawing refrigerant vapor from the analyzer and adding solution at the evaporator while the refrigeration system is in operation, to automatically achieve an accurate solution charge in the machine.

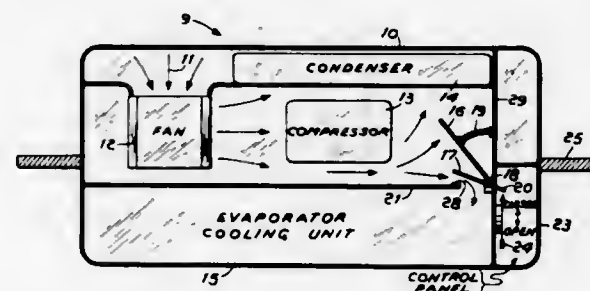
**3,826,105**  
**VENTILATION DAMPER FOR AIR CONDITIONING APPARATUS**

Kenneth E. Marsteller, Willow Grove, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 19, 1973, Ser. No. 352,754  
Int. Cl. F25d 23/12

U.S. Cl. 62-262

11 Claims



A ventilation damper for a unitary air conditioner wherein a partition separates the area to be cooled from ambient. An interconnecting aperture in the partition permits outside air to be conveyed into the area to be cooled. A damper mechanism or door normally closing the aperture opens in operative response to a flow of external air produced by a fan or blower. The air flow may be provided by the same fan or blower which is used to conduct ambient air over the external condenser of the air conditioning unit. Thus there is provided a ventilation damper which automatically permits the entry of outside air into the area when the air conditioner is operating and automatically prevents the entry of outside air when it is inoperative.

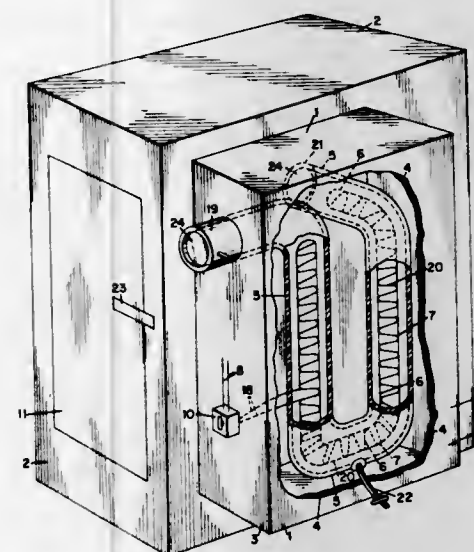
**3,826,106**  
**REFRIGERATION APPARATUS AND PROCESS**

Edward J. O'Hanlon, and Lewis F. Lavery, both of c/o Robert Kemp, Box 96, Lansingburgh, N.Y. 12182

Filed Dec. 14, 1972, Ser. No. 315,158  
Int. Cl. F25d 21/06

U.S. Cl. 62-275

4 Claims



Means and methods of equalizing atmospheric pressures inside and outside a refrigerating chamber, collecting atmospheric moisture outside of and away from refrigerating units, elongating time periods between defrostings, thus increasing overall efficiency and economy of cold production.

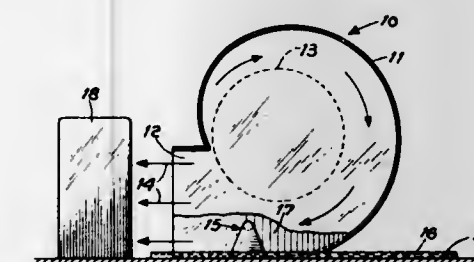
**3,826,107**  
**CONDENSATE ENTRAINMENT DEVICE**

Kenneth E. Marsteller, Willow Grove, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 19, 1973, Ser. No. 352,759  
Int. Cl. F25b 47/00

U.S. Cl. 62-279

14 Claims



Apparatus for effecting a transfer of heat wherein a sump collects water condensed on a cooling coil or heat exchanger. A fan or blower member produces a flow of outside air in a substantially uni-directional manner passing over and through a second heat exchanger to enhance the transmission of heat energy to the ambient environment. A water feed device is disposed in the air flow and configured so as to provide a relatively low pressure in a region of the air flow communicating through the device with the water collected in the sump. An air diversion member is used to conduct a portion of the air flow into the water communicating with the low pressure region. This results in percolation of the air through the water and its ultimate ejection into the air flow through said water feed device. Passage of the air through the water entrains droplets thus producing a discharge of the condensate water into the air flow.

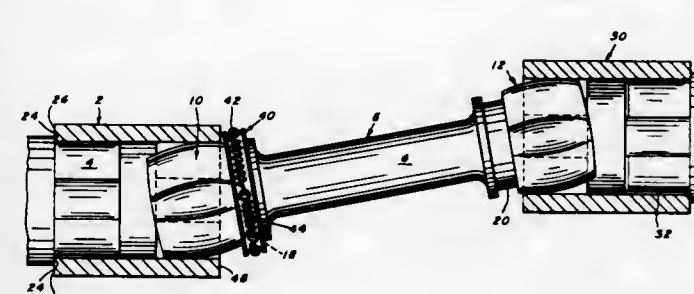
**3,826,108**  
**ROLLING MILL DRIVE CONSTRUCTION**

John H. Bradel, Jr., Markman Park Rd., R.D. No. 1, Baden, Pa. 15005, and Lew Watkins, R.D. No. 2, Dundee, Ohio 44624

Filed Aug. 3, 1973, Ser. No. 385,446  
Int. Cl. F16d 3/18

U.S. Cl. 64-9 R

17 Claims



A rolling mill drive construction including a tubular coupling box, a roll neck extending into one end of the coupling box and a spindle having a head extending into the coupling box from the other end. The spindle has an annular outwardly open groove disposed exteriorly of the coupling box and adjacent thereto. A circumferentially continuous retaining member is secured within the spindle groove for resisting movement of the coupling box along the spindle therebeyond. The spindle annular groove preferably has a diameter not less than the base diameter of the spindle. The retaining member may be a retaining ring having first and second ring elements pivotally secured to each other and a fastener element securing the retaining ring against relative separating rotation of the two elements. A second coupling box may be disposed in spaced relationship with the first coupling box and a second spindle head and pinion may be received within with a similar groove and retaining member securing the second box in place. The spindle heads have outwardly convex lateral portions in contact with the coupling box interior to permit efficient operation when the two coupling boxes are not axially aligned, thereby placing the spindle longitudinal axis in angular disposition with respect thereto. The radial outwardly disposed portions of the retaining member are preferably substantially continuous to provide uniform restraint against undesired coupling box movement during rotation of the spindle in such angular position.

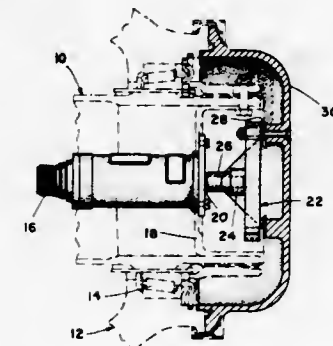
**3,826,109**  
**CAM POSITIONED DRIVE CONNECTOR FOR ROTOR**

Basil M. Madigan, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 25, 1972, Ser. No. 274,854  
Int. Cl. F16d 3/14

U.S. Cl. 64-27 R

7 Claims



The invention provides an improved drive connector particularly adapted for a wheel speed transducer which is automatically cam positioned, and which eliminates the problem

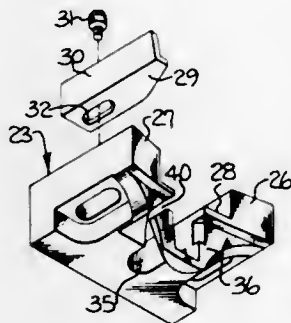


of binding and misalignment of the driven shaft or rotor. Further, the system is less expensive than the former bellows type approach, as well as being better at eliminating bearing loads.

3,826,110

# YARN FEEDING AND CONTROL MEANS FOR CIRCULAR KNITTING MACHINE

Otis W. Holder, Mount Airy, N.C., assignor to Oakdale Knitting Company, Mount Airy, N.C.  
Filed Apr. 3, 1972, Ser. No. 240,523  
Int. Cl. D04b 9/12, 9/18, 15/58  
U.S. Cl. 66—9 R



The plating position of plural yarns is accurately controlled during the knitting of both plain fabric and rib fabric in the formation of socks on a circular knitting machine of the type including both dial and cylinder needles. The yarn feeding and control means includes a special "drop" throat plate and a special yarn feed finger adapted to feed terry loop forming yarn at an upper throat level and elastic and inelastic body yarns at the same level in a lower throat in the throat plate. Radial separation of the elastic and inelastic body yarns is achieved by means of a yarn passage slot extending from the upper throat level to one side of the lower throat. This position of the body yarns is maintained as these yarns are fed to the needles to provide accurate plating of the yarns in the fabric.

3,826,111

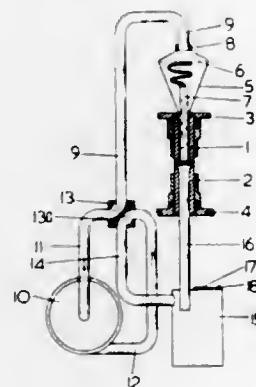
# CIRCULAR KNITTING MACHINE SUCTION TAKEUP

Roland Peberdy, Leicestershire, England, assignor to The Bentley Engineering Company Limited, Leicester, England  
Filed Mar. 8, 1971, Ser. No. 121,649  
Claims priority, application Great Britain, Mar. 11, 1970, 11566/70

Int. Cl. D04b 15/92, 9/10

U.S. Cl. 66—14

8 Claims



A method and means for producing tubular knitted fabric, as for stockings, socks or pantie hose, on a rotary cylinder circular knitting machine in which the fabric on being knitted is withdrawn upwardly from the knitting level into a receiving unit which rotates with the cylinder and on completion is withdrawn downwardly through the cylinder by reverse air

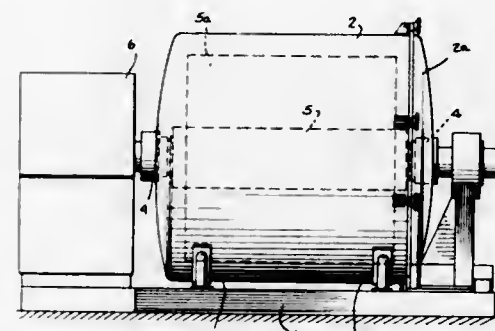
flow into a lower receptacle which is stationary. A switching valve operated from the machine control means is used to switch air suction from a suction generator to the receiving unit and the lower receptacle as and when required.

3,826,112

# APPARATUS FOR TREATMENT OF YARNS AND WEB-LIKE MATERIAL

Uwe Sick, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland  
Filed Mar. 21, 1972, Ser. No. 236,720  
Claims priority, application Switzerland, Mar. 25, 1971, 4399/71; June 17, 1971, 8849/71  
Int. Cl. B05c 8/02  
U.S. Cl. 68—8

11 Claims



A machine for full width treatment of textile material wound onto a perforated beam wherein a chamber is mounted on a frame with supports extending into the chamber for receiving the beam from a transport device, the beam being supported at both ends during rotation for treatment, one support holding the beam during transfer from the transfer device.

3,826,113

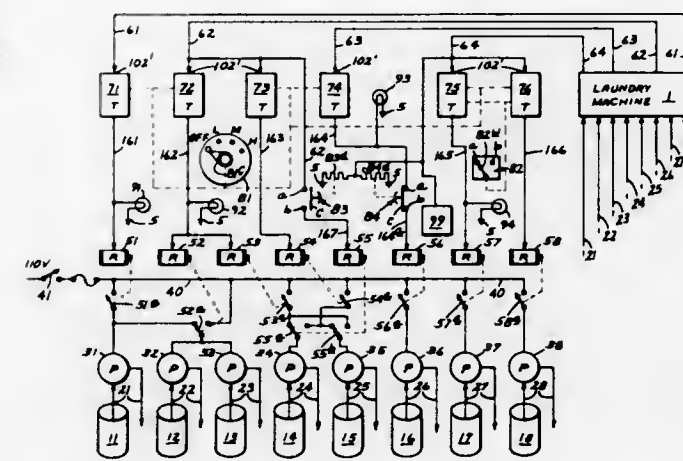
# ADDITIVE CONTROL AND INJECTION SYSTEM USEFUL IN LAUNDRY MACHINE OPERATIONS

Stan L. C. Boraas, and Marcus I. Nystuen, both of St. Paul, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed May 7, 1973, Ser. No. 358,098  
Int. Cl. D06f 33/02

U.S. Cl. 68—12 R

5 Claims



A system for selectively adding a plurality of liquid chemicals to a laundry machine in response to triggering signals from the machine is disclosed. Pumps are provided for pumping chemicals from their shipping drums through conduit means to the washing machine. Control means are associated with this system allowing the operator to remotely vary the chemical mix pumped to the washer by making control switch

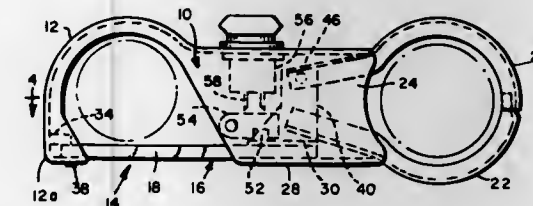
selections. The selections correspond to the soil levels of the laundry load, the presence of greasy soils, the need for bleach and the presence of permanent press fabrics. This injection process is controlled by a plurality of sequentially activated electrical timers that energize relays to in turn energize the pumps in selected groups. Means are provided for limited remote monitoring of the function of the system.

3,826,114  
LOCKING DEVICE

Galo P. Emerson, 71 Marlborough St., Boston, Mass. 02116  
Filed Dec. 1, 1972, Ser. No. 311,256  
Int. Cl. E05b 73/00

U.S. Cl. 70—14

11 Claims



A locking device comprising a stock provided at one end with a fixed hook having an open side, a bolt slidingly mounted on the stock for movement across the open side of the hook and a pair of jaws mounted on the bolt which are separable when the bolt is withdrawn from the open side of the hook and are movable into engagement by movement of the bolt to a position across the open side of the hook, in which position the ends of the jaws connected to the bolt are concealed within the stock, and a lock for holding the bolt in this latter position.

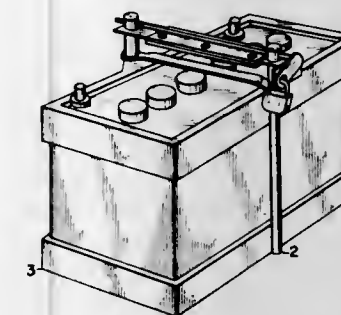
3,826,115

# BATTERY LOCKING DEVICE

B. T. Davis, 1029 Elm St., Waco, Tex. 76704  
Filed Sept. 12, 1972, Ser. No. 276,849  
Int. Cl. E05b 73/00; H01m 1/04

U.S. Cl. 70—25B

2 Claims



The battery locking device, which I term Battery Watchman, is a device consisting of several pieces of metal that is designed and constructed in such a manner as to provide a method of conveniently and economically locking a motor vehicle battery in place. The Battery Watchman consists of a pair of holddown slides which are to be fitted into a retaining slide in such a fashion as to allow the holddown slides to be fitted over holddown bolts, which are a part of the standard equipment of an automobile, and to be secured by a pair of holddown nuts which are screwed onto the holddown bolts. Each holddown nut contains an opening thru which an adjustment rod is placed in such a manner as to provide for the securing of the battery.

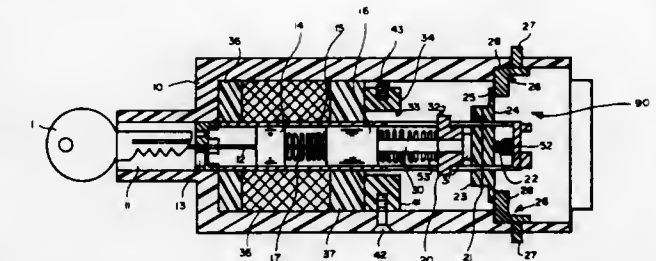
3,826,116

# IGNITION STARTER LOCK KEY REMOVAL SYSTEM

Dominic Messera, and Louis Messera, both of 28 Spring St., Oyster Bay, N.Y. 11771  
Filed May 3, 1973, Ser. No. 356,787  
Int. Cl. E05b 17/00

U.S. Cl. 70—388

8 Claims



A key-actuated lock has a core member connected to the barrel, and a push rod and a plunger inside the core member. When a key is inserted in the lock, the push rod and plunger are pushed back into the core, with the push rod closing buzzer contacts. Further rotation of the key disconnects the buzzer and starts the ignition. When the key is returned to neutral the plunger is energized to eject the key.

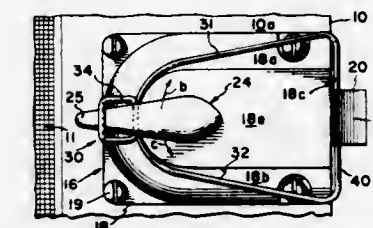
3,826,117

# DOOR SECURING APPARATUS

Charles R. Racobs, 644 S. Park St., Saginaw, Mich. 48607  
Filed Dec. 1, 1972, Ser. No. 311,279  
Int. Cl. E05b 13/08

U.S. Cl. 70—416

6 Claims



The combination of a door lock, including a door locking bolt and a bolt operating handle swingable to turn the bolt between locking and unlocking positions, and apparatus coupled to the handle to prevent unauthorized turning of the handle.

3,826,118

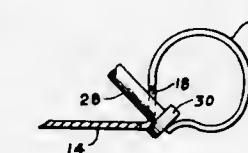
# KEY CONTAINER ASSEMBLY

James B. Kruger, Oxford, and Gerard T. LePage, Waterbury, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed June 18, 1973, Ser. No. 371,307  
Int. Cl. A47g 29/10

U.S. Cl. 70—456 B

2 Claims



A key container assembly comprising a key plate having a barrel with laterally spaced openings and slots, key-holding loops with attaching discs received into the slots, the end of the barrel forming a bar normally blocking the entry of the disc of the loop into the opening and hence effectively blocking release of the loop.



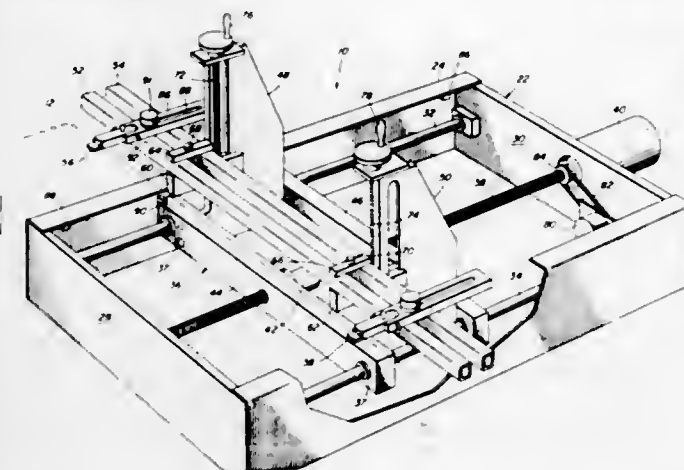
# 3,826,119 NUMERICAL CONTROL SYSTEM FOR PRESS BRAKES AND THE LIKE

Alan P. Marotto, Lexington, Mass., assignor to Automec, Inc.,  
Waltham, Mass.

Filed June 5, 1972, Ser. No. 259,439  
Int. Cl. B21d 11/22

U.S. Cl. 72—36

5 Claims



A numerical control system is provided for use with press brakes and the like for automatically gauging in sequence a plurality of different bending operations. The system includes a gauge mounted to the press brake bed and is provided with a carriage driven by a motor-operated lead screw which moves the carriage to different gauging positions in accordance with predetermined instructions set into a controller. A pivoted gauging finger is mounted on the carriage to serve as a gauge stop for the work fed between the punch and die of the brake. A closed loop digital to analog servo system is provided in the control of the carriage to cause rapid and precise movement of the gauge in accordance with the programmed instructions.

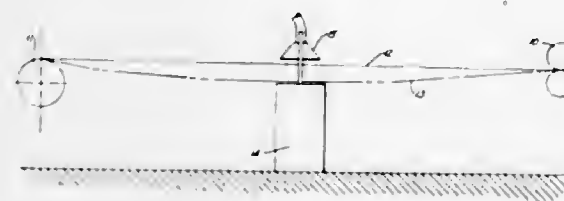
# 3,826,120 REDUCTION OF SLACK IN METAL COIL SLITTING LINES

Roger A. Ketterer, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Cincinnati, Ohio

Filed July 13, 1973, Ser. No. 379,094  
Int. Cl. B21b 45/00; B21f 11/00

U.S. Cl. 72—46

4 Claims



The application discloses the reduction of slack in metal coil slitting lines, wherein a relatively wide strip is passed through a slitting instrumentality by which it is slit into a plurality of narrower strips which are then recoiled by a common recoiling device. Because of variations in thickness across the width of the original strip, the recoiled narrower strips which are being rewound simultaneously, will have various degrees of slack, resulting in some loose coils. According to the invention, an electrostatic fluidized bed is disposed between the slitting device and the recoiler, below the slit strips. The bed contains a suitable powder, such as mica; and as any one of the slit strips sags toward the fluidized and charged bed, it picks up some of the charged powder particles. The pick-up is pro-

portionate to the amount of sag, or proximity of the sagging strip to the bed. The picked up powder is trapped in the wraps of the strip on the recoiler, effectively thickening the wrap, and thus restores tension and results in taking up the slack. The system is self-compensating and automatic.

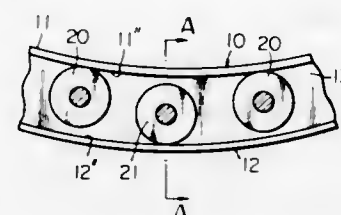
# 3,826,121 METHOD AND APPARATUS FOR COLD BENDING H- SHAPED STEEL

Kazuyoshi Yashiro, No. 19 Miharashi-cho 2-chome, Kue-shi,  
Hiroshima-ken, Japan

Filed Feb. 27, 1973, Ser. No. 336,350  
Int. Cl. B21d 5/14

U.S. Cl. 72—170

4 Claims



A method and apparatus for bending a grooved, H-shaped or the like shaped steel workpiece having a center web and two parallel flanges extending at right angles to and connected by the web in the plane of the web by cold-bending in which the inner surface of one of the two flanges has applied thereon an outward force by a pressure roller means and the inner surface of the other flange also has applied thereon an outward force by a pair of spaced pressure receiving roller means positioned on the opposite sides of the pressure roller means whereby the shaped steel workpiece has imparted thereto a bending moment without applying any buckling load on the web across the width thereof and the workpiece is then transferred in the longitudinal direction thereof with the workpiece held in pressure contact with the rollers.

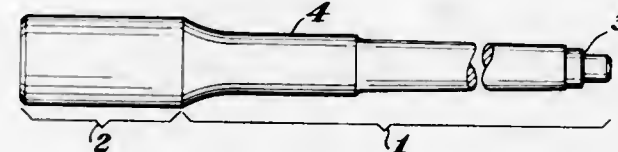
# 3,826,122 MANDREL FOR EXTRUDING TUBING

Karl F. Braeuninger, 535 Plantmore Dr., Ferguson, Mo. 63135  
Division of Ser. No. 55,531, July 16, 1970. This application  
Mar. 24, 1972, Ser. No. 237,690

Int. Cl. B21c 23/04

U.S. Cl. 72—264

6 Claims



A mandrel and mandrel-dummy block assembly for extrusion of tubing is disclosed wherein the mandrel has a shaft cross sectional area so related to the working section cross sectional area that the mandrel will stay in place without attachment to the dummy block. Such mandrel reduces the problems of mandrel necking down and breakage.

# 3,826,123 WALL IRONING TOOL PACK WITH REDRAW DIE

Richard J. Hasselbeck, Houston, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

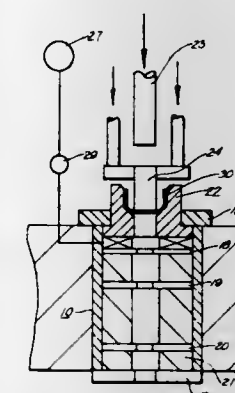
Filed June 11, 1973, Ser. No. 368,722  
Int. Cl. B21d 22/28

U.S. Cl. 72—349

4 Claims

A wall ironing tool pack is disclosed, incorporating one or more wall ironing dies and a redraw die to reduce the cup

shaped work piece to dimensions for wall ironing, wherein said reduction may amount to about 30 percent, and whereby the risk of fractures, or wrinkling of the work piece is avoided. One or more ironing dies and the redraw die are held in a holder and clamped by means of an annular hydraulic cylinder and piston disposed between any two rings. Hydraulic pres-



sure supplied to said cylinder to actuate said piston is controlled by means of a regulator, whereby adjustment of the pressure on the cup to be redrawn may be made rapidly during operation, to insure the desired redrawn cup for subsequent wall ironing without risking fractures if the pressure is too high, or wrinkles if the pressure is too low, and maintaining the several dies in clamped relation.

# 3,826,124 MANUFACTURE OF TUBES WITH IMPROVED METALLIC YIELD STRENGTH AND ELONGATION PROPERTIES

Ivan Baksay, Albany, Oreg., assignor to Zirconium Technology Corporation, Albany, Oreg.

Filed Oct. 25, 1972, Ser. No. 300,474  
Int. Cl. B21d 3/00

U.S. Cl. 72—367

7 Claims

A process for the manufacture of metal tubes, wherein the tubes exhibit improved yield strength, axial elongation and circumferential elongation properties. The tube is initially cold worked to obtain final size, which develops a certain strength to the metal of the tube and produces uniformity in the dimensions of the tube. A subsequent annealing increases the ductility of the metal in the tube. After annealing the tube is stretched significantly with the simultaneous reduction of the diameter thereof, to obtain a final product where the wall of the tube has been work hardened by such stretching. The latter operation increases the yield strength in the tube wall without failure occurring. A process of the type indicated where the annealing is a recrystallizing annealing, effective to produce recrystallizing of the microstructure of the tube's metal, and wherein the stretching is done without internal or external support of the tube wall.

# 3,826,125 PRESSURE VESSEL TESTING

Michael John Cotton, Mytholmroyd, England, assignor to NU Swift International Limited, Yorkshire, England

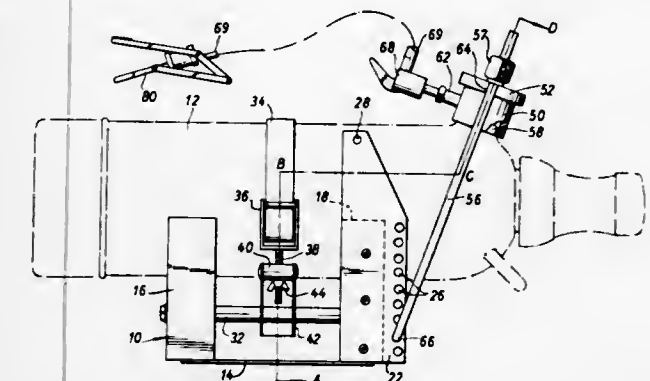
Filed Mar. 9, 1973, Ser. No. 339,885  
Int. Cl. G011 27/00

U.S. Cl. 73—4 R

12 Claims

An indicator on a pressure vessel such as a fire extinguisher adapted to show internal fluid pressure is tested by applying an external source of fluid pressure to the indicator acting in opposition to the internal pressure, preferably on a special test

stand having arrangements for supporting the pressure vessel and applying an external pressurized chamber in sealing rela-



tion onto the indicator, and observing the effect of the applied external pressure on operation of the indicator.

# 3,826,126 APPARATUS FOR TESTING PRESSURE RESISTANCE OF CONTAINERS

Tomita Yasuhiro, Nishinomiyu, Japan, assignor to Yamamura Glass Kabushiki Kaisha, Nishinomiyu Hyogo, Japan

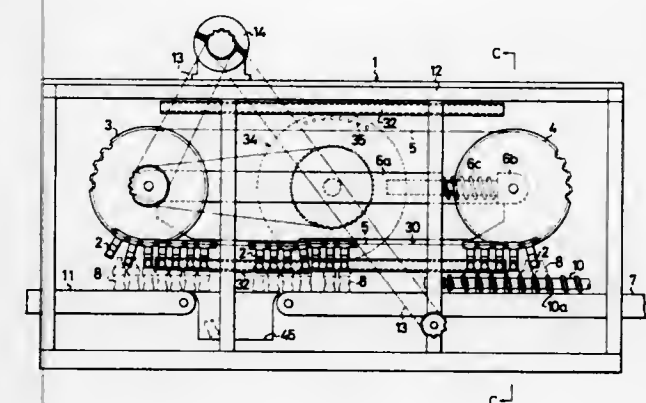
Filed Oct. 27, 1972, Ser. No. 301,508

Claims priority, application Japan, Dec. 22, 1971, 46-104984

U.S. Cl. 73—37

Int. Cl. G01m 3/02

4 Claims



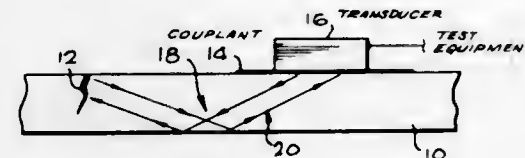
An apparatus comprising drive means for bringing a great number of pressure resistance testing heads successively at equal spacing to a testing station at a speed equal to the speed of travel of containers to be tested, feed means for sending the containers to the testing station at the same spacing as the testing heads, means for inserting nozzles of the testing heads into the containers respectively at the testing station, pressure fluid supply means for supplying a low pressure fluid through the testing heads into the containers and subsequently supplying high pressure fluid into the containers, means for causing the testing heads to seal the mouths of the containers and chuck the containers immediately before the supply of the high pressure fluid, means for permitting the testing heads to hold the containers in suspension during the supply of the high pressure fluid, and means for freeing the containers from the chucking and discharging the same at the terminal end of the testing station after testing.



**3,826,127**  
**COMPOSITION FOR ULTRASONIC INSPECTION OF**  
**OBJECTS AND METHOD FOR EMPLOYING SAME**  
 Orlando G. Molina, Westminster, Calif., assignor to Rockwell  
 International Corporation, El Segundo, Calif.  
 Filed Oct. 4, 1972, Ser. No. 295,059  
 Int. Cl. G01n 29/04

U.S. Cl. 73-67.5 R

6 Claims



Composition for ultrasonic inspection of surface and sub-surface flaws and discontinuities in bodies, in the form of an aqueous gel containing an N-alkyl-2-pyrrolidone having a short alkyl chain, preferably N-methyl-2-pyrrolidone, a water soluble surfactant, e.g. a nonyl phenyl ether of polyethylene glycol, and silica, preferably in fine powder form, suspended uniformly in the gel. The composition or gel is applied to a surface of a body such as a metal aircraft structural part, and a probe or transducer of an ultrasonic testing device is contacted or pressed against the gel and the transducer is caused to move or slide in various directions on the gel to transmit ultrasonic energy through the gel and the object, to inspect the object and locate any surface or subsurface flaws or discontinuities.

**3,826,128**  
**SURFACE DEFORMATION INDICATING APPARATUS**  
 James R. McVey, and Thomas O. Meyer, both of Spokane, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,822  
 Int. Cl. G01b 5/30

U.S. Cl. 73-88 E

7 Claims



An apparatus to indicate deformation of a surface such as the interior of a mine, to which it is attached. An anchor bolt assembly with one electrical contact is rigidly fixed into the surface. A movable pressure plate assembly with another electrical contact, engageable by the first contact on the bolt assembly is placed against the surface. When this plate is moved by surface deformations, it causes the contacts to engage each other which results in the actuation of a sensing device. The sensing device can either actuate a transmitter to transmit a

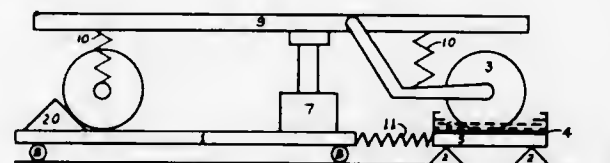
frequency modulated signal of a fixed or variable frequency or it can actuate a recording device that records data on the deformation. Several extendable arms may also be included to actuate a transmitter when overhead rocks or other objects fall near the apparatus. The arms may be arranged in a spider-like pattern around the periphery of the pressure plate assembly to which it is pivotally attached. Two spaced electrical contact rings associated with the arms are closed when an object pivots one of the arms. This closure can then actuate the same transmitter the deformation plate could actuate which results in a fixed frequency warning signal being transmitted.

A series of the signals from several transmitters may be fed to a common receiver. By making each signal different and associating the physical location of a given transmitter with a given signal, the deformation that occurs at a given point may be readily segregated from the others. This allows the sending of a warning signal or other type signal to persons in the danger zone.

**3,826,129**  
**AUTOMOTIVE VEHICULAR DYNAMOMETER**  
 John W. Wiss, 3316 Brookdale Dr., Pittsburgh, Pa. 15241  
 Filed Aug. 15, 1972, Ser. No. 280,865  
 Int. Cl. G01l 5/13

U.S. Cl. 73-117

3 Claims



An improved testing machine for operating an automotive vehicle under power while it is standing still. This type of operation is desired in such endeavors as service diagnosis and measurement of exhaust emissions. In this device, power is absorbed by friction between the vehicle's driving wheels and a stationary dynamometer member. Overheating of the tire is prevented by inserting a fluid such as water or air at the juncture of the tire and dynamometer, or otherwise cooling the dynamometer absorption plate. Load may be adjusted by raising or lowering the vehicle, and measured as a vehicle thrust against the dynamometer. Speed may be measured from the motion of the driving wheel. Horsepower may be calculated automatically to provide a continuous presentation of speed and horsepower to the test operator. This vehicular dynamometer possesses many of the characteristics of the traction or drawbar dynamometers, except that the vehicle remains essentially stationary.

**3,826,130**  
**ELECTRO-MECHANICAL POWER OR PRESSURE**  
**MEASURING TRANSFORMER**  
 Gunter Pusch, Dilsberg, Germany, assignor to Industrie-Automation GmbH & Co., Korpitzring, Germany  
 Filed Sept. 18, 1972, Ser. No. 290,104  
 Claims priority, application Germany, Sept. 16, 1971, 2146339

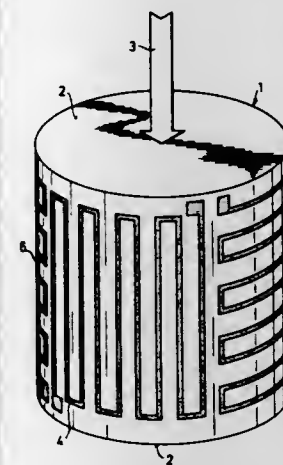
Int. Cl. G01l 5/00

U.S. Cl. 73-141 A

1 Claim

An electro mechanical power- or pressure-measuring-transformer with a body elastically deformable under the influence

of the value to be measured. The deformation of the body is transformed in corresponding electric values, wherein the proximity detectors, is continuously scanned transversely of a



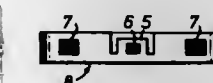
elastic deformable body comprises non-metallic, inorganic working material constituting a ceramic material.

**3,826,131**  
**DEVICE FOR MEASURING A DEFINED FORCE**  
**COMPONENT**  
 Gunter Pritschow, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany  
 Filed Oct. 2, 1972, Ser. No. 294,098  
 Claims priority, application Germany, Sept. 30, 1971, 2149438

Int. Cl. G01l 1/22

U.S. Cl. 73-141 A

2 Claims



A defined component of the force acting on a body is measured by wire strain gauges located in the path of the force component and providing the input for a bridge circuit. The strain gauges are located on a member which fits between the elements which create the force. This member also includes a region which is isolated from the force and which carries a device subjected to the same temperature as the strain gauges and connected in the bridge circuit to act as a temperature compensator which compensates for temperature variations experienced by the wire strain gauges.

**3,826,132**  
**DEVICE FOR PRODUCING A VISUAL DISPLAY OF THE**  
**TRANSVERSE TENSION PROFILE OF A MOVING STEEL**  
**STRIP**  
 Martin J. Fetner, and Glenn L. Hunsicker, both of Allentown, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

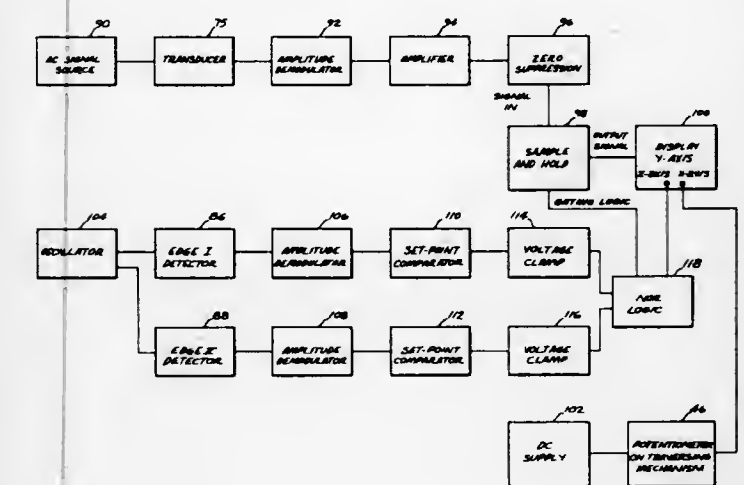
Filed June 1, 1973, Ser. No. 365,950

Int. Cl. G01l 5/10

U.S. Cl. 73-143

4 Claims

A traversing mechanism, carrying a transducer and two



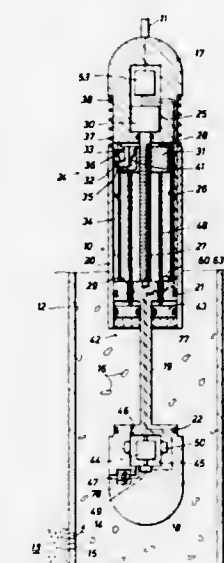
moving strip and produces a signal which is converted into a visual display indicative of the longitudinal tension in the strip.

**3,826,133**  
**APPARATUS FOR SAMPLING FLUIDS FLOWING IN A**  
**PRODUCTION WELL**  
 Yves Nicolas, Versailles, and Andre Landaud, Maisons Alford, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.  
 Continuation-in-part of Ser. No. 220,764, Jan. 26, 1972, abandoned. This application Nov. 15, 1972, Ser. No. 306,759  
 Claims priority, application France, Jan. 28, 1971, 71.02766

Int. Cl. E21b 47/00

U.S. Cl. 73-152

28 Claims



In the preferred embodiments of the invention disclosed herein, new and improved fluid-investigating tools adapted for positioning in a production well are respectively provided with a selectively closed chamber adapted to entrap a representative sample of the well fluids flowing past the tool so that the fluid phases of different densities will become segregated. The tools are uniquely arranged to provide surface signals which are representative of the density of the segregated fluid phases at discrete intervals in the sample chamber for determining the volumetric proportions and densities of the well fluids.



3,826,134

## ROTARY FLOW METER FOR WELLS

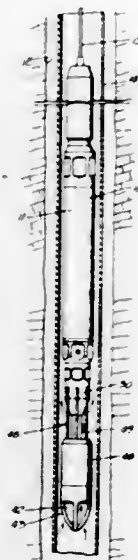
Leonidas C. Miller, 1321 Sombbrero Dr., Monterey Park, Calif. 91754

Filed Aug. 9, 1971, Ser. No. 169,944

Int. Cl. E21b 47/10

U.S. Cl. 73-155

7 Claims



A flow meter for measuring rate and direction of fluid flow at different elevations in a well employs a housing lowered into the well on a wire line. A vane rotor carried by the housing is contacted and caused to rotate by well fluid moving longitudinally in the well. A sealed chamber within the housing contains a speed reducer, a revolution counter or stepper and a recorder. The sealed chamber prevents well pressure from contacting these devices. One wall of the sealed chamber is formed as a hollow hemispherical dome of non-magnetic material, and a magnetic coupling operates across the dome to connect the rotor shaft to the input shaft of the speed reducer. In one form of the invention, the revolution counter or stepper turns the recorder drive shaft intermittently through a small arc and then returns it to its initial position. In another form of the invention, the recorder drive shaft is driven intermittently by the revolution counter through a small arc of travel but is not returned after each impulse to its initial position.

3,826,135

## SWINGING RAIN GAUGE

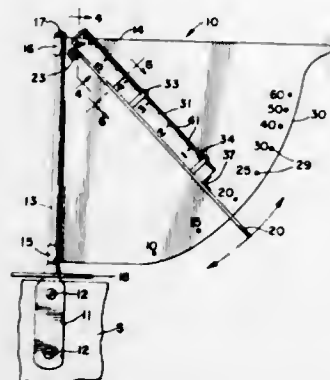
Elmer Hollmann, 618 E. Ashton, Grand Island, Nebr. 68801

Filed Mar. 30, 1973, Ser. No. 346,599

Int. Cl. G01w 1/14, 1/02

U.S. Cl. 73-171

6 Claims



A rain gauge which accurately measures rainfall regardless of the presence of wind, comprising a vertical support rod, a wind operated directional fin, said fin rotatably mounted on said rod for rotational movement responsive to the direction of wind, a wind operated rain gauge support pivotally con-

nected to said fin about a horizontal axis adjacent said rod and movable with said fin and pivotally movable about said horizontal axis responsive to the velocity of wind, and rain collecting receptacle means carried by the support and movable therewith for accurately collecting and measuring rainfall regardless of the presence or direction or velocity of wind.

3,826,136

## ANEMOMETER DEVICE

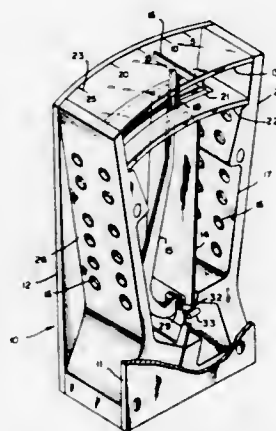
Nai-Chong Chang, 6 Robbin Hill Rd., Scarsdale, N.Y.

Filed June 7, 1972, Ser. No. 260,398

Int. Cl. G01p 5/04

U.S. Cl. 73-189

2 Claims



An anemometer device which utilizes a blade that is mounted within a case whereby it can rotate about a center which is pivotless. The case has holes therein for allowing air to enter and depart. The entering air moves the blade proportionately to the force the air is exerting against the blade, the force being the velocity of the air relative to the blade. The top of the case has markings corresponding to air speed and when the blade lines up with one of the markings the air speed can be determined. A maximum speed indicator moves with the blade but is biasedly attached to the case so that it remains at the maximum air speed indicated.

3,826,137

## METHOD FOR MEASURING THE RATE OF FLOWS OF LIQUIDS

Ellis Whiteside Clarke, 47 Deramare Dr., Belfast, England

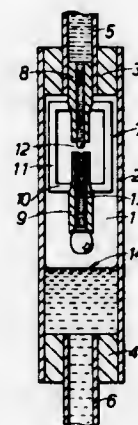
Filed May 31, 1972, Ser. No. 258,370

Claims priority, application Great Britain, June 2, 1971, 18518/71; Jan. 3, 1972, 31/72

Int. Cl. G01f 1/00

U.S. Cl. 73-194 R

6 Claims



A liquid flow rate is measured by forming the liquid into a stream of drops of a controlled size and counting the number of drops formed during a timed period. The drops are formed at an orifice and their size is controlled by providing a surface

3,826,140

## TEMPERATURE RECORDER

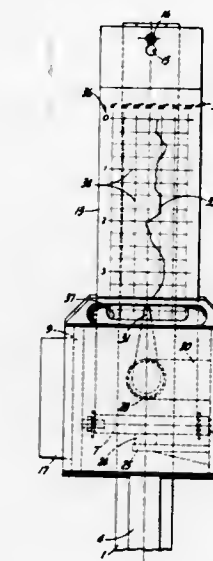
George Nakagawa, P.O. Box 4145, Modesto, Calif. 95353, and Bill Youmans, Box 875, Zephyr Cove, Nev. 89448

Filed July 23, 1973, Ser. No. 382,078

Int. Cl. G01k 1/02; G01d 9/12, 15/28

U.S. Cl. 73-343.5

13 Claims



A temperature recorder which produces a continuous graphic record, scribed on tape, of the temperature existing in an enclosure (such as a refrigerated railroad car) during a given period of time (e.g., the transit time of such a railroad car). The recorder comprises a guided, downwardly movable case—suspended by an upper-end anchored tape—which slowly gravitationally descends upon unwinding, under influence of the weight of said case and at a controlled rate, of the tape from a spool on such case, and the latter being fitted with a temperature-responsive device including a variably movable stylus which progressively scribes on the tape as the case so descends; the tape having a graph thereon which reflects the scribing in terms of temperature in relation to time.

3,826,141

## TEMPERATURE INDICATOR

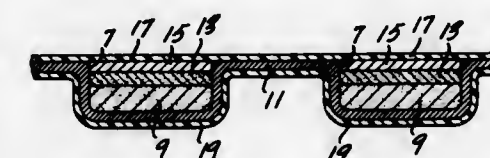
Charles G. Pickett, Andover, and Desh D. Chadha, Dover, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Division of Ser. No. 120,891, March 4, 1971, Pat. No. 3,704,985. This application Aug. 2, 1972, Ser. No. 277,065

Int. Cl. G01k 11/08, 11/12

U.S. Cl. 73-356

5 Claims



Temperature indicators are provided comprising a heat-conductive carrier having at least one, but preferably a plurality of regions (cavities) thereon, each region containing a thermally responsive substance which undergoes a change of state at a precise and predetermined temperature different from the temperature of the change of state of the thermally responsive substance in any other region. The temperatures at which such changes of state occur are detected visually by an indicator system which is intimately associated with the thermally responsive materials in these regions. The incorporation of certain organic compounds into the indicator system ac-

3,826,138

## THRUST BEARING

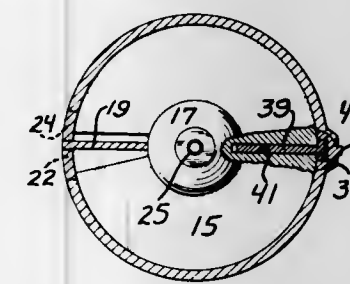
Howard E. Rittenhouse, Rogers, Ark., assignor to Crane Co., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,464

Int. Cl. G01f 3/08

U.S. Cl. 73-258

3 Claims



A thrust bearing insert positioned in a measuring chamber having an arcuate slot thereon adapted to receive and guide the thrust roller of a nutating disc when the disc is nutated by fluid passing through the meter.

3,826,139

## LIQUID LEVEL INDICATING APPARATUS

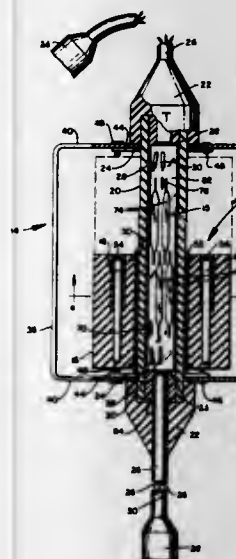
Albert J. Bachman, Bristol, Conn., assignor to DeLaval Turbine, Inc., Princeton, N.J.

Filed Mar. 19, 1973, Ser. No. 342,877

Int. Cl. G01f 23/10, 23/12

U.S. Cl. 73-311

14 Claims



A liquid level indicating apparatus provides remote digital indication of liquid level in a tank or the like and comprises a plurality of discrete liquid level indicating stations releasably mounted at vertically spaced intervals along a wall of the tank and connected together in electrical series by elongated flexible electrical conductors to define a voltage divider for transmitting electrical signals to a receiver or indicating meter. Each station has a float which carries permanent magnets and moves vertically between stops in response to a predetermined liquid level condition in the tank to operate a magnetically responsive tap switch, whereby to alter the effective electrical resistance of the voltage divider.



celerates visual detection of such change of state, thus permitting rapid measurement of the temperature corresponding to the incipient fusion of the thermally responsive material in each region.

3,826,142

## THERMOMETER PACKAGE

Berel Weinstein, Sparta, and Jimmie D. Scott, Parsippany, both of N.J., assignors to Bio-Medical Sciences Incorporated, Fairfield, N.J.

Filed Jan. 12, 1973, Ser. No. 323,301

Int. Cl. G01k 11/08

U.S. Cl. 73-356

6 Claims



There is disclosed a sterile thermometer and package for the same in which the thermometer is provided with shield components to maintain the thermometer operative temperature indicating component out of contact until the thermometer is required for use, with the thermometer further having a removal roller associated with the shield components and operative to facilitate the ease with which the shield components are removed from the thermometer concurrent with removal of the latter from the package envelope.

3,826,143

## FLUID PRESSURE TRANSDUCERS

Alan Thomas, Stratford-on-Avon, and Ronald Alfred Heath, Harborne, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

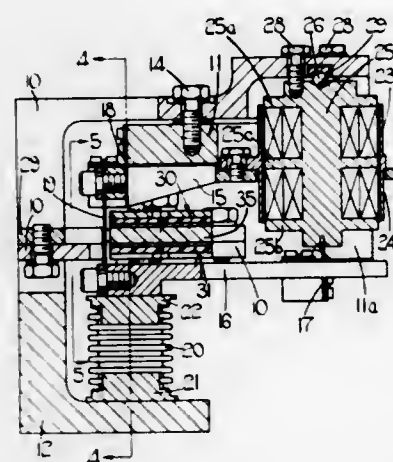
Filed Mar. 22, 1972, Ser. No. 237,024

Claims priority, application Great Britain, Mar. 26, 1971, 8218/71

Int. Cl. G011 9/12

U.S. Cl. 73-398 C

13 Claims

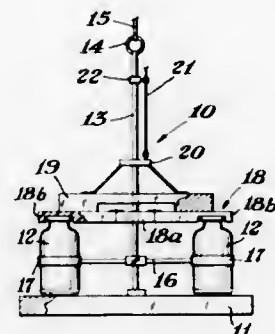


A fluid pressure transducer includes a body on which a bellows is mounted at one end. The other end of the bellows is connected to the free end of an elongated pivoted arm which guides the end of the bellows and prevents lateral displacement thereof. The free end of the arm is also connected to a displacement detector and by a flexible connector to an electromagnetic force applying device.

3,826,144  
APPARATUS FOR SAMPLING LIQUIDS  
Glenn R. Wessels, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.  
Filed June 25, 1973, Ser. No. 373,072  
Int. Cl. G01n 1/12

U.S. Cl. 73-425.4 R

6 Claims

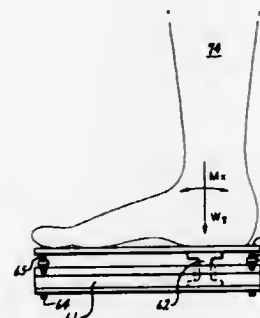


The apparatus disclosed herein is useful for collecting liquids, particularly water. A preferred form of the apparatus includes a platform, which supports one or more open-end containers. A rigid bar is positioned upright to the platform, and the lower end of the bar is fastened into the platform. A line is attached to a fastener ring at the top end of the bar. The line is used to raise and lower the unit into a liquid body to collect the sample in the containers. When the liquid fills each container, the apparatus is raised to the surface and a hinged closure assembly seals the open end of each container.

3,826,145  
ELECTRICAL ATAXIOMETER  
Keith H. McFarland, 13661 La Palma Rd., Los Altos Hills, Calif. 94022  
Filed Mar. 1, 1973, Ser. No. 336,914  
Int. Cl. A61b 5/00

U.S. Cl. 73-432 R

6 Claims



A device and accompanying instrumentation measures involuntary tremor and unsteadiness of the human body when standing in an erect position upon the device. Novel construction and combination produces highly accurate readings in spite of difference in weights and weight distribution of the subject. Correlated data makes possible studies revealing learning potentials, brain damage, neuro-muscular responses, effect of diet and drugs, and aids in evaluation of the treatment of related syndromes.

3,826,146  
METHOD AND APPARATUS FOR IMBALANCE DETERMINATION

Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG

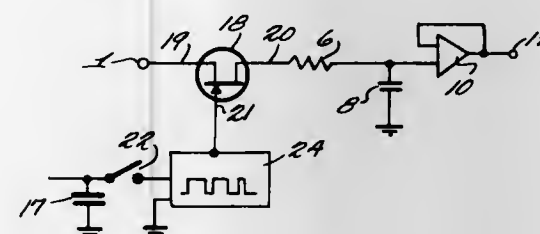
Filed June 19, 1973, Ser. No. 371,500

Claims priority, application Germany, July 28, 1972, 2237171

Int. Cl. G01m 1/22

U.S. Cl. 73-462

7 Claims



An improved method and apparatus for measuring imbalance of a rotary test body whereby the imbalance vector signal generated by a conventional wheel balance machine is split into rectified components and integrated to eliminate residual waves and interference frequencies, the integration time being extended with increasing measuring time. A logic element, for example, a field effect transistor, connected between the vector splitting circuit and integrator is alternately rendered conductive and non-conductive with the times of non-conductive increasing with respect to the times of conduction with increases in time.

3,826,147  
CONSTANT SPEED HYDRAULICALLY CONTROLLED TORIC TRANSMISSION WITH CONCENTRIC TWO PISTON VALVE AND GOVERNOR MEANS  
Raymond Sharpe, Mirfield, and James Christopher Herbert Triffitt, Baildon, both of England, assignors to Rotax Limited, Birmingham, England

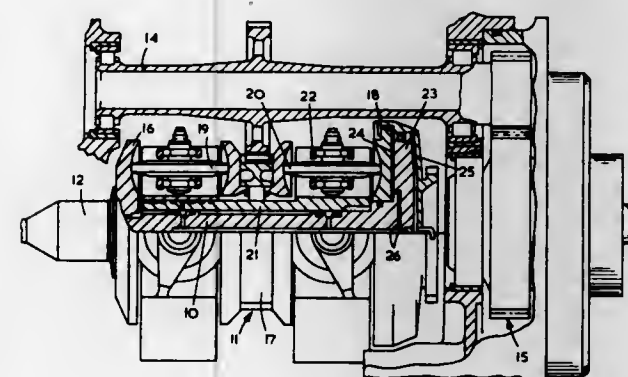
Filed July 27, 1972, Ser. No. 275,871

Claims priority, application Great Britain, July 27, 1971, 35322/71

Int. Cl. F16h 15/38

U.S. Cl. 74-200

5 Claims



A variable-ratio frictional drive gear comprises two axially spaced torus discs between which there is a set of circum-

ferentially spaced drive rollers in frictional rolling contact with toroidal surfaces on the discs. Each roller is rotatably mounted in a roller carriage which can tilt about an axis at right angles to the axis of rotation of the roller so as to vary the distances from the gear axis at which the roller engages respectively the two discs, thus varying the drive ratio of the gear. The variable ratio frictional drive gear further includes a first piston which is slidable in a second hollow piston under the influence of hydraulic fluid wherein axial movement of the first piston is arranged to effect tilting movement of the roller carriage. Means are also provided to reduce the pressure, which is, in use, applied to the first piston by the hydraulic fluid, such reduction occurring when the first piston reaches a predetermined axial position relative to the second piston. The latter is slidable in a cylinder under the influence of control fluid supplied by a governor, the control fluid being independent of the hydraulic fluid which influences the slidable movement of the first piston in the second piston.

3,826,148  
CONSTANT SPEED OUTPUT TORIC TRANSMISSION WITH HYDRAULIC CONTROLS CONSISTING OF A ROTATABLE SPIDER, AN ACTUATING VALVE AND GOVERNOR MEANS

George Maurice Martin Magill, Menston, England, assignor to Rotax Limited, Birmingham, England

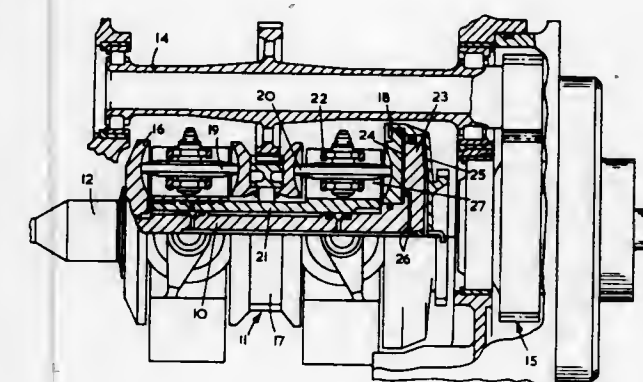
Filed July 27, 1972, Ser. No. 275,883

Claims priority, application Great Britain, July 27, 1971, 35323/71

Int. Cl. F16h 15/38

U.S. Cl. 74-200

4 Claims



A variable-ratio frictional drive gear comprises two axially spaced torus discs between which there is a set of circumferentially spaced drive rollers in frictional rolling contact with toroidal surfaces on the discs. Each roller is rotatably mounted in a roller carriage which can tilt about an axis at right angles to the axis of rotation of the roller so as to vary the distances from the gear axis at which the roller engages respectively the two discs, thus varying the drive ratio of the gear. The end portions of each roller carriage are slidably and rotatably supported by a support member whereby the roller carriages can be moved tangentially in order to control indirectly the ratio angle of the rollers. One end portion of each roller carriage has a piston which is slidable in a pressure cylinder in the support member and the other end portion has a guide portion slidable in a guide cylinder in the support member. The latter is mounted about a shaft to which the torus discs are rotatably connected, the support member being rotatable relative to the shaft and being urged, in use, against the valve member of a valve which is connected in an hydraulic control circuit arranged to control the tilting movement of the roller. The arrangement is such that the pressure exerted by the support member on the valve member is dependent upon the reaction force existing between the rollers and the torus discs so that an increase (decrease) in the pressure exerted by the support member and the valve member will cause an increase (decrease) of hydraulic fluid pressure in the control circuit.



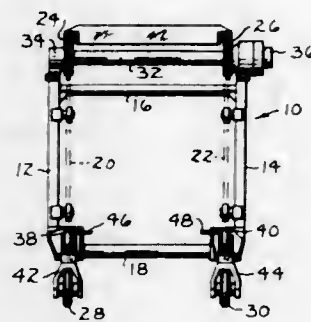
3,826,149

**SEMI-AUTOMATIC HYDRAULIC CHAIN ADJUSTER**  
Gary P. Freese, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1971, Ser. No. 211,320  
Int. Cl. F16h 7/12

U.S. Cl. 74-242.8

6 Claims



A system for adjusting an endless belt or chain is provided which either automatically or semiautomatically adjusts belt tension.

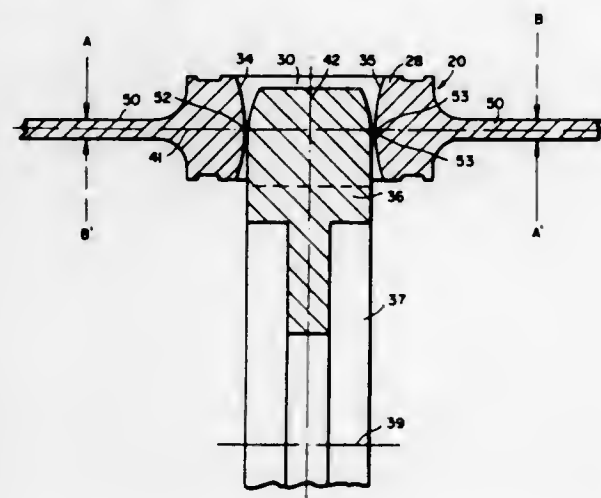
3,826,150

**LINK CONFIGURATION FOR DISTRIBUTION OF TRANSVERSE LOADS ON DRIVE AND DRAG CHAIN**  
Karl V. Palmer, Carmichael, Calif., assignor to KVP Company, Inc., Sacramento, Calif.

Filed May 8, 1972, Ser. No. 251,476  
Int. Cl. F16g 13/07

U.S. Cl. 74-250 R

4 Claims



Drive and drag chain links of novel configuration are disclosed. Specific link configurations including a recess or aperture having shaped side walls to enable distribution of transverse loads and reduce sprocket tooth insertion losses are described. A link configuration for providing bow chain action is disclosed.

3,826,151

**POWER TRAIN**

Erwin F. Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

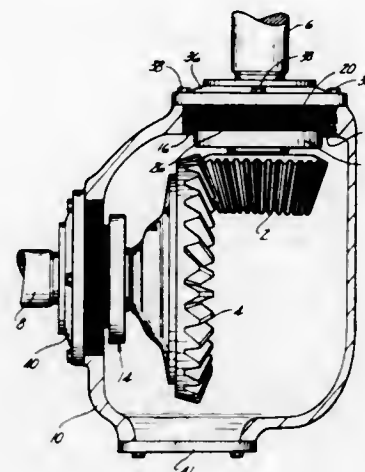
Filed Feb. 27, 1973, Ser. No. 336,293  
Int. Cl. F16h 35/08

U.S. Cl. 74-400

10 Claims

Bevel gears are adjustable as to prevailing torque, tooth load, and backlash. A bearing pod supporting a gear shaft is externally threaded and the gear case is internally threaded. An annular driver between the pod and the case carries

internal and external threads of different pitches but the same hand. Rotation of the annulus while pod and case are held stationary provides micro-adjustability of the associated



gear away from or toward the other gear to achieve the desired mesh as to backlash, tooth contact pattern, and prevailing torque.

3,826,152

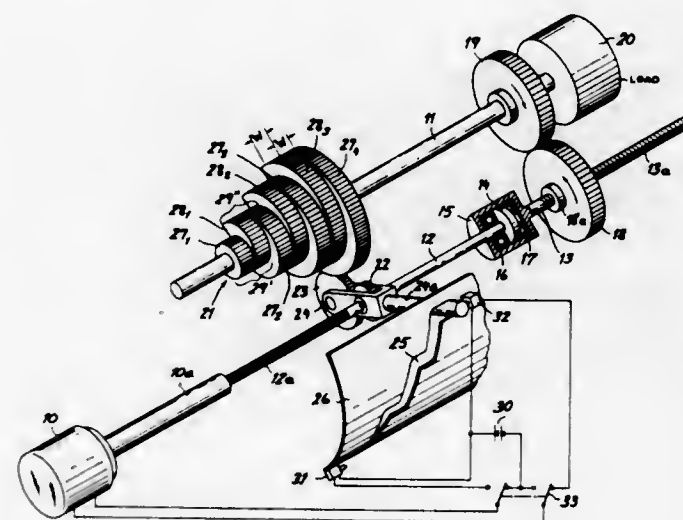
**VARIABLE-RATIO GEAR TRANSMISSION**

Kirill M. Alexeev, and Antonina Alexeev, both of 415 E. 52nd St., New York, N.Y. 10022

Filed May 11, 1973, Ser. No. 359,530  
Int. Cl. F16h 1/18

U.S. Cl. 74-424.5

10 Claims



A toothed body of generally conical shape, on an output shaft, is engaged by one of two constantly meshing pinions whose mate slides on a driven input shaft. The teeth of the body form several axially adjoining zones which may be successive turns of a helicoidal spiral, or a succession of coaxial arcuate shoulders of progressively increasing diameter separated by eccentric ramps of intermediate curvature. The two pinions are mounted on a carriage, swingable about the input shaft, with the off-axial pinion biased into permanent engagement with the toothed body. At least in the case of a helicoidally spiraling track, a worm drive coupled with the output shaft causes a continuous axial displacement of the carriage during rotation of the input shaft to provide a substantially continuously changing transmission ratio.

3,826,153

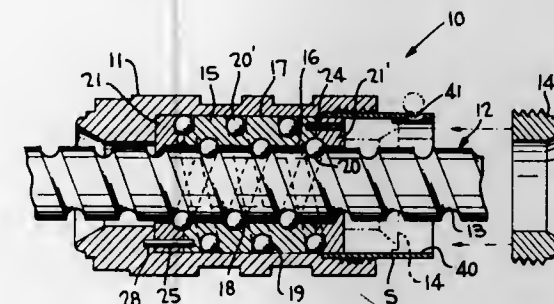
**BALL-SCREW MECHANISM**

Richard H. Sheppard, c/o R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Sept. 6, 1972, Ser. No. 286,695  
Int. Cl. F16h 55/04

U.S. Cl. 74-459

10 Claims



An easily machined ball-screw mechanism of compact design and characterized by improved smoothness of operation is disclosed. In the mechanism, a tubular nut is encased by an outer removable enclosing member and is operatively engaged with a screw member having a helical groove. The tubular nut has two helical guideways, one on the inner circumferential surface, in opposed relationship with said helical groove, and one in the return direction on the outer circumferential surface. A first set of bearing members is held captive between the inner helical guideway of the nut and the groove, and a second set is held captive in the outer guideway of said tubular nut by the enclosing member. Separate transfer discs positioned at each end of the tubular nut have an open grooved ramp spiraling from cooperative adjacency with the inner guideway to the outer guideway to transfer bearing members between said first and second sets. A sleeve adapted to mate with the enclosing member and the nut assist in loading the bearing members.

3,826,154

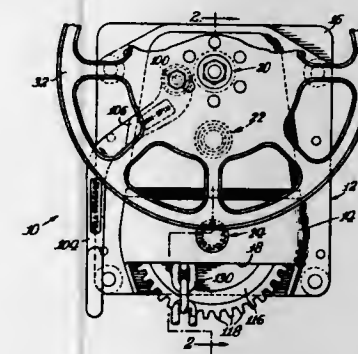
**MEANS FOR CONTROLLING CHAIN TAKE-UP IN A HAND BRAKE MECHANISM**

Ulo Motus, Hinsdale, and Richard C. Hammarlund, Clarendon Hills, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

Filed Aug. 7, 1972, Ser. No. 278,188  
Int. Cl. G05g 1/08; F16h 57/10

U.S. Cl. 74-505

7 Claims



A hand brake mechanism having a rotatable operating spindle, a rotatable pinion adapted to be coupled to the operating spindle, and a rotatable winding drum unit including a gear meshing with the pinion and a drum upon which brake chain may be wound. The pinion has a plurality of standard teeth of uniform face width and at least one special tooth with a lateral extension portion, the gear has a plurality of teeth with stop means intermediate at least two adjacent of the teeth at the ends thereof, and the lateral extension portion of the special tooth of the pinion is engageable with the stop means to

prevent interengagement of the special tooth between the two adjacent teeth of the gear whereby to limit rotation of the winding drum unit.

3,826,155

**LIGHTWEIGHT LEVER FOR HIGH MECHANICAL STRESSING**

Jochen Muller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

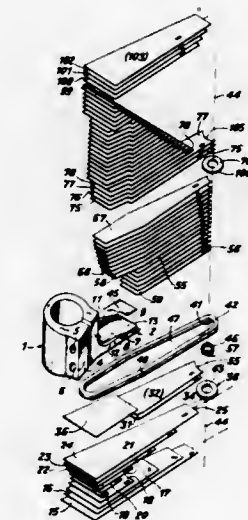
Filed May 9, 1973, Ser. No. 358,818

Claims priority, application Switzerland, May 12, 1972, 007030/72

Int. Cl. G05g 1/04; D03d 49/38; C09j 5/06

U.S. Cl. 74-519

21 Claims



The lever is constructed of a hub and a lever arm of composite structure which is secured to the hub. The lever arm is made of one or more strips of resin-impregnated carbon fibers cut from a board of like material. The boards are commercially prepolymerized to a predetermined extent. In addition, a loop of carbon fibers can also be used with the strips to form the lever arm. The arm is secured to the hub by a pressing and curing operation or is secured in place by an overlying cover.

3,826,156

**SECURED AIR RESERVE SYSTEM**

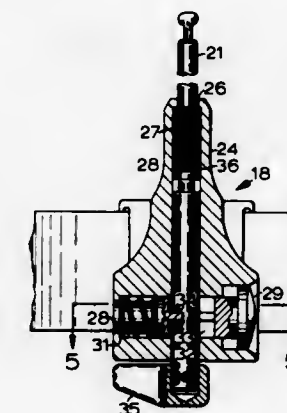
Thomas F. Dornaus, 12450 Lakewood Blvd., Apt. 316, Downey, Calif. 90242

Filed Mar. 19, 1973, Ser. No. 342,559

Int. Cl. G05g 5/06

U.S. Cl. 74-527

6 Claims

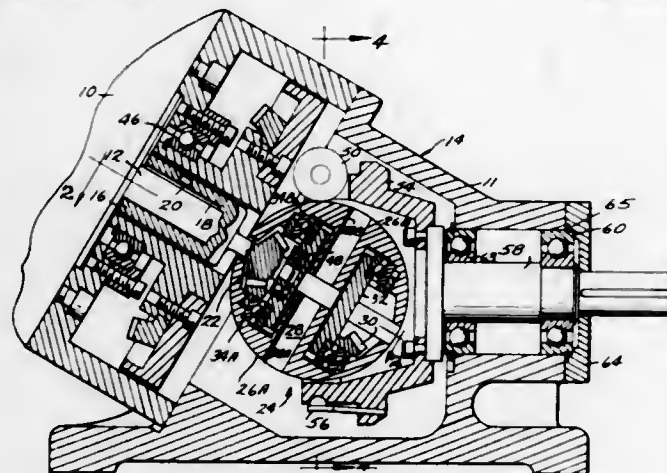


In combination with a self-contained underwater breathing apparatus that has a 2-position valve on an air tank to allow the diver to convert to his reserve supply by flipping the valve



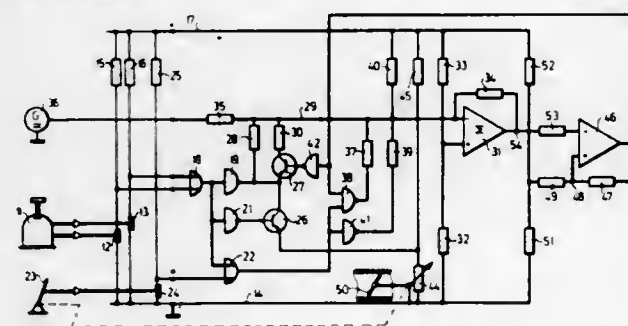
to an alternate position, there is provided a shaft and tube means wherein the shaft is fixed to the valve actuator. The means is locked in a first position. By twisting the shaft, a lock is disengaged and the shaft is free to slide axially under the influence of a compression spring to actuate the valve to its alternate position.

**3,826,157**  
**ROLLER/BALL TRANSMISSION**  
Charles C. Stoll, Rt. 1, Selbyville, Del. 19975  
Filed Aug. 11, 1972, Ser. No. 279,773  
Int. Cl. F16h 15/26  
U.S. Cl. 74—198



A power transmission including an input power source having an input shaft, a sphere connected through a gear system to the input shaft so as to rotate about its own axis when the input shaft is rotating, the axis of the sphere being in a plane perpendicular to the axis of the input shaft, and a control mechanism associated with the sphere for adjusting the orientation of the sphere's axis within the plane referred to. The transmission further includes an output spider, or ring including a plurality of rollers frictionally engaging the sphere, and therethrough transmitting a portion of the motion of the sphere to the output shaft which is attached to the spider. By controlling the orientation of the rotational axis of the sphere, the relative speeds of the spider and the sphere may be varied, and therefore the speed of the output shaft may be varied with respect to that of the input shaft. A loading device is provided to retain the axis of the sphere in a desired position but is set to release upon a high output torque so as to prevent scoring between the rollers and the surface of the sphere.

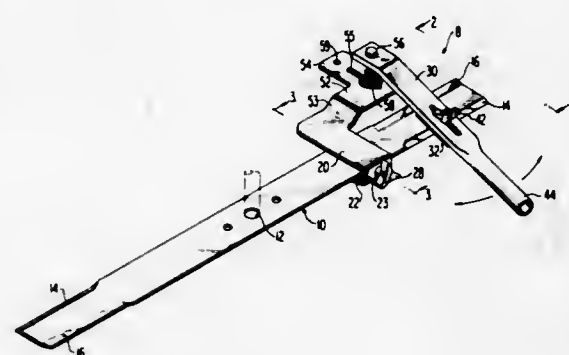
**3,826,158**  
**ELECTRONIC SHIFT COMMAND SYSTEM FOR MOTOR VEHICLE AUTOMATIC TRANSMISSION**  
Ulrich Flaig, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany  
Filed Oct. 19, 1972, Ser. No. 298,986  
Claims priority, application Germany, Jan. 5, 1972, 2200409  
Int. Cl. B60k 21/00; F16h 3/74  
U.S. Cl. 74—866



A Schmitt trigger circuit, the switching of which is used to command shifting of an automatic transmission from one gear

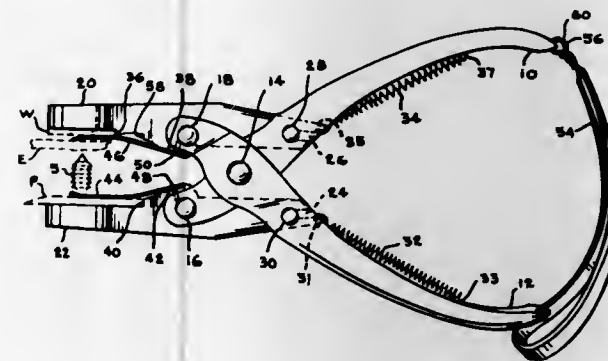
to another or back again, is driven by a summing amplifier responsive to a voltage proportional to vehicle speed, to a voltage inversely proportional to motor loading as indicated by the position of the throttle and also to two-valued conditions related to actuation of a kickdown switch and of a shift range limiting selector switch. The circuit design and logic is such that with the Schmitt trigger operating at fixed switching thresholds, the vehicle speed of no load upshift, full load upshift, kickdown upshift, no load downshift, full load downshift and kickdown downshift can be respectively determined by the independent choice of value for individual resistors in the circuit. When more than one shift stage is involved summing amplifiers and Schmitt triggers must be duplicated, but a common speed signal source and a common load signal source may be used.

**3,826,159**  
**SHARPENER ATTACHMENT FOR LAWN MOWER BLADE**  
Lloyd W. Otto, Springfield, Mo., assignor to O-Max Industries, Inc., Springfield, Mo.  
Continuation-in-part of Ser. No. 220,874, Jan. 26, 1972, Pat. No. 3,730,023. This application Feb. 13, 1973, Ser. No. 331,731  
Int. Cl. B24b 3/36  
U.S. Cl. 76—82



For sharpening a rotary lawn mower blade of the type which moves in a horizontal plane while cutting grass clippings or the like, an attachment device for sharpening the blade when not in use; the device including a main frame which is secured to the lawn mower blade radially inwardly from the cutting edge of the latter. The main frame extends across the blade beyond the rear or trailing edge of the blade where it then extends radially outwardly in a plane offset above the plane of the blade where it terminates rearwardly of the cutting edge of the blade to be sharpened. The offset in the main frame permits attachment to conventional blades which have formed on their trailing edges, upwardly extending vanes for purposes of creating a vacuum effect during cutting. The blade cutting edge is sharpened by means of a file insert removably held in an elongated holder arm pivotally mounted to the offset portion of the main frame so that it may be oscillated to engage the file along the cutting edge of the blade to sharpen the same. The file holder arm is spring mounted to the frame by means of a bolt and slot permitting adjustment of the arm relative to the frame. Similarly through means of an elongated slot in the arm file insert may be adjusted along the latter. If desired, a brace in the form of a bolt may be attached to the offset portion of the main frame to engage the lawn mower housing to further secure the main frame against movement during a sharpening operation.

**3,826,160**  
**EAR TAG CLAMPING TOOL**  
Eulalie H. Allen, 2725 S. Kingsbury Ave., Forth Worth, 76118; Earnest R. Allen, 1605 Phelps, Rt. 3, Seagoville, 75159, and Linwood W. Dickerson, P. O. Box 1133, La Porte, all of Tex. 77571  
Filed Oct. 11, 1973, Ser. No. 405,273  
Int. Cl. B25b 7/00, 7/02  
U.S. Cl. 81—5.1 R



The invention starts with a pair of parallel jaw pliers of the type having a pair of handles articulated from a common pivot and having distal portions extending beyond the common pivot. Each of a pair of parallel jaws is pivotally attached to one of the distal ends of the handles about midway along the length of the jaw. The proximal end of each jaw, that extending toward the hand-held body of the handles, is connected to the one of the handles to which it is not pivotally attached by a slot-and-pin arrangement, this structure insuring that the jaws will remain parallel to each other as they are forced closer together by squeezing the handles. The distal ends of the jaws are left free, and are modified in accordance with the invention.

The minimum modification is to slot one of the jaws and to attach a spring clip to the second. The slot is formed from the distal extremity and extends along the length of the jaw to terminate in a blind end, its purpose being to receive a shaft or stud member extending from an ear tag held in the second jaw, as the jaws are closed together, and then to permit withdrawal of the tool from the tag as attached to an animal's ear. The spring clip is secured to the inner surface of the second jaw, i.e., the surface facing a corresponding inner surface of the first jaw. Only the end closer to the pivot point of the handles is secured to the jaw, the balance of the spring clip extending toward the distal end of the jaw and, in relaxed position, touching or lying close to the jaw. As the base plate of an ear tag is slipped between jaw and spring clip, the spring clip exerts a clamping force on the plate to hold it in place.

Further modifications include providing a similar spring clip on the first jaw to hold either a washer or a plate in such position that a hole therethrough is aligned with the shaft of the ear tag. In addition, the inner surface of either or both jaws may be notched to seat the member secured by the spring clip in aligned position.

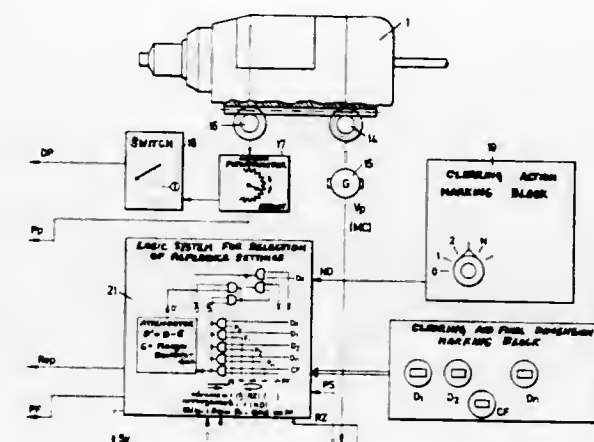
**3,826,161**  
**MOVEMENT CONTROL DEVICE FOR A SINGLE OR MULTI-SPINDLE DEVICE ON AN AUTOMATIC LOOSE-HEAD MACHINE TOOL**

Jean-Claude Simonin, Moutier, and Jean-Daniel Badoux, Nyon, both of Switzerland, assignors to Fabrique de Machines Andre Bechler S. A., Moutier/BE, Switzerland  
Filed Sept. 28, 1972, Ser. No. 293,161

Claims priority, application Switzerland, Oct. 1, 1971, 14295/71

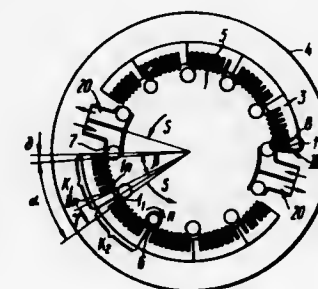
Int. Cl. B23b 3/00, 3/34  
U.S. Cl. 82—2 B  
A movement control device for a single or multi-spindle device on an automatic loose-head machine tool. The

machine tool comprises a mobile headstock for carrying a workpiece, a main camshaft for controlling the movement of the headstock, and tool means for carrying out first machining operations on said workpiece. The single or multi-spindle device is arranged facing the headstock for carrying out second machining operations on the workpiece simultane-



ously with the first machining operations and comprising fluid pressure-or electrically operated drive means to move the spindles axially. The movement control device comprises electrical control means for controlling the drive means so that in operation the axial displacement of each spindle is a function of both the speed of displacement and the position of the headstock.

**3,826,162**  
**MULTISPINDLE AUTOMATIC MACHINE TOOL**  
Grigor Arutjunovich Shaumian, Ananlevsky pereulok 5, kv. 63, Moscow, U.S.S.R.  
Filed June 29, 1973, Ser. No. 374,953  
Int. Cl. B23b 9/06  
U.S. Cl. 82—3



Article-supporting spindles rotatable at a cutting speed from the main drive are mounted on a rotor associated with an angular feed drive and uniformly angularly spaced on this rotor. The cutters associated with radial abutments are mounted in cutter blocks rigidly mounted on the framework of the machine tool and are also uniformly angularly spaced about the rotor. The angular spacing of the spindles is different from the angular spacing of the cutters by a value which is a multiple of the ratio of the angle of engagement of the cutter with an article at working of the latter to the number of the



cutter blocks, whereby in operation of the machine tool the angular feed of the rotor brings successive articles into contact with the cutters in sequential fashion.

The multispindle machine tool can be successfully employed for working various articles shaped as bodies of rotation, where requirements as to the accuracy of the size and shape of the articles, as well as to their surface finish are particularly strict.

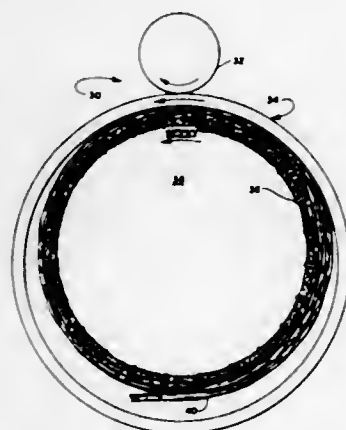
**3,826,163**  
**METHOD FOR APPLYING PRESSURE IN CUTTING ELONGATED FLEXIBLE MATERIAL INTO PREDETERMINED SHORTER LENGTHS, AND APPARATUS FOR PRACTICING THE IMPROVED METHOD**

Albert E. Spaller, Jr., Johnson City, and Bruce W. Stockbridge, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1973, Ser. No. 376,490  
Int. Cl. D01g 1/04

U.S. Cl. 83—18

16 Claims



Improved method for applying pressure in cutting elongated flexible material in the manner by which cutting occurs in the Keith U.S. Pat. No. 3,485,120 and the Coffin et al. U.S. Pat. No. 3,557,648, and to apparatus for practicing the method. The elongated flexible material is continuously wrapped in successive radially outwardly disposed layers around a circular cutter assembly having a plurality of knives spaced around the cutter assembly with the knife edges facing radially outwardly and with the innermost layer of material positioned in contact with the knife edges. The improved method involves applying against and over an arcuate surface portion of the continuously forming outer layer of material pressure distributed over an arc eccentric to and of greater radius than the radius of the arcuate surface portion. The apparatus for practicing the method preferably involves the use of a pressure ring encircling the layers of material wrapped around the cutter assembly and having a greater diameter than the wrapped layers, and eccentrically displacing the pressure ring relative to the cutter assembly.

**3,826,164**  
**PANEL CUTTING METHOD AND APPARATUS**  
James W. Campbell, Fort Worth, Tex., assignor to Wetoma Corporation, Ft. Worth, Tex.

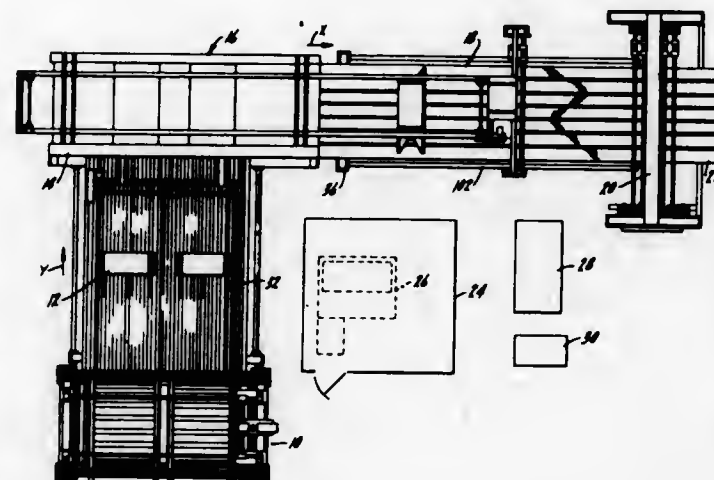
Filed Nov. 15, 1972, Ser. No. 306,935  
Int. Cl. B26d 7/06

U.S. Cl. 83—23

25 Claims

This is a method and apparatus for cutting accurately sized panels, for example, from sheets of particleboard, hardboard, fiberboard, plywood, plastics and other panel material, to be used in furniture making, home building, cabinets, etc. The

method and apparatus are concerned with improving the speed and efficiency of existing machines and include what is



referred to as cascade gauging on a machine with either one or two axis of movement.

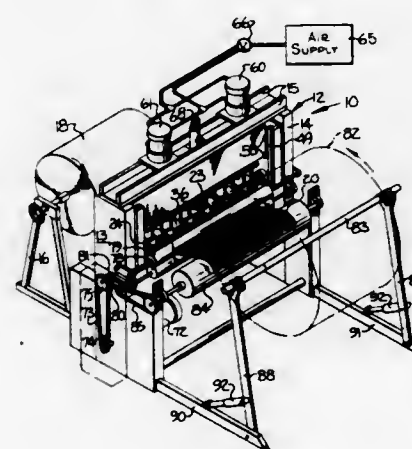
**3,826,165**  
**APPARATUS FOR PROCESSING FOAM SHEET MATERIAL**

Grover C. Currie, Lenoir, and Brendan L. Doll, Patterson, both of N.C., assignors to Celu Products Company, Patterson, N.C.

Filed Mar. 22, 1973, Ser. No. 343,678  
Int. Cl. B26d 3/00; B26f 1/20

U.S. Cl. 83—110

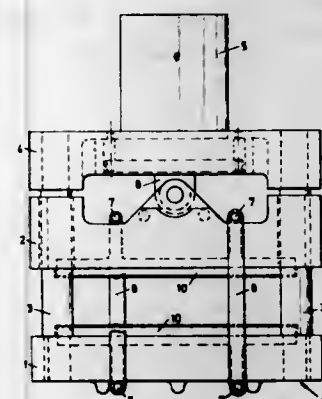
17 Claims



An apparatus for slitting and opening elongate foam sheet material or the like to form an open, net-like, cushioning material. The apparatus includes slitting means comprising a pair of cylindrical rolls forming a nip therebetween through which the advancing sheet material passes. One of the rolls has a plurality of axially extending rows of spaced cutting blades on the surface thereof, the rows extending along a small helix angle with respect to the axis of the roll. The blades of adjacent rows are staggered, and a pair of drawing rolls are positioned immediately downstream of the slitting means to open the incisions and thereby insure that the advancing sheet will not be retained by the cutting blades.

**3,826,166**  
**TIRE SHREDDING MACHINE**  
Norman Hemmings, Compton Abbas, Shaftesbury, Dorset, England  
Filed Oct. 25, 1972, Ser. No. 300,802  
Claims priority, application Great Britain, Oct. 27, 1971, 50023/71; Mar. 17, 1972, 12601/72; July 14, 1972, 33002/72  
Int. Cl. B26d 7/18; B29h 19/00  
U.S. Cl. 83—132

3 Claims



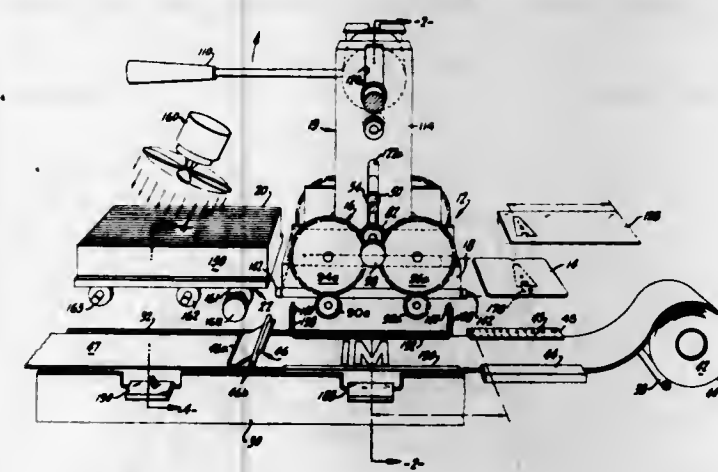
A tire shredding machine comprises a pair of relatively reciprocable platens formed with complimentary sets of guillotine-type blades. An hydraulic ram is provided for operating the platens and the machine has an ejector mechanism for expelling shredded material from between the blades.

**3,826,167**  
**SIGN FORMING APPARATUS, METHOD AND DIE FOR USE THEREIN**  
Pierre A. Pelet, Mill Valley; Bernard Bouyssounouse, Palo Alto, and Fritz Haas, Concord, all of Calif., assignors to PST Company, Sausalito, Calif.

Filed May 19, 1972, Ser. No. 255,243  
Int. Cl. B26d 7/10

U.S. Cl. 83—171

25 Claims

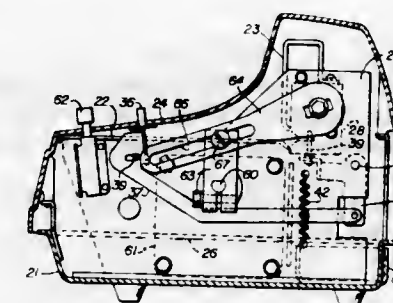


A die heating station is supported for movement between a ready position and a cutting position. In the cutting position a die is brought into contact with a sheet of thermoplastic material supported on a carrier having a suitable cutting pad against which the die can bear to cut a letter of a word. A die cooling station receives each die after the cutting operation and cools it to an operator-handleable temperature. A particular die structure is used which facilitates rapid heating and cooling of the die while retaining the necessary thermal properties for cutting thermoplastic sheet material. A procedure and guide is provided for accurately spacing adjacent letters of the word being cut.

924 O.G.—45

**3,826,168**  
**POWER-OPERATED, MULTI-DIE PUNCH**  
Charles T. Grosz, III, Los Altos, and Danilo P. Buan, Pleasanton, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.  
Filed June 14, 1973, Ser. No. 370,048  
Int. Cl. B26d 5/20  
U.S. Cl. 83—203

6 Claims

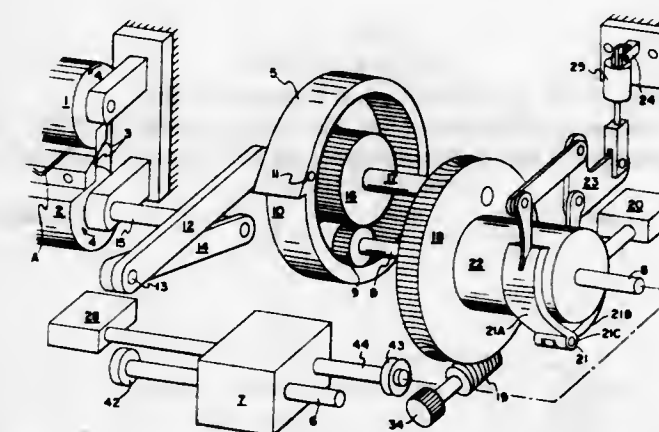


To punch paper and other sheet material a short distance inward of one margin with a plurality of small-diameter holes, a motor-driven punch machine is provided. Paper is deposited on a platen and squared with an adjustable side edge guide and is also squared with retractable pins a short distance forward of the back of the punch throat. The pins, when retracted, permit the paper to be inserted a greater distance in the punch so that the holes are a greater distance from said one margin than when the pins are projected. The motor, which turns through one cycle of the punch, rotates a crank which oscillates a lever attached to a splined main shaft. Each punch die is formed on the lower end of a generally cylindrical member formed with rack teeth meshing with the splines of the main shaft. When the lever oscillates, it oscillates the main shaft, depressing the punch dies across a throat in which the paper to be punched is inserted.

**3,826,169**  
**CUT-OFF KNIFE FOR CORRUGATORS**  
Gunter Schnell, Bochum, and Klaus Albert Hohage, Hattingen (Ruhr), both of Germany, assignors to Koppers Company, Inc., Pittsburgh, Pa.  
Filed Aug. 3, 1973, Ser. No. 385,287  
Int. Cl. B26d 1/40

U.S. Cl. 83—324

7 Claims



A cut-off knife for corrugators with at least one rotating knife bar for subdividing a web into sheets to which driving rotary motion is provided by a variable adjustable speed control gear and by a subsequently connected differential gear wherein the adjusting mechanisms of the speed control gear and the differential gear are not mechanically connected with one another. The control range of the speed control gear is subdivided into individual sections with each section producing a nominal-value signal; the differential gear is adjusted to



provide an actual-value signal for each adjustment. The difference between the nominal and the actual value signals form an output signal that controls the adjustment of the differential gear until the actual-value signal matches the nominal-value signal. The adjustment of the differential gear is preferably automatically controlled with the aid of the difference between the nominal-value signal and the actual-value signal so that the knife speed can be conformed to the speed of the web of material during operation.

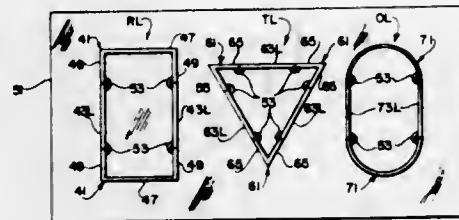
3,826,170

**APPARATUS FOR CUTTING SHEET MATERIAL**  
Charles V. Jones, James W. Alvey, and Charles H. Sawborn, III, all of Brookhaven, Mich., assignors to Kellwood Company, St. Louis, Mo.

Filed July 18, 1972, Ser. No. 272,768  
Int. Cl. B26f 1/46; B26d 7/26

U.S. Cl. 83-657

4 Claims



A cutting blade system for cutting sheet material into pieces of generally the same contour but of different sizes, especially useful in the manufacture of apparel for cutting cloth into pieces to be sewn together into garments. The system involves a set of primary cutting blade segments common to all sizes of a piece of given contour or pattern to be cut out of the sheet material and a set of auxiliary cutting blade segments additive to (or subtractive from) the primary segments to constitute cutting blade assemblies of different sizes in the stated contour or pattern. The segments are made of steel rule die stock, are releasably held together in assembly, and assemblies of segments in various patterns are utilized in a hydraulic press for die-cutting through one or more layers of material in the press. The press may have an electromagnetic head for magnetically gripping the assemblies for the cutting operation, and for quickly releasing them after the cutting operation, whereupon the assemblies may be disassembled and the primary segments reassembled with auxiliary segments in a different size.

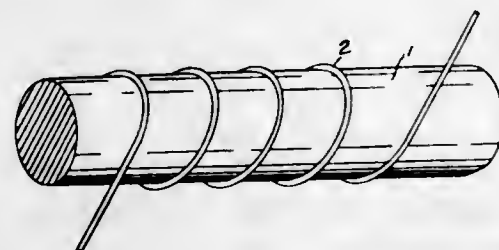
3,826,171

**GUITAR STRING**

James L. Kaar, 519 Ellis St., San Francisco, Calif.  
Continuation-in-part of Ser. No. 29,841, April 20, 1970, abandoned. This application Sept. 30, 1971, Ser. No. 185,281  
Int. Cl. G10d 3/00

U.S. Cl. 84-297 S

2 Claims



A classic guitar string made of a synthetic plastic material, such as polyester fibers, with minimum possible stretch so as not to go out of tune, combined with a magnetic material, such as iron oxide, to permit the use of a magnetic pick-up for an amplifier, which picks up the magnetic vibrations only. In one

form fine resilient iron wire is wound in close coil around Dacron fibres so that all the tension remains at all times on the fibres of the string and none of the tension on the fibres is taken up by the coil.

3,826,172

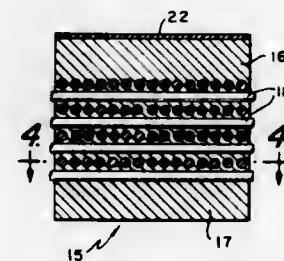
**METAL, MATRIX-FIBER COMPOSITE ARMOR**

Thomas J. Dawson, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1969, Ser. No. 846,314  
Int. Cl. F41h 5/04

U.S. Cl. 89-36 A

2 Claims



A high strength lightweight armor material consisting of metal composites strengthened by high density wire, fiber, or whisker elements, and which is particularly effective against more sophisticated weapons such as shaped charges and tungsten cored projectiles.

3,826,173

**METHOD AND APPARATUS FOR CUTTING WORM WHEELS**

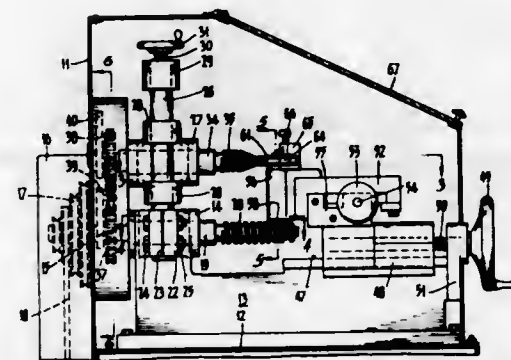
Langford Horace Waite, 3213 Napcan Hwy., Sorrento, Victoria, Australia

Filed Aug. 16, 1972, Ser. No. 280,951  
Claims priority, application Australia, Sept. 3, 1971, 6157/71

U.S. Cl. 90-4

Int. Cl. B23f 11/00

5 Claims



Worm wheels are formed from cylindrical blanks mounted on opposite sides of a cutter in the shape of a worm with a tapered end fluted to provide cutting edges. The cylindrical blanks are keyed or splined on parallel shafts fixed to corresponding worm wheels engaging on opposite sides of a worm. The cutter and the worm are driven concurrently and the cutter is advanced between the cylindrical blanks to cut teeth in the peripheral surfaces thereof.

3,826,174

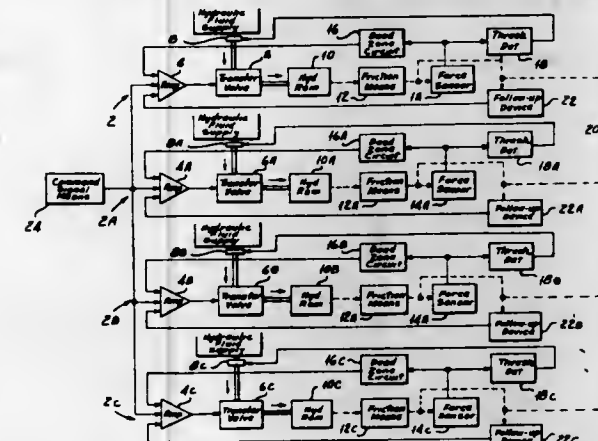
**QUADRUPLE REDUNDANT CLOSED LOOP ELECTRO-HYDRAULIC SERVO SYSTEM**

Walter A. Platt, Fair Lawn, N.J., and Gibson Reynolds, Tuxedo Park, N.Y., assignors to The Bendix Corporation, Teterboro, N.J.

Continuation-in-part of Ser. No. 120,522, March 3, 1971, abandoned. This application Nov. 15, 1972, Ser. No. 306,768  
Int. Cl. F15b 9/03, 9/09

U.S. Cl. 91-363 A

3 Claims



A quadruple redundant closed loop electro-hydraulic servo system which is operable for two failures and passive for a third failure includes force summing apparatus and means for alleviating sensitivity of said apparatus to channel-to-channel tolerances.

3,826,175

**BRAKE BOOSTER**

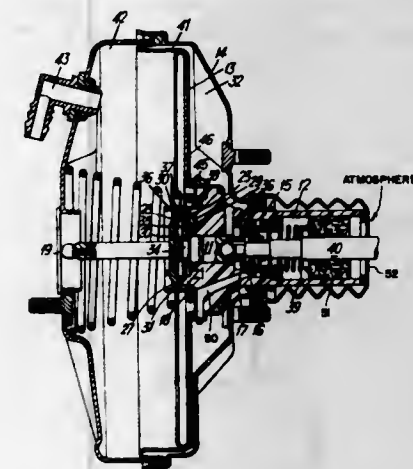
Rudolf Thiel, and Armin Lauterwasser, both of Frankfurt am/Main, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,465  
Claims priority, application Germany, Nov. 5, 1971, 2155169

U.S. Cl. 91-369 B

Int. Cl. F15b 9/10

19 Claims



This relates to a pneumatic brake booster and more particularly to the reaction mechanism which controls the application of the mechanical force (brake pedal force) and pneumatic servo-force to the output push rod which in turn operates on the brake pressure medium. The reaction mechanism includes specially designed reaction segments, a reaction ring and a supporting disc all of which are supported in such a way on an end of the control piston adjacent the output push rod that assembly is easy and force ratios can be easily changed.

3,826,176

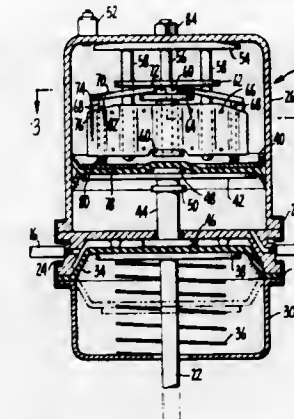
**VEHICLE BRAKE**

Ernest C. Ike, Santa Rosa, Calif., assignor to Wiz Corporation, Concord, Calif.

Continuation of Ser. No. 73,711, Sept. 21, 1970, abandoned.  
This application June 28, 1972, Ser. No. 267,311  
Int. Cl. F15b 15/26

U.S. Cl. 92-25

5 Claims



A captive air brake for vehicles adapted to be used as a parking brake for trucks having a mechanical lock for holding the brake in a brake applied position after the energy for application of the brake has been supplied by a captive body of fluid under pressure.

3,826,177

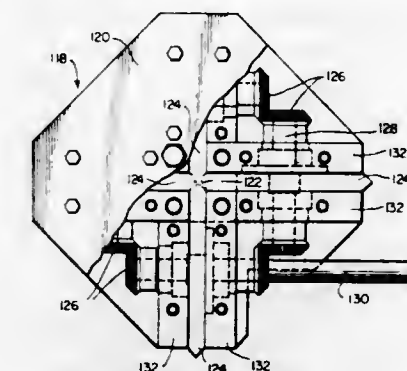
**APPARATUS FOR MAKING FILTER MEANS**

Richard M. Berger, Richmond, and Elwin W. Brooks, Mechanicsville, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 290,700, Sept. 20, 1972, Pat. No. 3,774,508, which is a division of Ser. No. 45,109, June 10, 1970, Pat. No. 3,637,447, which is a continuation-in-part of Ser. Nos. 727,477, May 8, 1968, Pat. No. 3,533,416, and Ser. No. 820,355, April 30, 1969, Pat. No. 3,599,646, which is a continuation-in-part of Ser. No. 727,477. This application Apr. 11, 1973, Ser. No. 350,019  
Int. Cl. A24c 5/50

U.S. Cl. 93-1 C

4 Claims



An apparatus for making filter means of a type which is constructed to provide elongated, high surface area, cavities defined on opposite sides of a relatively thin wall formed of filtering material with only the ends of the filter means contacting an overwrapped outertube thereby presenting maximum available surface area of the material from which the products are formed to the smoke for filtration is disclosed. A tow of a suitable filtering material is passed through an air nozzle containing a mandrel centered therein, the two thereby achieving a uniformly random, but tubular, configuration and then through a steam curing station followed by an air curing station. The formed rod is then again steam cured and passes to a



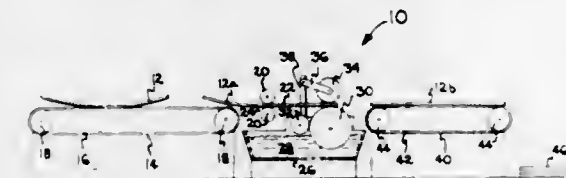
crimping device which imparts a particular configuration thereto. The crimped rod is then again air cured, wrapped, and cut. In another embodiment, an additional material may be added by means either of a printing applicator device or a pulsating nozzle device.

### 3,826,178 REMOVAL OF WARP FROM CORRUGATED PAPERBOARD

Larry D. Taylor, Circleville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio  
Division of Ser. No. 244,450, April 17, 1972, abandoned. This application June 7, 1973, Ser. No. 367,698  
Int. Cl. B31f 7/00

U.S. Cl. 93-1 R

1 Claim



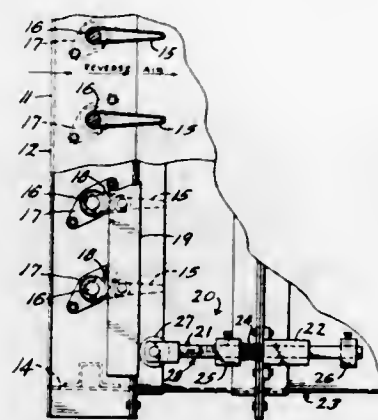
A new method and apparatus is provided by this invention for removing the warp from warped sheets of corrugated paperboard in corrugated box plants. In accordance with this invention, water is applied to the convex side of a warped sheet of corrugated paperboard as the sheet leaves a corrugator. As this wetted convex side of the paperboard sheet dries, the fibers shrink to a greater extent than they had originally thereby pulling the sheet to a non-warped, flat condition. Thus, by removing the warp from the warped corrugated paperboard, this board can be utilized as acceptable quality board rather than being scrapped as was previously necessary.

### 3,826,179 DIFFERENTIAL PRESSURE RESPONSIVE DAMPER

Raymond L. Alley, Toledo, Ohio, assignor to The American Warming & Ventilating, Inc., Toledo, Ohio  
Filed Oct. 20, 1972, Ser. No. 299,625  
Int. Cl. F24f 13/02

U.S. Cl. 98-40 V M

4 Claims



A damper comprising a plurality of parallel blades that are hinged on parallel axes and normally are opened in one direction by positive air pressure on a first side of the blades, for example, by the flow of air from an exhaust fan or the like. The damper blades are connected by linkage so that they swing together. The damper has a biased stop against which the blades close when the pressure differential between the two sides of the blades is negligible. When the pressure on the second side of the blade creates a predetermined positive pressure differential on the second side, the bias of the stop is overcome and the blades are opened in the opposite direction.

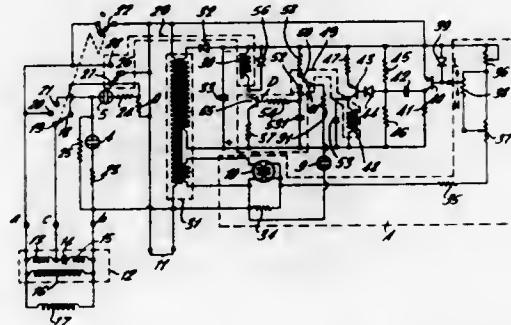
The bias on the stop is variable in order to determine the pressure differential necessary to open the blades in the opposite direction.

### 3,826,180 VENTILATION FAN SYSTEM WITH SMOKE DETECTOR SPEED CONTROL

Toshikazu Hayashi, 1-25, Minami 1-chome, Nara, Japan  
Filed Mar. 15, 1973, Ser. No. 341,781  
Claims priority, application Japan, July 28, 1972, 47-76178; July 28, 1972, 47-76179; July 28, 1972, 47-76180; July 28, 1972, 47-76181; Aug. 2, 1972, 47-77912  
Int. Cl. A62c 3/14

U.S. Cl. 98-43

9 Claims



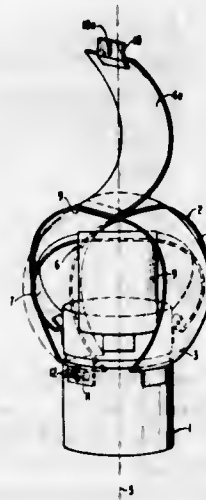
This invention relates to a ventilator wherein an electronic circuit is actuated when a detecting element detects the existence of any smoke or gas while a fan is in a manually selected slow rotating mode of operation or in a stand-by halting position, and then the fan is automatically put into full rotation in order to expel smoke or such gas as carbon monoxide, and also for a specified period after completion of this expelling operation the fan is kept rotating during the above operation through the function of a delay-off circuit, with a shutter of a ventilating window being kept open by means of a switch network.

### 3,826,181 ATTACHMENT FOR VENTILATING SHAFTS OR THE LIKE

Gerhard Schrade, Kriegerstrasse 14, Stuttgart 1, Germany  
Filed June 8, 1973, Ser. No. 368,302  
Claims priority, application Finland, June 9, 1972, 1654/72  
Int. Cl. F23f 17/02

U.S. Cl. 98-66

22 Claims



An apparatus for covering an open end of a ventilating shaft or the like which includes a collar having a through opening which is attachable to the open end, usually top end, of a ven-

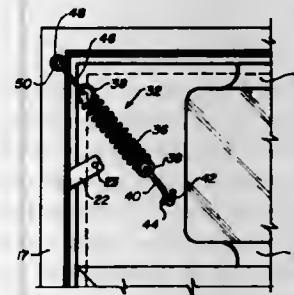
tilating shaft. Two concentrically arranged hood sections, each consisting of two intersecting flat strips of material attached at opposite sides of the collar are provided for covering the free end opening of the collar. The inner hood section is positioned with interspaces between the flat strips which are covered in radial outward directions with respect to an axis of symmetry of the collar by the strips of the outer hood section with a consequent complete closure in a radial direction with respect to said axis from the outside while still retaining large gaps between the concentrically spaced hood sections for accommodating flow through of ventilating gases from the ventilating shaft with a minimum danger of clogging of the hood apparatus, while also obtaining optimum aerodynamic performance of the ventilating hood insofar as maintaining a vacuum for assisting in the ventilation in response to wind flow against the hood apparatus. One of the outer strips forming the outer hood section includes a movable flap member for accommodating opening up of the outer hood section to facilitate cleaning and repair of both of the hood sections.

### 3,826,182 WINDOW AIR FILTER WITH LOCKING ASSEMBLY

Joseph Navara, 2105 Walton St., Chicago, Ill. 60610  
Filed Mar. 26, 1973, Ser. No. 345,109  
Int. Cl. E06b 7/08, 3/32

U.S. Cl. 98-98

2 Claims



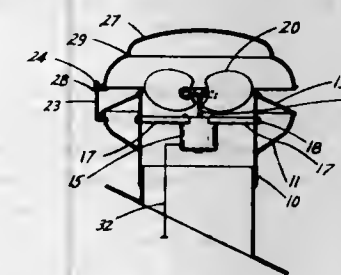
A window air filter unit for mounting between a top frame part and a top sash of an upper window, with an improved unit for locking the air filter unit in such position. The improved locking unit is an adjustable length lock having a connector, link means at the opposite ends of the connector, and hook elements at the ends of the link means to releasably engage catches, one catch fixed to an adjacent window side frame part just below the junction with the top frame part; and the other catch fixed on a movable sleeve of the filter unit. The catches are on the room side of the window and air filter unit so the air filter unit may be easily mounted and demounted by a person inside the room.

### 3,826,183 MOTOR-POWERED SELF-OPENING AND CLOSING VENTILATORS

Kenneth M. Rudine, 1307 Ashland, Houston, Tex. 77008  
Filed Jan. 2, 1973, Ser. No. 320,102  
Int. Cl. F04d 25/14

U.S. Cl. 98-116

7 Claims



Motor-powered ventilators having a domed top or lid which is opened by air pressure therebeneath when the ventilator is

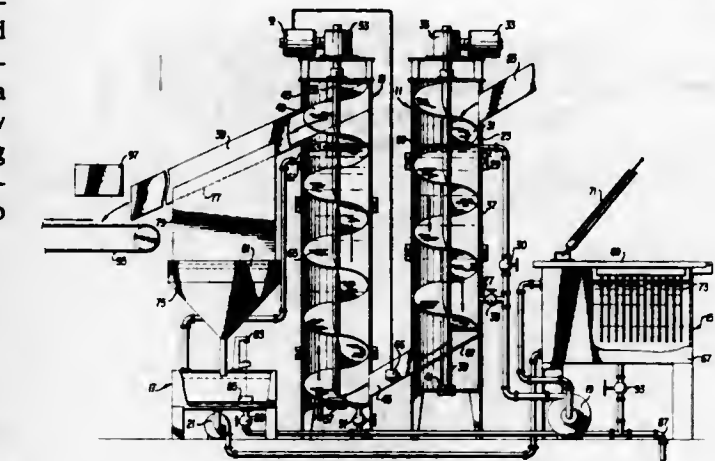
operating and which closes when the ventilator is not operating. The ventilators are of completely symmetrical form.

### 3,826,184 CONVEYOR-TYPE COOKING DEVICE

Thomas E. Shotton, Jr., 211 Fayette St., Suffolk, Va. 23434  
Filed Sept. 26, 1972, Ser. No. 292,284  
Int. Cl. A47j 37/12

U.S. Cl. 99-404

11 Claims



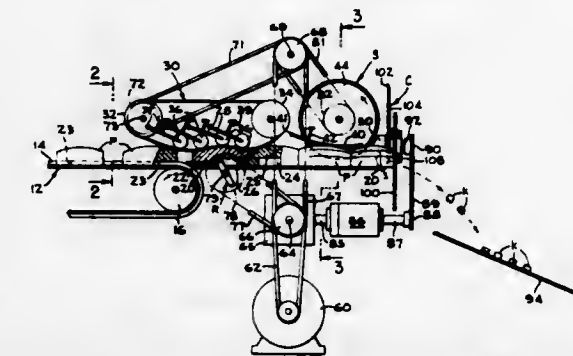
Described herein is a conveyor-type cooking device comprising two vertically-disposed auger conveyor systems, an oil-flow/oil-heating system, and an automatic conveyor control system. Each of the auger conveyor systems includes a perforate auger situated inside a cylinder housing. One of the perforate auger systems conveys downwardly and the other upwardly. The cylinder housings are serially connected at the bottoms thereof. The oil-flow/oil-heating system circulates heated oil through the serially connected cylinder housings in the same directions as the augers convey. The heating system maintains the oil at a uniformly high temperature throughout the cylinder housings. The automatic control system monitors food articles being conveyed through the cylinder housings and controls the speed at which the upwardly conveying auger rotates.

### 3,826,185 PINEAPPLE RECORING, SEGMENTING AND CHUNKING

Leslie Vadas, Los Gatos, Calif., assignor to Castle & Cooke, Inc., Honolulu, Hawaii  
Filed Mar. 9, 1972, Ser. No. 233,094  
Int. Cl. A47j 25/00; B26d 4/06

U.S. Cl. 99-548

3 Claims



Contour peeled and precored pineapple halves are continuously advanced, cut face down, along a planar support having a rib which guides the halves by their precore recesses. The halves are then passed over a rotary loop knife projecting up through the support which removes the remainder of the core material and the recored halves are then guided by a larger rib fitted into the recore recesses. The guided halves then pass beneath radial segmenting knives which are backed up by



downstream radial guide plates and the segmented halves are projected past the end of the support into the path of a rotary chunking knife. The rotary chunking knife has an offset gauge plate for receiving the fruit ends and a spiral edged slicing knife parallel to the gauge plate adjacent the end of the support, with the gauge plate terminating circumferentially while the knife is still slicing and with the knife terminating circumferentially at the off-set pineapple receiving portion of the gauge plate.

3,826,186

## PAPER COMPACTOR AND BUNDLER

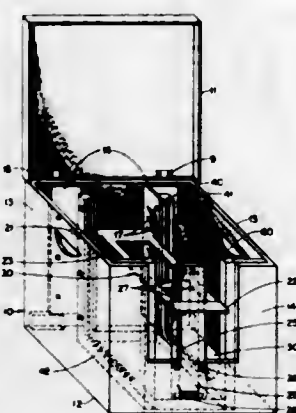
John L. Mechler, P. O. Box 341, Norris, Ind. 37828

Filed May 14, 1973, Ser. No. 359,867

Int. Cl. B65b 13/04

U.S. Cl. 100—25

7 Claims



A device is described which allows efficient and convenient compaction of papers, magazines and the like. The device consists of a rectangular container having an adjustable compression lever therein for compacting the papers into bundles, means for retaining the compression lever in the compressed state, means for encircling the bundle with a strand or wire and means for securing the ends of said strand or wire.

3,826,187

## GARBAGE PRESS

Kurt Smolka, Wittenauerstrasse 82-86, Berlin, Germany

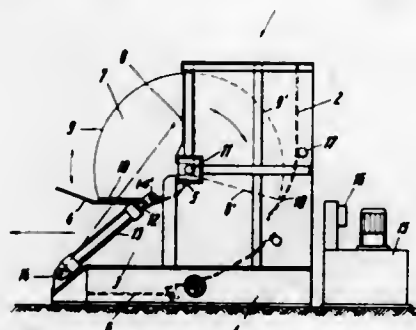
Filed Aug. 22, 1972, Ser. No. 282,803

Claims priority, application Germany, Aug. 25, 1971, 2143334

Int. Cl. B30b 15/28

U.S. Cl. 100—53

5 Claims



A garbage press has an opening filled from above and a chamber for the filling located under the opening. A pressing shield is movable in the chamber; it is swingable about a horizontal axis by a hydraulic piston-cylinder aggregate. The shield consists of a pressure plate, a cover plate coaxial with the axis of rotation and a rear wall. The shield pushes out the garbage directly through an outlet channel connected substantially horizontally to the chamber. The invention is particularly characterized in that the hydraulic piston-cylinder aggregate is directly attached to the rear wall of the pressure

shield at a distance from its axis of rotation in such manner that in the withdrawn position the longitudinal axis of the moved in piston-cylinder aggregate extends upwardly in an inclined direction at a distance from the axis of rotation of the pressing shield which is smaller than its distance from the point of attachment of the aggregate.

3,826,188

## TRUSS FABRICATING MACHINE

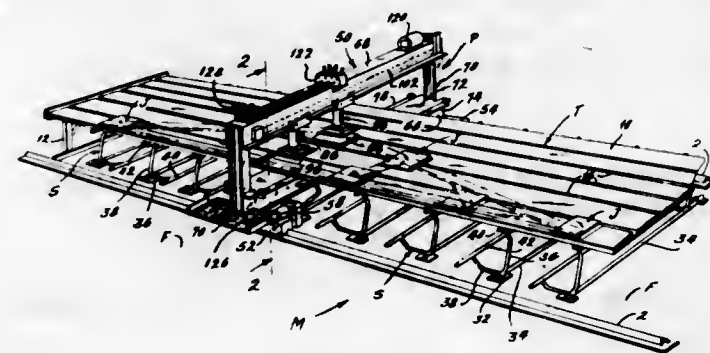
George F. Eberle, 427 Baker Ave., Webster Groves, Mo. 63119

Filed Oct. 24, 1972, Ser. No. 300,198

Int. Cl. B30b 7/00

U.S. Cl. 100—100

15 Claims



A truss fabricating machine for forcing truss connector plates into abutting pieces of lumber includes a platform having parallel channels extending the length thereof. Jigging pads rest on the platform and are secured thereto by bolts which thread into retaining elements in the channels. The platform is supported by supporting units, each of which has a pair of leading legs and a pair of trailing legs connected to the leading legs. The legs are movable between upright supporting positions and depressed non-supporting positions. When the leading legs are in their supporting positions, the trailing legs are in the depressed positions, and vice-versa. A gantry press moves along the platform and includes a pair of wheeled carriages, a lower beam extended beneath the platform, an upper beam extended over the platform, and hydraulic press units carried by and movable along the upper beam. The lower beam is secured firmly to one carriage and rests on a bridge bearing on the other carriage so that the wheels of the carriages will follow irregular track surfaces. As the gantry press moves along the platform, it strikes the leading legs of the support units, causing those legs to move to their depressed non-supporting positions and bringing the trailing legs up to their upright supporting positions. The upper beam is a box beam, the interior of which serves as a reservoir for the hydraulic system. Each carriage wheel is powered so the gantry press does not tend to skew on the track.

3,826,189

## TRASH COMPACTOR AND BAG SYSTEM

Ernst Grunewald, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed July 28, 1972, Ser. No. 276,241

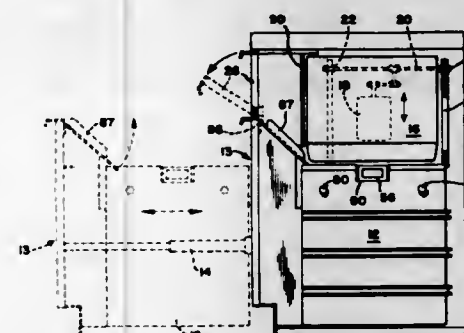
Int. Cl. B30b 15/00

U.S. Cl. 100—229 A

3 Claims

A trash compactor includes a container and a ram for compacting waste materials deposited therein, and a reusable liner positioned within the container receives the waste material, and facilitates removal of the waste material after compaction thereof. The liner has interfitting sections each with upstanding sidewalls and a bottom wall with one sidewall of each of the sections being shortened to permit their ready assembly and disassembly. A tubular bag of seamless plastic sheet material having one sealed end is placed in the liner, and a cuff portion folds over the upper end of the liner and the container. Holes in the cuff portion engage buttons on the exterior of the

container. The buttons have enlarged heads formed as sections of a sphere. When a bag of compacted trash is removed,



the material drops to the sealed end of the bag and the cuff portion can close the open end of the bag. The holes may then provide a means for engaging a tie to close the bag.

3,826,190

## PRINT WHEEL SETTING AND KEYLEVER RESET MEANS IN PRINTING MACHINES

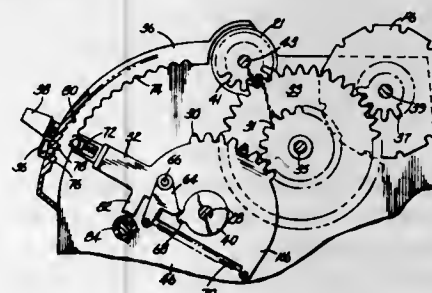
James T. Zofchak, Wickliffe, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 235,896, March 20, 1972, abandoned. This application July 18, 1973, Ser. No. 380,493

Int. Cl. B41j 7/02

U.S. Cl. 101—45

5 Claims



A printing machine for imprinting forms with fixed data from embossed printing plates and variable data from manually settable print wheels by moving a platen from a start position across the printing elements to an actuated position to perform a printing operation and back to the start position to complete a printing cycle. The print wheels are selectively positionable by keyset levers movable from a blank position to a selected position for rotating each of the print wheels to a desired peripheral setting. Adjustable stop means is associated with each of the keyset levers and is manually settable from a home position to a selective preset keylever blocking position at which it is desired to maintain the corresponding keylever for subsequent repetitive printing operations. Reset means is also provided for simultaneously restoring all of the keyset levers to the blank position, except those which have been blocked against movement by the stop means, during return movement of the platen from the actuated to the start positions.

3,826,191

## PRINTING DEVICE

Bertram H. Pittis, Madison, and Albert Clpas, Colonia, both of N.J., assignors to Dow Jones &amp; Company, Inc., New York, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,649

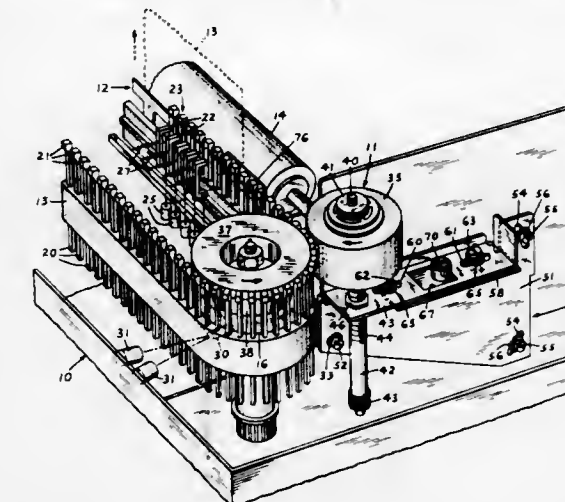
Int. Cl. B41j 5/08

U.S. Cl. 101—103

8 Claims

A belt type printer in which the conventional inking ribbon is replaced by a roller which is uniquely supported and ar-

ranged to insure the application of the correct amount of ink to the type characters at all times. A support member is carried by one of the pulleys of the printer to maintain the type characters in their correct positions relative to the roller, and the roller's location relative to the type characters is adjusta-



3,826,192

## WASTE INK DISPOSAL MEANS FOR SPRAY PRINTING DEVICES

Erich Kattner, and Klaus Bork, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

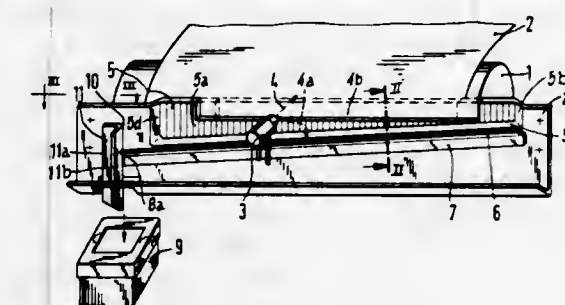
Filed Apr. 17, 1972, Ser. No. 244,492

Claims priority, application Germany, Apr. 21, 1971, 2119427

Int. Cl. B41f 31/00; G01d 15/18

U.S. Cl. 101—335

4 Claims



An inexpensive and efficient device which guarantees a satisfactory draining of waste ink accumulating on a rejection shutter in a spray printing device comprises a discharge channel member positioned below the rejection shutter and inclined from the horizontal by approximately 3°. The discharge channel member is formed of an elongated strip of sheet material bent at several points parallel to its length and joined to the rejection shutter to form a groove along their intersecting portions which groove will exert a capillary influence on the waste ink and thereby cause it to drain to a waste ink receptacle.



3,826,193

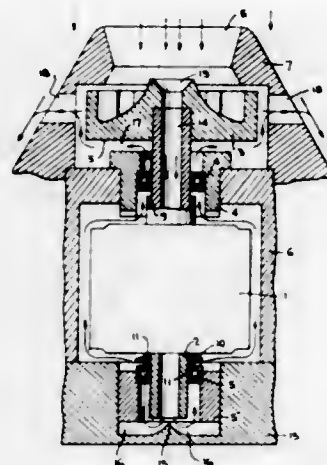
**METHOD FOR SUPPORTING A ROTATING BODY IN GENERATORS FOR MISSILES AND A SUPPORTING ARRANGEMENT FOR SUPPORTING SUCH BODIES**  
Tore Rognmo, and Kyrre Sjetun, both of Kongsberg, Norway, assignors to A/S Kongsberg Vapenfabrik Kirkegardsvelen, Kongsberg, Norway

Filed Feb. 16, 1973, Ser. No. 332,818

Int. Cl. F42c 11/00

U.S. Cl. 102—70.2 G

5 Claims



Method and means for supporting a rotating body in generators in missiles wherein the rotating body includes a generator rotor, a shaft therefor, bearing means rotatably supporting the shaft, and a turbine wheel mounted on the front end of the shaft. The turbine wheel is driven by ram air meeting the wheel in the axial direction and subjecting the rotating body to an axial load. A bore is provided through the shaft and a pressure chamber is defined rearwardly of the shaft to deflect the ram air approximately 180° passing the same through the bearing means to lubricate and cool the bearings. Any solid particles in the ram air are trapped in the pressure chamber. A radial gap is provided rearwardly of the turbine wheel and forwardly of the rotor to pass the ram air to free air after it has passed through the bearings.

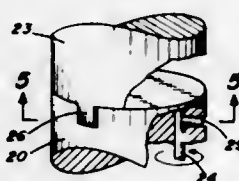
3,826,194

**SAFETY MECHANISM FOR MILITARY FUZES**  
Azriel J. Rabinowitz, and John J. Cama, both of Rochester, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Jan. 27, 1970, Ser. No. 10,110

Int. Cl. F42c 15/22

U.S. Cl. 102—79

3 Claims



A safety mechanism for military fuzes. The mechanism includes a tab on the fuze rotating member adapted to extend over a portion of the rear fitting. A slider and an associated spring in the rear fitting normally prevents rotation of the arming shaft of the fuze. Movement of the slider to free the arming shaft is controlled by the tab. At conventional settings of the fuze, slider movement is not blocked by the tab and the slider is free to move into an annular groove in the fuze non-rotating member under the influence of the centrifugal force generated by projectile spin.

3,826,195

**DEVICE FOR REMOVING BALLAST FROM RAILWAY ROADBEDS**

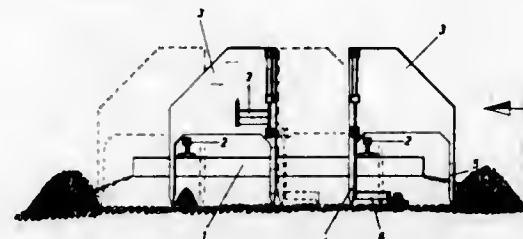
Herbert Bucksch, Ruskau, Germany, assignor to Rheine Maschinenfabrik Windhoff Akt.-Ges., Rheine, Germany  
Filed Sept. 17, 1973, Ser. No. 397,849

Claims priority, application Germany, Oct. 24, 1972, 2252056

Int. Cl. E01b 27/04

5 Claims U.S. Cl. 104—2

5 Claims



A pair of removal implements are mountable on a track supported work vehicle for movements between raised and lowered positions as well as movements longitudinally of ties disposed to support the tracks. Downwardly depending, blade-like implement elements on the removal implements are disposed to work simultaneously on the outside and inside of each track for removing ballast to the outside of the tracks. Supplementary implements including lateral extensions are rotatably mounted on each of the removal implements for movements from an inoperative position, during initial ballast removal operations, to an operative position during final ballast removing operations whereby ballast under the track is removed by the lateral extensions.

3,826,196

**LOAD-HANDLING GANTRIES**

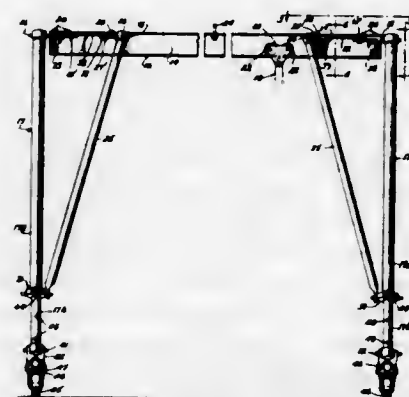
Bernard E. Wallace, Exton, Pa., assignor to B.E. Wallace Products Corp., Malvern, Pa.

Continuation of Ser. No. 864,858, Oct. 8, 1969. This application May 11, 1972, Ser. No. 252,222

Int. Cl. E01b 23/00

U.S. Cl. 104—126

13 Claims



A load-handling gantry, having a beam, from which loads may be suspended, is supported by divergent legs, a pair of which are disposed on opposite sides of the beam, each leg having its upper end pivoted to the beam on an axis slightly offset laterally from the center line of the beam, so that the gantry structure is laterally somewhat flexible but is stabilized by the load, and a stabilizing spring is also employed; the legs being adjustably cross-tied at the bottom. In the preferred form the legs are each longitudinally adjustable, and are pivotally connected to an adjustable cross-tie assembly serving also as a mobile mount, so that the height and the spread of the gantry are independently variable, while at the same time stability and mobility are achieved. Advantages as to space, weight, cost and versatility are among the objects.

3,826,197

**TRACKED VEHICLE SYSTEM**

Cesare Peveraro, Milan, Italy, assignor to Societa' Per La Strada Guidata S.r.l., Milano, Italy

Filed Mar. 19, 1973, Ser. No. 342,358

Claims priority, application Italy, Mar. 21, 1972, 9406/72

Int. Cl. E01b 25/12

U.S. Cl. 104—130

4 Claims



A crossover network interposed between two track portions of a tracked vehicle system each having to tracks, comprises a first resilient wheel-guiding tongue aligned with one of the tracks of one track portion, and a second resilient wheel-guiding tongue aligned with the other of the tracks of the other track portion. When the tongues are deflected by a lateral force one of the resilient tongues is aligned with a rigid wheel-guiding tongue, and the other resilient tongue is parallel to the rigid tongue whereby a wheeled vehicle is switched from one track to the other track.

3,826,198

**PORTABLE RAILWAY CAR MOVER**

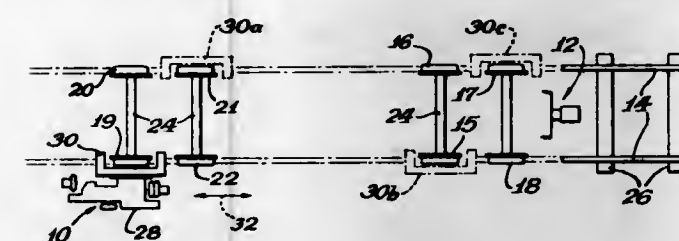
T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.

Filed Feb. 14, 1972, Ser. No. 225,907

Int. Cl. B61b 13/12, 15/00; B61j 3/12

U.S. Cl. 105—90 A

11 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

What are primarily involved here are the feature of the power unit's set of ground wheels being in a triangular arrangement for platform stability, the feature of one such ground wheel being a dirigible wheel which is turned in one direction to cooperate as part of the ground wheel set and in another direction in a cooperative, support providing relationship with said other rollers, and the feature of means for individually controlling wheel elevation of the set of ground wheels.

3,826,199

**PORTABLE RAILWAY CAR MOVER**

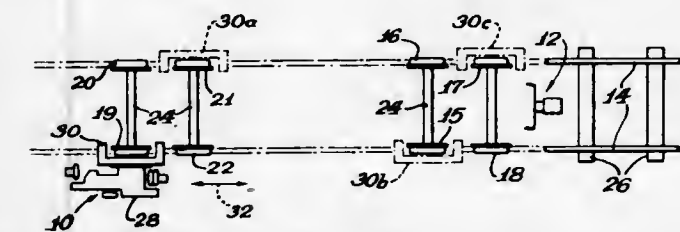
T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.

Filed Feb. 14, 1972, Ser. No. 225,911

Int. Cl. B61b 13/12, 15/00; B61j 3/12

U.S. Cl. 105—90 A

6 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

Primarily emphasized here are the features of a failsafe brake on one of the first rollers, and the feature of power delivery means common to one bidirectionally driven first roller and the brake, effective selectively to inactivate the brake and activate one driven first roller, and selectively to activate the brake and inactivate the one roller.

3,826,200

**PORTABLE RAILWAY CAR MOVER**

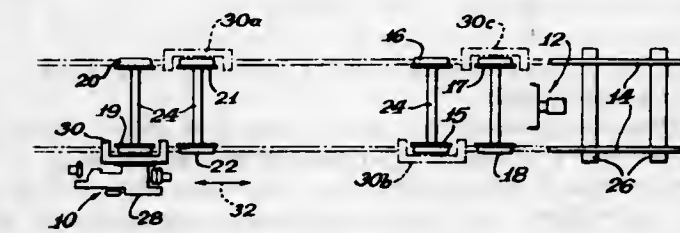
T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.

Filed Feb. 14, 1972, Ser. No. 225,912

Int. Cl. B61b 13/12, 15/00; B61j 3/12

U.S. Cl. 105—90 A

5 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally.



propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

Primarily involved here are the feature of a generally upright stabilizer arm pivotally connected to the structure and having an upstanding, roller carrying portion of the arm pivotable by the arm into a stabilized, wheel-gripping contact at about axle height, and the feature of bidirectional power means selectively to pivot the arm into wheel-gripping contact and to return the arm to unpivoted position.

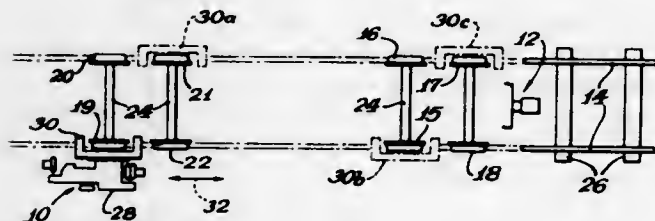
3,826,201

## PORTABLE RAILWAY CAR MOVER

T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.  
Filed Feb. 14, 1972, Ser. No. 225,918  
Int. Cl. B61b 13/12, 15/00; B61j 3/12

U.S. Cl. 105—90 A

11 Claims

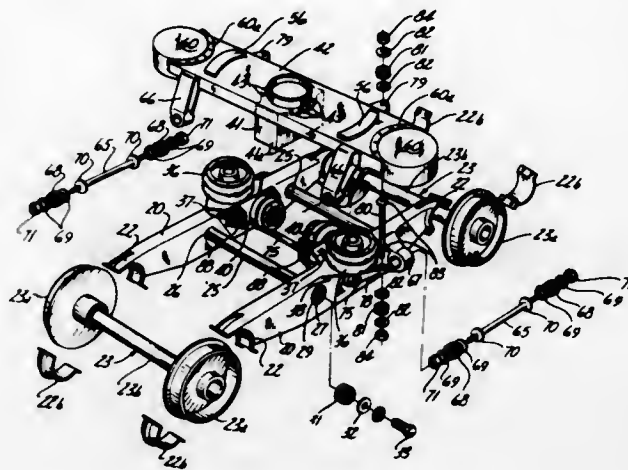


Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

Primarily involved here are the feature of one of the first rollers and a stabilizer roller spaced thereabove being oppositely placed on the clamp to the other one of the first rollers, all relative to the wheel therebetween, and the feature of the mentioned three rollers operatively establishing fixed engagement with the wheel periphery upon closure of the clamp, in three point rolling contact in a triangular arrangement in the plane of the wheel.

3,826,202  
PNEUMATICALLY SPRUNG RAILWAY CAR TRUCK  
Harry M. Russell-French, Philadelphia, Pa., assignor to The Budd Company, Detroit, Mich.  
Filed Mar. 12, 1973, Ser. No. 340,412  
Int. Cl. B61f 3/08, 5/10, 5/12  
U.S. Cl. 105—182 R

8 Claims



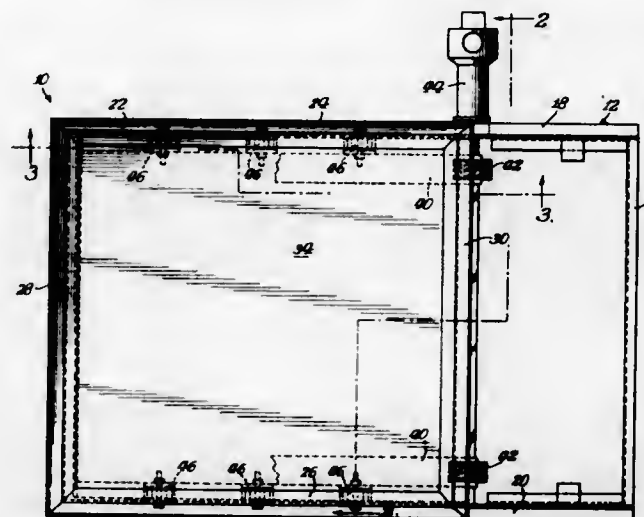
A railway truck is self-contained to receive car bodies of different sizes and includes a bolster, vertical and horizontal air springs. Transoms are provided to permit longitudinal movement of the side frames with respect to each other. A source of air is connected to provide air pressure for both the vertical and horizontal air springs.

3,826,203  
HOPPER GATE OUTLET ASSEMBLY  
Byron W. Martin, Kankakee, and William Gibson, South Holland, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

Filed Nov. 6, 1972, Ser. No. 303,795  
Int. Cl. B61d 7/02, 7/20, 7/26

U.S. Cl. 105—282 P

5 Claims

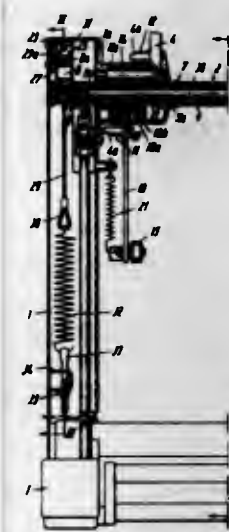


A horizontally movable carriage effects movement of a horizontal gate between open and closed positions relative to the discharge opening of a hopper outlet assembly. Between the carriage and the gate are cooperating force transmitting and reaction means. Upon movement of the carriage in one direction, the gate is first moved horizontally beneath the discharge opening and then raised to seal the opening. Upon movement of the carriage in the other direction, the gate is first lowered and then moved horizontally away from the position beneath the discharge opening.

3,826,204  
DRAWING TABLE  
Franz Kuhlmann; Arnold Gundlach, and Horst Seiffert, all of Wilhelmshaven, Germany, assignors to Franz Kuhlmann KG, Wilhelmshaven, Germany  
Filed Oct. 11, 1972, Ser. No. 296,586  
Int. Cl. A04f 5/12

U.S. Cl. 108—2

10 Claims U.S. Cl. 108—64

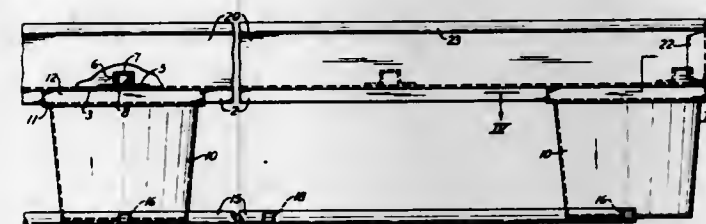


A drawing table having a stand and a board linked to the stand in such a manner as to allow the board to be adjusted in position whereby the weight of the board creates a second moment about the axis opposing the first moment. A compensating means varies the second moment to compensate for variations in the first moment due to changes in the position of the board so that the board is balanced in any position.

3,826,205  
METAL PALLET  
Maurice A. Weiss, Steubenville, Ohio, assignor to Follansbee Steel Corporation, Follansbee, W. Va.  
Filed Oct. 30, 1972, Ser. No. 302,102  
Int. Cl. B65d 19/18

U.S. Cl. 108—51

4 Claims U.S. Cl. 108—108

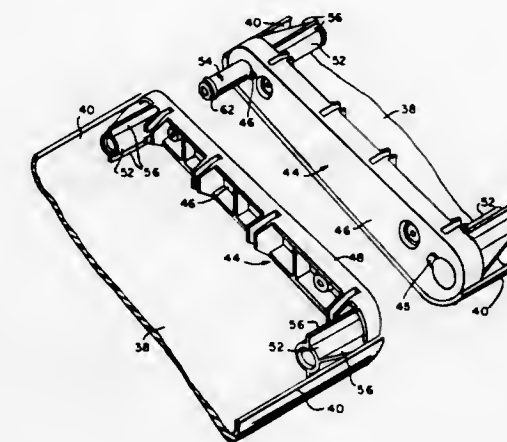


A number of spaced parallel sheet metal channels are arranged in two rows, one on top of the other. The upper row is welded to the lower row to form a platform. The platform is supported by sheet metal feet, each of which has a cup-like body disposed between two adjacent channels in the lower row and extending downwardly from them. Two opposite upstanding flanges connected with the top of the body straddle the two channels and are welded to the adjoining upstanding side walls of the two channels. The channels forming the boundary of the platform have upwardly extending outer edges that form side walls for the platform, so a tray is formed.

3,826,206  
MODULAR FURNITURE OR LIKE ARTICLES AND MODULAR UNITS THEREFOR  
Kay Ruggies, Salt Lake City, Utah, assignor to Directional Industries Incorporated, New York, N.Y.  
Filed Oct. 12, 1972, Ser. No. 297,056  
Int. Cl. F16b 12/26

U.S. Cl. 108—64

10 Claims

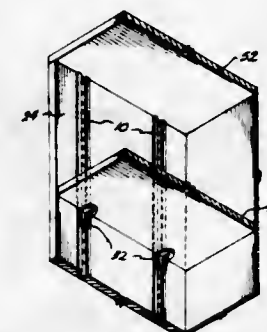


The invention provides modular structural units of various sizes and shapes for assembling into knockdown structures. Each unit is hollow and has at least one end edge corresponding in size and shape with an end edge of each of the others. The units are assembled corresponding end to corresponding end. The corresponding ends of the units are closed by a wall in which are set inwardly extending sockets for receiving the ends of rigid coupling members. Each socket and each end of each coupling member is provided with cooperating means for forming a snap engagement between them and for limiting the inward movement of the coupling member into the socket past the snap engagement.

3,826,207  
COLLAPSIBLE, ADJUSTABLE SHELVE  
William B. Sutherland, Gig Harbor, Wash., assignor to Pickering Industries, Inc., Tacoma, Wash.  
Filed Aug. 21, 1972, Ser. No. 279,283  
Int. Cl. A47b 57/08

U.S. Cl. 108—108

10 Claims



A pair of box shaped shelf support strips embedded in the face of upright support members resiliently urges serrated sides of the support strips against the support members. The outermost sides of the strips are slotted and the back sides have spaced holes to accept a projecting insert from a support bracket. The bracket is rotated after insertion and lugs on the projection hold to the forward sides of the strip. A pin extends upward from each bracket to enter a recess in shelving to hold the support members and shelving in relation to each other.

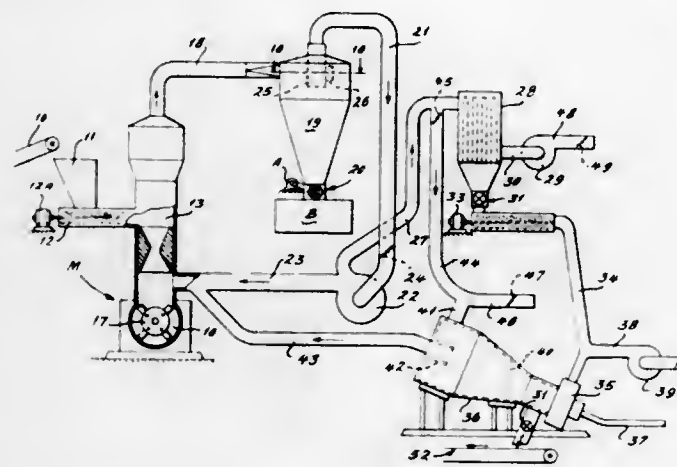


### 3,826,208 APPARATUS AND SYSTEM FOR DISPOSING OF COMBUSTIBLE AND WASTE MATERIAL

Robert M. Williams, Ladue, Mo., assignor to Williams Patent  
Crusher and Pulverizer Company, St. Louis, Mo.  
Filed Aug. 6, 1973, Ser. No. 385,984  
Int. Cl. F23g 5/00

U.S. Cl. 110-15

10 Claims



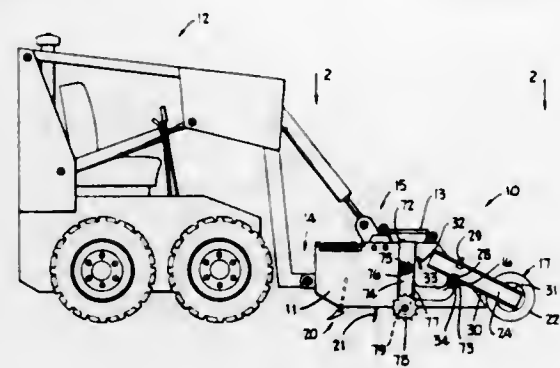
The disposal of hydroscopic combustible material, such as scrap wood and bark, needs to be carried on at a temperature of about 600° F. or somewhat lower to prevent flashing off certain volatiles which at or above that temperature level cause the formation of a noxious blue smoke. The system and apparatus is caused to move a large volume of air through a furnace to provide the needed heat for drying the material to a state where it can be consumed by serving as a fuel. The air volume so moved is dust laden, and the apparatus concentrates the dust and particulate material for burning, and effectively mixes the combustible products with cleansed air to produce a source of heat at a controlled temperature level.

### 3,826,209 LANDSCAPING APPARATUS WITH SEED DISPENSER

Carl D. Jackson, Fortville, Ind., assignor to C. D. Jackson  
Manufacturing, Inc., Fortville, Ind.  
Filed Apr. 19, 1972, Ser. No. 245,315  
Int. Cl. A01c 7/08

U.S. Cl. 111-8

9 Claims



An apparatus for landscaping having a container for dispensing seed. The frame of the apparatus has a roller swingably mounted thereto positionable against the ground for rolling the ground after the seed is dispensed. A plurality of plow blades and a rake are mounted to the frame for plowing and raking the ground prior to seed dispensing. The container is removably mounted to the frame and includes a slotted bottom wall through which the seed passes. A pair of shafts are rotatably mounted to the container on either side of the slotted bottom wall to facilitate the dispensing and are geared together with one of the shafts being connected to a sprocket mounted externally to the frame. A ground engaging wheel is

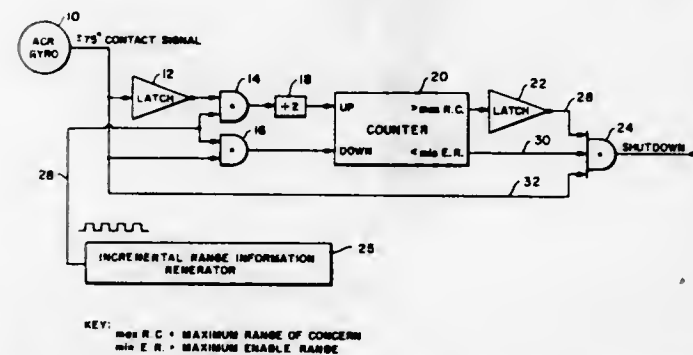
connected to the sprocket by a continuous chain so as to drive the sprocket and container shafts as the apparatus is moved across the ground. The sprocket and ground engaging wheels are rotatably mounted on a plate which in turn is mounted to the frame. A flange on the frame together with a removable pin secures the roller in a downward position against the ground and the plate to the frame.

### 3,826,210 TORPEDO ANTISELF HOMING (ASH) SYSTEM

Robert D. Timberlake, Silver Spring, Md., assignor to The  
United States of America as represented by the Secretary of  
the Navy, Washington, D.C.  
Filed May 21, 1973, Ser. No. 362,614  
Int. Cl. F42b 19/06, 19/01, 19/00

U.S. Cl. 114-24

6 Claims



A system to prevent a torpedo from attacking the launch vessel. Whenever the torpedo heading deviates by more than a predetermined angle from the base runout course a gyro provides a contact closure. The torpedo also supplies incremental range information representing a known distance of torpedo travel, which in conjunction with the contact closure, supplies a shutdown command to stop the torpedo propulsion system.

### 3,826,211 SAIL HANK

Jacob Hirsch, 2 E. Sandford Ave., Harrison, N.Y. 10550  
Filed Jan. 10, 1973, Ser. No. 322,539  
Int. Cl. B63h 9/04

U.S. Cl. 114-114

5 Claims



A hank is provided for rapidly attaching a sail to a stay. The hank has a generally cylindrical body member with a longitudinal channel therethrough large enough to accommodate and slide on a stay on which it is adapted to be mounted. A U-shaped attaching member is mounted on the body and secured to the edge of the sail through a grommet therein to form a hank thereon. A diagonal channel extends through the outer

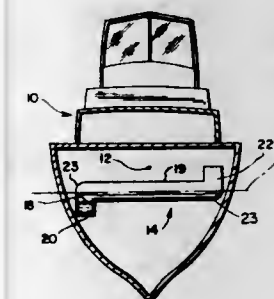
surface of the cylindrical body into the longitudinal channel therein, whereby the hank is adapted to be attached to the stay by inserting the cylindrical body member on the stay through the diagonal channel and rotating the hank until the stay is aligned and rests for slidable movement in the longitudinal channel. The top of the cylindrical body member is relatively flat, whereas the bottom surface is diagonal, making an angle with the diagonal channel in the body member. Accordingly, when a sail is mounted on a stay utilizing the aforesaid hanks, another sail can be hoisted on the stay to automatically remove the hanks from the stay, with the flat portion of the leading hank of the hoisted sail removing progressively the hanks of the other sail by coming into contact with the diagonal surface on each hank and rotating it, and releasing it from the stay. Thus, by using the hanks of this invention, a means is provided for rapidly changing sails merely by hoisting another sail.

### 3,826,212 SEMI-ACTIVE ROLL STABILIZER FOR SMALL CRAFT

Frans V. A. Pangalila, Waddinxveen, Netherlands, assignor to  
Flume Stabilization Systems, Inc., Hoboken, N.J.  
Filed Nov. 26, 1971, Ser. No. 202,142  
Int. Cl. B63b 43/06

U.S. Cl. 114-125

7 Claims



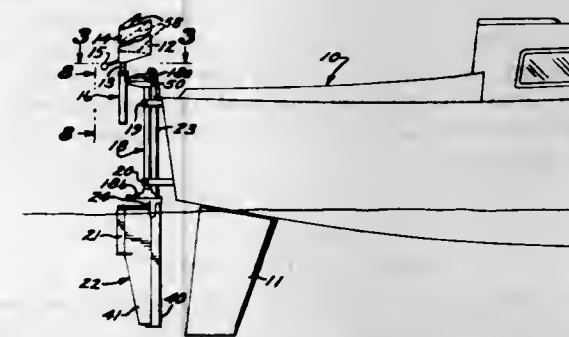
An elongated liquid-housing stabilizing tank extending from port to starboard of a water-going vessel, particularly suited for small crafts such as yachts and fishing vessels. The tank is adapted to rotate about its major axis; and tank liquid is caused to transfer, by gravity, from one end of the tank to the other. The tank may be made to rotate at a constant speed or intermittently.

### 3,826,213 SELF-STEERING SYSTEM

Reinhold W. Riebandt, Box 2153, Idyllwild, Calif. 92349  
Filed June 15, 1971, Ser. No. 153,248  
Int. Cl. B63h 25/52

U.S. Cl. 114-144 C

11 Claims



The present invention relates to a self-steering system that permits a boat to stay on a set course relative to an apparent wind; and to do so, the system uses a wind vane that pivots to undergo angular displacements. The resultant angular displacement of the wind vane is transmitted to a servo-tab of a rudder, the servo-tab in turn undergoing a corresponding an-

gular displacement; so that the new rudder orientation varies the boat heading. The self-steering system further comprises a clutch for engaging and disengaging the system while setting a new course. The system also comprises means for raising the rudder out of the water.

### 3,826,214 ANCHOR SUPPORT

Frank Bond, 2248 S.W. 34th Ter., Fort Lauderdale, Fla.  
33312  
Filed July 30, 1973, Ser. No. 384,036  
Int. Cl. B63b 21/22

U.S. Cl. 114-210

2 Claims



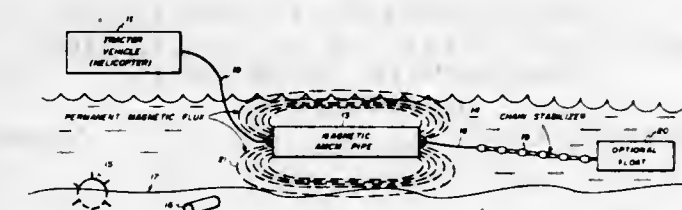
An anchor support presents an upwardly facing recess for snugly receiving the crown of a Danforth or similar type anchor to store the anchor in an upright position on deck or elsewhere. The recess in the anchor support has end walls that are inclined upward and inward toward each other at substantially the same angles as the opposite ends of the crown of the anchor. A clamping bolt extends through one of these end walls on the support to hold the anchor crown snugly against the opposite end wall of the support.

### 3,826,215 MAGNETIC MINE DETONATOR SYSTEM

Richard C. Dyjak, Panama City, Fla., assignor to The United  
States of America as represented by the Secretary of the  
Navy, Washington, D.C.  
Filed Sept. 7, 1973, Ser. No. 395,331  
Int. Cl. B63b 21/00

U.S. Cl. 114-221 R

21 Claims



A marine minesweeping system is disclosed as incorporating a permanently magnetized steel pipe, having a polyurethane foam type buoyancy controller disposed in the bore thereof, with one end of said pipe effectively connected to a helicopter by means of a suitable length cable for the towing thereof thereby. A chain tail-like stabilizer is effectively connected to the other end of said pipe to improve the attitude stability thereof, as it is towed through water, sea water, or the like, in sufficient proximity with magnetic responsive marine mines to effect the detonation thereof.



3,826,216

**WATER VESSEL PROPELLED BY MOTORIZED LAND VEHICLE**

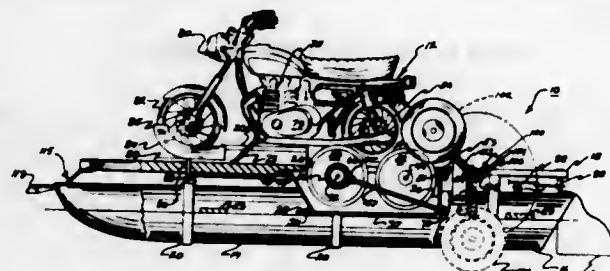
Howard A. Rhody, Grand Blanc, Mich., assignor to Erma L. Rhody a part interest, Grand Blanc, Mich.

Filed Aug. 23, 1971, Ser. No. 174,057

Int. Cl. B63h 25/00

U.S. Cl. 115—5 A

3 Claims



A water vessel having a pair of spaced, parallel pontoons connected by a deck on which there is fixedly supported a land traversing vehicle such as a motorcycle or a snowmobile. The water vessel includes at least one propeller operatively coupled to the power output drive of the land traversing vehicle, such that the propeller is rotated when the land traversing vehicle is operated. The water vessel further comprises a steering coupling mechanism which operatively couples the steering mechanism of the land traversing vehicle to at least one rudder carried by the water vessel such that the rudder is responsive to control the direction of the water vessel in response to the movement of the steering mechanism of the land traversing vehicle. The water vessel also comprises a rotatably mounted shaft having L-shaped outer ends extending beyond the outer portion of each pontoon. The outer ends of the shaft rotatably mount support wheels adapted to swing between a lowered position, wherein the support wheels extend below the pontoons to enable the wheels to engage the ground and permit towing of the water vessel, and a raised position wherein the support wheels may be raised above the water level so as not to impede the operation of the water vessel when it is underway. Means are provided for selectively locking the support wheels in either the raised or lowered position.

3,826,217

**JET PROPULSION APPARATUS FOR BOATS**

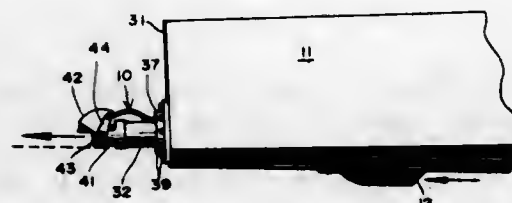
Henry L. Canova, 1575 S.W. 87th Ave., Miami, Fla. 33144

Filed Sept. 10, 1973, Ser. No. 396,119

Int. Cl. B63h 11/00

U.S. Cl. 115—12 R

2 Claims



A jet propulsion apparatus for boats wherein the inlet is mounted below the hull of the boat so that upon forward

movement of the boat a ramming effect is attained which causes an increased volume of water to flow into the apparatus. The apparatus having a duct extending upwardly to an impeller chamber all of whose cross sectional areas displaced by water are equal. A centrifugal pump directs the flow into a second chamber having straightening vanes therein and whose cross sectional area displaced by the water is equal to 0.707 of that of the impeller chamber thereby increasing the velocity of water by a factor of 1.414 through said second chamber and discharged by a discharge nozzle connected thereto with an arcuate deflector member both pivotally and rotationally mounted at the discharge nozzle for steering and reversing the boat.

3,826,218

**COMBINATION DRIVE FOR SHIPS**

Heinz M. Hiersig, Dusseldorf-Oberkassel; Klaus Hansgen, and Erwin Fleischmann, both of Witten, all of Germany, assignors to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

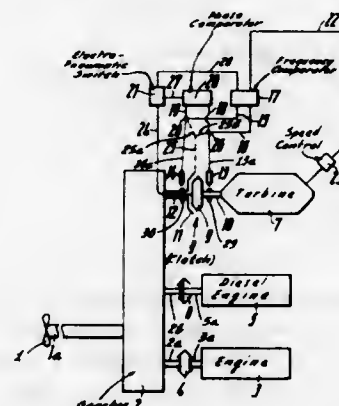
Filed Feb. 5, 1973, Ser. No. 329,743

Claims priority, application Germany, Feb. 8, 1972, 2206513

Int. Cl. B63h 1/14

U.S. Cl. 115—34 R

4 Claims



A combination drive arrangement for ships comprises at least one regular driving engine and a gas turbine, both arranged to be releasably connected to the propeller shaft of the ship by means of shaft clutches. Rotary input and output parts of the clutch are connected to speed pickup devices which are connected to a speed comparator for disconnected clutch and to a torsional angle comparator during synchronous running of turbine and clutch output. The speed comparator when detecting speed synchronism causes the clutch to shift into its engaged position. Upon detecting an overload on the clutch by measuring the torsional angle between the primary and secondary parts thereof, the torsional angle comparator controls disengagement of the clutch to disconnect the turbine from the propeller.

3,826,219

**MARINE DRIVE UNITS**

Clarence Frank Nossiter, Isle-of-Wight, England, assignor to Enfield Industrial Engines Limited, Cowes, Isle of Wight, England

Filed July 10, 1972, Ser. No. 270,512

Claims priority, application Great Britain, Nov. 11, 1971, 51646/71

Int. Cl. B63h 5/12

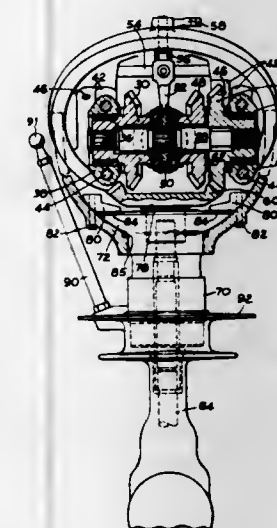
U.S. Cl. 115—35

2 Claims

The invention provides a marine drive unit of the through or over transom drive type, in which the power leg is pivoted on

the axis of a transverse shaft at the heart of the drive transmission so that the power leg can tilt upwardly and rearwardly

covered by a seal which is capable of being peeled off the cap



about that axis whilst the drive gears remain meshed, without utilising any universal joints.

3,826,220

**SELF-RIGHTING POWER-DRIVEN AQUATIC VEHICLE**

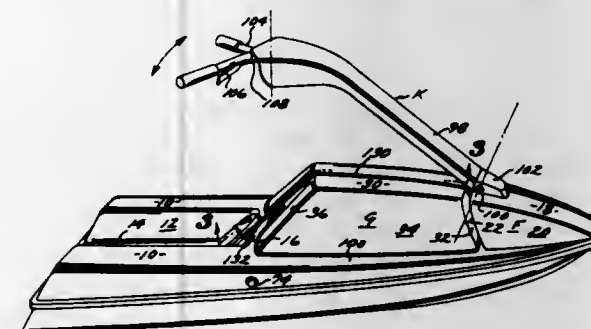
Clayton J. Jacobson, 3500 1/2 Highland, Manhattan Beach, Calif. 90266

Filed Jan. 22, 1973, Ser. No. 325,620

Int. Cl. A63h 5/08

U.S. Cl. 115—70

1 Claim



A low draft, hydroplane-like vehicle in which the engine and associated equipment is so located in the hull that the engine not only drives a jet pump to power the vehicle but the weight of the engine and associated equipment imparts an imbalance to the vehicle except when a user is mounted thereon. Due to this imbalance the vehicle is stable only when in an upright position, and will immediately right itself from any overturned position. A further result of this imbalance is that the bow is submerged to a substantially greater depth than the stern when a user is not mounted on the vehicle, and as a result the vehicle will slowly circle should the user be inadvertently displaced therefrom. Such slow circling permits the user by swimming a short distance to recapture the vehicle.

3,826,221

**CLOSURES FOR CONTAINERS**

Charles Forbes Ross, Wallasey, England, assignor to Evans Medical Limited, Speke, Liverpool, England

Filed June 13, 1972, Ser. No. 262,369

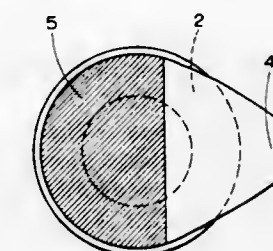
Claims priority, application Great Britain, June 15, 1971, 27938/71

Int. Cl. G01d 21/00

U.S. Cl. 116—114 V

1 Claim

A closure cap for a container has an aperture normally



to expose the aperture. At least part of the seal is arranged to change colour when the cap is exposed to heat.

3,826,222

**UNIT-DOSE MEDICATION HANDLING SYSTEM**

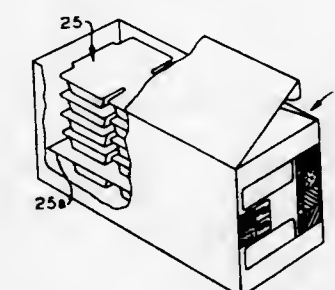
Jerome M. Romick, 1992 Commons Rd., North, Reynoldsburg, Ohio 43068

Filed Feb. 12, 1973, Ser. No. 331,677

Int. Cl. G09f 9/00

U.S. Cl. 116—121

12 Claims



A system for handling and dispensing pre-packaged unit doses of medicine for a large number of patients. It includes a dispensing container which is packed by the pharmacist with unit dose packs and from which the individual doses are administered to the patients, for example, by a nurse. The dispensing container has printed on its exterior, indicia, including coded sections, to indicate various times and other conditions of administering the unit doses. A label printed with corresponding indicia is provided for superimposing on the printed area of the container. By selective punching, or otherwise, of the label, before mounting on the container, the said coded section or sections on the container is exposed when it is so mounted. The exposed coded section or sections will be readily visible to the nurse to indicate the time or conditions of administering the dose or doses to a patient.

3,826,223

**HALYARD SILENCING CLASP**

John E. Lingo, Jr., Willingboro, N.J., assignor to Lingo, Inc., Camden, N.J.

Continuation-in-part of Ser. No. 276,713, July 31, 1972, abandoned. This application Apr. 19, 1973, Ser. No. 352,497

Int. Cl. G09f 17/00

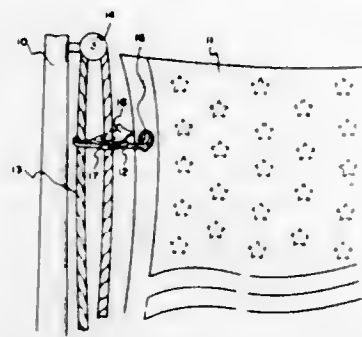
U.S. Cl. 116—174

3 Claims

A flag clasp for silencing a flagpole halyard in windy conditions which includes a clew which is secured to the flag clasp. The clew encircles the inner halyard run and may be formed integral with the clasp at the point where the halyard is tied off. The clasp is formed of two substantially flat body members which are journaled together by a hollow axle through which the outer halyard is tied. Each body member terminates in oppositely directed hooks which provide an opening eye for securing the flag. Any lateral movement of the outside ha-



lyard, by reason of wind or the like, will result in the inside halyard's movement with the outside halyard rather than in the



opposite direction in which it contacts the flagpole creating a noise condition.

3,826,224

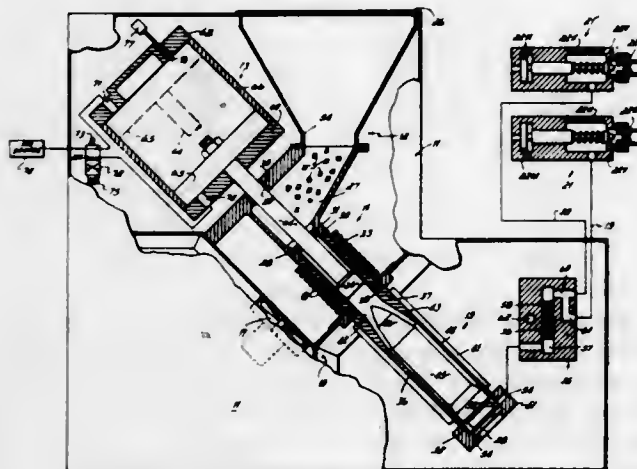
### THERMOPLASTIC DISPENSER SYSTEM HAVING NON-CLOGGING MELTING ZONE

Robert G. Baker, Avon, and Alan B. Reighard, Bay Village, both of Ohio, assignors to Nordson Corporation, Armherst, Ohio

Filed Nov. 2, 1971, Ser. No. 194,862  
Int. Cl. B05c 1/00

U.S. Cl. 118-2

14 Claims



This invention relates to a system for dispensing thermoplastic materials and particularly to a system for dispensing so-called "high performance" hot melt adhesives. More specifically, the invention relates to dispensing systems in which solid thermoplastic or hot melt material is melted in small charges or batches and is then supplied upon demand in liquid form to a dispensing gun, the quantity of molten material being maintained at a minimum from the area in which it is melted to the dispensing nozzle of the gun.

3,826,225

### CARBONYL PELLET DECOMPOSER

Henry Ronald Forman, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.  
Division of Ser. No. 156,442, June 24, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,164

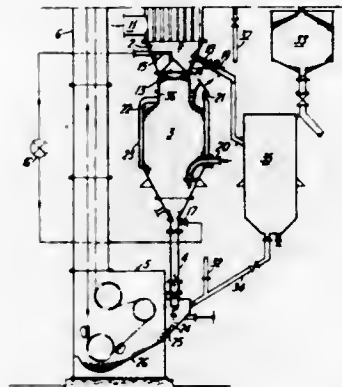
Int. Cl. C23c 13/02

U.S. Cl. 118-48

7 Claims

Contamination of nickel pellets with carbon is minimized by thermally decomposing nickel carbonyl contained in a nickel-carbonyl-containing gas which is passed counter-current to preheated pellets in a reaction chamber by withdrawing a preponderant part of the gas from the reaction chamber before the gas reaches the hottest pellets and while the gas still contains at least about 3 grams per cubic meter of nickel as nickel

carbonyl and withdrawing the remainder of the gas after substantially all the nickel carbonyl therein has been decomposed



to provide a nickel-carbonyl-free gas and recirculating the nickel-carbonyl-free gas through the reactor.

3,826,226

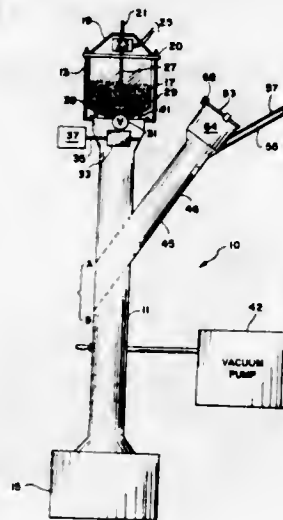
### APPARATUS FOR COATING PARTICULATE MATERIAL

Raymond L. Clark, 628 Chapel St., Hampton, Va. 23369  
Filed Dec. 12, 1972, Ser. No. 314,490

Int. Cl. C23c 13/12

U.S. Cl. 118-49.1

10 Claims



Apparatus and method of depositing controlled thickness coatings on small particles including a drop tower for gravity feed of the particles from a first hopper to a second hopper and wherein the particles are induced to spin during fall and pass through a vaporized coating medium; said medium comprising an ion beam directed from an ion emitter disposed laterally offset from, and shielded with respect to, said drop tower.

3,826,227

### TINNING MACHINE

Stanley Watson Allison, Formby, near Liverpool, England, assignor to D. T. & G. (Designs, Tools & Gauges) Limited, Seacombe, Wallasey, Cheshire, England  
Filed Dec. 13, 1972, Ser. No. 314,589

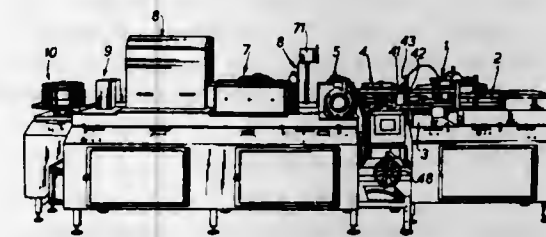
Int. Cl. B05c 3/12

U.S. Cl. 118-60

20 Claims

The present specification describes a tinning machine and a method for tinning at least one edge of a strip of metal. The machine comprises a supply station for storing said strip in the form of a coil the axis of the coil being vertical, a heated drum being arranged to be rotatably driven and to heat at least part of the width of said strip as said strip is uncoiled and passed from the supply station. A flux bath is arranged to receive the heated strip from said drum and to coat the strip with flux in

the region of lower edge of said strip, a constant flow tinner being arranged to tin the strip where coated with flux. An arrangement of knives is provided for removing excess tin, together with a hot water washer arranged to receive and wash



3,826,228

### SURFACE APPLICATION PROCESSING DEVICE

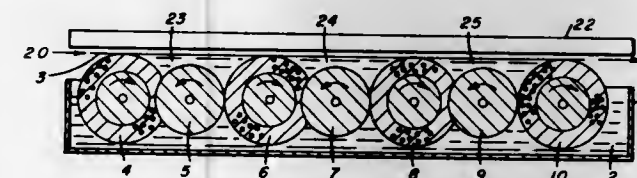
Edward Charles Timothy Samuel Glover, London, England, assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed July 31, 1972, Ser. No. 276,495

Claims priority, application Great Britain, Aug. 5, 1971, 36905/71

Int. Cl. B05c 1/08

U.S. Cl. 118-255

7 Claims



A surface application processing device comprising one or more solution applying rollers, each having a resilient solution absorbing peripheral layer partially immersed in a processing solution, and a solution expelling roller cooperating with the solution applying roller to form and maintain a solution pool during rotation of the rollers. The material to be processed is transported in contact with the solution applying rollers and solution pool for processing.

3,826,229

### ANIMAL CAGE

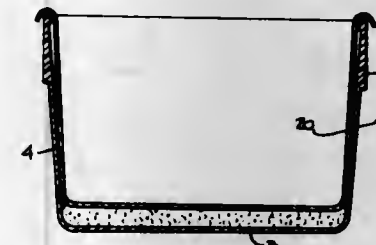
Anthony V. Classe, New York, N.Y., and Robert P. Mehn, Middletown, N.J., assignors to Ipcor Hospital Supply Corporation, Valhalla, N.Y.

Filed May 19, 1972, Ser. No. 254,898

Int. Cl. A01k 01/00

U.S. Cl. 119-17

1 Claim



An animal cage in which bedding material is in the cage and a seal is provided to prevent the bedding material from spilling out during shipment and storage. The seal comprises a removable retaining element, part of whose upper portion extends over the top edge of the cage side walls and outwardly

and downwardly along the outside of the cage. This part of the upper portion of the retaining element prevents inward displacement of the remainder of the upper portion.

3,826,230

### FLOORING SYSTEM FOR STIES AND OTHER ANIMAL SHELTERS

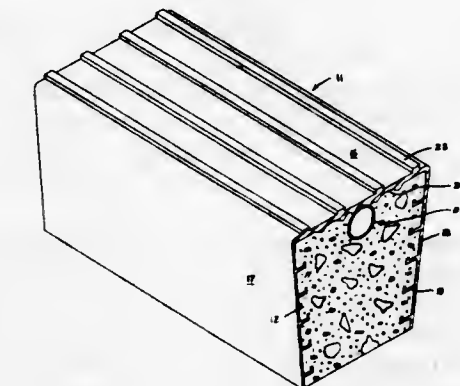
Robert S. Jones, Pontiac, and Harry W. Smathers, Aurora, both of Ill., assignors to said Jones, by said Smathers and Wesley E. Jones, Park Forest South, Ill.

Filed May 14, 1973, Ser. No. 360,347

Int. Cl. A01k 01/00

U.S. Cl. 119-28

1 Claim



A flooring system for sties and other animal shelters utilizing permanent, fluid conduit thermo-plastic slats or channel members which are adapted to be filled with concrete or the like. The filled channel members have traction surfaces on the exterior of their top walls. The inside of each top wall has arcuate groove means to properly position the conduit within the upper portion of the channel members.

3,826,231

### AUTOMATIC ANIMAL FEEDER

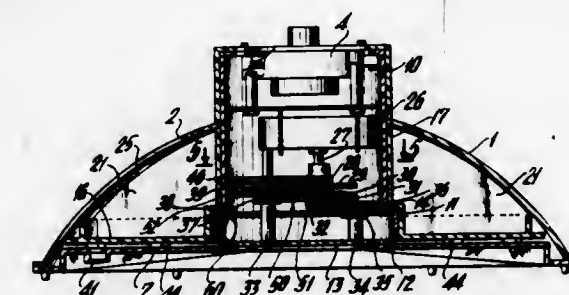
Beverly Crawford, 315 E. 65th St., and Genelle Jenkins, 107 E. 60th St., both of New York, N.Y. 10022

Filed July 5, 1973, Ser. No. 376,894

Int. Cl. A01k 5/02

U.S. Cl. 119-51.12

10 Claims



A pet feeding apparatus includes a tray assembly having a number of compartments in which food and/or liquids can be placed. The tray assembly is mounted on a rotating housing and is partially enclosed by a cover having at least one aperture which provides access to the tray compartment adjacent to the aperture. A timer activates a motor which rotates the tray assembly beneath the cover so that the cover aperture provides access to the various tray compartments at predetermined time intervals.



3,826,232

**COMPOSITION AND METHOD FOR THE CONTROL OF FLEAS ON DOMESTICATED ANIMALS**

Thomas E. Duffey, and William R. Coleman, both of Miami, Fla., assignors to Pet Chemicals, Incorporated, Miami Springs, Fla.

Continuation-in-part of Ser. No. 73,684, Sept. 18, 1970, which is a continuation-in-part of Ser. No. 28,110, April 13, 1970, abandoned. This application May 21, 1971, Ser. No. 145,706

Int. Cl. A01k 29/00; B43k 21/08; A01n 17/00

U.S. Cl. 119-157

6 Claims



A pest control composition in a solid stick form is provided for topical application around the neck or on the face of domesticated animals such as dogs, cats, cattle, horses and the like to control fleas, lice, ticks, flies, and like pests. Topical application about the neck or face of the animal in an amount ranging from about 0.1 to 0.3 grams, preferably about 0.13 to 0.25 grams, per kilogram of body weight results in the elimination of all fleas at the end of twenty to twenty four hours, a single application being effective for one to two weeks in most cases without evidence of irritation to the animal. The stick composition of the present invention comprises 0-(2-isopropoxyphenyl)-N-methyl-carbamate as the active ingredient uniformly dispersed in a compatible solid base material and in a stable state. The present invention provides a pesticidal package for applying the composition to the neck or face of the animal.

3,826,233

**INJECTION DEVICES FOR INTERNAL COMBUSTION ENGINES**

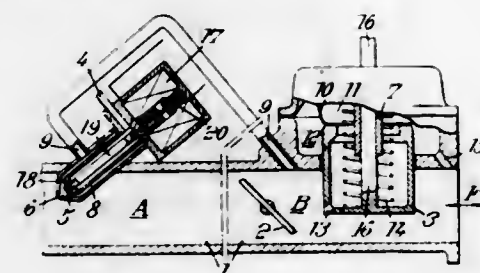
Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France

Continuation of Ser. No. 12,700, Feb. 19, 1970. This application Jan. 18, 1972, Ser. No. 218,823

Int. Cl. F02m 51/00

U.S. Cl. 123-119 R

2 Claims



An improved injection device is provided for internal combustion engines. It has on one hand an induction pipe, upstream of a main throttle actuated by the driver, an auxiliary throttle which is opened automatically and progressively in proportion with the increase in air-flow in the pipe, and on the other hand, a source of pressurized liquid fuel connected to an injection orifice. The latter communicates with a zone of the induction pipe downstream of the main throttle. It has also a metering system sensitive to the position of the auxiliary throttle and adapted to regulate the flow of injected fuel in such

manner that the richness of the air-fuel mixture passing into the induction pipe is substantially constant, at least under certain operating conditions of the engine. The injection orifice is aligned with an auxiliary orifice opening into the said zone of the induction pipe. The space between the two orifices forms a chamber where the pressure is independent of that in the said zone of the induction pipe. The chamber communicates, at least when the auxiliary throttle is in the slight air-flow position, with the portion of the induction pipe bounded by its two throttles.

3,826,234

**FUEL INJECTION APPARATUS IN AN INTERNAL COMBUSTION ENGINE**

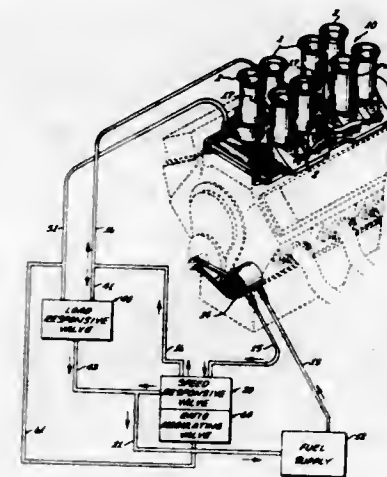
Vincent J. Cinquegrani, 333 W. Second St., Scottsdale, Ariz. 85251

Continuation of Ser. No. 83,040, Oct. 22, 1970. This application Oct. 11, 1972, Ser. No. 296,676

Int. Cl. F02m 69/00

U.S. Cl. 123-139 AW

9 Claims



Apparatus for injecting fuel into an internal combustion engine in predetermined amounts responsive to operating conditions of the engine.

3,826,235

**MEANS FOR USE IN CONJUNCTION WITH A CARBURETOR OF AN INTERNAL COMBUSTION ENGINE FOR IMPROVING THE COMBUSTION OF FUEL**

Max Pasbrig, Orselina/Ticino, Switzerland, assignor to Lacrex Brevetti S. A., Minusio, Switzerland

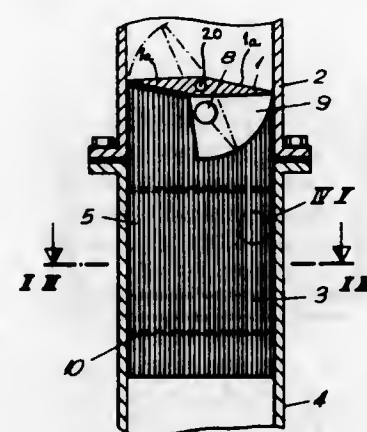
Filed Nov. 14, 1972, Ser. No. 306,432

Claims priority, application Germany, Nov. 26, 1971, 2158849

Int. Cl. F02m 29/00

U.S. Cl. 123-141

12 Claims



Means for use in conjunction with the carburetor of an internal combustion engine wherein, for improving the mixture

of air and fuel, an atomizer sleeve is arranged in a suction channel directly behind the throttle valve. The atomizer sleeve is provided with guide elements possessing approximately radially extending impact elements and throughpassage openings. The guide elements extend essentially over the entire cross-section of the suction flow and are arranged in spaced relationship with regard to one another. The atomizer sleeve is provided at its end neighboring the throttle valve with a substantially segmented spherical-shaped recess, the configuration of which exactly corresponds to the compartment swept by one-half of the throttle valve upon opening the throttle valve.

3,826,236

**IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES**

Hans Thorsten Henrik Carlsson, Amal, Sweden, assignor to Aktiebolaget Svenska Elektromagneter

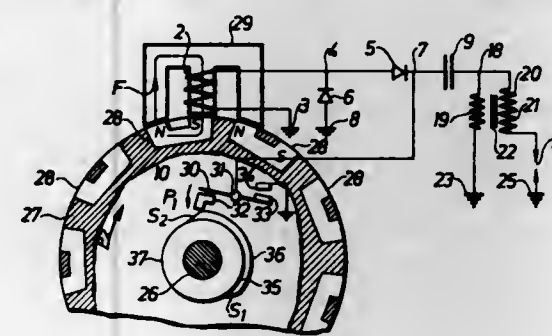
Filed Sept. 28, 1972, Ser. No. 292,914

Claims priority, application Sweden, Oct. 1, 1971, 12474/71

Int. Cl. F02p 1/00

U.S. Cl. 123-148 R

4 Claims



An ignition system has a capacitor charged by a magneto, and switch means responsive to magneto rotation and connected across said magneto for terminating charging of the capacitor before the capacitor is fully charged.

3,826,237

**TWO-STAGE FUEL INJECTION COLD START METHOD AND APPARATUS FOR CARRYING OUT SAME**

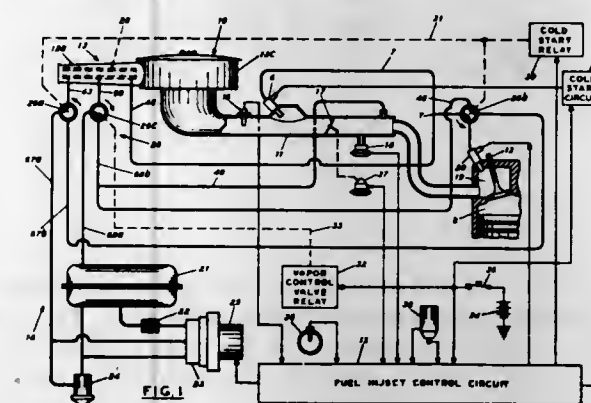
Sigmund M. Csicsery, Lafayette, and Bernard F. Mulasky, Fairfax, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 4, 1972, Ser. No. 295,030

Int. Cl. F02m 67/14, 27/02

U.S. Cl. 123-179 L

8 Claims



As cold start is initiated in a spark-ignition internal combustion, fuel injection engine, lower molecular weight constituents of a full-range gasoline are selectively eluted by an elution system including an adsorbent bed of adsorbent material for separate but simultaneous use at a cold start valve attached to the intake manifold of the engine as well as at a se-

ries of injector valves positioned adjacent the combustion chambers of the engine. The adsorbent bed forms an elution zone within a cannister assembly in fluid contact with the full-range gasoline. The adsorbent material—usually in pelletized form—is preferably housed within a tubular means being positioned within a much larger shell housing in fluid contact with a valve and conduit network. Entry of the full-range gasoline into the elution zone as well as of the resulting lower molecular weight effluent into the engine is controlled by the valve and conduit network under control of a fuel injection control circuit. A vapor emission control system can also be housed within the cannister assembly and undergo selective operation to prevent escape of vapor emissions originating from within the gasoline tank.

3,826,238

**A SPRING ACTUATED DEVICE FOR PROJECTING CLAY PIGEONS**

Ib Schreiner Hansen, Aaso DK-5953, Tranekaer, Denmark

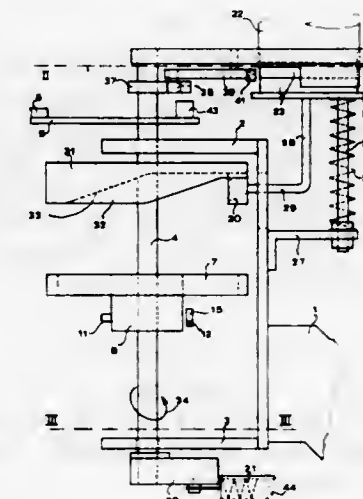
Filed Oct. 24, 1972, Ser. No. 300,302

Claims priority, application Germany, Oct. 26, 1971, 2153254; Denmark, May 23, 1972, 2542/72

Int. Cl. F41b 3/04

U.S. Cl. 124-8

6 Claims



An apparatus for the tossing of disc-shaped objects, the so-called clay pigeons including a main frame carrying a main shaft and an ejector arm. A crank arm is mounted on the frame and driven by an ejector spring. A motor drives a worm gear and worm wheel and a double coupling means comprising a one-sided overrunning clutch to allow the shaft to overrun the motor drive and a releasable clutch interposed between and interconnecting the worm wheel and the main shaft to release the shaft from the worm wheel when the crank arm is in its dead center position and the spring fully tensioned. A trigger locks and releases the releasable clutch in the position in which the ejector spring is fully tensioned and the crank arm is in its dead center position. An actuator reacts with the trigger to release the releasable clutch whereupon the motor drives the main shaft via the worm gear and the worm wheel through the one-sided overrunning clutch and the crank arm is driven off its dead center position. After a short rotary motion, the ejector spring via the one-sided overrunning clutch produces the additional speed necessary to launch a clay pigeon from the ejector arm without jerking the throwing arm. The pigeons are caused to be moved to the ejector arm by actuation of a cam follower connected to an elevator. The elevator carries the pigeons one at a time, from a stack, to the ejector arm. While the elevator is carrying a pigeon to the ejector arm a cam operated member is caused to move into engagement with the remaining stack of pigeons so as to support the remaining stack of pigeons.



3,826,239

**ARCHERY BOW WITH BOWLIMB TENSIONING DEVICE**

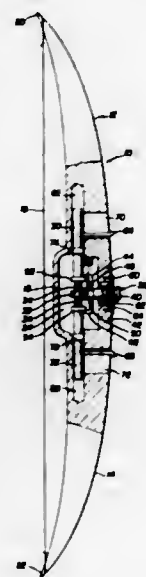
James R. Palma, 1502 Curry Rd., Schenectady, N.Y. 12306

Filed Oct. 19, 1973, Ser. No. 407,801

Int. Cl. F41b 5/00

U.S. Cl. 124-23 R

6 Claims



A bow in which reinforcing members can be propelled toward each of the bowlimbs to change the tension of the bowlimbs quickly. The reinforcing members are normally retracted and held in a cocked position against the bias of springs. Energy storage propulsion device is triggered to permit the extension of the reinforcing members along the bowlimbs. Retractor projections are manually operated on to withdraw the reinforcing members against the bias of the springs.

3,826,240

**DIRECT CONTACT WATER HEATER**

Kingo Miyahara, Tokyo, Japan, assignor to Kabushiki Kaisha

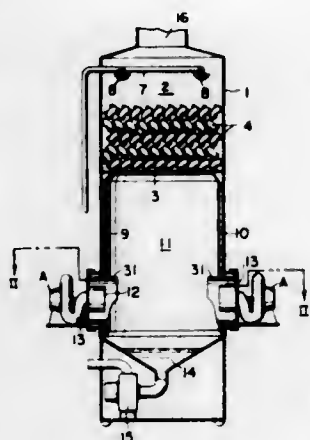
Dowa, Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,126

Int. Cl. F24h 1/10

U.S. Cl. 126-355

4 Claims



A water heater comprising a body and a lattice-like partition plate dividing the interior of the body into an upper heat absorbing chamber and a lower combustion chamber, burner means being provided in said combustion chamber so that the flow of combustion product is directed upwardly from the combustion chamber through the heat absorbing chamber, cold water being supplied into said heat absorbing chamber and passed downwardly as a counterflow to and in direct contact with said flow of combustion product. A plurality of heat absorbing members are disposed in said heat absorbing chamber and the cold water is supplied onto the heat absorbing members.

3,826,241

**IMPLANTING METHOD**

Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ven-

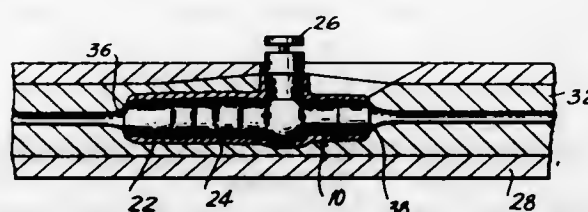
tures, Inc., New York, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,024

Int. Cl. A61f 1/24; A61b 19/00

U.S. Cl. 128-1 R

9 Claims



A method for implanting artificial devices in the bodies of living creatures such as human beings. The device is initially embedded in tissue of the living creature where the device is permitted to remain until ingrowth of tissue into intimate contact with the exterior surface of the device is completed. Then the device is removed while retaining thereon a layer of the tissue which has grown into contact with the device, and the device with this layer of tissue thereon is then implanted in the body at the location where the device is to be used in the body with tissue at this latter part of the body engaging the tissue which has previously grown onto the device, so that the possibility of rejection of the device is reduced.

3,826,242

**METHOD AND APPARATUS FOR TREATMENT OF HEMORRHOIDS**

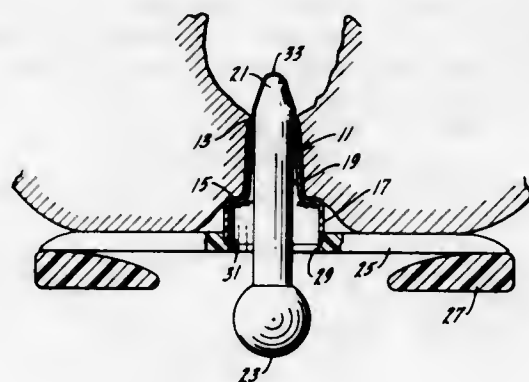
Paul J. Eggers, 320 S. Green Bay Rd., Lake Forest, Ill. 60045

Filed Apr. 16, 1973, Ser. No. 351,472

Int. Cl. A61m 29/00

U.S. Cl. 128-1 R

5 Claims



A method and apparatus for reducing the pain, distention and bleeding of hemorrhoids during defecation. The method involves maintaining pressure on the hemorrhoidal veins of the anal canal, lower rectum and anal area during defecation to prevent swelling and distention of the hemorrhoidal veins. The method also includes preventing extrusion of the internal hemorrhoidal veins out of the anal canal during defecation. In performing the method, a tubular member is inserted in the anal canal so that it engages the walls of the canal and the area around the rectal opening. This tubular member is held in place during defecation. The inner or forward end of this tubular member is closed during insertion and then opened after it is positioned in the anal canal to permit excrement to pass therethrough.

3,826,243

**BRAINWAVE ANALYSIS AND FEEDBACK METHOD AND APPARATUS**

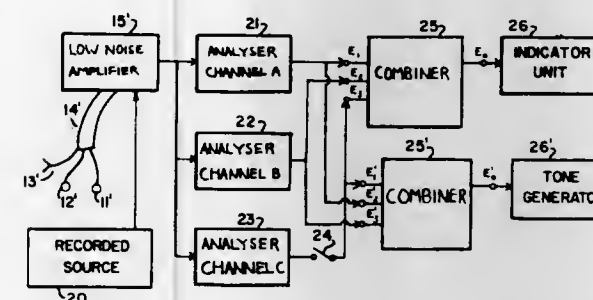
Weston Arthur Anderson, 763 La Para Ave., Palo Alto, Calif. 94306

Filed July 10, 1972, Ser. No. 270,520

Int. Cl. A61b 5/04

U.S. Cl. 128-2.1 B

14 Claims



A method and apparatus for minimizing spurious responses in brainwave analysis and feedback instruments. A plurality of Fourier amplitude coefficients of the incoming brainwave signals are determined, and these coefficients are appropriately combined to be representative of certain brainwave states and to suppress noise signals that have a relatively wide bandwidth.

3,826,244

**THUMB TACK MICROELECTRODE AND METHOD OF MAKING SAME**

Michael Salzman, New York, N.Y., and Martin J. Bak, Germantown, Md., assignors to The United States of America as

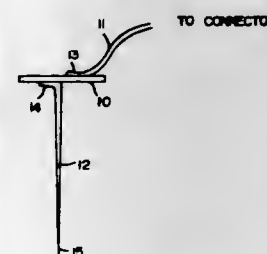
represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,234

Int. Cl. A61b 5/04

U.S. Cl. 128-2.1 E

14 Claims



A thumbtack microelectrode for making extracellular chronic recordings from single nerve cells in the cerebral cortex in unrestrained animals over prolonged periods of time comprises a rigid electrode shaft, which is microwelded to one side of a tack head-like disc, and a flexible electrical conductor which is microwelded to the opposite side of the tack head-like disc. After a cleaning operation including ultrasonic desiccation the entire microwelded assembly is electrically insulated. The insulation covering the recording tip of the electrode shaft which is tapered, prior to the cleaning and insulating operations, by electrolytic etching, is then removed so as to expose a small area for use as the recording surface.

3,826,245

**ELECTRODES EMPLOYING DISPOSABLE ELECTROPODS FOR CARDIAC INSTRUMENTS**

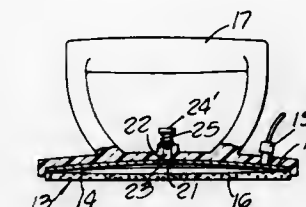
Horst Funfstuck, Oxnard, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Feb. 9, 1973, Ser. No. 331,050

Int. Cl. A61b 5/04; A61n 1/18

U.S. Cl. 128-2.06 E

1 Claim



This invention relates to disposable electrode pads which may be used with cardiac devices, such as ECG, defibrillator or pacemaker devices. The pads are in the form of a foil bag containing an electrolyte. The bags are easily rupturable so that the electrolyte is applied to the surface of the human body.

3,826,246

**APPARATUS FOR SENSING PHYSIOLOGICAL POTENTIALS**

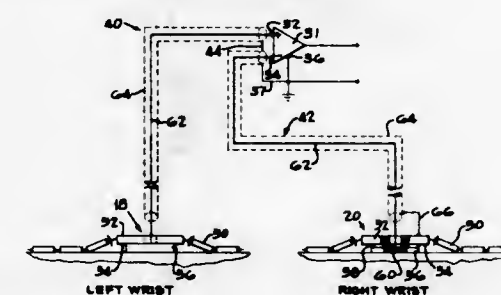
William J. Raddi, Philadelphia, and Robert William Johnson, Levittown, both of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 7, 1973, Ser. No. 337,262

Int. Cl. A61b 5/04

U.S. Cl. 128-2.06 E

9 Claims



Apparatus is provided for sensing physiological potentials of a living body. There is provided a first band for at least partially encircling a part of the living body and having a first electrode mounted thereon. The first electrode is adapted for connection to an instrument for amplifying the physiological potentials of the living body. A second band is provided for at least partially encircling another part of the living body and has a second and a third electrode located thereon. The second and third electrodes each are adapted for connection to the instrument for amplifying the physiological potentials of the living body.

3,826,247

**PULMONARY ACHIEVEMENT TRAINER**

Asa P. Ruskin, 865 West End Ave., New York, N.Y. 10025,

and Wilbur J. Gould, 115 Central Park West, New York, N.Y. 10023

Filed June 27, 1972, Ser. No. 266,663

Int. Cl. A61b 5/08

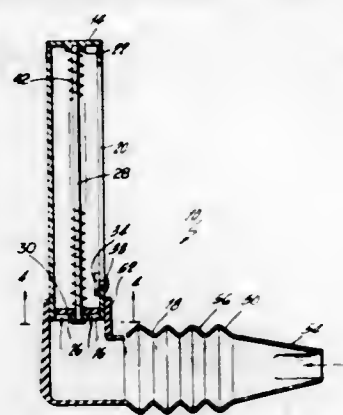
U.S. Cl. 128-2.08

1 Claim

A pulmonary achievement trainer for registering the strongest breath attained by a patient during a predetermined test or therapy period. The pulmonary achievement trainer employs a tube having a special L-shaped mouthpiece and further having an air inlet and a spring pressed plate actuated by air



passing into the tube. An indicator is attached to the plate and positioned outwardly of the tube for cooperating with indicia



on the tube for providing a direct readout of the actual strongest breath attained by the patient.

3,826,248

## LARYNGOSCOPE

Georg Gobels, Grungertelstr 10, 5038, Rodenkirchen near Cologne, Germany

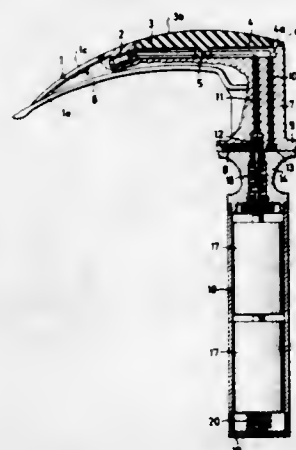
Filed Sept. 20, 1972, Ser. No. 290,572

Claims priority, application Germany, Sept. 21, 1971, 2147054

Int. Cl. A61b 1/06, 1/24, 1/26

U.S. Cl. 128—11

7 Claims



The invention relates to a laryngoscope for examining the larynx or the like comprising a handle element and a spatula detachable therefrom with a longitudinally extending lateral member serving as a tongue deflector.

3,826,249

## LEG CONSTRICTING APPARATUS

Arthur L. Lee, 2050 Tremont, Columbus, Ohio 43221, and Milton M. Michaels, 5559 Hampton, Pittsburgh, Pa. 15206

Filed Jan. 30, 1973, Ser. No. 328,133

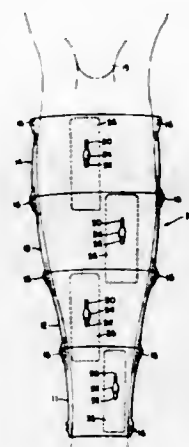
Int. Cl. A61h 1/00

U.S. Cl. 128—24 R

9 Claims

Leg constricting apparatus includes an air pressure control system for supplying air under pressure to inflatable sacs within a plurality of elastically extensible wrappings interlocked around the lower extremity of an immobilized patient to aid in the venous return of blood to the heart and to prevent thrombus formation. Each of the plurality of elastically extensible wrappings are hooked to adjacent wrappings in overlapping arrangement around the extremity for a suitable length therealong and surrounds an elastic stocking fitted firmly over the extremity. An air inflatable sac is sewn onto the outside end of each of the plurality of extensible wrappings

which envelop the sacs in folds around the extremity. Compressed air supplied from an air pressure control system is fed by conduits to a cam actuated air valve for sequentially delivering compressed air at preselected timed intervals to inflate the sacs. The sequential intermittent supply of com-



pressed air to each of the wrappings inflates and deflates the sacs therein exerting pressure against the elastically extensible wrappings to thereby exert rhythmic pressure upon the extremity and to constrict the muscles thereof. The rhythmic constriction of the extremity muscles squeezes the blood in the veins to aid the venous return of blood to the heart.

3,826,250

## APPARATUS

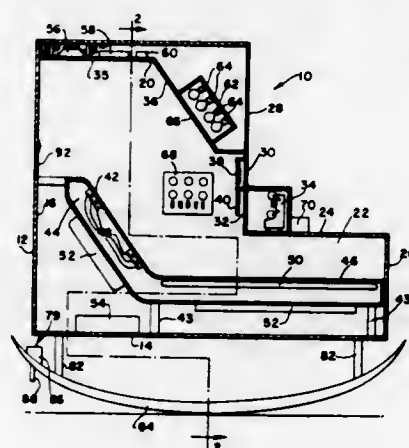
Hunter D. Adams, Arlington, Va., assignor to Zany Productions, Inc., Alexandria, Va.

Filed July 12, 1972, Ser. No. 271,190

Int. Cl. A61h 21/00

U.S. Cl. 128—24.2

11 Claims



A sensory stimulator comprising an enclosed housing, a seat within the housing, and a plurality of sensory stimuli for stimulating the senses of a person seated within the housing.

3,826,251

## LOCKING KNEE JOINT FOR ORTHOPEDIC LEG BRACE

Charles Ross, 7510 Persimmon Tree Ln., Bethesda, Md. 20034

Filed Jan. 4, 1973, Ser. No. 320,957

Int. Cl. A61f 3/00

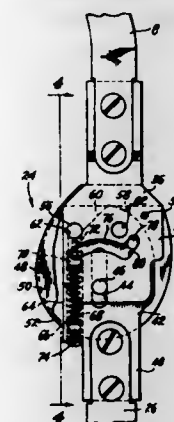
U.S. Cl. 128—80 F

8 Claims

A pivoted knee joint for an orthopedic leg brace provides for both pivoting and relative sliding movement. When the user's weight is placed on the braced leg and the leg is substan-

tially straight, the joint is locked against pivoting but is freely pivotable when the leg is lifted. If the weight of the user is

peelably secured thereto. Upon removal of the release liner and draping of the patient, the exposed tacky film is im-



placed on the leg while the leg is partially bent at the knee, the joint locks against pivoting to prevent collapse of the user.

3,826,252

## EDGE WRAPPING FOR CASTS AND METHOD FOR USING SAME

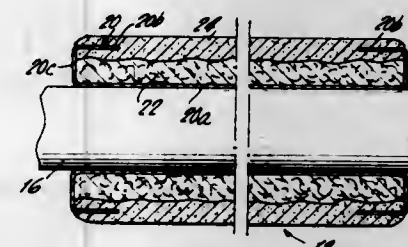
Joseph P. Lalco, 9 Ardsley Dr., New City, N.Y. 13214

Filed July 14, 1972, Ser. No. 271,769

Int. Cl. A61f 5/04

U.S. Cl. 128—91 R

7 Claims



There is disclosed an edge wrapping for use in making casts. A strip of material is wrapped around each end of the part to be casted; thereafter, a soft lining and the cast material are applied, and the free edge of each strip is folded back and embedded in the cast material. By using edge wrapping strips, as opposed to the conventional cylindrical wrapping (commonly called "stockinette"), the disadvantages of the latter are avoided and a number of advantages are obtained.

3,826,253

## SURGICAL DRAPE WITH CLOSED FENESTRATION

Ray E. Larsh, and Donald I. Urbansky, both of Milwaukee, Wis., assignors to Kleen Test Products, Inc., Milwaukee, Wis.

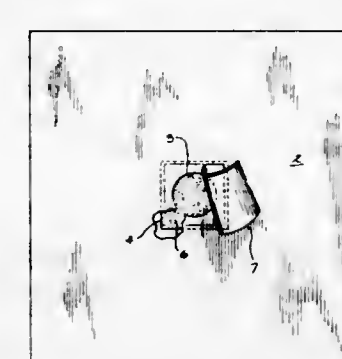
Filed Feb. 2, 1973, Ser. No. 328,905

Int. Cl. A61f 13/00

U.S. Cl. 128—132 D

3 Claims

A surgical drape includes a main drape body of suitable material, with a fenestration disposed therein. A sheet of impermeate transparent film is provided with at least one surface coated with a tacky adhesive. The film is dimensioned larger than the fenestration and is positioned with the tacky surface adhering to the drape body surrounding the fenestration, which is completely closed by the sheet. The tacky surface is exposed through the fenestration, and a release liner is



mediately pressed directly onto the area to be incised, and the said area remains fully protected from contamination.

3,826,254

## NEEDLE OR CATHETER RETAINING APPLIANCE

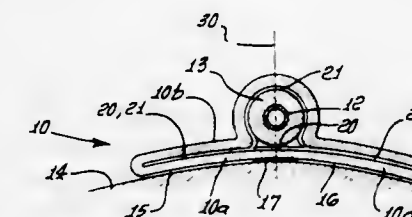
Eli K. Mellor, Burbank, Calif., assignor to Verco Industries, Newport Beach, Calif.

Filed Feb. 26, 1973, Ser. No. 335,478

Int. Cl. A61m 25/02

U.S. Cl. 128—133

6 Claims



An appliance for securely retaining a needle or catheter type device in operative position on a patient's body.

3,826,255

## INTERMITTENT POSITIVE PRESSURE BREATHING MANIFOLD

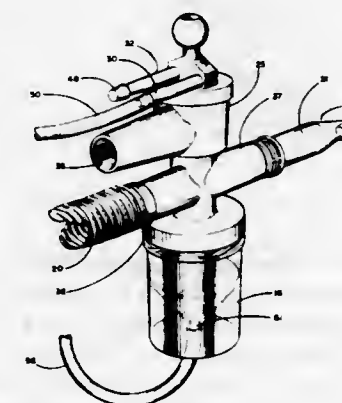
Harold R. Havstad, Lakewood, and Donald F. Diedrich, Temecula, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed June 22, 1972, Ser. No. 265,390

Int. Cl. A61m 11/00

U.S. Cl. 128—194

10 Claims



An improved intermittent positive pressure breathing manifold device comprises a substantially vertical main tube having open upper and lower ends, a diaphragm adjacent the upper main tube opening for intermittent closing thereof and



which diaphragm is in sealing engagement with an upper cap portion located above the main tube, an exhalation port adjacent the upper main tube end and in communication with the lower main tube opening, and first and second gas ports along the main tube between the upper and lower main tube ends. A preferred embodiment includes an improved nebulizer incorporating an air nozzle and coaxial aspirator cap each having concentric orifices substantially aligned with the central vertical axis of the main manifold tube.

3,826,256

## CATHETER DELIVERY DEVICE

Gordon E. Smith, Sun Prairie, Wis., assignor to Meddyne Corporation, Chicago, Ill.

Filed Jan. 13, 1972, Ser. No. 217,468

Int. Cl. A61m 5/18

U.S. Cl. 128—214.4

27 Claims



In a device for ejecting a catheter into a passageway like a blood vessel, the device including a housing containing a catheter extending or extendable into a feeding nose, such as a cannulated needle, the housing interior to be fluid pressurized to effect fluid flow around the catheter. The catheter is inwardly compressible and of a size where the outer diameter is about equal to and preferably somewhat greater than the inner diameter of the needle lumen. The build-up of fluid pressure within the housing of the device was found to compress the catheter making it of a smaller diameter than the needle lumen and in the process forming, at least during the initial stages of catheter movement, a catheter with a piston-like profile so that the catheter is impelled by fluid friction and piston action.

3,826,257

## PROSTHETIC SHUNT

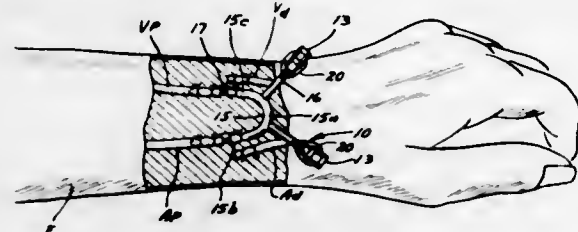
Theodore J. Buschmeier, 520 Washington Ave., S.E., Minneapolis, Minn. 55414

Filed July 14, 1972, Ser. No. 272,077

Int. Cl. A61m 05/00

U.S. Cl. 128—214 R

13 Claims



A prosthetic device partially implantable in the human body for repeated intermittent access to the blood in the circulation system, the prosthetic device comprising a subcutaneous U-shaped shunt of preshaped Silastic, the ends of the U-shaped shunt having tubular tips or other means for connection with an artery and a vein to shunt blood from the artery to the vein; at least one access tube connected with the shunt between the ends thereof and in blood-flow communicating relation, at least the distal end of the access tube to be located at the exterior of the person's skin, and a removable plug entirely filling the full length of the access tube and being removable to obtain access to the blood in the shunt tube.

3,826,258

## GRADUAL RELEASE MEDICINE CARRIER

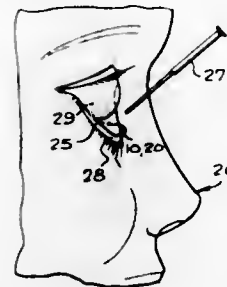
Samuel V. Abraham, 16026 Royal Oaks Rd., Encino, Calif. 91316

Filed Feb. 7, 1972, Ser. No. 224,138

Int. Cl. A61m 31/00

U.S. Cl. 128—260

5 Claims



A medicament carried within a perforate or semipermeable shell is gradually released, as by dissolution into body fluids, to provide effective therapy with reduced concentration and dosage. The medicament may be in dry powdered form. For treatment of the eye, the carrier comprises a capsule less than 1 millimeter in diameter which is placed in the conjunctival sac or mounted in a contact lens. The capsule may be colored for easy location and removal, may be absorbable by the body, or may gradually swell to allow washout by the tears. For glaucoma treatment, less than 1 milligram of pilocarpine or phospholine in a single sustained release capsule may be an adequate daily dosage. In another embodiment a soft contact lens itself may serve as the medicine containing carrier.

For burn, ulcer, or wound treatment, the carrier may be of planar configuration or incorporated in a film forming spray comprising many minute particles or capsules each containing a medicament. The resultant film will protect the tissue from exposure, will provide sustained release medication, and may be absorbable to eliminate the need for removal with concomitant damage to newly formed granulation tissue.

3,826,259

## SELF-CONTAINED DISPOSABLE SWAB-TYPE MEDICATION APPLICATOR

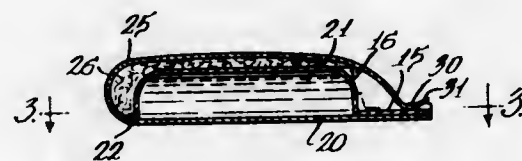
James D. Bailey, Decatur, Ill., assignor to Health Products, Inc.

Filed June 4, 1973, Ser. No. 366,799

Int. Cl. A61m 35/00; A61j 1/00

U.S. Cl. 128—269

5 Claims



A self-contained disposable medication applicator with an encapsulated topical medicine or other fluid wherein a relatively rigid section of material is provided with a recess to hold the fluid and a flexible strip has one part thereof sealed to the relatively rigid material to close off the recess and encapsulate the liquid, with an adjacent length of flexible material having swab material, such as cotton, secured thereto and with a further length of the flexible material peelably attached to the rigid material in a manner to have the flexible material arranged in a generally U-shape, with the swab material captured within the flexible material and positioned to be impregnated by the liquid when the liquid is discharged from the recess. The discharge of the fluid is facilitated by having a manually fracturable seal at one end of the recess whereby manual squeezing of the medication applicator releases the fluid for impregnating the swab material and the flexible

material may then be peeled from the relatively rigid base material and folded back upon itself to expose the swab material for use.

3,826,260

## VIAL AND SYRINGE COMBINATION

Fred M. Killinger, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 27, 1971, Ser. No. 212,592

Int. Cl. A61j 5/00; A61m 5/32

U.S. Cl. 128—272

1 Claim



A syringe barrel having a perforable seal closing an end thereof and a hollow cylindrical portion of reduced diameter extending beyond the seal. A vial having a stoppered opening and a hollow cylindrical portion of reduced diameter extending beyond the stopper. A double-ended cannula is slidably received in the reduced portions of the barrel and the vial for perforating the seal and the stopper to communicate with and between the interiors of the syringe and the vial. A support on the cannula is removably engaged with the reduced portion of the barrel. An elongated tubular sheath extends between and is slidably supported upon the cannula support and the reduced portion of the vial.

3,826,261

## VIAL AND SYRINGE ASSEMBLY

Frem M. Killinger, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. Nos. 212,592, Dec. 27, 1971, and Ser. No. 287,661, Sept. 11, 1972. This application Oct. 25, 1972, Ser. No. 300,649

Int. Cl. A61j 1/06

U.S. Cl. 128—272

5 Claims



A syringe having a needle connected to one end thereof and a hollow cylindrical chamber adapted for communication with

said needle. A vial has a sealed opening and a hollow cylindrical portion of reduced diameter extending beyond the seal. The needle is slidably receivable into the reduced portion of the vial for perforating the seal to communicate with and between the interiors of the hollow chamber and the vial. An elongated tubular sheath extends between and is slidably supported upon the syringe and the vial.

3,826,262

## STOMA DRAINAGE APPLIANCE

Jack R. Blackwood, Largo, Fla., assignor to Howmedica, Inc., New York, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,408

Int. Cl. A61f 5/44

U.S. Cl. 128—283

4 Claims



A stoma drainage appliance comprising a face plate comprising an inner aperture adapted to surround a stoma of any size, and an inner recessed circumferential shoulder in such aperture having a lip protruding into said aperture, and aperture size reducing means having resilient locking means adapted to releasably fit about said protruding lip so as to form a fluid-tight seal between said plate and said reducing means and an opening therein of a size smaller than that of said aperture.

3,826,263

## ELECTRICALLY HEATED SURGICAL CUTTING INSTRUMENT

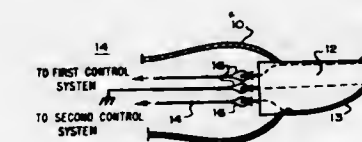
John M. Cage, Los Altos; Robert F. Shaw, San Francisco, and Paul E. Stoft, Menlo Park, all of Calif., assignors to Robert F. Shaw, Palo Alto, Calif.

Division of Ser. No. 63,645, Aug. 13, 1970. This application Aug. 7, 1972, Ser. No. 278,684

Int. Cl. A61b 17/38; A61n 3/00

U.S. Cl. 128—303.1

3 Claims



A surgical cutting instrument includes an electrically heated cutting edge and an automatic control system for maintaining the cutting edge at a constant high temperature for sterilizing the blade, cutting tissue, and cauterizing the incised tissue to reduce hemorrhage from the cut surfaces of the tissues (hemostasis).



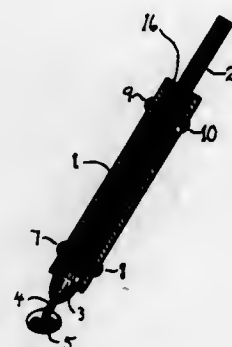
### 3,826,264 THORN AND SPLINTER PULLERS

Roland E. Gunther, 100 Joanne St., Princeton Junction, N.J. 08550

Filed Jan. 30, 1973, Ser. No. 327,930  
Int. Cl. A61b 17/36

U.S. Cl. 128—303.1

2 Claims



A means is provided for cooling a cold-congealable fluid in simultaneous contact with a probe and a foreign body imbedded in the skin thereby forming a substantial bridge between probe and object so that a pulling force can be exerted on the object to effect its removal.

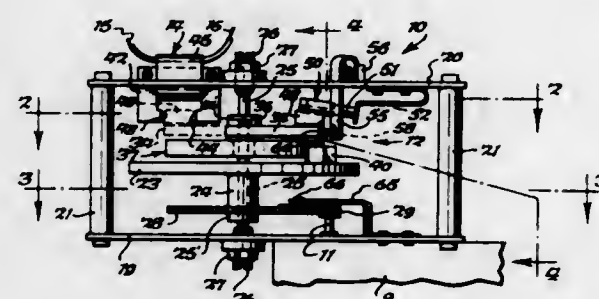
### 3,826,265 MECHANICAL PULSE GENERATOR FOR CARDIAC PACER

Francis A. Glori, Clarence, and Alvin S. Topolski, Tonawanda, both of N.Y., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 5, 1972, Ser. No. 295,184  
Int. Cl. A61n 1/30

U.S. Cl. 128—419 P

13 Claims



A medical electronic pulse generator comprising a source delivering mechanical power at a regulated rate, a motion producing means coupled to the output of the source for cyclically producing a relatively rapid mechanical motion of a duration less than that of each cycle of said pulse generator and having a consistent velocity characteristic, and a transducer means operatively associated with the motion producing means for converting the motion produced thereby to an electrical pulse. The motion producing means includes a first inertial member or element drivenly connected to the source for a portion of each cycle and freely movable during the remainder of each cycle, a second inertial member or element, and an elastic coupling means (e.g. a torsion spring) connected between the inertial members. The inertial members are stopped at predetermined times during each cycle of pulse generation, whereby the kinetic energy of one of the members after generation of a pulse is utilized to store energy in the torsion spring and to position the inertial members for the next cycle. The electrical output pulses are produced at a constant repetition frequency as determined by the mechanical power source and at a constant amplitude as determined by the consistent velocity characteristic of the motion producing means.

### 3,826,266 BRASSIERE

Selma Alpert, 12720 Vose St., Hollywood, Calif. 91605

Filed Dec. 26, 1972, Ser. No. 318,248  
Int. Cl. A41c 3/00

U.S. Cl. 128—435

8 Claims



An adjustable brassiere incorporating a halter including a back, sides and straps and separate cups adapted to be releasably attached to one another and to the sides and straps of the halter. The back and sides of the halter or portions thereof may be fully or partially elasticized and may be provided with mid-back or side fastening means. The cups are formed in a variety of sizes, shapes and styles to permit the wearer to modify the under-garment to match her individual contours and aesthetic tastes. If desired, the halter, with or without the straps, may be incorporated as an integral part of other wearing apparel.

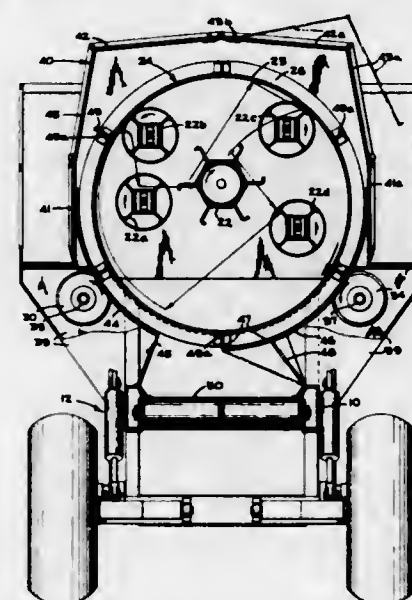
### 3,826,267 LEGUME HARVESTER WITH WIPED SIDE PANELS

Frank F. Scribner, Hoopston, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 7, 1973, Ser. No. 330,333  
Int. Cl. A01d

U.S. Cl. 130—30 H

6 Claims



A field harvester for legumes such as peas, beans or the like includes a rotating drum screen containing beaters with a forwardly running crop conveyor beneath the screen. A shroud surrounds the upper portion of the drum screen and has depending side panels for directing shelled crop downwardly to the crop conveyor. The depending side panels are curved to conform to the drum screen and the screen has an external wiper that dislodges crop from a first curved side panel and sweeps it down to the crop conveyor. The wiper sweeps crop up from the opposite curved side panel, carries it up and around to the first curved side panel, and sweeps it down to the crop conveyor. The lower, crop delivery edge of the first side panel runs diagonally above the crop conveyor.

### 3,826,268

#### ENVELOPE FOR TOBACCO GOODS

Ernst-Rolf Detert, Lubbecke, Westfalen, and Wilhelm Ruchholz, Obermehnen, both of Germany, assignors to Eduard Gerlach, GmbH Chemische Fabrik, Lubbecke, Germany

Division of Ser. No. 83,658, Oct. 23, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,724  
Claims priority, application Germany, Feb. 21, 1970, 2008150

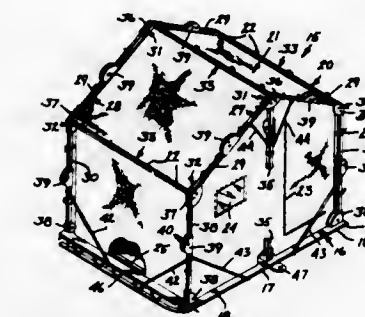
Int. Cl. A24b 3/14

U.S. Cl. 131—140 C

9 Claims

An improved cigarette envelope comprising a mixture of highly methylated methyl cellulose, acetyl cellulose, a filler agent, and a softener agent. According to the preferred process described in the disclosure, the mixture is prepared by using the above mentioned materials in a suspension wherein the solvent is a mixture of methylene chloride and methanol and in which the acetyl to methyl cellulose is in the ratio of 4:1 to 20:1 and the suspension is dried by gradually increasing the temperature in at least three zones.

the collapsible frame and flexible enclosure stored therebetween. Skid runners are secured to the floor structure



to support the floor structure in the horizontal planar position thereof or in the storage-transport position thereof.

### 3,826,269

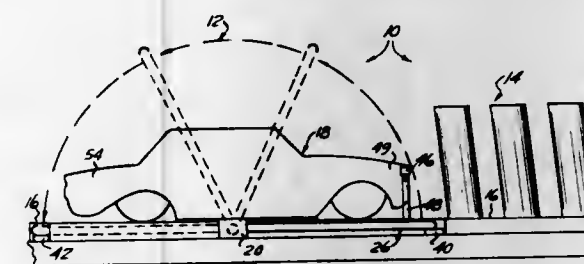
#### VEHICLE WASHING APPARATUS

Harry F. Garrison, 7470 Gerald, Warren, Mich. 48192

Filed Aug. 11, 1972, Ser. No. 279,975  
Int. Cl. B08b 3/02; B60s 3/04

U.S. Cl. 134—123

1 Claim



A limit switch closed by a vehicle activates an inverted U-shaped conduit with nozzles on the inner side thereof and pivotally mounted on its free ends to swing from the slightly below floor level forward of the vehicle to a slightly below floor-level position behind the vehicle. At the same time, a spray of wash water and detergent under pressure is ejected from the nozzles. The conduit then swings back to its forward position while emitting a water spray under pressure from its nozzles for washing off the detergent and water solution emitted during its rearward swing. Another limit switch shuts off the water flow as the vehicle then moves forward and passes between longitudinally spaced upright slotted ducts emitting a pressurized flow of drying air.

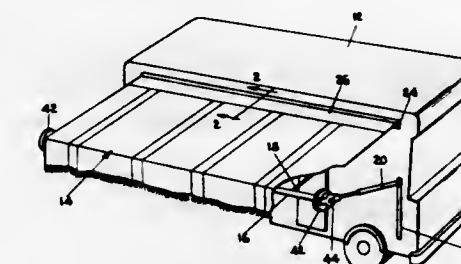
### 3,826,271 AWNING CONSTRUCTION

James L. Sattler, Big Rapids, Mich., and David P. Phillips, Lookout Mountain, Tenn., assignors to Wildwood Products, Inc., Lookout Mountain, Tenn.

Filed May 24, 1972, Ser. No. 256,434  
Int. Cl. E04f 10/00

U.S. Cl. 135—5 AT

10 Claims



An awning construction for use in travel vehicles and the like in which a fabric member serves as the major portion of the awning and a flexible and pliable cover member, preferably of a thermoplastic sheet material, is joined to the inner edge of the fabric so that the cover member serves as a portion of the awning during normal use and serves as an outer cover for the fabric portion when the same is rolled up for storage and travel. The cover member is easily cleanable and of a different material than the fabric member so that the fabric member is protected from dirt when it is rolled up. Desirably, end plates are provided on a frame adjacent to the outer end of the fabric member for closing the ends of the cover when the fabric member is rolled up.

### 3,826,270

#### COLLAPSIBLE ICE FISHING HOUSE

Howard N. Hentges, 11873 Radisson Rd., Blaine, Minn. 55434

Filed Feb. 14, 1973, Ser. No. 332,269  
Int. Cl. E04b 1/347

U.S. Cl. 135—4 R

9 Claims

A sectioned floor structure supports a collapsible frame and a flexible enclosure is suspended from the collapsible frame within the confines thereof. The sectioned floor structure and collapsible frame are foldable from an erect operative position wherein the floor structure is in a horizontal planar position to a storage-transport position wherein wing sections of the sectioned floor structure are disposed in parallel vertical planes perpendicular to a center section of the floor structure with

### 3,826,272 CLOTH-PROTECTOR FOR FOLDING UMBRELLA

Toshio Okuda, Daito, Japan, assignor to Hashimoto Kabushiki Kaisha, Osaka, Japan

Filed Nov. 9, 1972, Ser. No. 305,066

Claims priority, application Japan, Nov. 22, 1971, 46-109696

Int. Cl. A45b 19/06

U.S. Cl. 135—20 R

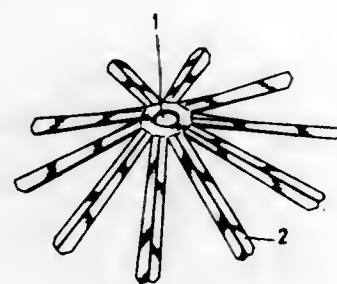
3 Claims

Stripline fabric supports made of a flexible elastic material



and secured to the stick of a telescopically collapsible umbrella extend along umbrella ribs respectively to prevent the um-

distorts the cup-shaped diverter into the tub outlet to provide a seal. A reduced portion of the diverter extends into the tub



brella fabric from being caught between folded ribs when the umbrella is collapsed.

3,826,273

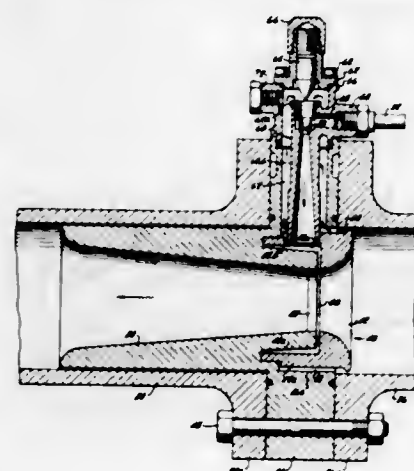
## PRESSURE LOSS COMPENSATOR

Albert William Brown, Newport Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,708  
Int. Cl. F16k 31/12

U.S. Cl. 137-1

22 Claims



A main venturi creating a small pressure drop in its throat is positioned in a high pressure fuel line for fueling aircraft. A small amplifying venturi with means for adjusting the flow therethrough is positioned with its input connected to the line pressure while its outlet is in communication with the throat of the main venturi. The throat of the adjustable venturi is connected to a regulator at a fueling station controlling the fuel line pressure, the amplifying venturi is selected and adjusted to compensate for a pressure drop in the fuel line downstream of the main venturi.

3,826,274

## SHOWER-TUB DIVERTER VALVE

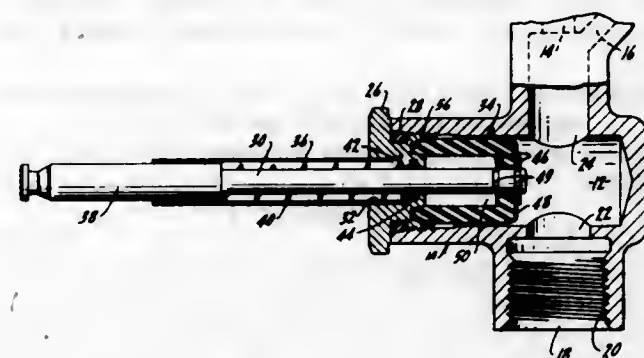
Alfred M. Moen, 25 Lakeview Dr., Grafton, Ohio 44044  
Filed Mar. 26, 1973, Ser. No. 344,507

Int. Cl. F16k 31/44, 51/00

U.S. Cl. 137-119

11 Claims

A shower-tub diverter member is spring-biased to a position to maintain communication between the water inlet and the tub outlet. The diverter is formed of a distortable flexible material and is generally cup-shaped. When the diverter is in a position to block water access to the tub outlet, water pressure



3,826,275

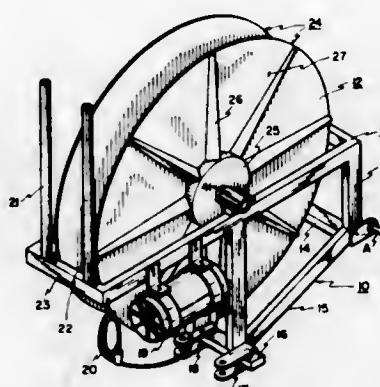
## HOSE REEL CONSTRUCTION

Burr Courtright, La Grande, Oreg., assignor to CH O, Inc., La Grande, Oreg.

Filed Sept. 18, 1972, Ser. No. 290,099  
Int. Cl. B65h 75/36

U.S. Cl. 137-355.2

9 Claims



A hose reel device constructed for winding and unwinding fluid carrying hoses such as agricultural, irrigation water supply hoses. The subject reel, in a preferred form of the invention, is constructed for attaching to the conventional three-point hitch connections of a conventional farm tractor. The reel includes hub structure suitable for receiving a journal shaft to which a main gear is affixed. Orbital motor means drives the main gear in either of two directions, for winding and unwinding functions. In a modification of the equipment a water-fluid exhaust unit such as a blower or water pump is attached to the frame and has the useful purpose of exhausting water from a hose lying on the terrain preparatory to the hose being wound upon the reel. A clutch and gear combination, structurally related to the revolving reel proper, is constructed so that the reel may be not only driven in either of two directions and also conditioned for free-spooling, as desired. Adjustable stand structure and towing bracket means are optional but usable features.

3,826,276

## LEVEL SENSING APPARATUS

James H. Sears, Anderson, and Bernard H. Jones, Pendleton, both of S.C., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

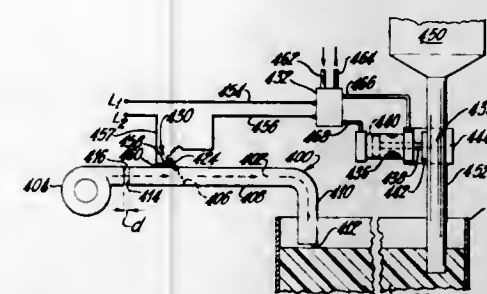
Filed Dec. 22, 1971, Ser. No. 210,872  
Int. Cl. F16k 31/02

U.S. Cl. 137-389

2 Claims

Apparatus for controlling the level of a body of flowable material including a passageway for flow of gas to the level of

the body, means for supplying a gas to the passageway, means for sensing the flow of gas in the passageway as an indication



of the level and means effective in response to the sensed flow of gas controlling supply of material to the body to maintain a selected level.

3,826,277

## VENT VALVE WITH PILOT VALVE FOR OIL-TANKER STORAGE TANKS

Louis Marius Jean Bois, Lotissement des Charmes, Norges-la-Ville (Cote-d'Or), France

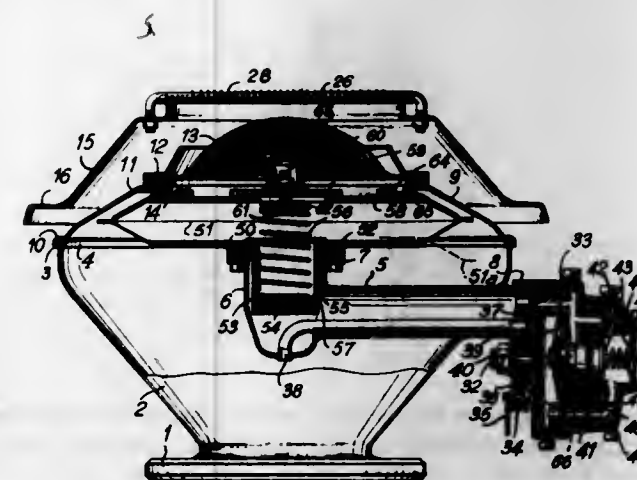
Filed Oct. 27, 1972, Ser. No. 301,296

Claims priority, application France, Nov. 2, 1971, 72.39159; Apr. 20, 1972, 72.13930

Int. Cl. F16k 17/196

U.S. Cl. 137-493

4 Claims



A vent valve having a pilot-valve, for oil-tanker storage tanks, comprises a flared casing offering maximum flow section when the associated obturator member is in the open position, within the casing and beneath a seat terminating the same, the seat having a diameter at least equal to that of the inlet conduit of the casing and being surmounted by a flame-guard and a discharge nozzle both of which are external to the casing. The vent valve may comprise a main expandable valve with a rigid inner end-surface which is profiled by an outwardly directed border the end section of which is fixedly restrained level with the widest part of the casing and is joined by a deformable, flexible and annular wall to a movable upper or outer end-surface having a central profiled extension, which end-surface is provided with a lining which forms a seal upon contacting the sealing seat.

3,826,278

## MISSILE AND POWERPLANT

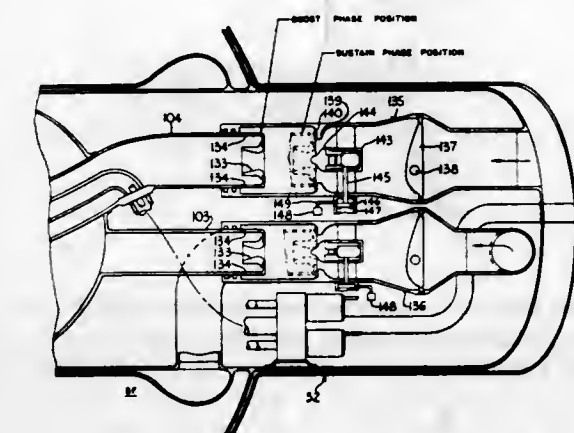
Joseph J. Lovingham, 72 Wayne Blvd., Madison, N.J. 07940, and Hartmann J. Kircher, III, 137 Springbrook Trl., Sparta, N.J. 07871

Division of Ser. No. 502,221, Oct. 22, 1965, abandoned, which is a division of Ser. No. 247,443, Dec. 18, 1962, Pat. No. 3,482,404. This application Mar. 3, 1967, Ser. No. 622,879

Int. Cl. F17b 1/12

U.S. Cl. 137-599

4 Claims



A valve for controlling fluid flow through a conduit and having means to reduce flow therethrough upon sliding operation of the valve.

3,826,279

## OIL/WATER PIPELINE INLET WITH MEANS FOR PRODUCING A UNIFORM OIL VELOCITY

Eke Verschuur, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

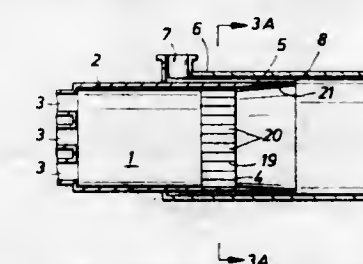
Filed Jan. 13, 1972, Ser. No. 217,496

Claims priority, application Netherlands, Apr. 29, 1971, 7105973

Int. Cl. F17d 1/16

U.S. Cl. 137-604

2 Claims

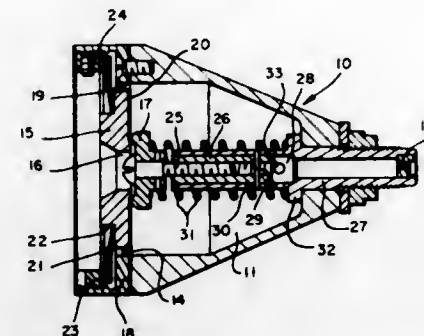


An inlet piece for a pipeline for the transport of a viscous liquid surrounded by an annular layer of a liquid with a lower viscosity, which liquids are entirely or substantially insoluble with respect to each other, composed of a central channel, provided with at least one inlet and with an exit for the viscous liquid, a chamber surrounding that central channel, provided with at least one inlet for the liquid with a lower viscosity and with an annular outlet for that liquid which is so positioned as to surround the exit for the viscous liquid, and a rotation-symmetrical connecting piece for the connection to the pipeline; and a process for the transport of those liquids through a pipeline.



**3,826,280**  
**QUICK-ACTING, SELF-RESETTING FLUID PRESSURE RELEASE VALVE ASSEMBLY**  
 Roscoe E. Perham, Lebanon, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.  
 Filed Feb. 16, 1973, Ser. No. 333,438  
 Int. Cl. F17d 3/00  
 U.S. Cl. 137—624.14

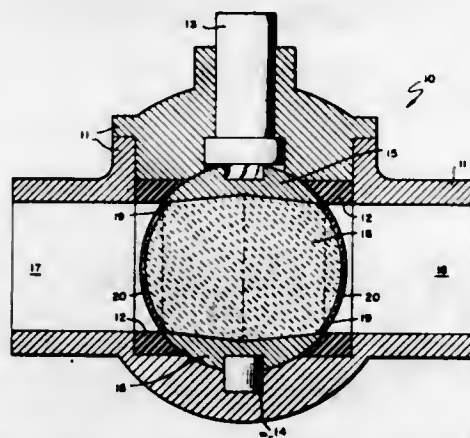
8 Claims



A valve that stores and releases pressurized fluid periodically and automatically using just the energy present within the fluid. A Belleville spring is employed in combination with a poppet valve arrangement to snap the valve open and to reclose the valve automatically. Build-up of pressure within the storage chamber of the valve assembly moves the valve against the compression of the Belleville spring until that point is reached wherein the spring snaps through carrying the valve to its full open position releasing the pressurized contents.

**3,826,281**  
**THROTTLING BALL VALVE**  
 Edward C. Clark, Cheverly, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
 Filed Oct. 29, 1969, Ser. No. 872,265  
 Int. Cl. E03b  
 U.S. Cl. 137—625.31

4 Claims



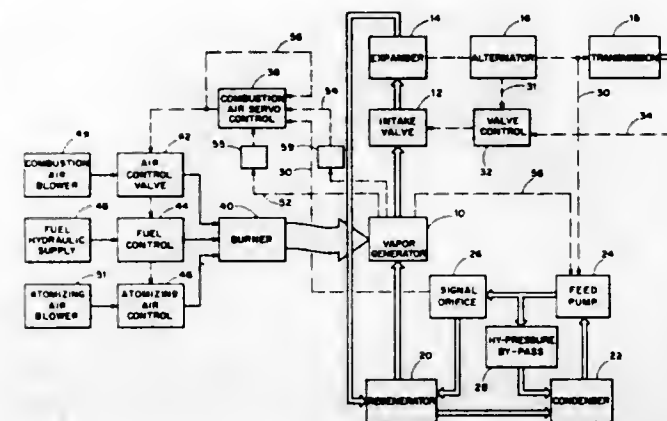
A ball valve having a ball with a porous core which acts as a filter and a noise reduction element, allowing use of the valve as a throttling valve as well as a shut-off valve.

**3,826,282**  
**EXTERNAL COMBUSTION ENGINE AND CONTROL MECHANISM THEREFOR**  
 William B. Noe, Concord, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.  
 Filed May 5, 1972, Ser. No. 250,638  
 Int. Cl. F16k 11/07, 39/04  
 U.S. Cl. 137—625.69

4 Claims

An external combustion engine, such as the vapor cycle engine, produces power by the expansion of a working fluid

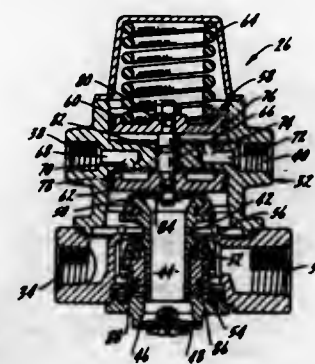
vapor. A vapor generator vaporizes a suitable working fluid which is fed to an expander. The vaporized working fluid expands and is subsequently fed back to the vapor generator. A burner provides energy for the vapor generator. The fuel and air supply for the burner is controlled by a system responsive to operating conditions of the engine. That is, the power input



to the vapor generator is correlated by a control system with the demand on the engine. The control system disclosed involves a servomechanism which may suitably respond, for example, to either the working fluid flow rate or the input from an accelerator which commands a change in the working fluid flow rate.

**3,826,283**  
**INVERSION VALVE**  
 Boleslaw Klimek, Des Plaines, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.  
 Filed May 29, 1973, Ser. No. 364,307  
 Int. Cl. F16k 31/12; B60t 13/68  
 U.S. Cl. 137—627.5

11 Claims



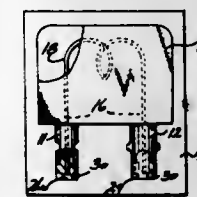
An inversion valve for use in a vehicle air brake system includes a valve member which maintains communication between a source of pressure and an air brake as long as pressure is maintained in both primary and secondary air systems. If the primary air system should suffer a reduction in pressure, the valve member closes communication between the tank and the air brake and opens an exhaust port to exhaust the air pressure in the brake, thereby causing the brake to operate.

**3,826,284**  
**TUBULAR FLUIDIC RESISTOR**  
 David C. Broker, and Judith L. Wisniewski, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.  
 Division of Ser. No. 41,814, June 1, 1970. This application June 26, 1972, Ser. No. 266,247  
 Int. Cl. F15c 1/06  
 U.S. Cl. 137—833

1 Claim

A capillary linear fluidic resistor is formed by molding a plastic about a close tolerance wire to define a particular length-to-diameter ratio. The wire is shaped to the desired

capillary passageway and supported in a mold with walls of the mold engaging the wire at the opposite ends of the capillary passageway. Thus, the wire is a close tolerance member hav-

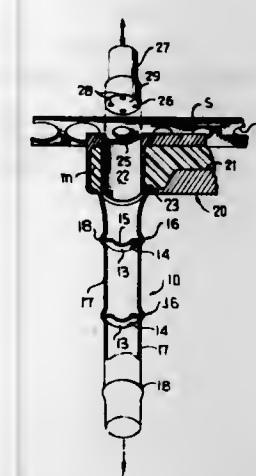


ing a given constant diameter. A thermoplastic fills the mold and after curing, the molded member with the wire therein is removed. The wire is pulled from the plastic member to form the capillary resistor.

**3,826,285**  
**HOLLOW TUBE OF VARIABLE EXTERIOR DIMENSIONS**  
 Frank J. Reynolds, 1616 Van Buren Dr., North Brunswick, N.J. 08902  
 Filed Oct. 24, 1972, Ser. No. 300,147  
 Int. Cl. F16l 9/12

U.S. Cl. 138—103

13 Claims



This invention relates to an article of manufacture and more particularly a hollow extruded tube of variable exterior dimensions formed of preheated, drawn down and thereafter cooled thermoplastic material having a plurality of elements internally interlocked therewith in spaced relationship to each other whereby in outward appearance the tube may be best described as "bamboo" and is adapted for use as a percussion instrument, the game of tinikling, fishing pole sections, structural elements, etc.

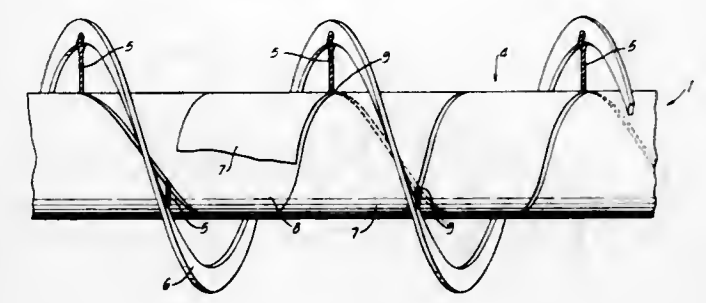
**3,826,286**  
**SPACER CONSTRUCTION FOR THERMALLY INSULATING CONCENTRIC TUBES**  
 August Beck, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte/Aktiengesellschaft, Hannover, Germany  
 Filed Feb. 28, 1973, Ser. No. 336,421  
 Int. Cl. F16l 7/00

U.S. Cl. 138—114

9 Claims

In a coaxial tube system for low temperature use, such as an envelope for cryogenic cable or as conduit for low temperature fluids, the system having a first, inner tube and a second, outer tube concentric to the inner tube, there being a ring space in-between, a spacer and supporting structure in the ring space, comprising a plurality of layers on the inner tube in concentric relation thereto and to each other and in superimposed relation; each layer includes at least one highly reflective foil ribbon and of at least one supporting ribbon of like

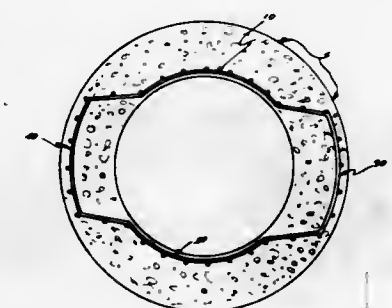
width and helically wound on the respective layer underneath on the inner tube, and in sequential loops leaving a narrow gap between adjacent loops; sequential layers have their respective ribbons wound at opposite pitch and sense of direction of winding; the ribbon helices of every other layer are superimposed and the gaps of every other layer are radially aligned so that the gaps of immediately adjacent layers intersect, result-



ing in a plurality of gap intersections arranged along at least two helices around the inner tube; a plurality of flexible members such as filaments, ropes, string, etc., respectively traverse the gap intersections, for holding the inner tube underneath said radially aligned gap intersections; and means, such as a helical carrier hold the said flexible means adjacent the outer tube for suspending the inner tube therein.

**3,826,287**  
**CONCRETE PIPE REINFORCING CAGE**  
 Wilbur E. Tolliver, Holland, Mich., assignor to New York Wire Mills, Tonawanda, N.Y.  
 Filed Feb. 8, 1973, Ser. No. 330,608  
 Int. Cl. F16l 9/08  
 U.S. Cl. 138—175

13 Claims



A cage for reinforcing concrete pipe made by positioning two reinforcing fabric segments at the crown and invert reinforcing portions of the cage respectively and two fabric segments at the opposed spring line reinforcing segments of the cage respectively. Each of the segments is formed on a generally circular radius, the crown and invert reinforcing segments being formed on an inner radius so as to be located generally near the inner wall of the completed pipe and the spring line reinforcing segments being formed on a larger radius so as to be generally adjacent the outer wall of the pipe. In one embodiment, the four segments are joined together by two spaced hoops, the crown and invert reinforcing segments being joined directly to the hoops and the spring line reinforcing segments being joined to the hoops by spacer rods. In another embodiment, the four segments are part of an integral piece of reinforcing fabric bent outwardly at the edges of the crown and invert reinforcing segments to define spacer segments, the spacer segments terminating and being bent inwardly at the edges of the spring line reinforcing segments.



3,826,288

## SELF-RECOILING HOSE

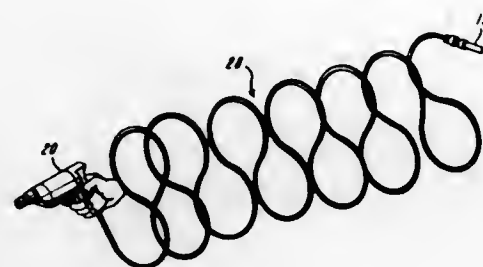
Jerry W. Cooper, Waynesville, and John S. Haley, Lake Janakia, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 20, 1973, Ser. No. 353,054

Int. Cl. F16I 9/12, 11/04

U.S. Cl. 138—178

9 Claims



A self-recoiling hose having a plurality of integral convolutions wherein said convolutions with the hose in a coiled condition are arranged in a corresponding plurality of parallel planes and each convolution has a peripheral outline which is substantially noncircular.

3,826,289

## METHOD FOR INSERTING WEFT IN SHUTTLELESS LOOMS

Pavel Vladimirovich Galkin, ul. 1 proezd, 1a, and Nikolai Antonovich Rudenko, ul. Lesnaya, 4, kv. 10, both of Klimovsk, U.S.S.R.

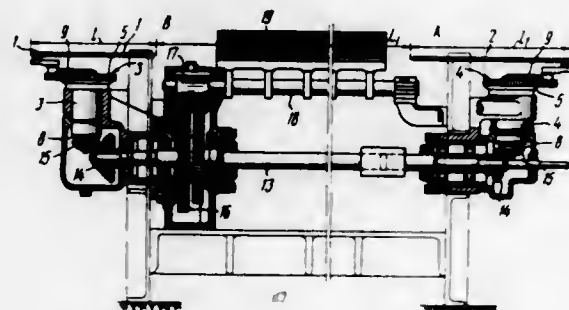
Filed Aug. 25, 1972, Ser. No. 283,757

Claims priority, application U.S.S.R., Dec. 15, 1971, 1724106

Int. Cl. D03d 47/18

U.S. Cl. 139—127 R

3 Claims



A method for laying weft thread in the warp shed used in needle looms is disclosed. This method consists in that the feeding and the receiving laying needles mutually reciprocate to transfer the weft thread at the moment of their closest approach. The needles meet at the midpoint of the distance between the starting points of their reciprocating movement for which purpose the needles are made different in length. The shorter needle is introduced into the warp shed with a time lag relative to the moment of inserting the longer needle therein, thus making the needles move in one direction while the weft thread is transferred, whereupon the needles return to their initial positions leaving the warp shed at the same time. At the expense of extending the time of contact of the needles during their movement in one direction, this method permits of significantly improving the conditions for catching the weft and sharply reducing the number of mispicks, loops, and double threads.

3,826,290

## COIL BINDING MACHINE

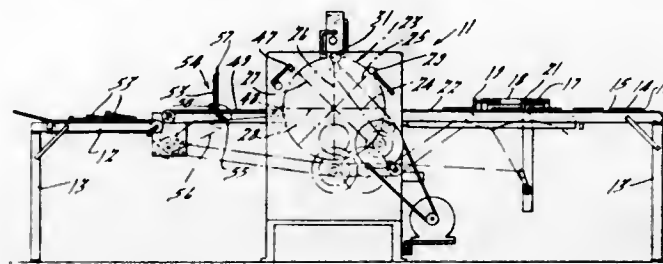
Ernst Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Mar. 8, 1973, Ser. No. 339,125

Int. Cl. B21f 11/00, 15/00

U.S. Cl. 140—92.7

6 Claims



Stacks of sheets are fed to a rotary carrier indexable to successive stations where the sheets are aligned and spiral bound. The binding takes place at two separate stations, the coil being inserted and severed from the feed wire at one station with an axially moving shear and the ends trimmed and turned inward at the succeeding station. After leaving the carrier, alternate books are flipped over by a continuously rotating set of fingers and stops.

3,826,291

## DISPENSING VOLATILE HYDROCARBON FUELS

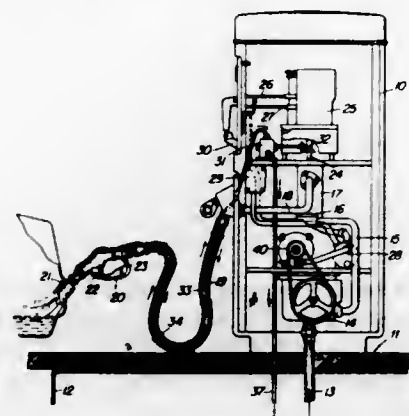
Lester R. Steffens, Darien, Conn., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,721

Int. Cl. B65b 31/00

U.S. Cl. 141—59

1 Claim



Escape of hydrocarbons to the atmosphere during dispensing of volatile hydrocarbon fuels is avoided by pumping vapor from the container to be filled concurrently with introduction to that container of hydrocarbon fuels which contain volatile components. Suitable apparatus for the purpose include a vapor pump driven by the shaft of the meter which operates an indicator of amount of liquid dispensed.

3,826,292

## APPARATUS FOR INTRODUCING A FILLING MATERIAL INTO A CONTAINER OF FLEXIBLE MATERIAL

Flemming Lerche-Svendsen, No. 11 Skovholmsvej, 2920 Charlottenlund, Denmark

Filed Aug. 14, 1972, Ser. No. 280,243

Claims priority, application Denmark, Aug. 31, 1971, 4265/71

Int. Cl. B65b 31/16

U.S. Cl. 141—114

23 Claims

A container of flexible material and a method of filling the container with a bulk material is described. A filling hose is

3,826,294

## MECHANISM FOR MOVING CENTERING MEMBERS FOR CONTAINERS IN CONTAINER FILLING MACHINES

Friedrich Rademacher, Kamen-Sudkamen, Germany, assignor to Holstein & Kappert Maschinenfabrik, Dortmund, Germany

Filed Jan. 28, 1972, Ser. No. 221,544

Claims priority, application Germany, Jan. 28, 1971, 2103983

Int. Cl. B67c 3/34

U.S. Cl. 141—258

10 Claims



distended and thus exert tensile forces in the intermediate zones of the hose. Since the hose material in these zones is weaker than the bonding strength between the hose and the container, the hose will be gradually torn longitudinally into two parts each of which participates in the distention of the container so that the location at which the filling material passes from the hose into the container will be displaced away from the closed container end in timed relationship with the filling operation.

3,826,293

## NO CAN-NO FILL FOR HIGH SPEED ROTARY FILLING MACHINE

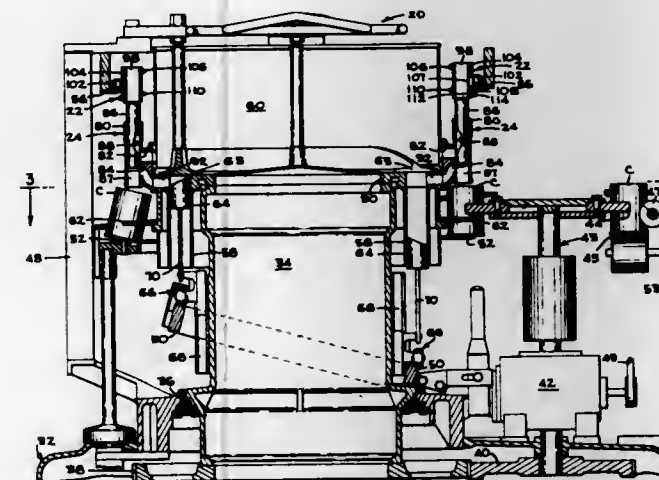
David W. Cayton, Cupertino, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 16, 1973, Ser. No. 351,417

Int. Cl. B65b 57/02

U.S. Cl. 141—142

13 Claims



A high speed rotary filling machine is provided with means for sensing incoming empty containers before they are moved onto the turret of the filling machine. Each valve of the filling machine is provided with a movable cam follower and a latch for either arming the follower to open the valve, or disarming the follower to keep the valve closed, according to the presence or absence of an incoming empty container approaching the turret for subsequent alignment with that valve. Arming the follower is effected by a fixed cam lying in the path of the followers, and disarming the follower is effected by a power actuated cam adjacent the same path. Each filling valve, accordingly, is normally opened during the filling operation unless it has been previously disarmed.

924 O.G.—46

3,826,295

## FELLING HEAD STRUCTURE

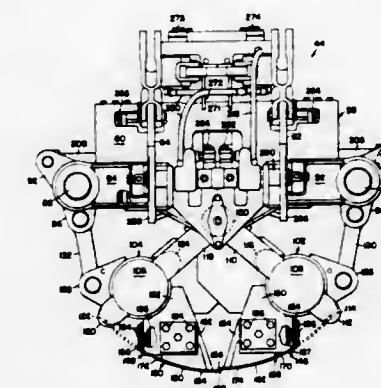
Earl C. Johnson, Bellevue, and Stanley Robert Hiscier, Dubuque, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 26, 1973, Ser. No. 354,480

Int. Cl. A01g 23/08

U.S. Cl. 144—34 E

18 Claims



An articulated, four-wheel drive tree harvesting machine includes a front frame section upon which a felling boom assembly, a delimbing assembly and a feed assembly are mounted. The felling boom assembly is operable for severing a



tree and lowering the same into a generally horizontal disposition from where the trunk of the tree may be released for engagement by feed rolls of the feed assembly and for encirclement by blades of the delimbing assembly. The felling boom assembly includes a felling head structure which is pivotally mounted at the end of a boom section for movement about a horizontal axis and which includes a pair of cylindrically curved blades mounted for vertical swinging movement about an axis arranged to extend crosswise to the longitudinal axis of a tree being sheared. A pair of double-acting pistons are mounted within a common cylinder and are respectively linked to the pair of blades for selectively moving the latter towards and away from each other. The felling head structure also includes a pair of grapple tongs located above the pair of blades and a double-acting cylinder is connected to each of the pair of grapple tongs and are operable independently of the blade-operating pistons. The pivotal connection between the felling head structure and the boom of the felling boom assembly forms a fluid manifold for conveying pressure and exhaust fluid to and from the hydraulic actuators for the blades and the grapple tongs.

3,826,296

## SELF-LINING HANDBAG OR THE LIKE

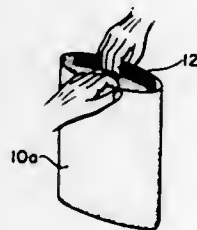
Myrtle Ellen Morris, 8564 Freyman Dr., No. 110, Chevy Chase, Md. 20015

Filed Mar. 8, 1972, Ser. No. 232,789

Int. Cl. B63d

U.S. Cl. 150-3

2 Claims



A self-lining receptacle such as a handbag or the like is provided which includes a pair of closure strips or tapes which are secured to opposite inner surfaces of the bag and which provide closure of the bag when pressed together. The bag is manufactured by folding a blank of material to which the strips have been secured, lengthwise along the longitudinal centerline thereof so the unfinished side is exposed. Adjacent edges at one end, and the side opposite the fold, are sewn together after which the folded blank is turned inside out through the open end. This end is then sewn closed and is inserted back into the pocket formed by the other end, one half being tucked into the other half so that the finished surface of this half forms a lining and that the strips are located on the lining opposite one another, adjacent the opening at the top produced by this step.

3,826,297

## RADIAL TIRE CARCASS

Sterling W. Alderfer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed Oct. 26, 1972, Ser. No. 301,189

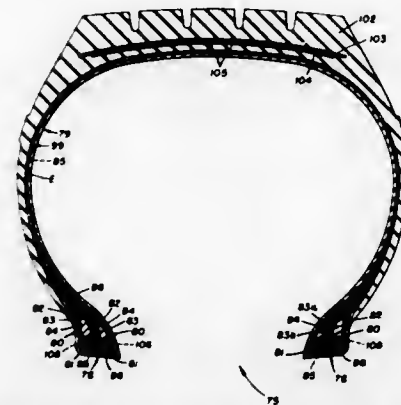
Int. Cl. B60c 9/08, 15/06

U.S. Cl. 152-354

10 Claims

The radial tire carcass disclosed has a pair of bead sections and at least one reinforced body ply functionally gripped thereby. Each bead section incorporates one or more bead assemblies comprising a bead ring and a reinforced radially oriented flipper portion anchored to the bead ring. The flipper portion overlies the body ply in contiguous juxtaposition, and the reinforcing means in the body ply terminates along the radial extent of the bead assembly. Because the reinforcing means in the flippers are wholly independent of the reinforcing means in the body ply, the transfer of forces therebetween

is occasioned solely by virtue of the aforesaid contiguous juxtaposition. The method and apparatus for making such a tire assembles a first pair of bead assemblies on a building drum and then builds a first body ply by successively depositing a plurality of reinforced elastomeric strips about the outer surface of the building drum. The deposited strips are stitched to each other and to the bead assemblies. The relationship of the



successive strips with respect to each other is predetermined by coordination of the degree of angular displacement through which the drum means is indexed to receive the successive deposits of strips thereon in conjunction with the width of the successive strips. Additional bead assemblies and body plies as well as chafer strips, belts, sidewall stock and tread stock may be applied, if desired.

3,826,298

## POLYVINYL ALCOHOL CORD TIRES

Shoichi Tanaka, 550-1, Yasue; Susumu Kousaka, 1273-4, Nakasho, both of Kurashiki, and Toshio Kimura, 2-208, Katsuragi-cho, Nara, all of Japan

Continuation-in-part of Ser. No. 90,816, Nov. 10, 1970. This application Jan. 5, 1972, Ser. No. 215,621

Claims priority, application Japan, Nov. 25, 1969, 44-94790; Apr. 30, 1970, 45-37354

Int. Cl. D02g 3/48, 3/02

U.S. Cl. 152-359

3 Claims

Polyvinyl alcohol fibers are provided containing boric acid or a borate salt thereof in an amount of 0.2 to 0.9 percent by weight of polyvinyl alcohol wherein the yarn tenacity of 120°C., the yarn initial modulus at 120°C. and the yarn creep at 135°C. are at least 7.5 g/d, 100 g/d and less than 2 percent, respectively. Radially and belted bias ply tires are also provided which utilize said fibers in the cord of the breaker or belt, the fiber being twisted under a twist constant of ply of 800 to 1,300 and a cable twist (turns/10cm) of 80 to 100 percent of the ply twist (turns/10cm).

3,826,299

## TYRE CHANGERS

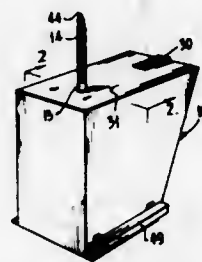
Donald Butler Curchod, 150 Cabarita Rd., Clareville, New South Wales, Australia (2107)

Filed Sept. 8, 1972, Ser. No. 287,351

Int. Cl. B60c 25/10

U.S. Cl. 157-1.24

8 Claims



A tyre changer and bead breaker having a cylinder actuated threaded shaft which when displaced urges a bead breaker

holder against a tyre on a wheel positioned in the path of travel of the bead breaker to separate the bead from the rim, the tyre thereafter being positioned coaxially with respect to the shaft, and a tyre lever which when mounted on the shaft, is rotated upon displacement of the shaft whereby portion of the lever inserted between the wheel and the tyre removes the tyre from the wheel.

3,826,300

## LIGHT SEAL FOR HAND OPENINGS IN PHOTOGRAPHIC PROCESSING EQUIPMENT

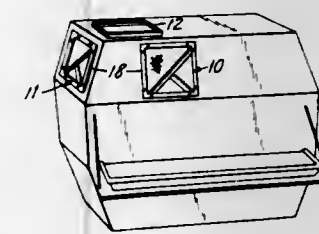
Conrad E. Lee, Mound, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Feb. 7, 1973, Ser. No. 330,179

Int. Cl. G03d 17/00

U.S. Cl. 95-1 R

1 Claim



This is a light seal for sealing hand access openings for photographic processing equipment and specifically includes four triangular panels made from elastic material respectively arranged 90° out of phase around a square opening with the free marginal edge portions thereof having a substantial light sealing overlap provided with an elastic reinforcement and constitutes an improvement over the light seal disclosed in the U.S. Pat. to Grant, No. 3,314,352.

3,826,301

## METHOD AND APPARATUS FOR MANUFACTURING PRECISION ARTICLES FROM MOLTEN ARTICLES

Reginald Gwyn Brooks, Mirfield 1, Sketty Park Rd., Sketty Green, Swansea, Glamorgan, Wales

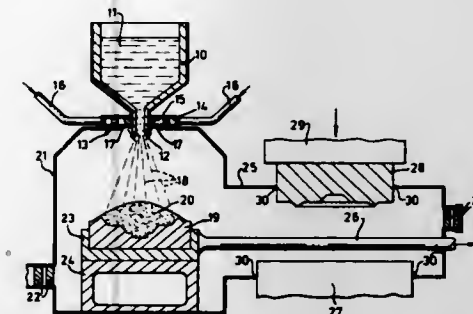
Filed Oct. 16, 1972, Ser. No. 297,866

Claims priority, application Great Britain, Oct. 26, 1971, 49646/71; June 6, 1972, 26307/72

Int. Cl. B22d 11/10

U.S. Cl. 164-46

35 Claims



A method and apparatus for manufacturing shaped precision articles from molten metals (including alloys), which articles may either be effectively non-porous or have a controlled degree of porosity and may be finished (i.e. no further processing is required) or may require a small amount of finish machining (e.g. trimming of flash and/or heat treatment), wherein the method comprises directing a stream of molten metal or molten metal alloy at a collecting surface to form a deposit, and working the deposit by means of a die to form a precision metal or metal alloy article.

3,826,302

## DIE CASTING APPARATUS

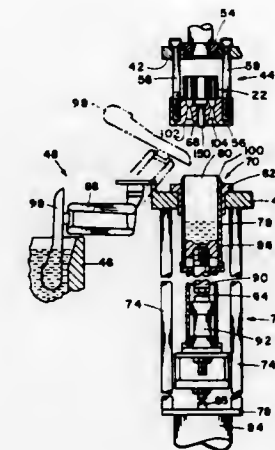
William G. Wunder, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 3, 1972, Ser. No. 294,523

Int. Cl. B22d 17/12

U.S. Cl. 164-312

6 Claims



Apparatus for automatically casting articles and particularly the end rings and conductor bars in a rotor. A mold having interconnected ends adapted to receive the body of the product into which the liquid material to be cast is injected, can be clamped, is movably seated over a chamber, reservoir or shot sleeve for the injectable material. By movement of either the mold, the reservoir or both, the mold and chamber can be separated sufficiently to permit free access to the reservoir for introduction of a charge of the liquid injectable material. In a more automated phase of the invention, a single injection station is provided with a plurality of molds movable between the injection station and other stations at which the mold is opened, sprue removed, finished product removed and the mold prepared for the next casting cycle.

3,826,303

## APPARATUS FOR CASTING MOLTEN METAL/FOAMING AGENT COMPOSITION

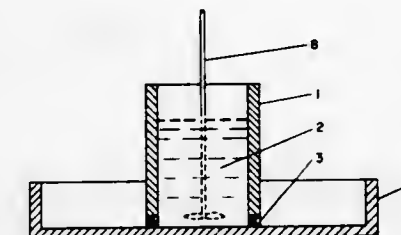
Chester P. Jarema, Detroit, and Leonard M. Niebylski, Birmingham, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 50,139, June 26, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,040

Int. Cl. B22d 41/00

U.S. Cl. 164-335

2 Claims



A novel vessel and an improved method of casting batch liquid materials which solidify on cooling or standing utilizing one or more upright open-ended body elements with mixing means therein initially seated on the bottom of a mold; the method is especially advantageous for casting foamed metals.



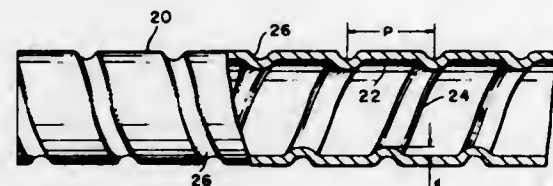
3,826,304

**ADVANTAGEOUS CONFIGURATION OF TUBING FOR INTERNAL BOILING**

James G. Withers, Jr.; Harvey R. Dean, both of Dearborn, Mich., and Stuart T. Ross, Manlius, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.  
Continuation of Ser. No. 674,611, Oct. 11, 1967, abandoned.  
This application Nov. 4, 1970, Ser. No. 86,708  
Int. Cl. F28f 1/08

U.S. Cl. 165—1

26 Claims



Tubing designed for internal boiling, particularly of substituted hydrocarbon refrigerants provided with an unobstructed interior having radially inwardly extending ribbing comprising a multiplicity of convolutions extending around the tubing, the axial pitch  $P$  of adjacent convolutions being not greater than  $3/4$  inch, the depth  $d$  of the ribbing being between  $1/64$  inch and  $3/64$  inch, the ratio  $P/d$  being between 5 and 25.

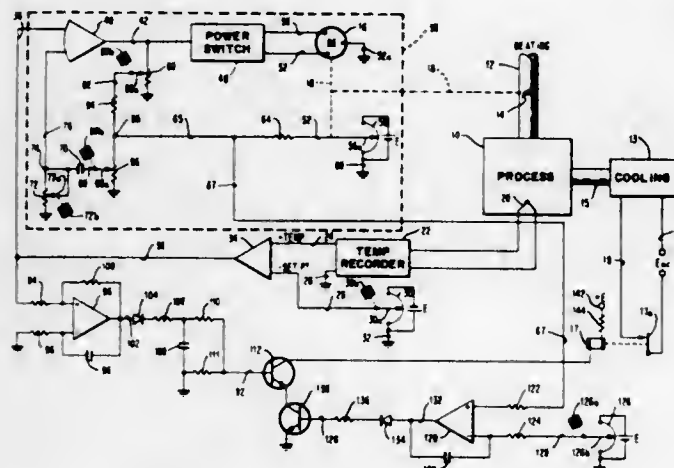
3,826,305

**TEMPERATURE CONTROLLER FOR CONTROLLING BOTH HEATING AND COOLING**

Walter Fishman, Hatfield, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.  
Filed Jan. 10, 1973, Ser. No. 322,325  
Int. Cl. F25b 29/00

U.S. Cl. 165—26

7 Claims



A temperature controller for maintaining the temperature of a process at a set point by controlling the heating input in accordance with both a proportional and reset response from the temperature deviation. When the deviation indicates that the temperature control requires a cooling input to the process, a gating signal is produced. Another gating signal is produced when the manipulated variable providing the heating input is below a preset value. Gating means are provided which will respond to the coincidence of the two gating signals for introducing the cooling to the process. The cooling is thus controlled in an on-off mode.

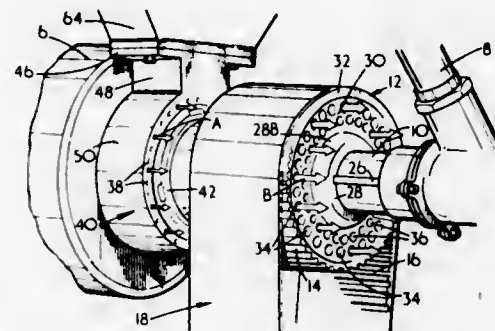
**3,826,306  
APPARATUS HAVING ONE OR MORE ROTATABLY DRIVEN COMPONENTS**

Charles Richard Marsh, Romiley, near Stockport, England, assignor to Auto-Masters Limited, Hyde, Cheshire, England  
Filed Feb. 23, 1973, Ser. No. 335,281  
Claims priority, application Great Britain, Feb. 23, 1972, 8267/72

Int. Cl. F24h 3/00

U.S. Cl. 165—47

17 Claims



To prevent heat degradation of a rubber driving belt passing around a pulley keyed to a shaft of a heated roller, cooling air is blown onto a side of the pulley from a ring of jets extending around the shaft, and the pulley is formed with passages extending in rings around the shaft to permit the air to pass through the pulley.

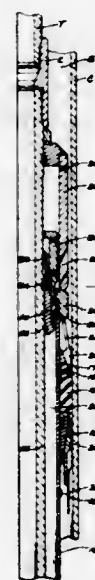
3,826,307

**WELL PACKER AND TESTING APPARATUS**

Cicero C. Brown, and Chudleigh B. Cochran, both of Houston, Tex., assignors to Brown Oil Tools, Inc., Houston, Tex.  
Filed Sept. 25, 1972, Ser. No. 292,136  
Int. Cl. E21b 47/10

U.S. Cl. 166—120

20 Claims



Apparatus for testing a well packer having a supporting body anchored to a surrounding well conduit and on which is carried a seal member for forming a fluidtight seal between the surrounding well conduit and the supporting packer body. The testing apparatus may comprise an inner well conduit concentrically disposed within the surrounding well conduit and to which is attached a tubular mandrel for disposition within the supporting packer body to form an annular flow passage in fluid communication with the annulus between the two well conduits. Annular pack-off means comprising a cylindrical sleeve member is carried by the mandrel for axial move-

ment from a first position above the annular passage to a second position sealingly engaging this flow passage and preventing flow of fluids from the annular passage through the annulus between the well conduits. The sleeve member may be mounted on the mandrel for limited axial movement relative thereto and may be initially prevented from axial movement relative to the mandrel by hold-down means. The hold-down means may be adapted to release the sleeve member in response to pressure applied to one end thereof so as to permit its limited axial movement relative to the mandrel. The hold-down means also includes cooperable friction means on the mandrel and the sleeve member responsive to pressure applied to the opposite end of the sleeve member to permit axial movement in one direction while restricting movement in the opposite direction.

3,826,308

**PROCESS FOR PRODUCING PRODUCT FROM FOSSIL FUEL**

Alicia L. Compere-Whitney, Knoxville, Tenn., assignor to Imperatrix, San Jose, Calif.

Filed Sept. 25, 1972, Ser. No. 291,572

Int. Cl. C12d 3/10; E21b 43/22, 43/24

U.S. Cl. 166—246

12 Claims

A process is disclosed for producing a valuable product from fossil fuel deposits which contain organic ring compounds. In the process, a fossil fuel deposit containing organic ring compounds is contacted in situ, preferably at a depth of at least 500 feet below ground surface, with an anerobic ring compound fermenting microorganism. An intermediate having a lower ring compound content and including paraffins and organic acids is produced. Generally, water is present during the fermenting and the intermediate is more soluble in the water than are the organic ring compounds. The intermediate is contacted either concurrently with the fermentation of the organic ring compounds or thereafter with a microorganism which converts paraffins to organic acids. The resulting organic acid composition is contacted with a microorganism which converts organic acids to valuable products. The conversion of the organic acids to valuable products can occur either concurrently with or after the microorganism conversion of paraffins to organic acids. In a preferred embodiment of the invention a microorganism which converts carbohydrates, e.g., cellulose, to a valuable product is included in at least one of the contacting steps, most preferably during the ring compound fermenting.

3,826,309

**WELL SAFETY VALVE**

Gilbert H. Tausch, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed May 11, 1973, Ser. No. 359,254

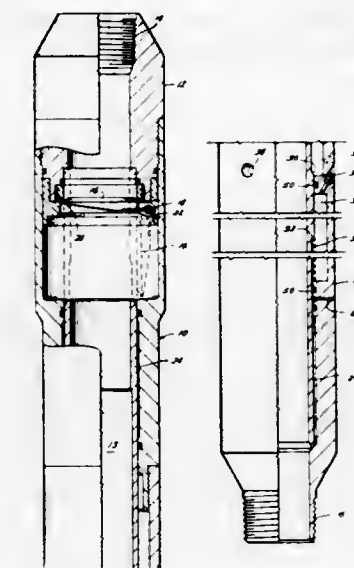
Int. Cl. E21b 43/12; F16k 17/02

U.S. Cl. 166—224 S

3 Claims

A well safety valve for use in a well tubing having a valve for engaging an annular valve seat for opening and closing the valve and operated by a sliding tube telescopically movable in the body and positioned below the valve means. Upward movement of the tube opens the valve and downward movement of the tube closes the valve. Means normally biasing said tube upwardly for holding the valve open and piston means connected to the tube and in communication with the exterior of the valve for moving the tube downwardly for closing the valve on increase in pressure exteriorly of the valve. A flapper valve pivotally connected to the body below the valve seat and movable upwardly into engagement with the seat for closing the valve and movable downwardly away from the seat for opening the valve. The biasing means including a gas chamber having a seal on each side of the chamber between the chamber and the interior of the tubing, and a bleed port lead-

ing from the side of each seal remote from the chamber to exteriorly of the body for preventing tubing pressure entering



the chamber and providing a fail safe operation of the biasing chamber.

3,826,310

**PLUG-DISPLACED SANDPACKING PROCESS**

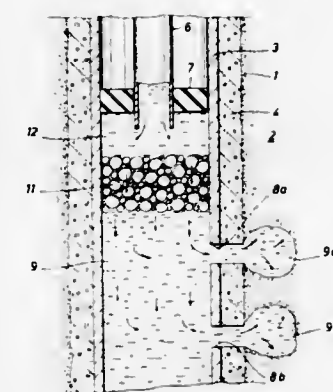
George Thomas Karnes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 18, 1973, Ser. No. 324,702

Int. Cl. E21b 43/02

U.S. Cl. 166—276

9 Claims



A slurry of resin, sand and oil, for forming a sand or gravel pack in a well, is injected ahead of a mass of solid particles that form chemically removable plugs across the openings of well casing perforations into which the slurry is injected.

3,826,311

**PRODUCING WELL TREATMENT**

Miklos Tamas Szabo, Coraopolis; Andrew Jackson Sharpe, Jr., McMurray, and Nancy Spicer Sherwood, Sewickley, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed June 13, 1973, Ser. No. 369,630

Int. Cl. E21b 33/13, 43/16

U.S. Cl. 166—295

7 Claims

Use of copolymers of (3-acrylamido-3-methyl) butyl trimethyl ammonium chloride and acrylamide to treat producing wells in order to reduce water production and improve the oil-water ratio of said well or gas-water.



3,826,312

## SELF-NEUTRALIZING WELL ACIDIZING

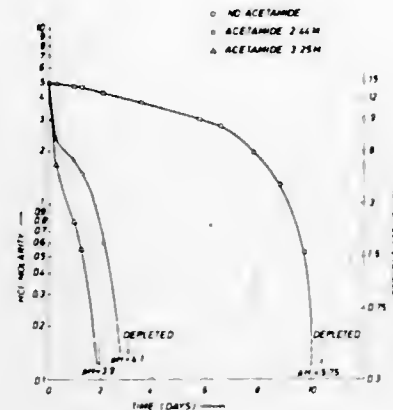
Edwin A. Richardson, Houston, and Ronald F. Scheuerman, Bellaire, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed July 24, 1972, Ser. No. 274,778

Int. Cl. E21b 43/16, 43/25

U.S. Cl. 166—307

10 Claims



A process for acidizing a subterranean region by contacting it with an acidic solution is improved by dissolving in the solution a pH-increasing reactant that subsequently adjusts the pH of the solution to a selected relatively neutral value.

3,826,313

## METHOD OF FIRE PROTECTION USING RECIRCULATION OF COMBUSTION PRODUCTS TO DISCHARGE A FOAM EXTINGUISHANT

Cheng Yao, Weston, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Division of Ser. No. 277,495, Aug. 3, 1972, Pat. No. 3,780,811, which is a division of Ser. No. 198,386, Nov. 12, 1971, Pat. No. 3,708,015. This application Oct. 2, 1973, Ser. No. 402,833

Int. Cl. A62c 1/14

U.S. Cl. 169—44

14 Claims



A method of fire protection in which a foam extinguishant is discharged towards the fire in response to a predetermined fire condition in the space to be protected. At least a portion of the foam discharge is terminated and a fluid extinguishant is discharged towards the fire in response to an additional predetermined fire condition.

3,826,314

## CULTIVATING IMPLEMENTS

Ary Van Der Lely, 10 Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36 Esdoornlaan, Rozenburg, both of Netherlands

Continuation of Ser. No. 43,006, June 3, 1970, abandoned.

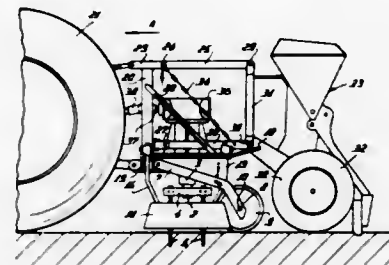
This application Apr. 24, 1972, Ser. No. 246,738

Claims priority, application Netherlands, June 10, 1969, 6908785

Int. Cl. A01b 33/00

U.S. Cl. 172—59

5 Claims



A cultivator connectable to the three point lifting hitch of a tractor and having a plurality of side-by-side rotatable supports with tines. The frame has a trestle which connects to the tractor's hitch. The supports and tines are turnable about shafts and mounted in a row with vertically adjustable screens with locking guides located at each end of the row. The frame of the cultivator includes an upper and two lower arms connected to the tractor's three point hitch. A further implement, such as a seed drill machine has a further coupling trestle which can be pivotally connected to the arms and trails the tine supports. Also, a roller is adjustably mounted on the frame, immediately to the rear of the tine supports. The tines are tapered towards their bent-over tips and can be rectangular in section.

3,826,315

## TILLAGE APPARATUS

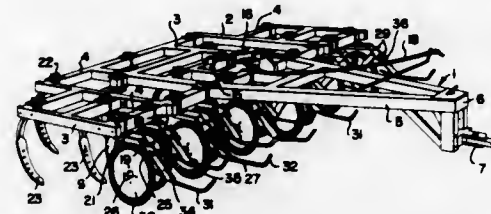
Calvin B. Blair, P.O. Box 76, Barnard, Kans. 67418

Filed Jan. 19, 1973, Ser. No. 325,176

Int. Cl. A01b 17/00, 49/02

U.S. Cl. 172—514

10 Claims



Soil management apparatus combines pointed tillage tools with forwardly positioned, swingable rolling disc cutters which are preceded by elongated deflector bars projecting transversely and angularly across the anticipated path of the disc cutters for deflecting upwardly projecting stubble and the like laterally downwardly into the disc cutter path.

3,826,316

## PNEUMATIC IMPACT TOOL

Ross Bassinger, San Antonio, Tex., assignor to Reed Tool Company, Houston, Tex.

Continuation-in-part of Ser. No. 116,980, Feb. 19, 1971, abandoned. This application June 19, 1972, Ser. No. 264,019

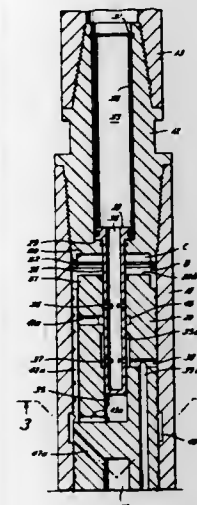
Int. Cl. E21b 5/00; E21c 7/00

U.S. Cl. 173—73

11 Claims

The impact tool disclosed includes a housing, an anvil in the lower end of the housing, and a hammer to reciprocate in the

housing and strike the anvil a series of blows. A stationary hollow valve member extends into an opening in the top of the hammer and supplies air under pressure from the pipe string to passageways in the hammer that conduct the fluid alternately to opposite ends of the hammer to cause the hammer to reciprocate in the housing. The arrangement is such that



the actuating air acts across the entire cross-sectional area of the upper end of the hammer during its power stroke. Also, a hollow stationary bottom valve can be used to control exhaust

3,826,317

## DRILLING APPARATUS

Robert L. Pereau, Irvine, Calif., assignor to Smith International Inc., Santa Fe Springs, Calif.

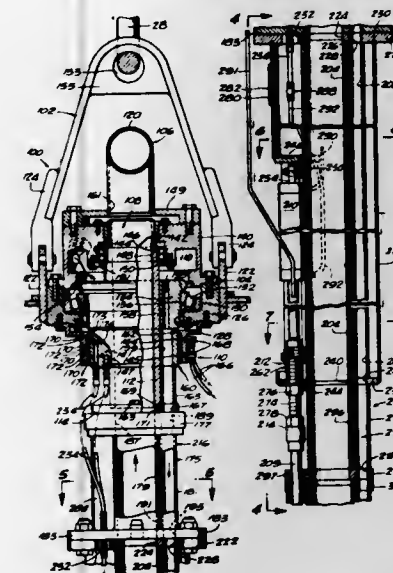
Division of Ser. No. 177,037, Sept. 1, 1971, Pat. No. 3,757,876.

This application Aug. 23, 1973, Ser. No. 390,719

Int. Cl. E21b 19/08; E21c 1/10

U.S. Cl. 175—162

5 Claims



Apparatus for drilling a hole, and for belling out the lower end of the hole into a conical enlargement, in a single pass of the apparatus down the drill hole, which apparatus includes a combined drilling and belling tool. A novel drill stem assembly and a novel kelly bar assembly are also disclosed.

3,826,318

## DIGITAL WEIGHING SCALE WITH AN INCREMENTAL MEASURING SYSTEM

Alfons Baumgartner, Grassau, Germany, assignor to Dr. Johannes Heindenhain, Trannreut, Germany

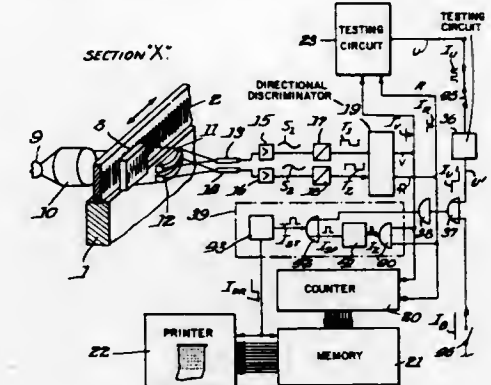
Filed June 22, 1972, Ser. No. 265,308

Claims priority, application Germany, June 22, 1971, 2130840

Int. Cl. G01g 23/10, 23/365

U.S. Cl. 177—25

8 Claims



A digital scale having an incremental measuring system is disclosed. The scale includes a source of light, a weight-indicating movable grid and a stationary grid all in optical alignment, the two grids having alternately disposed transparent and nontransparent vertical surfaces, wherein the upper portions of said surfaces on the stationary grid are slightly offset from the lower portions thereof. Photoelectric means produce a series of leading and lagging electrical signals when the movable grid moves in response to a load placed on the scale, the signals from the upper portions of the stationary grid leading when the weight indicated by the movable grid is increasing, and the signals from the lower portions leading when the weight is decreasing. An electrical discriminator discerns which signals are leading, and converts them to electrical impulses which are passed to a count-up—countdown counter for recording the weight. Testing circuitry, which determines when the scale is substantially still, produces electrical information for energizing digital means, connected to the counter at that time. During substantial movement of the scale, however, the testing circuit prevents the digital means from being energized, thereby assuring weight readings only when the scale is substantially still.

3,826,319

## SCALE MOTION DETECTOR

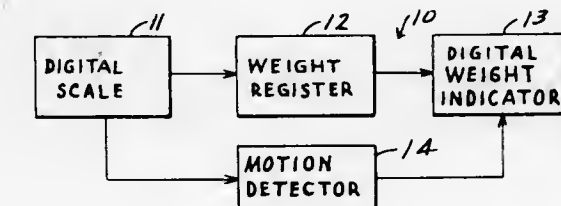
Richard C. Loshbough, Temperance, Mich., assignor to Rellence Electric Company, Toledo, Ohio

Division of Ser. No. 373,907, June 27, 1973. This application Oct. 26, 1973, Ser. No. 409,861

Int. Cl. G01g 23/22

U.S. Cl. 177—25

2 Claims



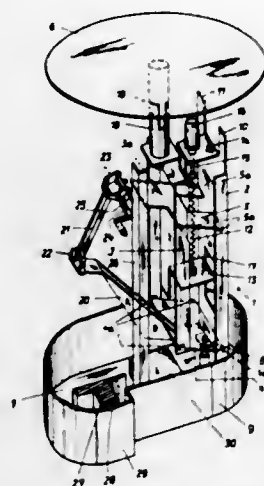
In combination with a system for weighing a load placed on a load receiver and for displaying the measured weight on a digital indicator, a circuit connected to blank the indicator whenever a predetermined degree of motion of the article receiver is detected. Provisions may also be made to blank the indicator when the weight capacity of the system has been ex-



ceeded and, in a price computing scale system, to set the computed value to zero whenever the weight indicator is blanked.

### 3,826,320 BALANCE

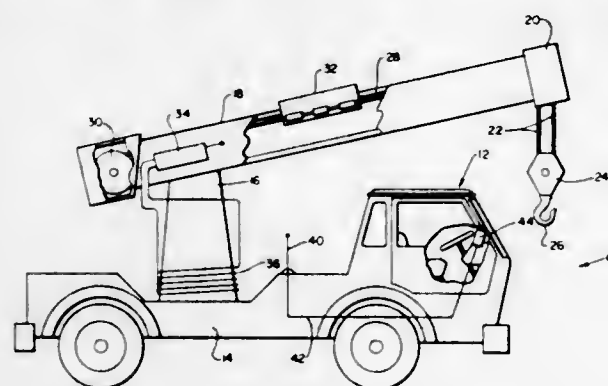
Paul Terrailon, 74 Monnetier-Mornex, France  
Filed May 9, 1973, Ser. No. 358,619  
Claims priority, application Switzerland, May 15, 1972, 7163  
Int. Cl. G01g 23/14, 23/26  
U.S. Cl. 177-170



A balance, for example a letter scales, comprises an articulated parallelepiped formed by two upright plates pivotally joined by two transverse plates. One of the upright plates is fixed on a base and the other, which is movable against the action of a spring, carries a scale at its upper end. The lower transverse plate has an extension carrying a pivotally mounted arm which in turn pivotally carries an index at a free end thereof. A pair of upright members on the frame define a vertical guide channel for the free end and for the index which cooperates with graduations on one of the members.

### 3,826,321 LOAD WEIGHING SYSTEM FOR CRANES WITH ROTATABLE BOOMS

Edward T. Rigney, Wayland; Richard A. Benson, Bedford, and Bradford W. Edgerton, Lynnfield, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.  
Filed May 25, 1973, Ser. No. 363,942  
Int. Cl. G01g 19/18  
U.S. Cl. 177-210

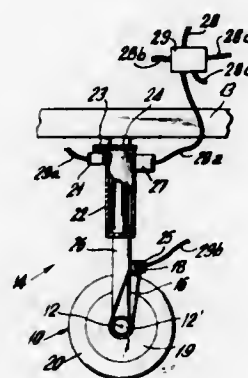


A load weighing system for a crane having a boom which is independently rotatable with respect to an operator's cab carrying an indicator for displaying the load weight. The system uses a boom-mounted dynamometer whose output is an accurate indication of cable tension and therefore load weight. The dynamometer output modulates a transmitter and the trans-

mitter output is fed to a loop around the boom pedestal. The resulting magnetic field surrounding the loop provides a medium for coupling the transmitted signal to the cab-mounted receiver.

### 3,826,322 ACCESSORY WHEEL AND DRIVE DEVICE FOR A MOTOR VEHICLE

Samuel D. Williams, 1923 Hennessy Pl., Bronx, N.Y.  
Filed Sept. 28, 1972, Ser. No. 292,937  
Int. Cl. B60s 9/14; B62d 5/04  
U.S. Cl. 180-1 AW



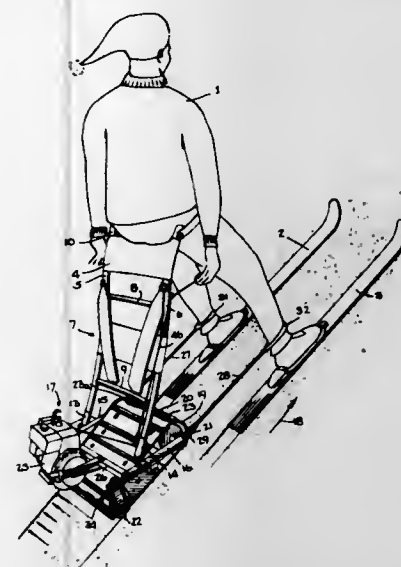
In a preferred embodiment an automobile having four extra accessory utility wheels mounted on hydraulic jacks, with the back two accessory wheels being connected for synchronized steering thereof in both lateral and forward directions of movement of the car as well as the forward two wheels being synchronized with one another for synchronized steering in both lateral and forward directions and there being switch means whereby the front wheels and the rear wheels may be synchronized to one another for the forward and/or lateral steering, and at least one of the sets of front and back accessory wheels being connected for and including propulsion means alternately drivable by the regular automobile motor or by an electrical motor, the electrical motor-including embodiment also including accessory batteries connected to provide electricity to any accessory electrical motor and also connected to continually charged if necessary by the generator of the automobile, this above described combination of this invention providing both parking advantages and emergency power and wheels in the event of flat tires or other mechanical difficulty requiring supplemental driving power for propulsion of the automobile for reasonably short periods of time to remove the automobile from hazardous traffic locations or to propel the automobile to an appropriate next-occurring filling station or repair facility.

### 3,826,323 PROPELLING APPARATUS FOR SKIERS

Albert R. Mehne, 9 Susquehanna Rd., Ossining, N.Y. 10562  
Filed Apr. 12, 1973, Ser. No. 350,371  
Int. Cl. B62m 27/02  
U.S. Cl. 180-5 R

Motor powered apparatus for propelling a skier on skis and which is portable on the skier's back in which a motor powered unit having an endless track has pivotally connected thereto a frame which extends upwardly and forwardly of the unit. The skier is partially supported by the end of the frame

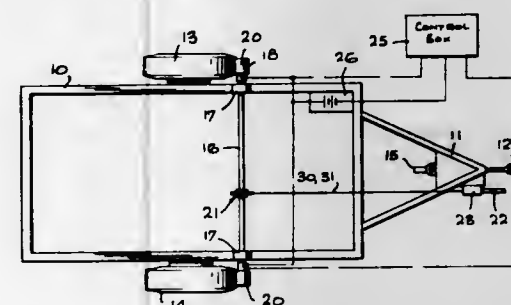
and by his skis, and separation of the skis and the unit is limited by straps attached to the unit and the skier's ankles.



The frame can be detached from the unit and can be used in its inverted position to carry the unit on the skier's back.

### 3,826,324 TRAILER MOVER

Duane M. Stevens, 1216 El Monte Dr., Simi, Calif. 93065  
Filed Oct. 26, 1972, Ser. No. 300,973  
Int. Cl. B62d 11/04  
U.S. Cl. 180-6.5



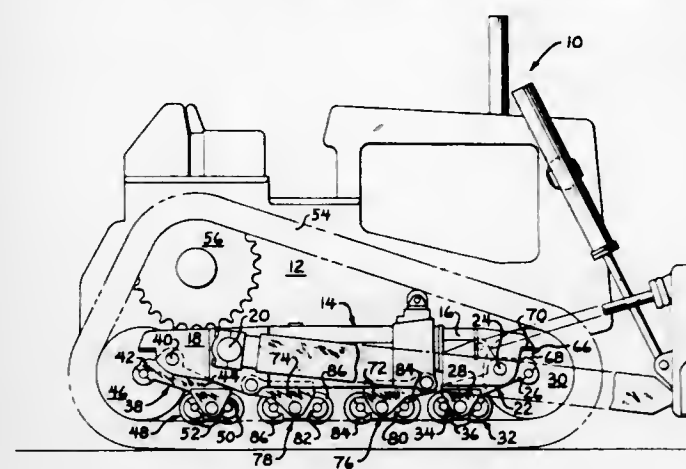
A powered mover is disclosed herein for positioning a wheeled trailer or the like in a forward, rearward or pivotal direction which includes a drive drum associated with each wheel that is pivotally carried on the chassis of the trailer and operably coupled to a drive motor via a drive gear train whereby the exterior periphery of the drum frictionally engages with the tread of the trailer wheel in a driving relationship. A control mechanism is operatively carried on the chassis for positioning the drum into and out of engagement with the tire tread. Powered rotary movement and speed of the drum is imparted to the tire for driving the trailer in a selected direction in response to the direction of the drum rotation as determined by an electrical control circuit.

### 3,826,325 TRACK SUSPENSION ASSEMBLY

Robert J. Purcell, Washington, and Kenneth E. Wehr, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed Aug. 22, 1972, Ser. No. 282,699  
Int. Cl. B62d 55/10, 55/30  
U.S. Cl. 180-9.54

The track frame of a vehicle is pivotally mounted to the vehicle main frame and has crank members pivotally mounted to the opposite ends of the track frame. Each crank member has mounted thereon an idler and a bogey to which is fixed a pair of track rollers. These idlers and track rollers are engaged by a continuous track chain, and the track frame is supported

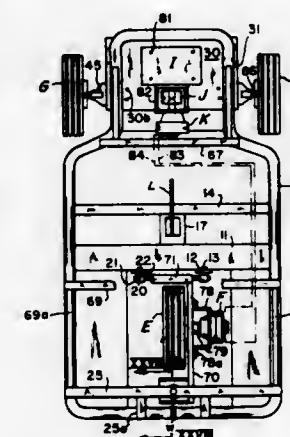
at the crank member-track frame pivot points by means of the idlers and track rollers. Between the crank members are a pair of link members which are pivotally fixed to the track frame and extend toward each other. Each of these link members also has a bogey and track rollers mounted thereon, these



track rollers being engaged by the track chain. Stop members and resilient pad means are associated with the crank members, link members, and track frame for proper support of the track frame, the particular placing of the crank member-track frame and link member-track frame pivot points being chosen for most efficient operation.

### 3,826,326 THREE WHEELED AUTOMOTIVE VEHICULAR CONSTRUCTION

David Blair, 307 S. School St., Pittsburgh, Pa. 15202  
Filed Nov. 9, 1971, Ser. No. 196,981  
Int. Cl. B62d 61/06  
U.S. Cl. 180-25 R



An engine-energized fluid-motor-driven three-wheeled automotive vehicle utilizes a somewhat bottle-shaped continuous basic frame structure whose reduced front end part serves to mount a pair of wheels, a combustion engine and a fluid pump, and whose back end part serves to centrally carry a rear drive wheel and its actuating fluid motor. The construction provides a stable vehicle whose rear drive wheel motor assembly is resiliently positioned to absorb road shock.

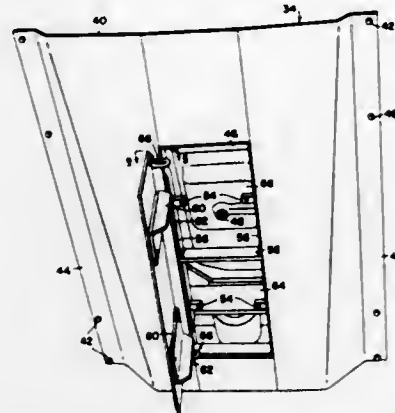
### 3,826,327 VEHICLE BOTTOM GUARD STRUCTURE

David Emmert Stover, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.  
Filed Dec. 18, 1972, Ser. No. 316,435  
Int. Cl. B62d 25/20

Disclosed is an off-the-road vehicle having a forward-mounted engine, the bottom of which is protected from



damage by obstacles by a bottom guard plate assembly which extends below the bottom of the engine and is releasably secured to the main frame of the vehicle. The plate assembly comprises a centrally located access opening which is normally closed by an access door which is held in place by a plurality of releasable cap screws. The door is provided with a pair of hooks along one of its sides, the hooks cooperating with a pair of abutments located along one side of the access opening of the plate assembly to form a hinge about which the door is vertically swingable once the cap screws have been



removed. For the purpose of aiding in the installation and removal of the plate assembly to and from its normal position at the underside of the engine, there is provided a length of proof-coil chain which has one end welded to a tractor frame member located above one end of the plate assembly and having a link at its other end slipped over a hook formed on the upper side of the plate assembly. The upper side of the plate assembly is provided with a planar debris-collecting plate which overlies reinforcing ribs of the assembly exclusive of the access door. The access door is also provided with reinforcing ribs.

3,826,328

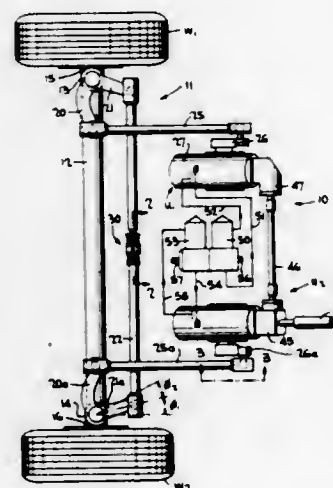
## DUAL HYDRAULIC POWER STEERING SYSTEM

Richard H. Sheppard, c/o R. H. Sheppard Co., Hanover, Pa. 17331

Filed Mar. 20, 1972, Ser. No. 236,410  
Int. Cl. B62d 5/10

U.S. Cl. 180—79.2 R

14 Claims



Steering for wheels of a vehicle is provided by two separate and independent steering combinations of first and second power operating units, corresponding first and second power supply means and control means with each combination providing only approximately 50 percent of the total design force required to allow the operator of the vehicle to comfortably turn the wheels. The system thus is designed to provide a safety factor of allowing approximately one-half force

power steering upon failure of one combination. With two operating units, one adjacent each wheel, a resilient interconnection in the tie rod of the steering linkage is required. In a tandem wheel arrangement, a steering gear or operating unit is provided on each axle. The preferred embodiment includes a master steering gear assembly on one side of the vehicle and a slave gear assembly on the other with two in-piston valves positioned in the master steering gear unit. The valves include spool elements that are both guided and maintained in alignment by a guide pin having three guide surfaces. Transfer of the fluid in the second combination includes telescoping tubes extending through and forming a seal with the passageway at the end of the piston of the master unit. The two spool elements are accurately positioned during manufacture by interposed resilient means and radial locking pin arrangement.

3,826,329

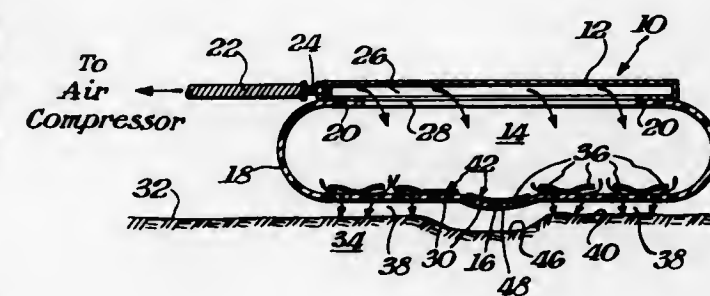
## AIR CUSHION APPARATUS

Arthur G. Crimmins, and William J. Nissley, Jr., both of Wilmington, Del., assignors to All American Industries, Inc., Wilmington, Del.

Filed May 8, 1972, Ser. No. 250,934  
Int. Cl. B65g 7/06; B60v 1/00

U.S. Cl. 180—125

11 Claims



Air pressure is conserved in an air cushion load conveying apparatus by valve elements disposed within the air pressure chamber in operative association with an array of relatively small holes which provide the pressurized air cushion between the wall of the chamber and an adjacent surface. The valve elements are constructed and arranged to rapidly respond to the pressure differential across the holes. They quickly open and transmit chamber pressure to the pressurized air cushion when an object is disposed close to the hole and rapidly close and preserve pressure when there is no object and concomitant air cushion disposed adjacent the hole. The valve elements are flapper valves made of a single large perforated flexible sheet or a number of smaller sheets which substantially obstruct the holes in the presence of a high differential pressure. The flapper valves inherently leak, which makes them sensitively respond to changes in pressure. The leakage is, however, not enough to cause an undue loss of air through closed holes. Bleed holes may be provided, if necessary, to accelerate movement under special conditions. The perforated chamber wall may be rigid for operating against regular smooth surfaces or it may be flexible for operating against irregular or interrupted surfaces. A flexible walled chamber may be used under a rigid pallet for transporting a load over irregular surfaces. The upper surface of the rigid pallet may also be perforated and valved to facilitate sliding loads on and off, and the pressurized air may be alternately supplied to the upper and lower portions to facilitate loading, unloading and transport.

3,826,330

## BRAKE AND STABILIZER FOR AIR CUSHION VEHICLES

Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459, and Lee R. Armstrong, 47 Armstrong Rd., Enfield, Conn. 06082

Filed May 21, 1973, Ser. No. 362,021  
Int. Cl. B60v 3/08

U.S. Cl. 180—116

10 Claims

3,826,332

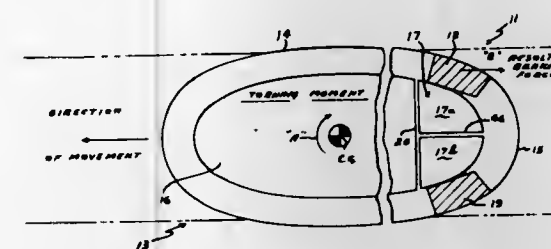
## AIR INTAKE SILENCER FOR INTERNAL COMBUSTION ENGINES

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

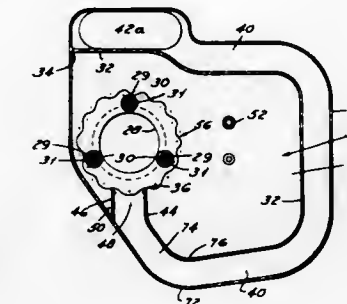
Filed Dec. 27, 1972, Ser. No. 318,892  
Int. Cl. F01n 1/02, 1/06

U.S. Cl. 181—35 A

4 Claims



An air cushion machine-inflatable trunk device compartmentalized into a main, positive pressure, air cushion-chamber producing a supporting lift force on the machine, and an auxiliary, negative or vacuum pressure-chamber further divided into left and right-side, braking and stability control sections, each encompassing a brake lining or friction pad assembled in spaced-apart relation to the bottom of the aft end portion of the trunk device and producing a downward tilting movement to the machine-aft end for thereby bringing the brake linings or friction pads into positive braking contact with the ground surface.



An air intake silencer for internal combustion engines to be attached directly to a carburetor intake having a large volume central chamber connected to the carburetor intake and surrounded by a peripheral tortuous passage feeding air from an outside inlet to the carburetor intake. The construction includes a gravity low point for the collection of fuel wherein it may be caught up into the incoming air stream and re-introduced into the engine. A relief valve is also provided to relieve the unit against back-fire pressures.

3,826,331

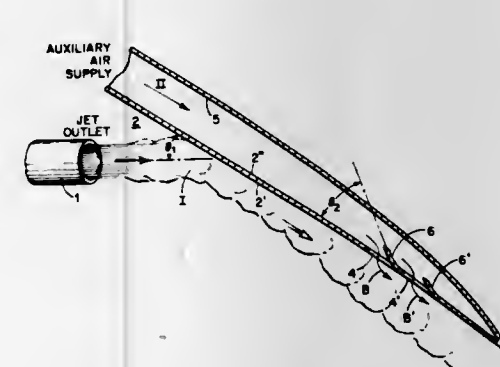
## METHOD OF AND APPARATUS FOR REDUCING SOUND GENERATED BY SURFACES IN FLUID JET STREAMS AND THE LIKE

Terry D. Scharton, and Benjamin Pinkel, both of Santa Monica, Calif., assignors to Bolt, Beranek and Newman, Inc., Cambridge, Mass.

Continuation of Ser. No. 230,380, Feb. 29, 1972, abandoned.  
This application Aug. 20, 1973, Ser. No. 389,786  
Int. Cl. B64d 33/06

U.S. Cl. 181—33 HC

8 Claims



Noise is reduced by the use of preferably slot apertures near the trailing edge, for example, of a sheet, over one surface of which a fluid jet or other stream is passing, for directing fluid from an auxiliary source which is ducted to the opposite face of the sheet, through the sheet to produce buffer layers between said one surface and said fluid jet at and downstream of the said apertures, thereby suppressing noise generation at the discontinuity provided by the said trailing edge of the sheet.

3,826,333

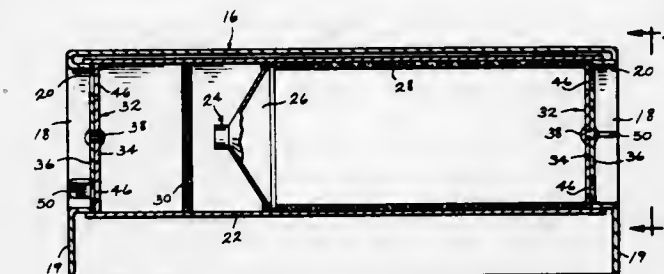
## BAFFLE FOR A SOUND PRODUCING DEVICE

James K. Buckwalter, 65 Robert E. Lee Dr., Wilmington, N.C. 28401

Filed Mar. 21, 1973, Ser. No. 343,251  
Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

4 Claims



A baffle which is used in a sound producing device and which includes overlying first and second disks having coincident axes. The first disk is rotative about its axis relative to the second disk and has a plurality of equi-angularly spaced and equi-radially disposed slotted openings formed therein. The second disk also has a plurality of equi-angularly spaced, equi-radially disposed slotted openings formed therein. Each slotted opening in the first disk is disposed at an angle to a radial line passing through the opening. Each slotted opening in the second disk is disposed at an angle to a radial line extending through such opening with the angle of the second disk opening differing from the angle of the first disk openings so that upon rotation of the first disk relative to the second disk selected portions of the slotted openings in the second disk will be covered by the first disk openings to produce circumferentially spaced openings through the baffle located at a selected radial distance from the axes of the disks.



3,826,334

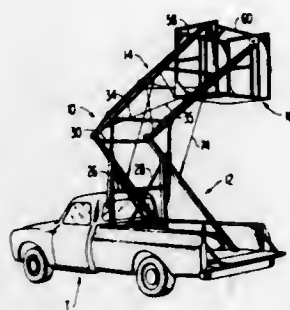
## MOBILE AERIAL PLATFORM

Robert L. Spillman, 221 S. Cassady Ave., Columbus, Ohio 43209

Filed July 7, 1972, Ser. No. 269,811  
Int. Cl. B66f 1/104

U.S. Cl. 182-2

14 Claims U.S. Cl. 182-15



The platform includes an upstanding support structure carried by a wheeled vehicle. A boom is pivotally connected at one end to the upper end of the support structure. A platform is pivotally carried by the boom at its opposite end. At least one fluid cylinder connects between the support structure and the boom to raise and lower the boom and platform. A pair of flexible lines are fixed at opposite ends to the support structure sides and the platform, respectively and are reeved over sheaves on the boom whereby the platform is partially supported thereby and maintained in a horizontal position throughout the full range of pivotal movement of the boom. The platform is mounted on a vehicle, for example, a truck, trailer, fork-lift truck, and the like.

3,826,335

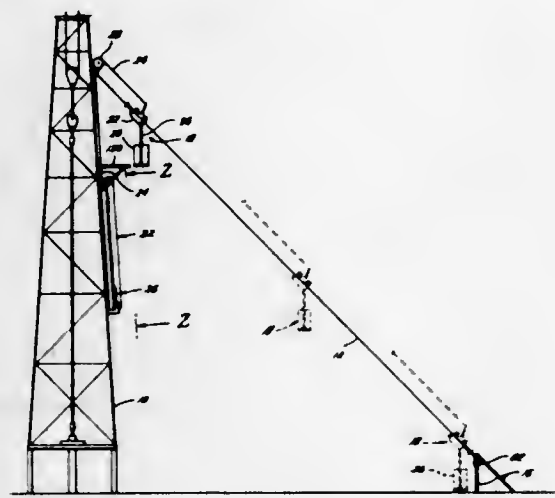
## PERSONNEL/LOAD CARRYING SYSTEM

Marion F. Allen, P.O. Box 3387, Odessa, Tex. 79760

Filed Feb. 1, 1973, Ser. No. 328,753  
Int. Cl. A62b 1/06

U.S. Cl. 182-10

20 Claims



An apparatus system for moving personnel and/or other loads from one elevation point to another. The apparatus system includes a carrier traversing an inclined carrying line secured between higher and lower elevation points, a movable counterweight for counterbalancing weight of the carrier, a cable interconnecting the carrier and counterweight, sheaves coacting with the cable, and fluid power means for adjusting rate and direction of movement of the carrier along the carrying line, the carrier being automatically returnable to the upper elevation point if desired. Braking means are provided to stop the carrier in an emergency situation.

3,826,336

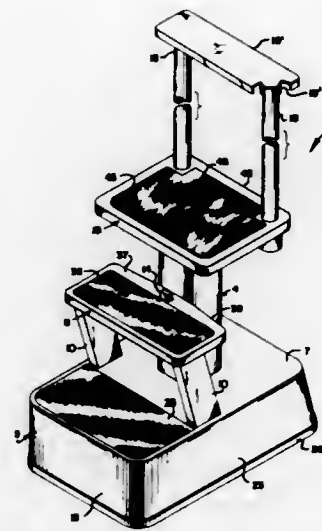
## STEP STOOL

Harold Cramer, 8419 Linden Ln., Prairie Village, Kans. 66207

Filed Mar. 13, 1973, Ser. No. 340,695  
Int. Cl. A47c 9/12

Int. Cl. A47c 9/12

12 Claims



A step stool includes a base engageable with a support surface, such as a floor or the like, and an upstanding support member or standard having a lower end thereof received in a first socket depending from a flat top of the base. A first step member is supported on the base and the standard. A second step member or platform is mounted on an upper end of the standard whereby the first step member, standard, and second step member or platform are removably mounted relative to the base. The step stool may include one or more steadying members having a lower end portion thereof supported relative the second step member and extending upwardly therefrom and adapted to be grasped by a person standing on the step stool.

3,826,337

## RETRACTABLE LADDER

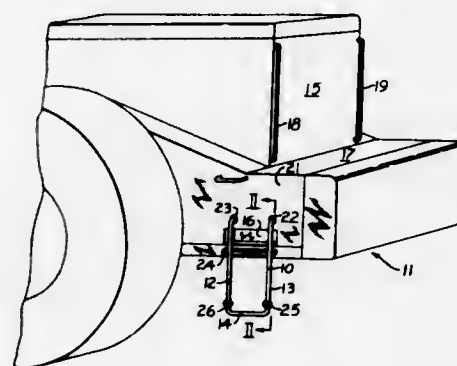
Neil R. Liptak, Joliet, and Beno E. Echerd, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1973, Ser. No. 374,474

Int. Cl. B60r 3/02

U.S. Cl. 182-91

6 Claims



A retractable ladder is in the form of a generally U-shaped member adapted for operative use in a vertical position and which may be stored in an inoperative position within the supporting body by lifting the bottom rung or step and pushing the ladder into the body. Optional stops are provided on the ladder for limiting its travel. Optional hand grip means are also provided.

3,826,338

## DEVICE FOR FEEDING A LUBRICATING OIL OR THE LIKE TO THE PERIPHERY OF A ROTATING ELEMENT

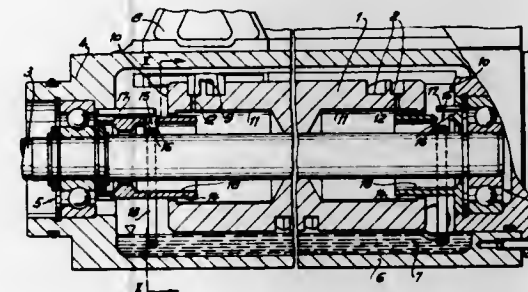
Anton Josef Mair, Durach, Germany, assignor to A. Ott, Kempten, Germany

Filed Feb. 21, 1973, Ser. No. 334,369

Int. Cl. F01m 9/06; F16n 7/26

U.S. Cl. 184-11 A

8 Claims



Apparatus for feeding lubricating oil to the surface of a rotating element, such as the thread of a reversible thread roller including a shaft fixed to the rotating element which has a cylindrical bore and at least one radial passage opening from the bore to said surface, an enlarged ring freely supported on the shaft, and means defining a friction surface against which the ring engages to transfer oil from the ring to the bore and thence through the passage as a result of centrifugal force. An oil sump is provided below the rotating element into which a portion of the ring projects at all times.

3,826,339

## VIBRATION DAMPER FOR ELONGATE MEMBERS

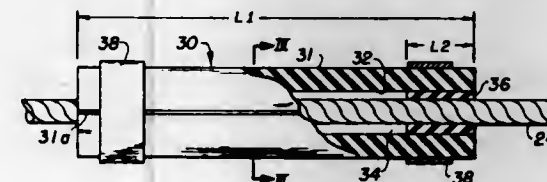
Hal R. Brokaw, 2052 Galveston, San Diego, Calif. 92110

Filed Sept. 7, 1973, Ser. No. 396,271

Int. Cl. F16f 7/12

U.S. Cl. 188-1 B

5 Claims



A vibration damper for reducing vibration of an elongate member under tension, such as a cable utilizing a sleeve member clamped around the cable at both ends only, in a manner to be free to rock on the cable during vibration to suppress oscillations by shifting the natural resonant frequency of the vibrating cable.

3,826,340

## VIBRATION DAMPER FOR SLENDER VERTICAL STRUCTURES

Hal R. Brokaw, 2052 Galveston, San Diego, Calif. 92110

Filed Sept. 19, 1973, Ser. No. 398,891

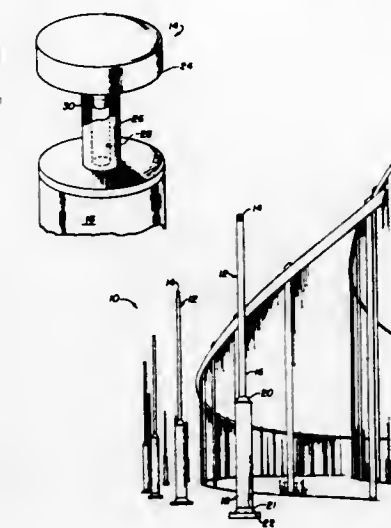
Int. Cl. F16f 7/10; H01q 1/00

U.S. Cl. 188-1 B

3 Claims

A damper for detuning a vertical slender structure such as a monopole antenna, subject to wind induced vibrations, the

damper having a "mushroom" shaped configuration with a cap mounted on one end of a flexible stem, the other end of



the stem secured to the top of the structure enabling the cap to oscillate out-of-phase with the vibrating structure.

3,826,341

## EMERGENCY DESCENT APPARATUS

Albert C. Ledner, 5328 Bellaire Dr., New Orleans, La. 70124

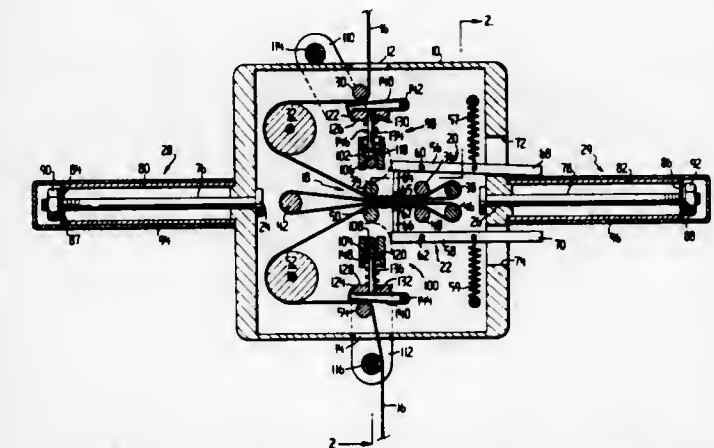
Continuation-in-part of Ser. No. 344,436, March 23, 1973.

This application Sept. 11, 1973, Ser. No. 396,241

Int. Cl. A62b 1/14

U.S. Cl. 188-65.5

6 Claims



A device useful for descending from an elevated location along a strand of webbing or similar material is disclosed, which includes a housing containing a tortuous path through which the strand is drawn as the housing moves downward on the strand. Means for automatically maintaining an essential uniform rate of descent essentially irrespective of the weight of the escaping person are included, and a unique handle arrangement permits immediate reuse of the device without having to draw the strand back through the housing.

3,826,342

## UNIT TRANSMISSION GEAR INCLUDING A DECELERATING DEVICE AND AN ELECTROMAGNETIC BRAKE

Jean Noly, La Clayette, France, assignor to Potain, Chevilly Larue (Val de Marne), France

Filed Aug. 2, 1972, Ser. No. 277,328

Claims priority, application France, Aug. 6, 1971, 71.29642

Int. Cl. B60t 13/74

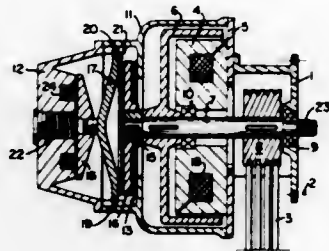
U.S. Cl. 188-171

3 Claims

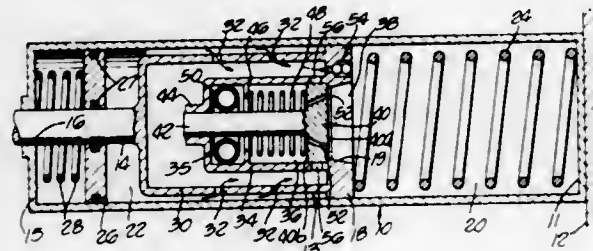
A unit decelerating assembly may be used for control of cranes or travelling cranes. The working speed of the belts 3 is



transmitted to the end shaft 23 which is slowed down to an extent depending on the current flow supplied to the fixed inductor 4-18 of an eddy-current clutch (bell 6). The spring 22 ensures the braking of the disc 14 to block the apparatus in the event of a failure of current.



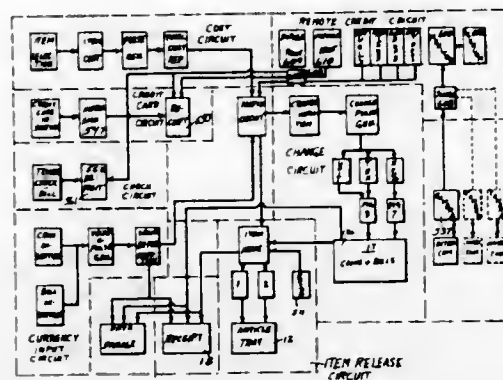
**3,826,343**  
**PRESSURE REGULATOR FOR HYDRAULIC SHOCK ABSORBERS**  
Bernard R. Heymann, Glendale, Calif., assignor to Conair, Inc., Glendale, Calif.  
Filed Dec. 8, 1972, Ser. No. 313,590  
Int. Cl. F16f 9/34  
U.S. Cl. 188-282 3 Claims



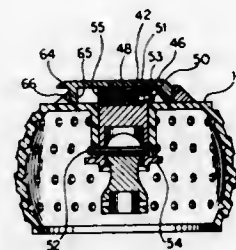
A regulator for hydraulic shock absorbers wherein the moveable piston has a pressure control chamber provided with a poppet valve. A volume of air in the chamber behind the poppet valve, receives the initial impact, compressing it so that the poppet valve moves instantaneously, uncovering metering orifices in the control chamber to permit a high rate of fluid flow from the high pressure side of the piston, thereby substantially eliminating initial peak loads on the unit. As flow rate decreases, the poppet moves to gradually cover the metering orifices, maintaining a constant pressure in the high pressure side, thereby dissipating the impact at the maximum allowable rate.

**3,826,344**  
**APPARATUS FOR TRANSACTING BUSINESS**  
Eric C. Wahlberg, 32 Eighth St., Stamford, Conn. 06905  
Continuation of Ser. No. 816,565, April 16, 1969, abandoned.  
This application Aug. 9, 1971, Ser. No. 170,279  
Int. Cl. G07f 7/00  
U.S. Cl. 194-2 26 Claims  
Apparatus for transacting business by the use of a standard currency, credit cards, checks, bank drafts, deposit vouchers,

large denomination paper currency or foreign currency including means for registering a credit against an account or



**3,826,345**  
**PRINT HEAD MOUNTING ASSEMBLY**  
Harry R. Miller, Trumansburg, N.Y., assignor to SCM Corporation, New York, N.Y.  
Filed Jan. 26, 1973, Ser. No. 326,622  
Int. Cl. B41j 1/60  
U.S. Cl. 197-52 7 Claims

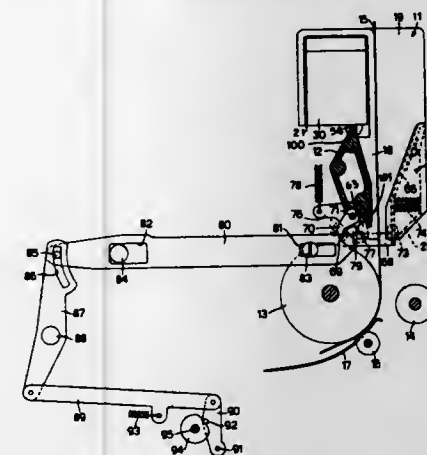


Improved means for releasably locking a typewriter ball-type print head to a driving head shaft are disclosed. The print head has a downwardly-projecting hub which is slidably received on the head shaft and is axially locked thereto by means of a spring-loaded locking pin which snaps out from its retracted position within the head shaft to rest on the top wall of the print head, the print head being axially releasable by operating a cam lever located on the print head top wall. A key pin extending from the head shaft engages a key slot at the lower edge of the hub when the print head is seated on the drive shaft to angularly lock the print head to the head shaft.

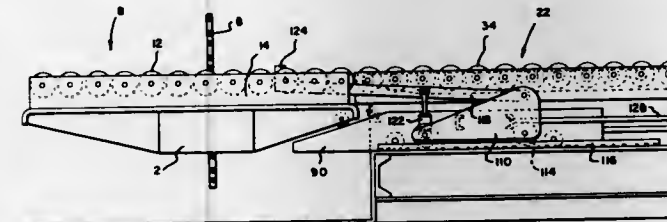
**3,826,346**  
**CARD GUIDE FOR FRONT-FEED DEVICE IN ACCOUNTING MACHINE OR THE LIKE**  
Piero Musso, Ivrea (Turin), Italy, assignor to Ing. Co. Olivetti & Co., S.p.A., Ivrea (Turin), Italy  
Filed May 10, 1972, Ser. No. 251,991  
Claims priority, application Italy, May 12, 1971, 68568/71  
Int. Cl. B41j 13/00  
U.S. Cl. 197-127 R 5 Claims

A card guide for accounting machine front-feed devices includes two symmetric hopper elements slidably mounted on a supporting bar for adjusting the distance between them in order to accommodate different types of accounting cards and forms. The hoppers are secured to the supporting bar by a lever-operated pair of shoes being commonly pivoted and located at the edge portions of the hoppers for improving mechanical rigidity. Each hopper is further provided with adjustable gripper means for firmly retaining cards in the hopper

during printing and releasing the cards for permitting replacement. The main shaft of the accounting machine automatically governs the cyclic operation of the gripper means through a linkage.



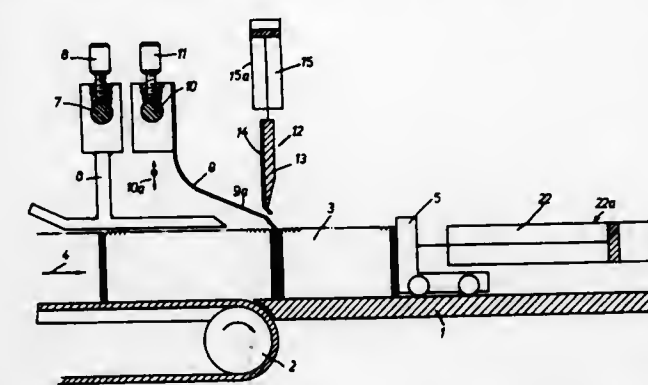
**3,826,347**  
**CONVEYOR APPARATUS**  
Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio  
Filed May 3, 1972, Ser. No. 249,987  
Int. Cl. B65g 47/00  
U.S. Cl. 198-20 R 9 Claims



The disclosure relates to apparatus for bringing the load-supporting surface of the tray of a vertical conveyor or elevator into horizontal alignment with the load-supporting surface of a horizontal conveyor and for transferring a pallet load between the tray and the horizontal conveyor. After the tray has been stopped at a transfer station, a pair of wedges carried by the horizontal conveyor is moved under the tray in engagement therewith to support the latter during transfer of the pallet load. The horizontal conveyor also carries shiftable means arranged to engage the under side of the load in order to displace it between the tray and the horizontal conveyor.

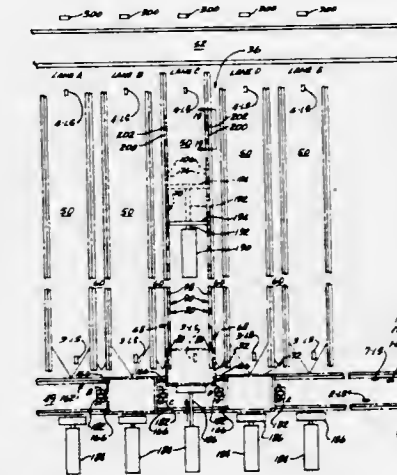
**3,826,348**  
**ARTICLE SELECTION AND SEPARATION APPARATUS**  
Roland Priesig, Yens, and Arthur Frei, St. Sulpice, both of Switzerland, assignors to J. Bobet & Fils SA, Prilly, Switzerland  
Filed Sept. 12, 1972, Ser. No. 285,841  
Claims priority, application Switzerland, Sept. 17, 1971, 13619/71  
Int. Cl. B65g 47/26, 59/00  
U.S. Cl. 198-34 5 Claims

An apparatus for selecting and separating articles, such as blanks, comprising article selection means intended to bear upon the edge of essentially vertically arranged articles in such a manner that during displacement of a stream of such articles in such a manner that during displacement of a stream of such articles the article selection means successively follows or moves over each article edge. A separator or knife is located transverse to the articles with respect to the direction of flow of the stream of articles. This separator or knife is intended to bear upon the selection means and serves to penetrate



between two successive articles without coming into contact with both of these articles at the beginning of its penetration between two such articles. There is also provided means for adjusting the pressure exerted by the selection means upon the edge of the articles.

**3,826,349**  
**LIVE STORAGE CONVEYOR SYSTEM**  
Clarence H. Stevenson, III, 308 W. Glenoaks Blvd., Glendale, Calif. 91202  
Continuation-in-part of Ser. No. 35,020, May 6, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,499  
Int. Cl. B65g 37/00, 25/08  
U.S. Cl. 198-81 38 Claims

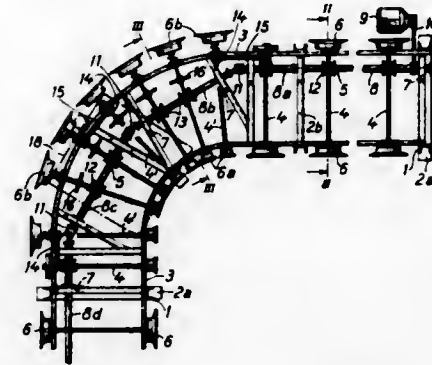


A conveyor system has a cross-feed conveyor for moving stacks of cases to an accumulating area, and an in-feed transfer system for selectively feeding the stacks onto respective live storage conveyors in the accumulating area. Each live storage conveyor includes a track for supporting the stacks of cases, longitudinally spaced apart engaging lugs pivotally mounted on a reciprocating carriage centered in each track, and respective sensing members for sensing the presence of stacks located on the track and for urging the lugs into contact with the stacks of cases located forward of the engaging lugs. Each forward stroke of the carriage pushes the engaging lugs against the stacks to move the stacks forward along the conveyor track. The sensing members are positioned forward of their respective engaging lugs, and each sensing member is depressed by a stack positioned on the carriage above it to break contact between the sensing member and its respective lug. This causes the lug to drop under gravity to an inoperative position so the lug will not move a stack forward on the track when there is no unoccupied space for receiving it. The engaging lug at the end of each conveyor track is normally maintained in an inoperative position while stacks are being accumulated on the track. A slidable bar moves a separate lug lifting member into engagement with each lug to move all lugs into an operative raised position when it is desired to override



the instructions of the sensing members and discharge the accumulated stacks, one-by-one, onto an out-feed conveyor leading from the accumulating area to a shipping area.

sections, the conveyor line has its transverse shafts inclined and provided with smaller diameter flanged wheels on their

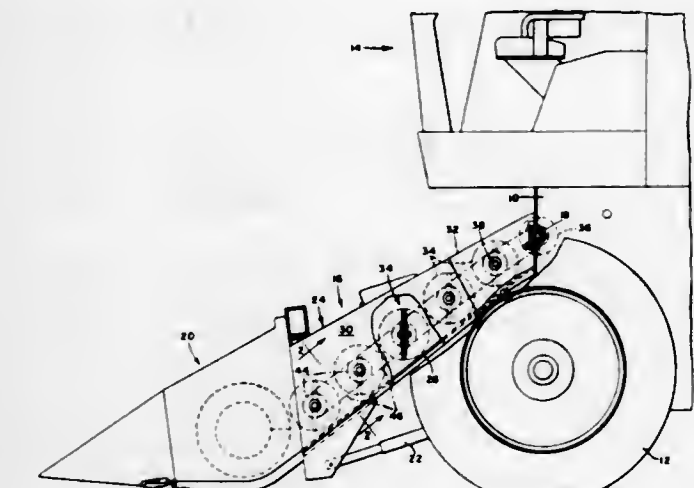


### 3,826,350 PADDLE-TYPE CONVEYOR

Gene Roger Fowler, and Sidney Elmer Anderson, both of Geneseo, Ill., assignors to Deer & Company, Moline, Ill.  
Filed Apr. 2, 1973, Ser. No. 347,059  
Int. Cl. B65g 37/00

U.S. Cl. 198—82

4 Claims

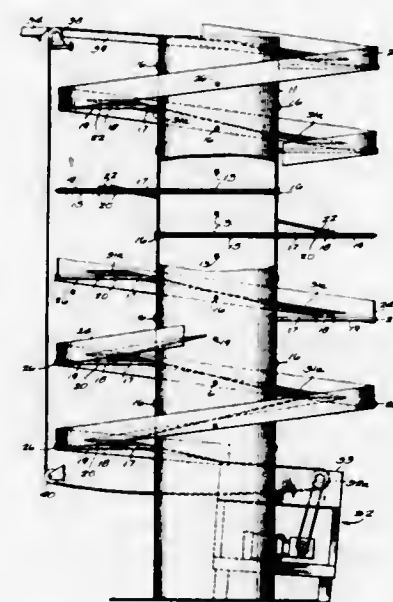


inner end, thus maintaining the same conveying plane, while causing the trays to move along a curved path.

3,826,352  
SPIRAL COLUMN FOR ENDLESS CHAIN CONVEYOR  
Jacob Van Zon, Port Hope, Ontario, and Russel J. Lake, Cobourg, Ontario, both of Canada, assignors to Rexnord Inc., Milwaukee, Wis.  
Filed Oct. 27, 1972, Ser. No. 301,566  
Int. Cl. B65g 15/00

U.S. Cl. 198—136

8 Claims



A combine has a forward harvesting header, a separating mechanism in the combine body, and a fore-and-aft upwardly and rearwardly inclined feeder housing between the header and the combine body for delivering the harvested crop to the separating mechanism. The feeder housing has an upwardly and rearwardly inclined floor and opposite upright sidewalls, and a plurality of rotary, axially transverse, paddle-type impellers extend between the sidewalls with their peripheries proximate to the floor and to one another, so that as the impellers rotate the crop is engaged by successive impellers and moved upwardly and rearwardly along the floor. Each impeller is formed by an axial shaft and a pair of flexible, radial paddles attached to the shaft, each paddle being formed by a pair of tire carcass members spanning the width of the feeder housing and having a curvature about a transverse axis parallel to the shaft, the tire carcass members being attached to the shaft with their concave sides facing each other and with their outer edges at the periphery of the impeller.

A hollow steel upright cylinder is provided with a series of projecting round rods forming a spiral. The brackets which support the spiral track for the conveyor and an outer spiral guide are assembled and supported by the rods with intermediate lengths of tubing. The track and guide are radially positioned uniformly and readily by the predetermined lengths of the tubing. The ends of each rod are threaded and fitted with nuts to secure the parts on the rod.

### 3,826,351 TRAY CONVEYOR

Hans-Georg Fromme, Wetzlar, Germany, assignor to Firma Fromme GmbH, Wetzlar, Germany  
Filed Mar. 15, 1972, Ser. No. 234,890  
Claims priority, application Germany, Aug. 9, 1971, 0213979

Int. Cl. B65g 13/02

U.S. Cl. 198—127 R

3 Claims

A tray conveyor supports the trays and laterally guides them, as well as propels them by flanged wheels mounted on the ends of transverse shafts which are driven through cross-belt drives from a longitudinal main drive shaft. In the bend

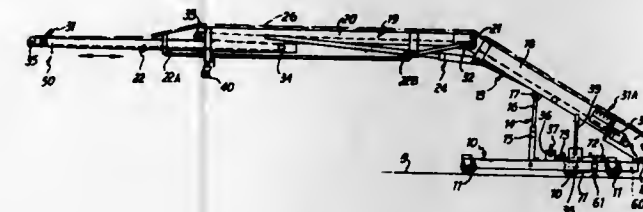
3,826,353  
CONVEYORS  
Cecil Henry Greasley, 518 Chester Rd., Woodford, England  
Filed Aug. 4, 1972, Ser. No. 278,166  
Int. Cl. B65g 15/26

U.S. Cl. 198—139

7 Claims

A conveyor includes a first elongated support which is movably coupled to a support structure, and a second elongated support which is supported by the first support. A conveyor belt, engaged with the first support, the second support, and a motor, tends to extend or retract the second support with respect to the first support depending on the sense of rotation imparted to the belt by the motor. However, brake

means connected between the first and second supports continuously create a frictional force which prevents relative motion between the first and second supports due to the action of the free running belt. The second support includes means for



directly trapping the moving belt, thereby causing the belt to apply a force between the first and second supports which overcomes the frictional force provided by the brake means and creates relative motion between the first and second supports.

3,826,354  
HOPPER AND FEED LEVELER FOR A TAPERED BED CONVEYOR

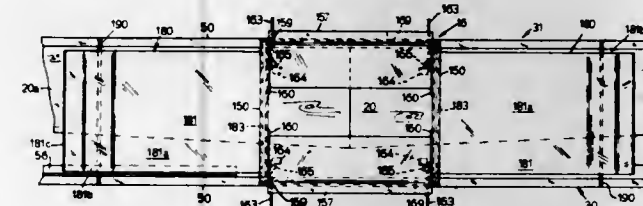
Paul Patz, Pound, Wis.

Filed Sept. 26, 1973, Ser. No. 400,884

Int. Cl. B65g 19/08

U.S. Cl. 198—171

9 Claims



A conveyor comprising a tapered bed and a chain-flite assembly drivable in either or both directions for moving comminuted material in either one direction along the bed or in opposite directions from a location intermediate the ends of the conveyor is provided with an adjustable hopper and feed leveler for receiving the material from a source, such as another conveyor, depositing the material at a desired rate and location on the bed, and for leveling the material as it is moved along the bed by the flites so that the tapered bed and conveyor act to evenly distribute feed along the length of the bed.

### 3,826,355 CONTINUOUS PLATING SYSTEM

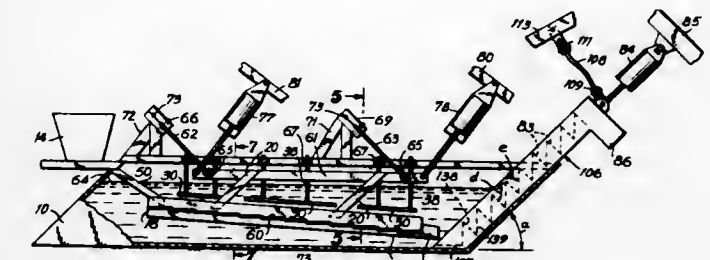
Elbert R. Faust, Litchfield, Conn., assignor to The Buehler Corporation, Indianapolis, Ind.  
Division of Ser. No. 120,635, March 3, 1971, Pat. No. 3,699,985, which is a continuation-in-part of Ser. No. 796,033, Feb. 3, 1969, Pat. No. 3,616,423. This application June 29, 1972, Ser. No. 267,408  
Int. Cl. B65g 15/42

U.S. Cl. 198—220 BA

5 Claims

An exit conveyor for continuously removing articles from a container. A longitudinally extending conveyor trough having a sawtoothed floor is angularly disposed in said container with its lowermost end positioned to receive articles to be removed and its uppermost end positioned to discharge the articles. The conveyor trough is cyclically driven rapidly forwardly and upwardly to transport articles in said trough forwardly and upwardly, and then abruptly rearwardly and downwardly to

mentarily suspend said articles above said trough. The trough is then held for a predetermined dwell period to permit inertial



deposition of the suspended articles forward and upward of their original position.

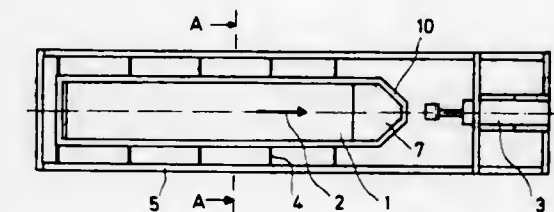
### 3,826,356 VIBRATORY CHUTE

Dietrich Kroger, Breckenheim, Germany, assignor to Firma Jean Netter, Weisbaden, Germany  
Filed July 3, 1972, Ser. No. 268,680  
Claims priority, application Germany, July 7, 1971, 2133838

Int. Cl. B65g 27/00

U.S. Cl. 198—220 CA

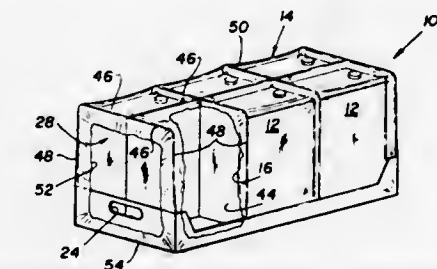
1 Claim



A vibratory chute is disclosed with a material transporting surface, such as a trough, that is suspended in the manner of a pendulum and that is thrust into sudden swinging movement and suddenly decelerated thereafter by a drive means, e.g., in the form of a piston rod with a buffer.

3,826,357  
DISPLAY PACKAGE  
Lee J. Roth, 9 Fairbanks Boulevard, Woodbury, N.Y. 11797  
Filed Dec. 1, 1972, Ser. No. 311,132  
Int. Cl. B65d 65/16, 85/62  
U.S. Cl. 206—45.33

5 Claims



In a display, a combination of cardboard components which form slightly oversized compartments for multiple products, and heat-shrunk outer wrap about said components and, of course, about said products in their display positions within the compartments. The portion of the wrap coextensive with any one compartment can be ruptured to provide a removal opening therein, and the peripheral portion which bounds such opening nevertheless remains effectively supported on the cardboard walls bounding such compartment so that the



opening is localized to that compartment and does not adversely affect the protective function of the remainder of the wrap.

### 3,826,358 PACKAGE FOR TABLETS

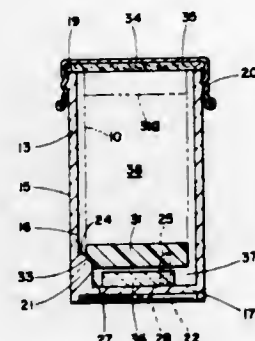
Arthur Devon Butler, Elkhart; Robert Lee Debroka, Mishawaka; Horace Bradley Moyer, Elkhart, all of Ind., and Ronald Lee Yinger, Edwarsburg, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 10, 1972, Ser. No. 251,997

Int. Cl. B65d 81/26, 85/56; B01f 3/06

U.S. Cl. 206—204

4 Claims



A combination of a tubular container having inwardly projecting holding means and cushion means frictionally engaged therewith adjacent the bottom end wall. An ambient effective element may be retained between the cushion means and the bottom end wall.

### 3,826,359 PACKAGING DEVICE

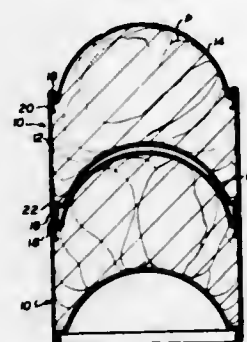
Nicholas M. Brecher, 2 Manor Ln., Lawrence, N.Y. 11559

Filed June 9, 1972, Ser. No. 261,273

Int. Cl. B65d 21/02, 43/04

U.S. Cl. 206—216

2 Claims



A packaging device comprising an open-ended tubular sleeve and a pair of shells, one of which projects outwardly of one end of said sleeve and the other of which projects inwardly of the other end of said sleeve to define between the sleeve and the shells a compartment for an article of merchandise. The outwardly projecting shell in one such packaging device being receivable into the inwardly projecting shell of another such packaging device whereby a pair of said packaging devices may be nested one within the other. The two shells are releasably securable to each other to define a storage enclosure for such article of merchandise.

### 3,826,360 PHONOGRAPH RECORD JACKET

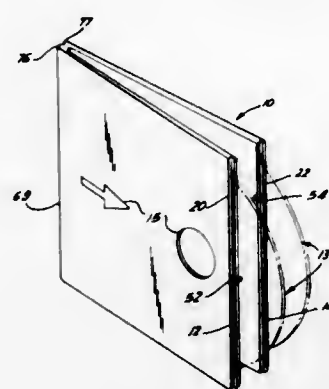
Paul B. Shore, Kings Point, N.Y., assignor to Shorewood Packaging Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,962

Int. Cl. B65d 27/08, 85/30

U.S. Cl. 206—312

6 Claims



An improved phonograph record jacket having at least one pocket to receive a phonograph record is provided. The jacket is formed from at least two blanks of sheet material, one superimposed upon the other with each blank containing two side by side panels. Glue flaps extend from the top and bottom edges of both panels of one of the blanks and are adhesively joined to the panels of the other blanks. A spine is formed by folding the joined blanks along the line separating the two panels. In the fold condition, the glue flaps cooperate to provide a palletlike support for the records to be contained therein thereby maintaining the records in a flat position so as to minimize the danger of warpage during record storage periods.

### 3,826,361 PLASTIC BAG DISPENSER SYSTEM

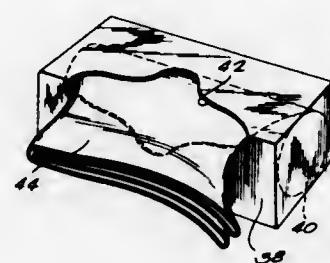
William F. Heckrodt, Menasha, Wis., assignor to Presto Products Incorporated, Appleton, Wis.

Filed Dec. 13, 1972, Ser. No. 314,865

Int. Cl. B65h 55/00; B65d 85/00; A47k 10/24

U.S. Cl. 206—409

6 Claims



Plastic bags which are each folded a number of times along parallel fold lines are arranged in overlapping sequence in the direction of the fold lines and are rolled up to form a cylindrical shaped coreless roll of bags. The cylindrical roll is contained within a package having an opening through which the leading bag can be pulled off the roll. The package is large enough to allow the roll to rotate when the bag is pulled off, and the bags are overlapped sufficiently so that the leading edge of the next bag will be rotated to a position of access through the package opening when the leading bag is pulled off the roll.

### 3,826,362 SHIPPING FOLDER

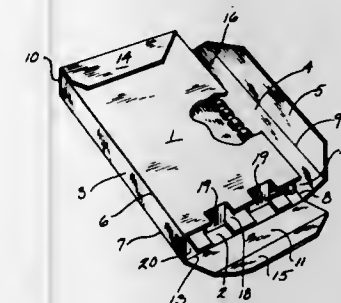
Edward J. Staskus, Elm Grove, Wis., assignor to W. A. Krueger Co., Bookfield, Wis.

Filed Aug. 23, 1972, Ser. No. 283,079

Int. Cl. B65d 5/02

U.S. Cl. 206—424

5 Claims



A one piece cushioned shipping folder for books has the inner end flaps relieved to accommodate an enlarged spiral ring binder or backing for the book and folded to protect the book backing from crushing.

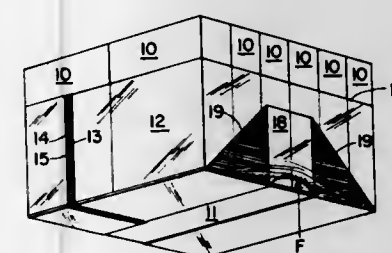
**3,826,363  
STORAGE AND DISPLAY PACKAGE**  
John S. Amneus, Woodlawn, and Justin G. Leisring, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 28, 1972, Ser. No. 238,898

Int. Cl. B65d 65/02, 75/20

U.S. Cl. 206—430

6 Claims



A tray-like storage and display package is formed from a flexible material, which is preferably transparent, such as polyethylene which is wrapped about the sides of an array of containers and underlies at least a portion of the bottom of the array. Handles preferably formed by the film itself as a result of the folding pattern used in assembling the package, are provided. The film normally has little or no tension about the array of containers thereby allowing free removal of containers. The position of the handle means is such that the application of lifting force to them also imparts circumferential tension tightening the material thereby uniting the containers into an integral unit to allow handling.

**3,826,364  
PARTICLE SORTING METHOD AND APPARATUS**  
William A. Bonner, La Honda; Richard G. Sweet, and Henry R. Hulett, both of Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed May 22, 1972, Ser. No. 255,443

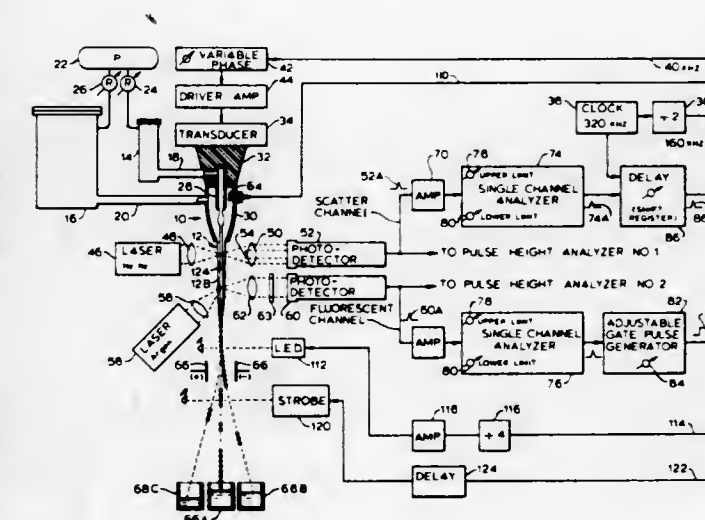
Int. Cl. B07c 5/34

U.S. Cl. 209—3

20 Claims

A particle sorting method and apparatus for separating minute particles incorporated in a liquid stream in accordance

with selected particle parameters. Particles such as biological cells to be separated are incorporated in the inner or central portion of a confined coaxial flow stream which includes an outer cell-free fluid sheath portion. This coaxial flow stream is released through a vibrating nozzle for inspection by one or more cell sensing means for sensing cells in the jet stream immediately downstream of the nozzle. Beam illumination and/or observation of the jet stream for particle sensing is effected outside of the nozzle. Vibration of the nozzle breaks the coaxial jet stream into a series of uniform drops downstream of the cell sensing means, and signals from said means are used to initiate delayed charging pulses applied to preselected cell-containing drops as they break from the vibrating fluid jet. Nozzle vibration is synchronized with the charging pulse to



prevent separation of drops from the stream during the drop charging pulse on and off transition times, thereby preventing undesired drop charging. The drops pass between charged deflection plates where the charged drops are deflected into appropriate receptacles. By using a plurality of sensing means such that all cells are sensed by one sensor, and only certain cells, i.e. cells characterized by a particular parameter value, are sensed by another sensor, drops containing both cells characterized by a particular parameter and cells not characterized by that parameter can be sorted away from the receptacle for cells characterized by that particular parameter.

### 3,826,365 BENEFICIATING CLAY BY SELECTIVE FLOCCULATION AND MAGNETIC SEPARATION OF IMPURITIES

Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

Continuation-in-part of Ser. No. 76,219, Sept. 28, 1970, Pat.

No. 3,701,417. This application June 13, 1972, Ser. No.

262,266 The portion of the term of this patent subsequent to

Oct. 31, 1989, has been disclaimed.

Int. Cl. B03b 1/04; B03c 1/30

U.S. Cl. 209—5

10 Claims

Colored titaniferous impurities are removed from a deflocculated aqueous slip of kaolin clay by activating the impurities with polyvalent cations, e.g., calcium ions, selectively flocculating the impurities by addition of a synthetic organic anionic polyelectrolyte and then passing the slip through a high intensity magnetic field, whereby the flocculated impurities are separated from the slip containing brightened purified clay.



3,826,366

**DEVICE FOR SELECTIVELY DISCHARGING REFUSE MATERIAL FOR SEPARATE RECOVERY OF FIBROUS MATERIAL**

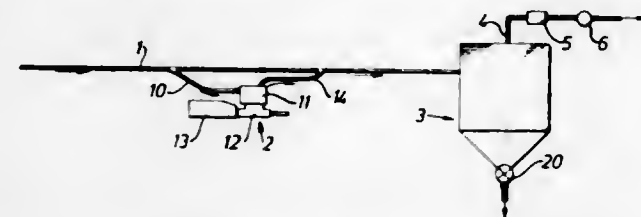
Per Anton Naumburg, Djursholm, and Hans Olof Hyden, Stockholm, both of Sweden, assignors to AB Centralsug, Solna, Sweden

Filed Feb. 13, 1973, Ser. No. 332,100

Claims priority, application Sweden, Feb. 25, 1972, 2385/72 Int. Cl. B07c 3/06

U.S. Cl. 209-74

8 Claims



A device for discharging inhomogeneous material such as household garbage from a vacuum conveying system, said device comprising means permitting a lighter fraction of said material substantially comprising fibrous material to be discharged separate from the rest of the material.

3,826,367  
**GRAIN CLEANER**

Louis E. Hubach, Aurora, Ohio, assignor to W. S. Tyler Incorporated, Cleveland, Ohio

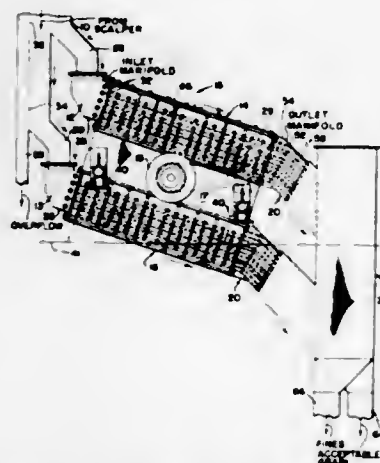
Continuation-in-part of Ser. No. 795,260, Jan. 30, 1969, Pat. No. 3,680,697. This application Feb. 23, 1972, Ser. No. 228,684

The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. B07b 1/46

U.S. Cl. 209-243

9 Claims



A grain cleaner including, in series, an inlet manifold, vibrating apparatus, an outlet manifold and vertically extending chutes. The inlet manifold includes an opening at the top for receiving a mixture of grain and foreign matter and side walls converging downwardly toward outlets, said manifold being constructed to allow linear flow of said grain from said opening to said outlets. The outlets being located at one side of the inlet manifold near the lower end, each one being constructed to feed a stream of the substantially dry mixture to one of a plurality of superposed screening decks. The mixture flowing through the outlets may be individually regulated by pivotable gates disposed therein to give uniform flows to each deck. Each deck includes a screen superposed over a pan. Whole grains are retained above the screen and fines consisting of foreign matter, broken grains, and undersized grains fall through the pores of the screen onto the pan. A vibrator is operatively assembled to shake the box and its contents at an acceleration of at least three times that of gravity and to exert

a throw on the fines which is adequate to cause them to strike the underside of the screen and dislodge any material blinding any of the openings. The outlet manifold includes two outlets from each deck. One outlet is disposed to receive the grain which is retained on the screen. The other outlet is disposed to receive the fines on the pan. A passage in the outlet manifold adjoins each of the outlets and baffles are provided therein to horizontally deflect the grain or fines into different vertically extending chutes. Below the outlet manifold, the chutes are structured to laterally deflect the grain in one direction and the fines in another direction whereby all the grain will empty into a single duct and the fines will empty into another single duct.

3,826,368

**LIQUID FILTER SYSTEM HAVING AUTOMATIC FILTER BACK WASH CONTROL AND METHOD OF OPERATION**

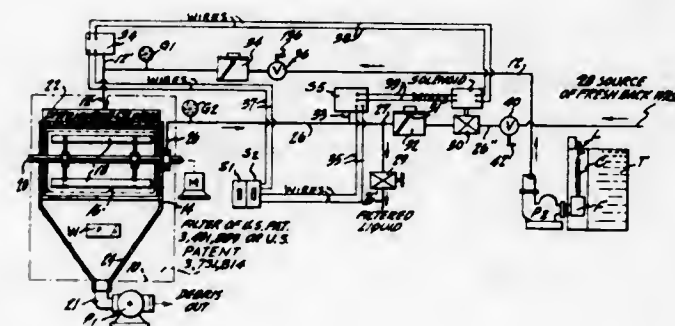
Theodore M. Walters, Milford, N.J., assignor to Charles H. Brown, Boca Raton, Fla.

Continuation-in-part of Ser. No. 727,842, May 9, 1968, Pat. No. 3,731,814. This application Aug. 9, 1972, Ser. No. 297,213

Int. Cl. B01d 29/38

U.S. Cl. 210-82

11 Claims



A filter for removing solid particles from a fluid in which an inlet supplies the fluid to be filtered to one side of the screen, and an outlet carries away the filtered fluid from the other side of the screen, wherein means are coupled to the outlet responsive to an absolute drop in normal pressure therein below a predetermined amount for introducing a higher pressure back wash into the outlet, and means are coupled to the inlet responsive to an increase in normal pressure in the inlet for terminating the flow of back wash into the outlet.

3,826,369

**FILTRATION PROCESS AND FILTRATION EQUIPMENT**

Kazuo Murata; Hirotaka Ikeda; Katsuzi Ashida, and Ukichi Sato, all of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Hakuhachiro, Tokotsuki City, Osaka and Yuasa Kiko Company Limited, Takatsuki City, Osaka, both of Japan

Continuation of Ser. No. 159,245, July 2, 1971, abandoned.

This application Dec. 18, 1972, Ser. No. 316,424

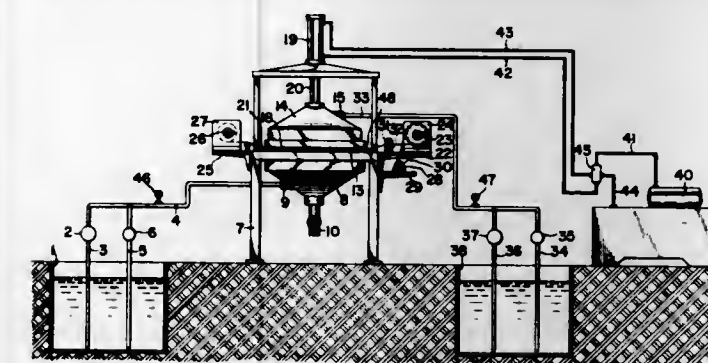
Int. Cl. B01d 29/02

U.S. Cl. 210-82

5 Claims

This invention provides a filtration process capable of intermittent repetition wherein the prefilter is fed under pressure to one section of a pair of containers compressed to a watertight closure through a filter medium and the filtrate is discharged from another section of said containers, the backwash process wherein the filtrate is fed under pressure in the reverse direction of the filtration process, while said filtration process is suspended, to remove plugging of said filter medium, and the filter medium exchange process wherein said filter medium is moved for replacement by a new one, subsequent to said filtration process and backwash process alternately repeated

predetermined times. This invention relates to a process and equipment which enable one to filter with ease and certainly



extremely fine particles using the special microporous substance.

3,826,370

**ROTARY FILTER APPARATUS HAVING MEANS FOR CONTROLLING THE LEVEL OF FILTRATE**

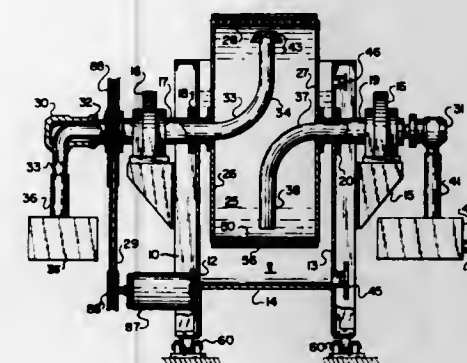
Harry Ball, Piscataway, and Henry A. Steward, Calif., both of N.J., assignors to Technical Fabricators, Inc., Piscataway, N.J.

Filed May 29, 1973, Ser. No. 364,364

Int. Cl. B01d 33/12

U.S. Cl. 210-109

14 Claims



A rotary filter has a rotary drum with a perforated circumferential wall, the drum extending partly into a tank containing a slurry to be filtered. A sheet of a filter medium is wrapped around the circumferential wall. A first standpipe extends into the drum through a hollow bearing shaft from a filtrate pump, for withdrawing filtrate from the drum, and a second standpipe extending into the upper portion of the drum by way of the hollow bearing shaft is connected to a vacuum pump for separately withdrawing air. A weighing device is positioned to provide an output corresponding to the level of the filtrate in the drum, for maintaining this level within a given range by controlling the operation of the filtrate pump for the purpose of separately withdrawing the air and filtrate and prevent them from mixing.

3,826,371

**AQUARIUM CLEANING DEVICE**

James L. Adamson, 120 Calle Marguerita, Los Gatos, Calif. 95030

Filed Dec. 21, 1972, Ser. No. 317,173

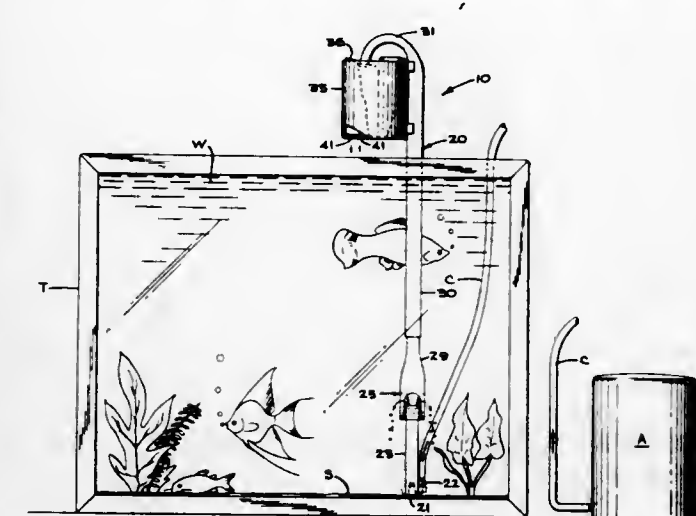
Int. Cl. E04h 3/20

U.S. Cl. 210-169

16 Claims

An aquarium cleaning device comprising a withdrawing tube for removing water along with debris and foreign matter from an aquarium and advancing the removed water into a filter. Openings in the bottom of the filter enable the filtered water to return to the aquarium. The withdrawing tube has a reduced diameter inlet opening disposed in the aquarium for

increasing the speed of the withdrawal of water with debris and foreign matter into the withdrawing tube. Air is supplied to the withdrawing tube for the removing of water with debris and foreign matter from the aquarium and for advancing the removed water through the withdrawing tube into the filter.



Spaced from and above the inlet opening, the withdrawing tube includes an increased diameter portion or a deceleration chamber to cause sand and objects of greater density advancing from the inlet opening of the withdrawing tube to fall back into the aquarium through openings in the wall thereof rather than advance to the filter.

3,826,372

**FLEXIBLE FILTER**

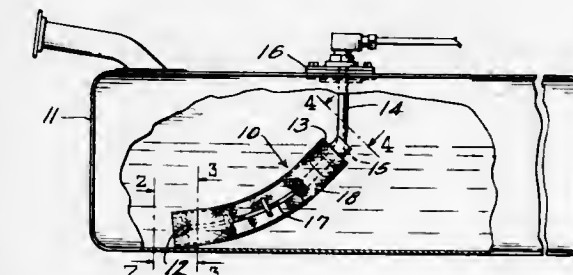
Rupert B. Bell, Grosse Point Park, Mich., assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed June 14, 1973, Ser. No. 370,017

Int. Cl. E03b 11/00

U.S. Cl. 210-172

8 Claims



The invention is a flexible fuel filter for use, for example, in an automotive fuel tank. The filter depends from an obliquely angled outlet tube and is flexed against the tank bottom, so that the lower end of the filter is maintained in forced contact with the tank bottom to assure pick-up of fuel at the lowest level. A bias wrapped filter mesh serves as a flexible sleeve which is sealingly retained by an interior flexible spool including a closure on one end and means for attachment to the outlet tube on the other end.

3,826,373

**LIQUID CHROMATOGRAPHY APPARATUS**

Raymond E. Andreotti, Hopedale, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 3, 1973, Ser. No. 347,601

Int. Cl. B01d 15/08

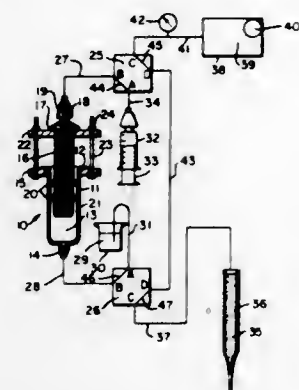
U.S. Cl. 210-198 C

5 Claims

A liquid chromatography apparatus comprising a liquid sample measuring and feeding device adapted for use in feeding a liquid sample of a measured volume to a chromatography column.



graphic fractionating column, the device comprising a syringe-like means for measuring the sample, and a pair of four-way valves for controlling the flow of the sample to the syringe-like



measuring means and from the measuring means to the chromatographic fractionating column and for controlling the flow of the mobile liquid phase employed in driving the sample to and through the chromatographic fractionating column.

3,826,374

# **APPARATUS ENABLING THE SHIFTING OF GROUPS OF FILTER PLATES IN A FILTER PRESS**

Oswald Busse, and Hugo Klepper, both of Aarbergen, Germany, assignors to Passavant-Werke Michelbacher Hütte, Aarbergen, Germany

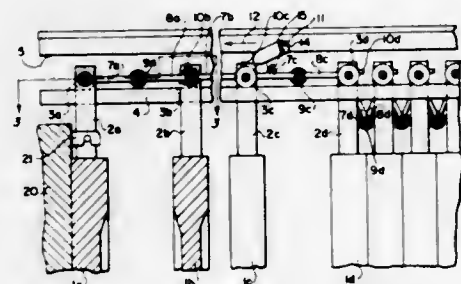
Filed May 24, 1973, Ser. No. 363,552

Claims priority, application Germany, June 2, 1972, 2226957

Int. Cl. B01d 25/32

U.S. Cl. 210-225

16 Claims



Adjacent filter plates of a filter press are connected by links permitting the plates to close and separate. Some plates have a cam thereon which moves between an operative position and a neutral position, moving to the former position in response to movement of its associated links to a filter plate separated condition. An engaging dog moves along the filter press, engaging an operative cam to move at least one but preferably a group of filter plates to an open, separated condition.

3,826,375

# **LIQUID-SOLIDS CONTACTING CHAMBER WITH SPHERICAL STRAINER MEANS**

Paul W. Fournier, New Brighton, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 163,847, July 19, 1971, abandoned. This application July 20, 1973, Ser. No. 381,294

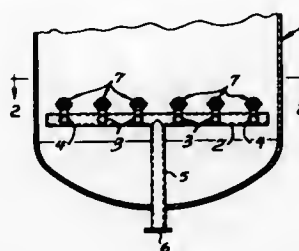
Int. Cl. B01d 35/28

U.S. Cl. 210-291

4 Claims

A liquid-solids contacting chamber using a plurality of slotted ball-form strainer-nozzle members to effect the withdrawal and/or distribution of liquid from, or into, the contacting chamber. The plurality of members are utilized as part of the liquid manifold or pipe header system and are of par-

ticular advantage over present types of cylindrical form members in that they can provide greater resistance to external



crushing pressures, as well as provide more optimum backwash flow patterns in the chamber.

3,826,376

# **SEPTIC TANK CONSTRUCTION**

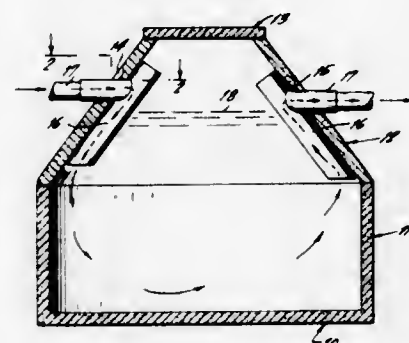
Andrew L. Carlson, and John R. Pinezich, both of Northport, N.Y., assignors to Andrew Carlson & Sons, Inc., Kings Park, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,872

Int. Cl. C02c 1/14

U.S. Cl. 210-519

5 Claims



Septic tanks are described comprising a receptacle portion having an upstanding wall and a dome open at its top and supported on said wall. A removable slab covers the open end of the dome which is provided at opposite sides with baffled inlet and outlet means so constructed and arranged as to direct the sewage in an arcuate path from the inlet means to the outlet means while keeping turbulence to a minimum.

3,826,377

# **FIXTURE FOR HOLDING SEMICONDUCTOR DISCS DURING DIFFUSION OF DOPING MATERIAL**

Gerhard Bachmann, Muenchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

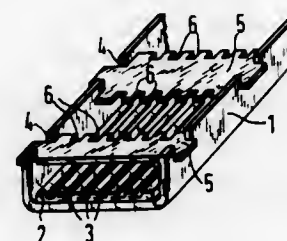
Filed June 13, 1972, Ser. No. 262,353

Claims priority, application Germany, July 7, 1971, 2133876

Int. Cl. A47g 19/08

U.S. Cl. 211-41

3 Claims



A fixture for retaining semiconductor discs during diffusion with a doping material including a hollow member with base and sidewalls, and a base plate located on the base of the hollow member with grooves therein for receiving the semicon-

ductor discs in standing relation, in combination with retainer means extending between the sidewalls, the retainer means having slots therein for embracing the semiconductor discs in edge contact at a level which is at least as high as the center of gravity of the discs.

3,826,378

# **SKI RACK**

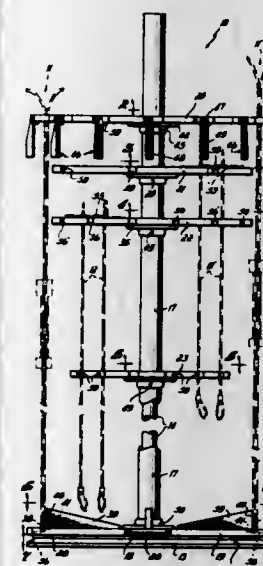
Warren D. Novak, 325 Douglas Rd., Chappaqua, N.Y. 10514

Filed Dec. 10, 1971, Ser. No. 206,646

Int. Cl. A47b 49/00; A47b 81/00

U.S. Cl. 211-60 SK

28 Claims



A rotary ski rack for high density storage of multiple pairs of skis and ski poles. The rack is so arranged and configured that each pair of skis and the associated pair of ski poles are stored in the same sector of the rack and the skis lock the associated poles in the rack.

3,826,379

# **METHOD AND MEANS FOR REDUCING THE EFFECT OF ELECTROSTATIC CHARGES ON PAPER IN A COPYING SYSTEM**

Wayne E. Wright, 167 Wooded Ln., Villanova, Pa. 19085

Filed Feb. 28, 1973, Ser. No. 336,816

Int. Cl. B65h 31/02

U.S. Cl. 271-208

6 Claims

The present device provides a means to remove electrostatic charges from one side of a sheet of paper and means to provide a ground plane so that the remaining charges are attracted to the ground plane which causes the sheets of paper to stack without "floating."

3,826,380

# **ARRANGEMENT IN CRANES TO DETERMINE THE DEVIATION OF THE HOISTING DEVICE OF THE CRANE FROM A DEFINED VERTICAL LINE**

Bo Lenander, and Bernt Ling, both of Vasteras, Sweden, assignors to Almannas Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 12, 1973, Ser. No. 350,623

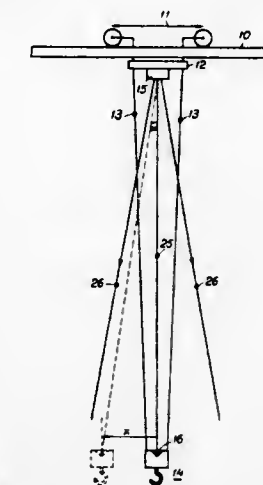
Claims priority, application Sweden, Apr. 14, 1972, 4859/72

Int. Cl. B66c 19/00

U.S. Cl. 212-125

12 Claims

To determine the deviation of the hoisting device of a crane from a vertical line, a light emitting arrangement is placed on the crane which emits a wide beam of light downwardly. Within this beam, the hook or other hoisting device has an up-



wardly directed reflector. There is also on the crane a detector unit which receives the light reflected from the reflector and

3,826,381

# **ARTICLE HANDLING APPARATUS**

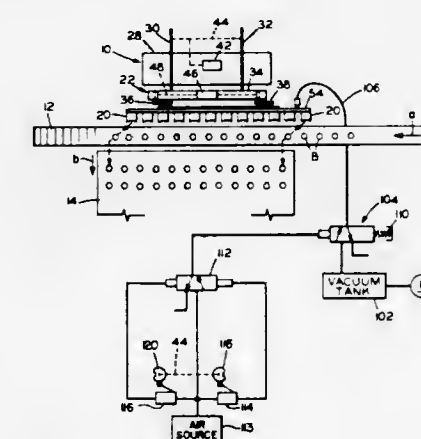
Constantine W. Kulig, Windsor, Conn., and Lyman L. Campbell, East Longmeadow, Mass., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Mar. 30, 1972, Ser. No. 239,643

Int. Cl. B66c 1/02

U.S. Cl. 214-1 BT

12 Claims



An article handling apparatus which is used to transfer a plurality of articles, such as glass containers which may be in a heated condition, from a pickup position which may be over a first conveyor to a discharge position which may be over a second conveyor employs a plurality of vacuum pickup heads mounted on a movable carriage. A drive mechanism connected to the carriage moves the plurality of pickup heads into laterally adjacent and embracing relationship with the articles at the pickup position so that one article is embraced in each of the respective heads. The drive mechanism then raises the carriage and the embraced articles so that they are held in a suspended condition and moves the carriage from the first conveyor to the discharge position where the articles are lowered onto the second conveyor. As the carriage lowers the embraced articles, the source providing the vacuum is disconnected from the plurality of heads and the articles are deposited at the discharge position.

In order to minimize the capacity of the vacuum system, each of the plurality of vacuum pickup heads contains a valve and an actuating element which opens the valve to produce a localized vacuum within the head when an article to be embraced is located in closely spaced relationship with the head. The drive means for moving the plurality of heads on the car-



riage sweeps the heads at the appropriate time into closely spaced relationship with the articles as they move along the first conveyor. When the actuating elements of the valves are contacted by the articles, the valves open and the full effect of the vacuum source is available to draw the articles into embracing relationship with the pickup heads.

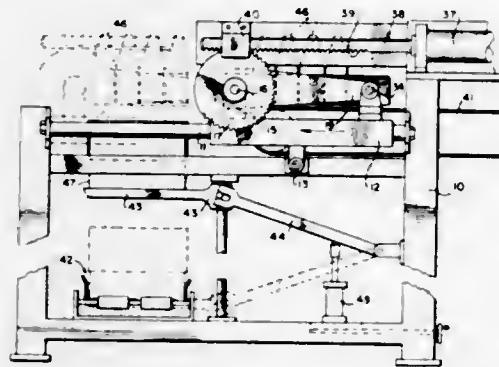
### 3,826,382 CASE PACKER

Anthony T. Zappia, 7576 Ivywood Dr. Apt. A, Indianapolis, Ind. 46250

Filed Jan. 4, 1973, Ser. No. 321,003  
Int. Cl. B65b 21/22

U.S. Cl. 214-1 BB

6 Claims



A case loader, particularly for glassware, including a gripper assembly comprising a plurality of parallel arms each including an expandable diaphragm distensible toward a similar diaphragm on an adjacent arm, and a motor for moving the gripper assembly between a ware receiving station and a ware delivering station either by rectilinear motion or by arcuate motion.

### 3,826,383

#### AUTOMATIC HANDLING APPARATUS

Hans Richter, Augsburg, Germany, assignor to Keller & Knapich Augsburg, Zweigniederlassung der Industrie-Werke Karlsruhe Ausberg Aktiengesellschaft, Augsburg, Germany

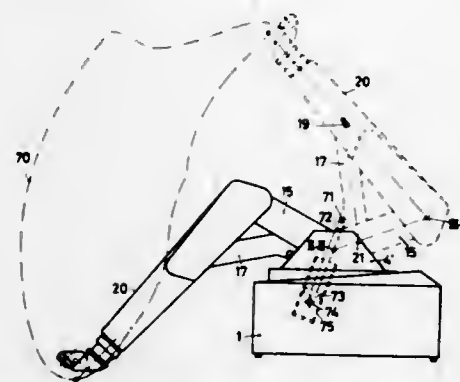
Filed May 25, 1973, Ser. No. 365,641

Claims priority, application Germany, May 31, 1972, 2226407

Int. Cl. B66c 1/10

U.S. Cl. 214-1 BD

10 Claims



A mechanical handling apparatus controlled by a recorded but variable program has a rotatable base. An upper arm is pivoted on the base. A forearm is pivoted on the upper arm, and a wrist movement and gripper are pivoted on the end of the forearm. Each part subject to rotary motion is driven by an epicyclic gear located as near as possible to the part to reduce slack or backlash. Each gear is driven through belts and bevel gears by an electric motor located in the base. The program is pre-recorded and all movements of the apparatus when in use generate signals which are compared with the program, which thus controls the motor drives.

### 3,826,384 CARGO TRANSFERRING VESSEL AND METHOD

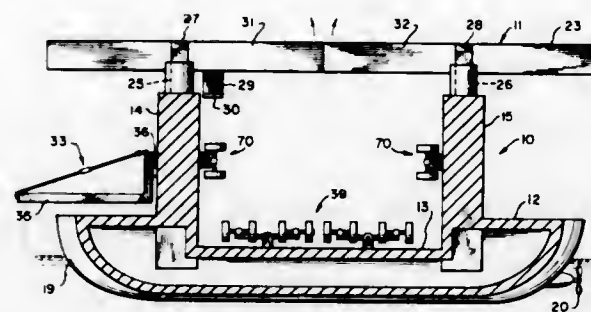
Robert F. Cecce, 8320 Verona Dr., New Carrollton, Md. 20784

Filed Aug. 7, 1972, Ser. No. 278,231

Int. Cl. B65g 67/58

U.S. Cl. 214-13

9 Claims



A cargo transferring vessel and method for transferring cargo between a small ship or lighter and a larger ship. The cargo transferring vessel is capable of being partially submerged to various depths to permit a large ship to float over the center portion of its hull and is then capable of increasing its buoyancy to bring wheels of wheel assemblies on the center portion of its hull into contact with the hull of the larger ship to eliminate relative pitching, rolling and up and down movements between the larger ship and the cargo transferring vessel which might be caused by waves or rough water. A stabilizing apparatus is provided on the side of the hull of the cargo transferring vessel for exerting a downward force on the hull of the smaller ship for assisting in preventing relative movement between the smaller ship and the combined cargo handling vessel and the larger ship. The wheel assemblies are capable of conforming to the shape of the hull of the larger ship and they permit the cargo transferring vessel to be located at various positions along the hull of the larger ship. The cargo transferring vessel and method permit the transfer of cargo between a large and a small ship without the undesirable pitching, rolling and up and down movements between the large ship, the smaller ship and the cargo transferring vessel.

### 3,826,385

#### SILO FILLING ARRANGEMENT

Rene Bluntzer, Thann, France, assignor to Ameco S.A., Kingersheim, France

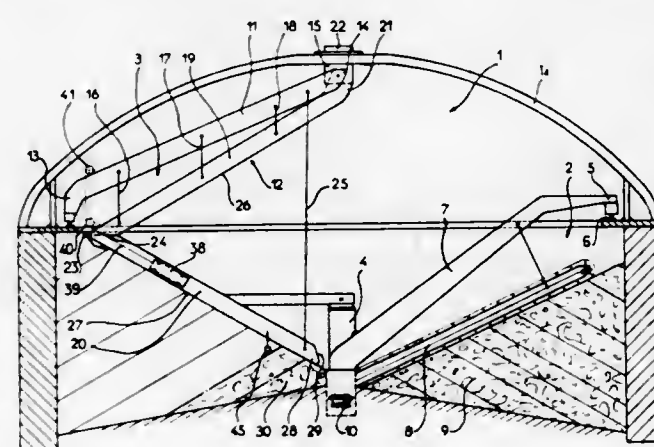
Filed May 6, 1971, Ser. No. 140,775

Claims priority, application France, May 6, 1970, 70.16467

Int. Cl. B65g 65/32

U.S. Cl. 214-17 CA

13 Claims



This invention relates to a device for discharging loose materials or bulk products, notably for a rotary scraper, which comprises a conveyor duct to which a movement of rotation

identical with that of said scraper is imparted, and of which at least one section comprises movable discharge means adapted to move along said section in the axial direction thereof. With this arrangement the head or height of fall of the materials to be discharged is reduced considerably so that the detrimental emission of dust is safely avoided. Furthermore, this device facilitates the storage by successive layers of the materials in view of its subsequent homogenization (FIG. 1).

### 3,826,386

#### COMPACT LIFT FOR VAN

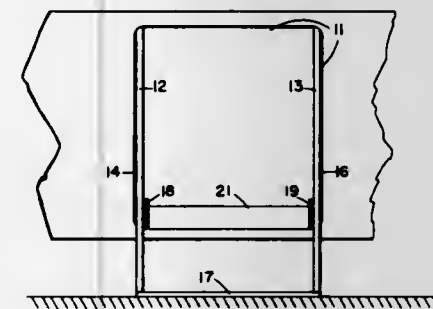
Kenneth A. Tauer, 9801 W. Robin Oak Rd., Tucson, Ariz. 55343

Continuation-in-part of Ser. No. 322,732, Jan. 11, 1973, abandoned. This application Mar. 30, 1973, Ser. No. 346,349

Int. Cl. B60g 1/48

U.S. Cl. 214-77 R

5 Claims



An electrically-operated lift platform is provided for insulation at the side or rear door of a van-type passenger/cargo automobile body. The platform is long enough to accommodate a wheel chair. The platform sides are connected to two linkage mechanisms, secured to the body inside the van at the top and sides of the door opening. The lift, in operation, moves between a position flat on the ground outside the door to a position level with the van floor, keeping horizontal during travel between these positions. The lift also can be moved from the floor position to a storage position in which the lift platform is vertical and entirely within the van, so that the van doors can be closed, when the lift is entirely concealed from outside view.

In a first embodiment the lift is operated electrically, and in a second, hydraulically.

### 3,826,387

#### IMPROVED SELF-LOADING AND SELF-PROPELLED HAULAGE VEHICLE

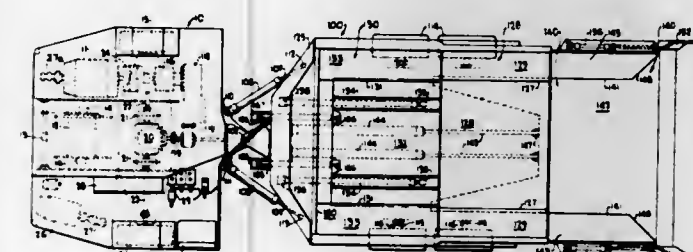
Alex J. Galis, Heatherbrae Square, Apt. 101, Indiana, Pa. 15701

Filed Oct. 15, 1971, Ser. No. 189,512

Int. Cl. B60p 1/00

U.S. Cl. 214-90

11 Claims



An improved, self-loading self-propelled loading haulage vehicle, for hauling loose mined material, such as coal, in an underground mine or the like. The haulage vehicle comprises prime mover means operably connected to a trailer having a material haulage compartment that includes a fixed, or sta-

tionary, hopper portion having mounted therewith one or more selectively movable hopper portions whereby the effective length, and hence hauling capacity, of the haulage vehicle may be varied, and whereby rapid loading and unloading of the vehicle is obtained. In one embodiment, the trailer means includes a fixed hopper portion having mounted thereon front and rear movable hopper portions which may be selectively positioned during loading and unloading of the haulage vehicle. Each of the hopper portions is channel-shaped and includes spaced-apart vertical sidewalls transversely interconnected by a bottom plate portion. The movable front hopper includes pivotally mounted at the end thereof a loading and holding gate means adapted to pivot to an open position during vehicle loading or unloading and to a closed position during loaded vehicle travel. Further provided is a cleaner plate within the trailer means adapted to travel the length of the fixed hopper portion whereby the hopper contents may be dumped, or discharged therefrom.

### 3,826,388

#### WHEEL/TRACK LOADER

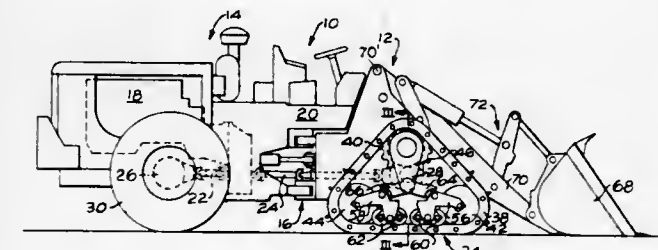
Dorrance Oldenburg, Peoria, and James Robert Sturges, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 16, 1971, Ser. No. 171,916

Int. Cl. E02f 3/00

U.S. Cl. 214-140

1 Claim



A loader vehicle rides on a set of track assemblies and a set of wheels and is articulated at the mid-point between the wheel assembly and the track assembly.

### 3,826,389

#### BALE HANDLING MACHINE

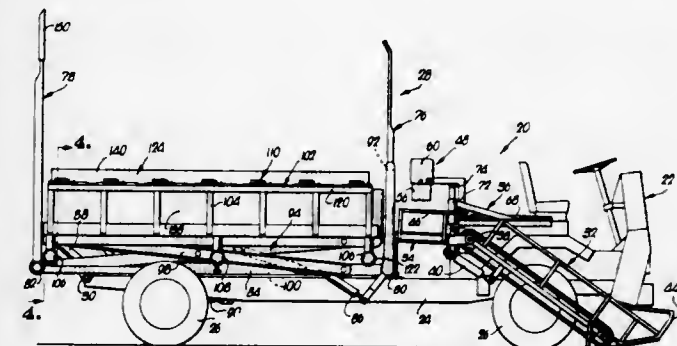
Vern L. Godfrey, and Bill D. Clark, both of Rt. 4, Warrensburg, Mo. 64093

Filed July 24, 1972, Ser. No. 274,337

Int. Cl. B65g 57/28

U.S. Cl. 214-152

8 Claims



A mobile bale handling machine picks up successive bales in the field and directs the same rearwardly into a receiver in which a stacked load of the bales is formed from the bottom up by virtue of a pusher in the receiver which raises successively formed tiers of the bales to holding structure located above the tier-forming level of the receiver. Upon completing the formation of the stacked load, the receiver may be tilted about a horizontal axis to swing the tiers of the load into an



upright disposition, whereupon the same pusher used to build the load may be employed to displace the load of bales through the open top of the receiver as a stack. Upstanding load-retaining forks of the receiver may be inclined as the receiver is tilted in order to give the receiver a canted appearance for overhead clearance. The stack may subsequently be retrieved by virtue of the ability of the retaining forks to operate independently of one another for maneuvering under and over the stack and for clamping the same within the receiver for subsequent tilting to a transport position.

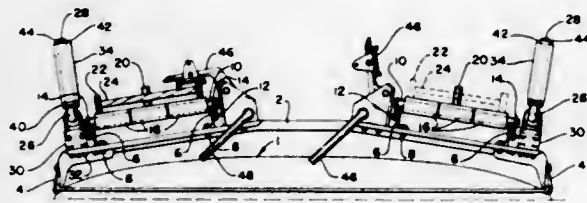
3,826,390

**RACK FOR ATTACHMENT TO THE TOP OF A VEHICLE**  
Clyde W. Watson, 1916 S.E. 6th Ave., Mineral Wells, Tex. 76067

Filed Aug. 7, 1972, Ser. No. 278,581  
Int. Cl. B60r 9/00

U.S. Cl. 214—450

5 Claims



A rack for attachment to the top of a vehicle, on which rack elastomer elements receive the ladder or other elements being hauled. The rollers of which rolling element are positioned on a longitudinal shaft along the side of the vehicle top and on a lateral shaft on each end of the rack to enable a ladder, boards, pipe or like elongated material to be readily loaded onto the rack without injury thereto or to the top of the vehicle, and enables such material to be hauled. A special feature is the provision of a projection which may extend upward between the rungs of a ladder to prevent longitudinal movement of the ladder. Furthermore, a clamping device is provided to prevent longitudinal movement of a ladder and/or other material being hauled. An upstanding corner shaft, having an elastomer roller journaled thereon is provided on the rack, near the distal end thereof, which enables an element, being hauled, to be moved thereagainst in rolling relation with the roller thereon, so as to expedite the work involved in loading the rack. The rack is removable and replaceable. The elastomer rollers provide a cushion between the ladder and/or other material being hauled and the mounting frame on the vehicle so as to prevent damage to the ladder or other material being hauled to prevent shock to the vehicle.

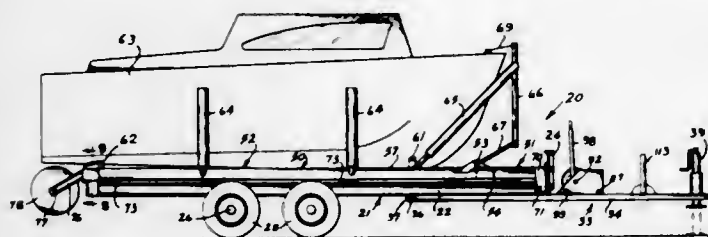
3,826,391

**ARTICULATED BOAT LAUNCHING TRAILER**  
Amos C. Prince, P.O. Box 894, Goldsboro, N.C. 27530  
Filed Dec. 15, 1972, Ser. No. 315,374

Int. Cl. B60p 3/10

U.S. Cl. 214—506

8 Claims



Apparatus for transporting, launching and retrieving boats or other marine vehicles including a trailer having telescoping frames and with one of such frames being articulated in a

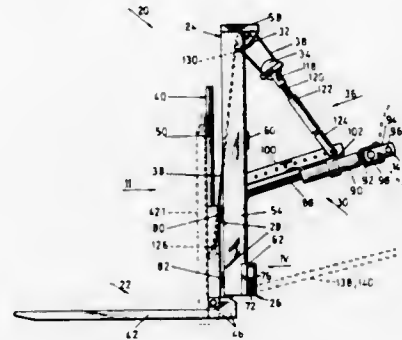
generally vertical direction to follow the contour of a launching ramp or the bottom of a body of water.

3,826,392  
LIFTING DEVICE

Brian Farley, 9 Struben Rd., Claremont, South Africa  
Filed May 1, 1973, Ser. No. 356,190  
Int. Cl. B60f 9/20

U.S. Cl. 214—672

12 Claims



A lifting device for attachment to a three-point tractor lift mechanism which has a mast supported and elevated by two links. A flexible member is attached to a link connected to the mast such that elevation of the mast causes elevation of a carriage movably guided by the mast.

3,826,393

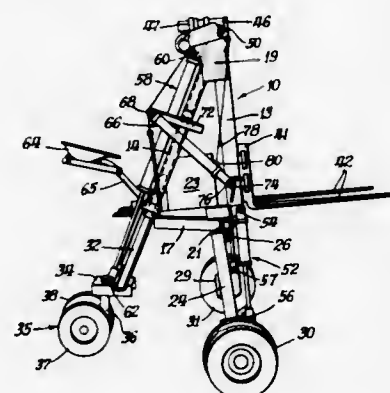
SELF-PROPELLED UNLOADER

Henry F. Carroll, Cary, Ill., assignor to John Barchard, Crystal Lake, Ill., a part interest

Filed Mar. 28, 1973, Ser. No. 345,742  
Int. Cl. B66f 9/20

U.S. Cl. 214—674

3 Claims



A self propelled unloading vehicle having an adjustable and articulated lightweight compact frame enabling the vehicle to carry tremendous loads in a stable manner and with the center of gravity shiftable to a position between the front and rear wheels of the vehicle during the raising of the load. The unloader is capable of lifting loads from a raised bed, such as the bed of a truck, and then by telescoping certain frame members and angularly adjusting other frame members the load is, in effect, rocked off the raised bed without fear of losing the load by tipping during transport of the load.

3,826,394

SAFETY CAP

Morton Stull, 221-223 Banta Ave., Garfield, N.J. 07026  
Filed Dec. 19, 1972, Ser. No. 316,480  
Int. Cl. A61j 1/00; B65d 55/02

U.S. Cl. 215—9

11 Claims

A safety cap construction comprising a pouring-spout type fitment and a closure cap attachable to and removable from

3,826,396

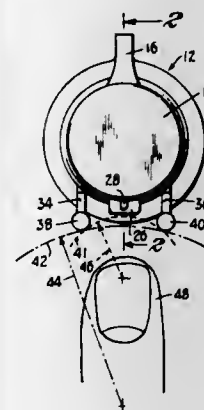
DOUBLE SEAL CLOSURE PLUG

James J. Frassica, South Glens Falls, N.Y., assignor to C. R. Bard, Inc., Murray Hill, N.J.

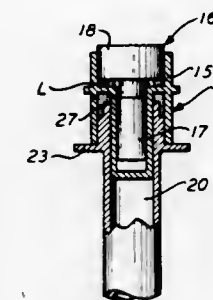
Filed Oct. 31, 1972, Ser. No. 302,441  
Int. Cl. B65d 41/24

U.S. Cl. 215—234

12 Claims



the fitment. The cap has a protruding finger piece by which a user can pry it off, using the fingers. The fitment has spaced-apart guard members disposed in a forward location, which straddle the finger piece of the cap when the latter is in place. The finger piece and the two guard members define a hypothetical arc which, due to the closeness and the positioning of the members, has a radius that is shorter than the radius of the arc defined generally by the front teeth of a human being, to the end that a person such as a small child cannot employ his teeth against the finger piece to force the cap off of the fitment. However, the spacing between the guard members is still great enough to admit a user's finger for access to the finger piece for the purpose of removing the cap from the fitment by finger pressure. The cap and fitment are permanently connected to each other by a thin flexible web which insures that the finger piece will always be urged to a central location between the guard members when the cap is being replaced on the fitment after use.



A closure plug for a tubular opening as in the neck of a receptacle or at the end of a conduit, wherein a plug portion enters the opening with a close fit to constitute a mechanical seal, while an outer skirt portion of the plug forms an annular enclosed recess about the exterior of the opening, an axially movable piston in the top of the plug being forced into a cylindrical chamber in the plug to drive a quantity of sealing (sterilizing) liquid from said chamber into the recess to form a liquid barrier seal around the exterior of the opening, the lip of the opening being thus enclosed externally and internally.

3,826,395

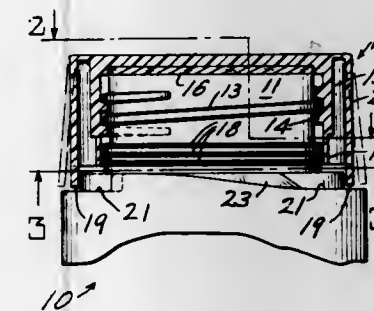
LEAK-PROOF CLOSURE FOR A LIQUID CONTAINER

Gary Van Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed May 3, 1973, Ser. No. 356,913  
Int. Cl. A61j 1/00; B65d 55/02

U.S. Cl. 215—9

11 Claims



A leak-proof closure for a liquid container having a threaded neck. A cap for the closure has internal threads which mate with those on the container neck. The cap has an annular skirt portion above or below the threaded section. The container neck has at least one annular sealing ring on its outer surface at such a level that the cap skirt portion fits circumjacent the ring when the cap is threaded onto the neck into closed position. The outer diameter of the ring and the inner diameter of the cap skirt are such that an interference fit therebetween is established. Preferably the sealing ring or rings have a sharp edge in order to provide substantially a line contact with the skirt portion. In a preferred and illustrated embodiment, co-operating means are provided on the cap and the container to make the closure child-proof.

3,826,397

BOTTLE CLOSURE

Herbert Ashley Atkins, Maidenhead, England, assignor to Beecham Group Limited, Brentford, England

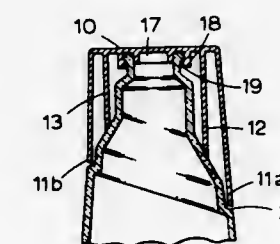
Filed May 19, 1972, Ser. No. 254,922

Claims priority, application Great Britain, May 20, 1971, 16052/71

Int. Cl. B65d 41/06, 41/22

U.S. Cl. 215—41

5 Claims



A cap-sealed bottle wherein the shoulder of the bottle commences inwards from the top of the bottle, leaving a peripheral ledge, the shoulder and the upper region of the body are elliptical and the shoulder portion is longer on one side than the other, the shoulder joining the body of the bottle to the neck of circular cross-section; and the cap comprises a hollow cup-shaped member having a downwardly-extending skirt, a snap-lock liquid-tight sealing arrangement internal of the skirt and at least one internal rib adapted to ride over the shoulder and which rib also serves as a guide means to position the cap on the bottle.



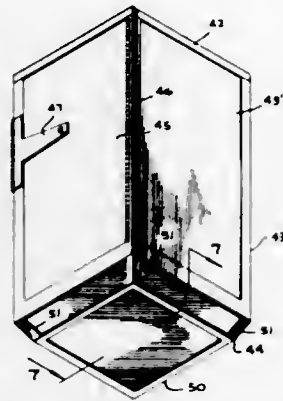
### 3,826,398 TRANSPORT CONTAINER

William C. Rivers, Jr., 2848 Village Grove Dr., Jacksonville, Fla. 32217  
Division of Ser. No. 48,662, May 15, 1970, Pat. No. 3,695,471, which is a division of Ser. No. 808,531, March 19, 1969, Pat. No. 3,561,621. This application May 12, 1972, Ser. No. 252,723

Int. Cl. B65d 87/00

U.S. Cl. 220-1.5

4 Claims



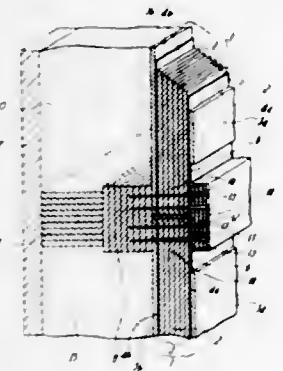
A transport vehicle having a load bed with upstanding guides defining container positions on the bed, and containers including a skeletal bottom suction having downwardly converging corners to provide a guide for automatic orienting at the container positions. The vehicle has an after deck carrying a load handling machine for loading and unloading containers, with a pivoted machine loading ramp pivotally mounted on the after deck and movable to and from loading position by the load handling machine.

**3,826,399  
LOW TEMPERATURE LIQUIFIED GAS STORAGE TANK**  
Tetsuo Noma; Koji Hayakawa; Osamu Nagao; Ichizo Okano; Ryuzo Teramoto; Tomomichi Kurihara; Kenji Nakano, and Tomiyasu Okamoto, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company, Ltd., Osaka, Japan  
Filed July 6, 1972, Ser. No. 269,489

Claims priority, application Japan, July 9, 1971, 46-50830  
Int. Cl. B65d 25/26, 87/34

U.S. Cl. 220-15

3 Claims



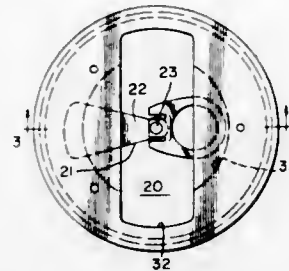
A low temperature liquified gas storage tank having an outer shell and an inner wall formed by a plurality of multi-layer panels, each panel including at least one interior liquid-tight membrane layer protected from excessive thermally induced stresses by an exterior heat shock absorbing layer of plywood or fibrous material which forms the inner wall surface of the tank. A symmetrical arrangement of the membrane layer or layers with respect to the cross-sectional center of the panel prevents warping thereof under thermally induced stress.

**3,826,400  
SAFETY OVERCAP FOR EASY OPENING CONTAINER**  
Gary A. Hougén, Palatine, and Henry F. Kloc, Plainfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,161  
Int. Cl. B65d 51/18

U.S. Cl. 220-29

5 Claims



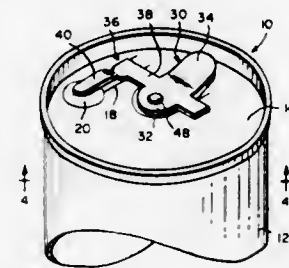
A safety overcap for an easy opening container having an end closure with a tear portion defined by a score line and a pull tab secured to the tear portion by an integral rivet. The overcap includes a panel and a peripheral flange adapted to be detachably snap fitted over the seam of the container. The overcap is formed with a slot having co-acting pull tab for removing the tear strip and a position permitting tilting of the pull tab.

**3,826,401  
CONTAINER OPENING MEANS**  
Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Jan. 26, 1973, Ser. No. 326,970  
Int. Cl. B65d 39/00

U.S. Cl. 220-47

8 Claims



A container end panel is formed with a lever member having a first end, a second end and an offset portion which serves to expose a dispensing opening in the panel when the lever is rotated. The panel is provided with first and second weakened lines which respectively enable the dispensing opening to be formed and the lever to rotate. The front end of the lever is in turn connected to a hinge formed in the end panel by means of the second weakened line.

**3,826,402  
NON-DETACHABLE EASY OPENING CONTAINER**  
Gary A. Hougén, Palatine, and Henry F. Kloc, Plainfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

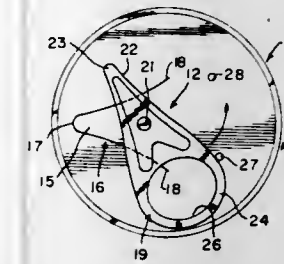
Filed Aug. 3, 1972, Ser. No. 277,722  
Int. Cl. B65d 17/00

U.S. Cl. 220-48

7 Claims

An easy opening container including a can body and an end closure. The end closure is provided with a tear portion defined by a score line terminating in spaced ends. An opening tab is attached to the tear portion and is provided with a rigid nose complementary to the contour of the score line for depressing the tear portion inwardly to provide a pour open-

ing. The opening tab is arranged for pivotal movement in a generally horizontal plane between a position in which the



nose is out of alignment with the score line to prevent inadvertent opening and a position in which the nose is in alignment with the score line for opening the container.

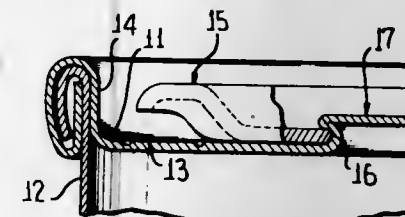
**3,826,403  
EASY OPENING END**  
Christian Enjolras, Pavillons-S-Bols; Pierre Gautier, Ville-D'Avray, and Emile Billy, St-Cloud, all of France, assignors to Etablissements J. J. Carnaud & Forges De Basse-Indre, Paris, France

Division of Ser. No. 191,731, Oct. 22, 1971, Pat. No. 3,781,972. This application Jan. 15, 1973, Ser. No. 323,718

Int. Cl. B65d 17/20

U.S. Cl. 220-54

3 Claims



This invention relates to the attachment of a pull tab to an easy opening end for cans and like receptacles by means of a novel rivet formation wherein the head of the rivet is of a thickness substantially approaching the original thickness of the material of the end. The rivet is formed in two punching steps each employing a flat headed punch.

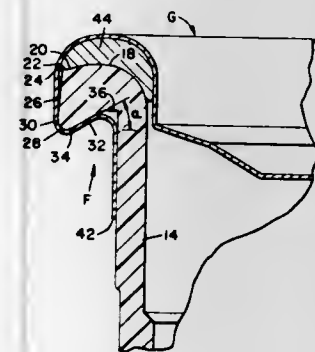
**3,826,404  
MOLDED PLASTIC PAIL**  
Edgar R. Rowe, Cleveland, and William R. Fox, Brecksville, both of Ohio, assignors to Van Dorn Company, Cleveland, Ohio

Continuation of Ser. No. 27,462, April 10, 1972, abandoned. This application Mar. 1, 1972, Ser. No. 231,012

Int. Cl. B65d 7/42

U.S. Cl. 220-70

4 Claims



A molded plastic pail for storing liquids or the like having an open top end, a closed bottom wall and a side wall which ex-

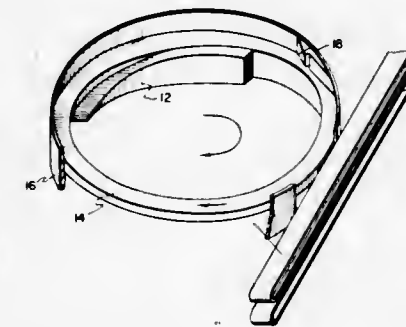
tends upwardly therefrom, the pail including a bead integrally formed at the outer circumference on the open end to act as a retainer for maintaining a lid in sealing relationship with the pail wherein the bead has a downwardly extending tapered lip. The pail further contains two integrally molded bale receivers to maintain a bale in position to provide carrying means, the receivers including side portions extending longitudinally along the side wall for use in combination with a nesting ring for determining a nested position of one pail inside another. The bottom wall is recessed within the side wall and contains an integrally molded downwardly extending abutment element to control the flexing of the bottom when a filled pail is subjected to a sudden jarring or the like.

**3,826,405  
METHOD OF ORIENTING ARTICLES**  
Kurt H. Hoppman, Falls Church, Va., and George W. Edmunds, Derwood, Md., assignors to Hoppmann Corporation, Springfield, Va.

Filed June 20, 1972, Ser. No. 264,636  
Int. Cl. B23q 7/12

U.S. Cl. 221-1

19 Claims



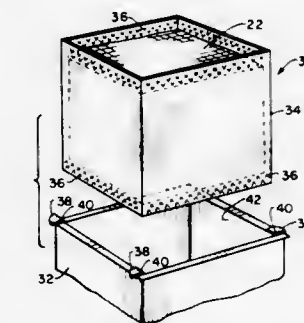
Method of orienting articles which have a configuration consisting of a shank and a head including rotating the parts upon an inner plane so as to distribute them centrifugally, guiding the parts from the inner plane upwardly onto a rotating outer rim which aligns the parts in single file, gating exit of the particles from the rim and radially orienting the articles so as to place them in side by side relationship while tangentially guiding the articles away for packaging, counting or the like.

**3,826,406  
ARTICLE DISPENSER**  
Vincent E. Moniot, 5919 Hanna Ave., Woodland Hills, Calif.  
Continuation-in-part of Ser. No. 40,225, May 25, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,294

Int. Cl. B65h 1/12

U.S. Cl. 221-58

4 Claims



A dispenser primarily for dispensing articles such as pad-like sponges or cylindrical absorption articles used mainly in the field of medicine, dentistry and veterinary medicine wherein an enclosed chamber is employed to contain a plurality of articles with one side open thereof to permit removal of an article, a restrictive material secured to the interior of the



open end which permits removal of a single article while tending to prevent removal of a plurality of articles. The dispenser may include a spring biased platform which biases the articles toward the open end.

### 3,826,407 END WRAP DISPENSER

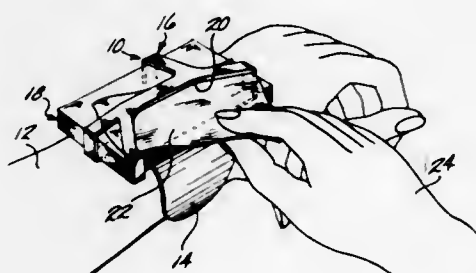
James L. Keating, Seattle, Wash., assignor to Paris American Corporation, Seattle, Wash.

Filed July 12, 1972, Ser. No. 271,030

Int. Cl. A45d 44/00

U.S. Cl. 221-63

7 Claims



A dispenser attachable to a user's arm adjacent the wrist forms a receptacle for a plurality of superposed sheets of non-woven, absorbent fibrous material. These sheets are commonly known in the art of cosmetology as end wraps. The dispenser has a base portion integral with two downwardly extending resilient flanges which conform to the shape of the arm adjacent the wrist. A plurality of sidewardly extending arms is attached to the base portion. Tongue members connected to the ends of the arms mate with slots provided in the base portion. The arms generally extend in four directions at right angles to each other to form part of a bottom surface for the receptacle. Upwardly extending arms are attached to the sidewardly extending arms. Flanges, which are connected to the upwardly extending arms, extend above the bottom surface of the receptacle. The flanges are spaced from the surface in a generally parallel relationship. The flanges are paired and are connected to each other. A reinforcing arm inter-connects the pairs of connected flanges. The four upwardly extending arms are positioned along the sides of a rectangular pattern to form a receptacle for the plurality of superposed sheets. The upwardly extending arms are spaced to provide easy access to the top sheet of the plurality of superposed sheets to assist in removal of the top sheet without disturbing the next subjacent sheet.

### 3,826,408 GRAVITY FLOW PORTABLE LAUNDRY LIQUID DISPENSER

Alvin W. Berndt, 613 111th Ave., Minneapolis, Minn. 55434, and Alex Freyberger, 936 Parker Ave., Roseville, Minn. 55113

Filed June 29, 1973, Ser. No. 374,916

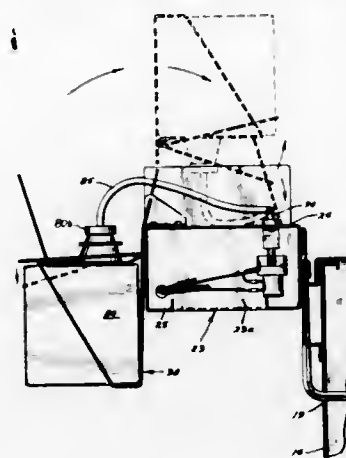
Int. Cl. D06f 29/00

U.S. Cl. 222-70

4 Claims

A portable apparatus comprising a laundry liquid dispenser used in connection with a washing machine delivering by gravity laundry liquids in controlled amounts to a washing machine comprising means for automatically dispensing said laundry liquids in a predetermined order and controlling the

quantity of each of said laundry liquids delivered to said washing machine and controlling the interval of time between the



passage of each of said laundry liquids to said washing machine and means substituting a manual operation.

### 3,826,409 LIQUID DOSAGE DISPENSER

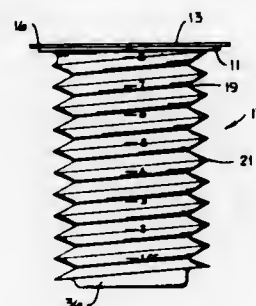
Elmer F. Chilcoat, 318 St. Carr Rd., Plainfield, Ind. 46113

Filed June 25, 1971, Ser. No. 156,845

Int. Cl. B65d 35/08

U.S. Cl. 222-107

10 Claims



A small plastic container having a built-in foldable straw and a built-in receptacle for the folded straw includes a bellows-type wall with an integral in-wall plastic spring, and includes a flanged upper face with a gummed identification label thereon having an integral sleeve encircling a portion of the straw to facilitate erection of the straw for dispensing of contents by collapsing the bellows or accordin wall, using thumb or finger pressure.

### 3,826,410 ELECTRIC MORTAR SPREADER

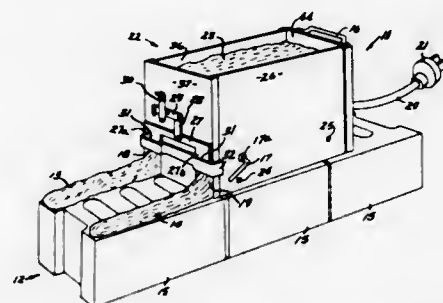
Warren H. Meyer, Rt. No. 1, Box 16, Atlanta, Mich. 49709

Filed Dec. 18, 1972, Ser. No. 316,439

Int. Cl. A01c 19/00

U.S. Cl. 222-178

4 Claims



An electric mortar spreader having a mortar container which is movable on anti-friction rollers and having a rear-

wardly inclined chute bottom. A pair of apertures through the rear wall of the container are gated to meter the flow of mortar therethrough. A lever is provided through the container operating two flapper valve elements selectively opening and closing ports through the bottom of the container and serving the apertures simultaneously. The lever is spring biased to close the ports on release of the lever and the lever actuates a normally open electrical switch. The electrical switch, when closed, permits electrical current to flow through a vibrator element secured beneath the inclined bottom of the container. The vibrator is suspended to impart oscillations to the container at the rear thereof and immediately beneath the floor or bottom adjacent the ports. A guide is secured to the side of the container and is selectively movable to depend below the lower line of block.

### 3,826,411 CONCRETE SLAB FORMING MACHINE WITH HIGH EXTRUSION CAPACITY

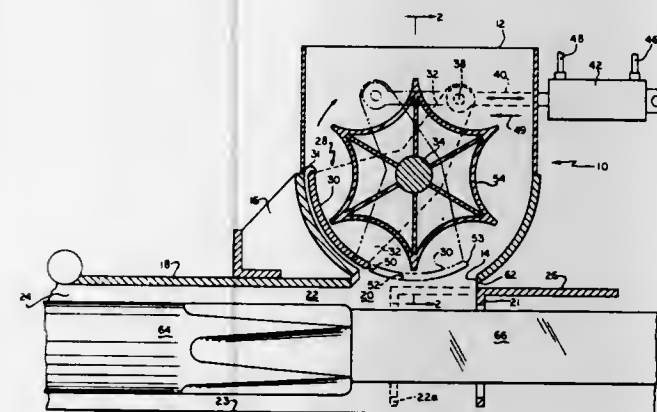
Arvids Kalns, 541 Central Ave., Albany, N.Y. 12206

Filed Jan. 26, 1973, Ser. No. 327,209

Int. Cl. G01f 11/02

U.S. Cl. 222-235

2 Claims



During a ram stroke, a ram plate forces a concrete mix from a ram chamber into a slab forming cavity and a gate member closes to isolate the ram chamber from a supply hopper. The supply hopper includes a rotary feeder having a hypocycloid cross section for transporting the concrete mix through the hopper to the ram chamber.

### 3,826,412 PRESSURE RELEASE VALVES FOR AEROSOL CANS

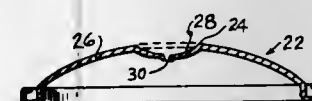
Raymond H. P. Kneusel, Flourtown, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 199,929, Nov. 18, 1971. This application July 26, 1972, Ser. No. 275,370

Int. Cl. B65d 83/14

U.S. Cl. 222-397

20 Claims



A pressure release valve is located in the domed bottom of an aerosol can. A centrally located area in the domed bottom having a lesser resistance to eversion than the peripheral area in the domed bottom includes several score lines which meet at a common point in a spoke-like configuration. The centrally located area of the bottom will evert at a pressure of 170 to 200 p.s.i. so as to rupture the bottom at the source lines before any substantial eversion of the peripheral area occurs.

### 3,826,413 DEVICE FOR DISPENSING FLUIDS

William Edward Warren, Cuffley, England, assignor to Bepak Industries Limited, Waltham Cross, Hatfordshire, England

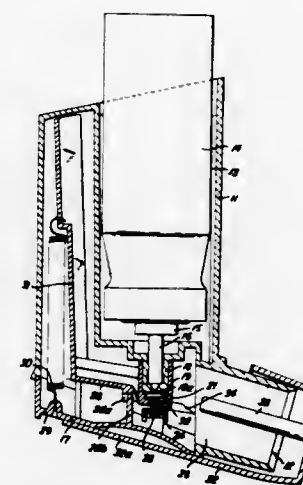
Filed July 18, 1972, Ser. No. 272,816

Claims priority, application Great Britain, July 19, 1971, 33793/71

Int. Cl. B65d 83/14

U.S. Cl. 222-402.13

13 Claims



A device for dispensing fluid from an aerosol container of the kind which meters discrete doses, operable to dispense the dose when suction is applied. The preferred form of the device has a recess to hold the aerosol with the outlet of the aerosol sealingly secured in a cavity, and a resilient element to seal the outlet from the cavity, which opens into an air duct. The resilient element is held against the cavity outlet by a spring-loaded pivoted arm, and a vane on the arm is located in the air duct, so that suction applied at the outlet of the duct will cause the vane to pivot the arm and release the element. In use, the aerosol is operated to meter a dose, which is held partly in the aerosol outlet and partly in the cavity until suction applied at the outlet of the duct causes the cavity to be opened and the dose dispensed into the duct.

### 3,826,414 HANDCUFF HOLSTER

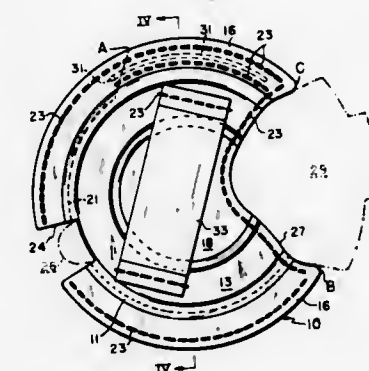
Rudolph Valadez, 3313 Campbell Rd., #248 Houston, Tex. 77055

Filed June 21, 1973, Ser. No. 372,278

Int. Cl. F41b 13/04

U.S. Cl. 224-2 F

5 Claims



A handcuff holster comprising a pair of substantially circular spaced apart side members between which is circumferentially positioned a tapered end member. Each of the side members includes an outwardly extending annular groove which is located between a circumferential flange and an inner circular area. The annular grooves in cooperation with the inner area define an engaging pocket which conforms to the shape of conventional handcuffs. The end member is positioned between and to the circumferential flange and occupies



only a portion of the circumference about said side members to provide an opening into the engaging pocket. Means are also provided for securing the holster to a belt.

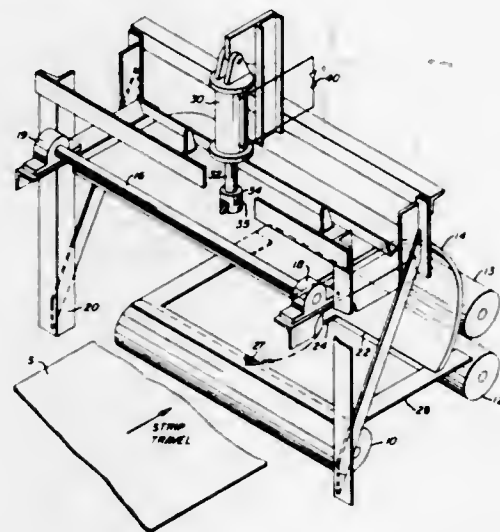
**3,826,415**  
**APPARATUS FOR PREVENTING STRIP**  
**ACCUMULATION**

George S. Koss, Birmingham, and Jay R. Scott, Mountain Brook, both of Ala., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1972, Ser. No. 288,621  
Int. Cl. B23d 17/06

U.S. Cl. 225-94

6 Claims



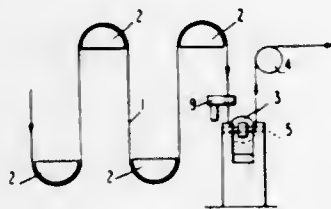
Apparatus for preventing accumulation of strip between stands of a multistand hot or cold reduction mill when a strip breaks includes a curved knife blade of greater width than the strip, means for maintaining the knife in a stand-by position above the path of the strip, and means for moving the knife into contact with the strip to cut and reverse the direction of travel of the strip. The method consists of detecting the strip break, actuating a cutting means, cutting the strip and reversing the direction of strip travel.

**3,826,416**  
**WEB EDGE POSITION CONTROLLING DEVICE**  
Akira Takagi, and Motoharu Kuroki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
Continuation-in-part of Ser. No. 98,502, Dec. 16, 1970. This application Dec. 27, 1972, Ser. No. 318,978  
Claims priority, application Japan, Dec. 17, 1969, 44-101443

Int. Cl. B65h 25/26

U.S. Cl. 226-22

3 Claims

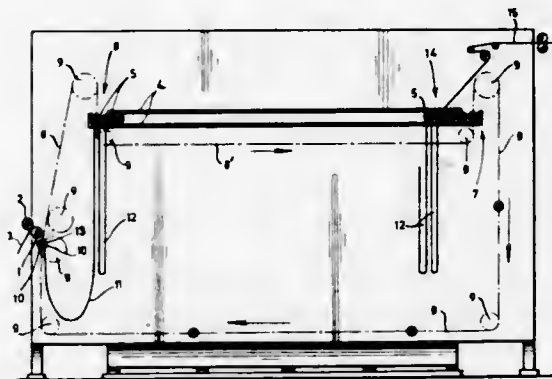


A device for controlling the position of the edge of a moving web in a web feeding apparatus in which a contact feeding station succeeds a noncontact feeding station. This device comprises a contact roller downstream of an air cushion web-feed station, said contact roller being pivoted about an axis not parallel to the surface of the outgoing web.

**3,826,417**  
**APPARATUS FOR FORMING AND MOVING VERTICAL**  
**LOOPS IN A STRIP OF MATERIAL**  
Wolfgang Koster, Bad Salzungen-Schotner, and Harald Jentzsch, Brackwede-Quelle, both of Germany, assignors to Stork Amsterdam N.V., Amstelveen, Netherlands  
Filed Mar. 8, 1972, Ser. No. 232,744  
Int. Cl. B65h 17/06

U.S. Cl. 226-107

2 Claims

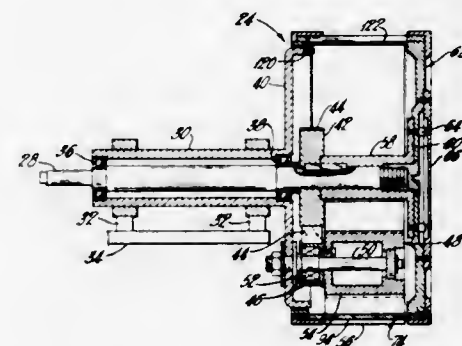


A festoon steamer comprising a set of supporting rods travelling through a closed circuit with a horizontal track in which the web is hanging down in loops from said rods, the loops being consecutively formed in a portion of the circuit ahead of said horizontal track and each loop being only picked up by a rod after its completion.

**3,826,418**  
**PULLING WHEEL CONSTRUCTION**  
Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio  
Filed Apr. 20, 1973, Ser. No. 353,149  
Int. Cl. B65h 17/20

U.S. Cl. 226-190

13 Claims

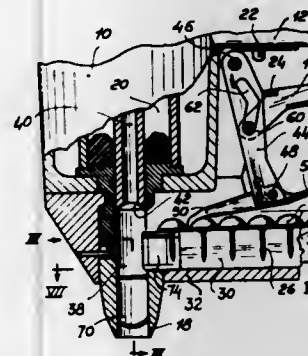


A pulling wheel construction is provided which includes separate peripheral elements for a spoke-type pulling wheel. The peripheral elements are held at one end by a rotatable circular member and at the opposite end by a ring member. The elements define a discontinuous, cylindrical surface for receiving a strand or the like and define slots therebetween to receive spokes of a spoke wheel within the pulling wheel. The spokes project beyond the peripheral elements to eject the strand from the periphery of the pulling wheel at a predetermined position thereon. The individual peripheral elements can be made of hard and long wearing material to increase the life of the pulling wheel, and they are also individually replaceable in the event of damage or failure. Further, only a few need be removed for access to the interior of the pulling wheel.

**3,826,419**  
**DEVICE FOR SEQUENTIALLY DRIVING LARGE**  
**HEADED GIMP NAILS**  
Giordano Bruno Maestri, 24, Via Vincenza, Milan, Italy  
Filed Sept. 15, 1972, Ser. No. 289,237  
Claims priority, application Italy, Sept. 21, 1971, 28872/71  
Int. Cl. B25c 1/04

U.S. Cl. 227-136

5 Claims



A device for sequentially driving nails, especially gimp nails connected in a row by a tape, into a workpiece, in which the nails are fed seriatim by a pawl adapted to engage behind the leading nail of the row into a cylindrical passage in which a driver rod is movable along an active stroke for driving the nail in the passage into a workpiece. Movement of the driver rod along its active stroke is actuated by a trigger lever mounted at one end for pivotal movement between a rest position and an actuating position. The trigger lever has at its other end a transverse pin engaging in a slot provided in a second lever pivotally mounted at one end and carrying on at the other end the aforementioned pawl. The slot has two slot portions including an angle with each other and arranged so that when the trigger lever moves from the rest towards the actuating position, the pin riding along one of the slot portions will cause the pawl to move the leading nail into the aforementioned passage, while during further movement of the pin through the other slot portion the pawl will be slightly retracted before the trigger lever reaches its actuating position.

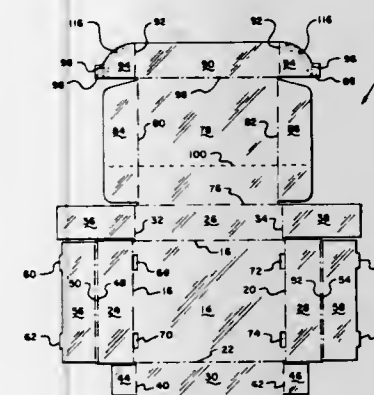
**3,826,420**  
**SELF-LOCKING TAMPERPROOF CONTAINER**  
Robert A. Bamberg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olin-kraft, Inc., West Monroe, La.  
Filed May 17, 1972, Ser. No. 253,998  
Int. Cl. B65d 5/30, 45/00

U.S. Cl. 229-45

7 Claims

U.S. Cl. 229-68 R

3 Claims



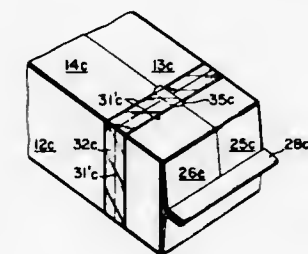
A container having unique tamperproof properties, in that, after the container is filled, the lid of the container may be permanently locked in place so that it may not be removed without destroying the integrity of the container. In order to remove the lid of the container, it must either be physically

torn from the container or cut open along a cut scoreline provided in the lid for that purpose and for easy removal of the contents of the container. As a result, the contents may not be tampered with by someone not authorized access to the container without the container visibly showing that tampering has occurred. The permanent locking of the lid to the container is accomplished by at least one locking flap which engages locking means formed on one of the sides of the container.

**3,826,421**  
**SEVERABLE CARTON WITH STERILE EDGE**  
Hugh B. Morse, San Jose, and Thomas W. Foster, Palo Alto, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.  
Division of Ser. No. 833,008, June 13, 1969, Pat. No. 3,620,439. This application Jan. 20, 1971, Ser. No. 108,148  
Int. Cl. B65d 5/54, 17/24

U.S. Cl. 229-51 AS

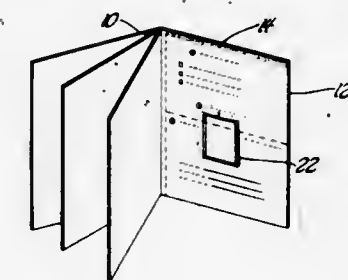
6 Claims



A carton comprises separable sections connected together at a continuous cut line, covered by a removable tape. Additional cut lines being formed on the carton adjacent to the cut line to provide a sterile edge around the carton upon removal of the tape and separation of the carton's sections.

**ERRATUM**  
For Class 236-12 see:  
Patent No. 3,827,016

**3,826,422**  
**PRINTED SHEET CONTAINING USER FOLDED**  
**ENVELOPE WITH COIN POCKET**  
Robert H. Dickinson, Birmingham, Mich., assignor to George F. Valassis & Company, Oak Park, Mich.  
Filed Aug. 14, 1972, Ser. No. 280,616  
Int. Cl. B65d 5/08



A sheet adapted to be formed as a page of a brochure or as an insert in a magazine has imprinted thereon a form adapted to be filled in by a user and then folded along a printed line and formed into an envelope using a gummed line applied to the sheet during the printing process. A rectangular coin pocket is adhered to the sheet along three of its edges. The pocket straddles the fold line so that when the envelope is folded and sealed the opening in the coin pocket is closed off.



In an alternative embodiment the opening in the coin pocket is closed off by a gummed flap which may be adhered to the envelope.

3,826,423

## RAIL SEAT AND SUPPORT STRUCTURE

Robert A. McClung, 1401 Caribbean Rd., West Palm Beach, Fla. 33406

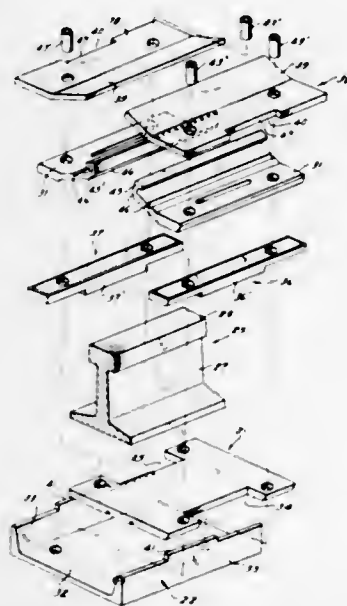
Continuation of Ser. No. 10,242, Feb. 10, 1970, abandoned.

This application Dec. 15, 1971, Ser. No. 208,462

Int. Cl. E01b 9/02

U.S. Cl. 238—264

13 Claims



A rail seat and support structure for mounting, cushioning, anchoring and insulating a rail. A flexible rail seat is provided with the rail seat being of resilient material and having surfaces assisting in forming a recess. The recess is open to the exterior of the rail seat on its upper surface and has an interior configuration corresponding to the base flange and the lower portion of the vertical portion of the rail so as to receive and engage those portions of the rail in insulating, cushioning and bearing relationship. The rail seat also has at least one interior chamber adjacent to each side of the rail and a bar in each of the chambers. A base plate having a horizontal portion and two spaced upright longitudinal side walls is present and the rail seat is positioned in the base between the side walls and is adapted to receive the rail in substantially parallel relationship with the side walls. A clamping plate is positioned on the upper surface of the rail seat on both sides of the rail and mounting means are present for fastening the assembled rail seat and support structure to a rail bed so as to maintain the rail seat and support structure in assembled arrangement, connected to the rail bed, and to retain the rail in mounted, cushioned and insulated position.

3,826,424

## RAIL SEAT AND SUPPORT STRUCTURE

Robert A. McClung, West Palm Beach, Fla., and Frank V. Pfliml, Jr., Arlington Heights, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill., by said Pfliml

Division of Ser. No. 208,462, Dec. 15, 1971, which is a

continuation of Ser. No. 10,242, Feb. 10, 1970, This

application June 20, 1972, Ser. No. 264,678

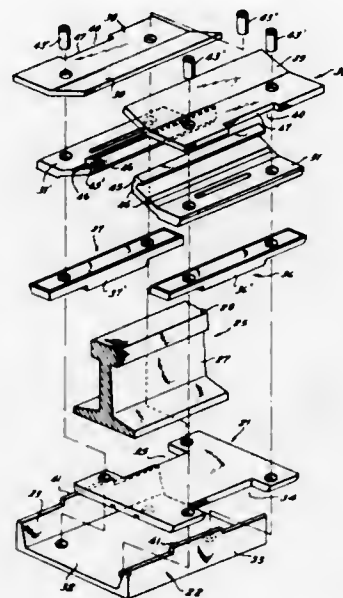
Int. Cl. E01b 9/02

U.S. Cl. 238—264

7 Claims

A rail seat and support structure for mounting, cushioning, anchoring and insulating a rail. A flexible rail seat is provided with the rail seat being of resilient material and having surfaces assisting in forming a recess. The recess is open to the exterior of the rail seat on its upper surface and has an interior configuration corresponding to the base flange and

the lower portion of the vertical portion of the rail so as to receive and engage those portions of the rail in insulating, cushioning and bearing relationship. The rail seat also has at least one interior chamber adjacent to each side of the rail and a bar in each of the chambers. A base plate having a horizontal portion and two spaced upright longitudinal side walls is present and the rail seat is positioned in the base between the side walls and is adapted to receive the rail



in substantially parallel relationship with the side walls. A clamping plate is positioned on the upper surface of the rail seat on both sides of the rail and mounting means are present for fastening the assembled rail seat and support structure to a rail bed so as to maintain the rail seat and support structure in assembled arrangement, connected to the rail bed, and to retain the rail in mounted, cushioned and insulated position.

3,826,425

## ELECTROSTATIC APPARATUS

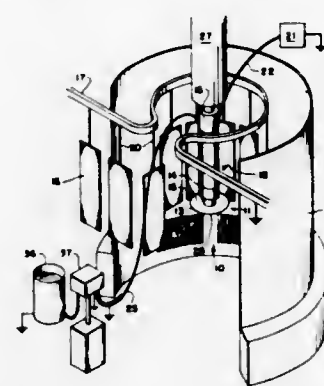
James A. Scharfenberger, and Edward W. Drum, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed June 21, 1972, Ser. No. 264,967

Int. Cl. B05b 5/00; F23d 11/28

U.S. Cl. 239—15

4 Claims



An apparatus for and a method of electrostatically charging coating material. The apparatus includes a composite member terminating in an extended edge adjacent with coating material is formed into a charged spray. The composite member is constructed of an electrically non-conducting binder material such as a polymeric material, for example, phenolic resin and includes in the binder material an electrically conducting material such as graphite or copper, and reinforcing material such as glass fibers or woven hemp or flax (canvas). The composite member has desirable properties such as low effective

electrical capacitance despite a necessary large physical size, good impact and tensile strength, and good chemical and mechanical resistance to the action of the ingredients of the coating material. The composite member is adapted to be connected to a high voltage source such as a direct current voltage source capable of supplying up to 100,000 volts or more to the composite member. Means such as a coating material feed tube and nozzle supplies to the composite member a suitable liquid such as paint, or dry coating material such as powder. A suitable means is used to move the coating material across the composite member to the extended edge in the vicinity of which the coating material is formed into a charged spray. The last named means may include an inner hub and an outer hub for cooperatively retaining the composite member.

3,826,426

## MOTOR-DRIVEN SPRAYING MACHINE TO BE CARRIED ON THE WORKER'S BACK

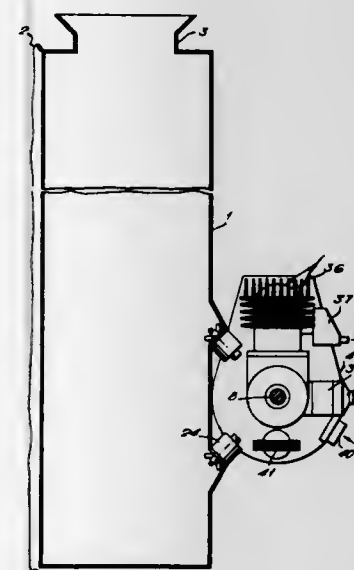
Giacomo Bonvicini, Via Romana, 17, Poviglio, Italy (42028)

Filed May 30, 1973, Ser. No. 365,226

Int. Cl. B05b 9/08

U.S. Cl. 239—127

6 Claims



A knapsack motor-driven spraying machine for spraying liquids for agricultural purposes, for disinfestations of other treatments comprising a container for the liquid to be sprayed, provided with means for hanging the machine on the worker's back and including a pump for delivery the liquid under a predetermined pressure by means of an at least partially flexible delivery pipe ending with a handle including a nozzle controlled by a valve, provided to stop or reducing the liquid delivery, characterized by the fact that the pump is actuated by an internal combustion engine forming with said pump a compact unit carried on the outside of the rear wall of the container and each having self-carrying casing, on the side of the motor the motor pump unit being supported by fastening means including packing means and dampers to absorb the vibrations, while at the side where the pump is arranged its self-carrying casing is connected and supported by the container by two hollow connection members, one of which constitutes a portion of the suction pipe of the pump and the other is a portion of a recirculation pipe of the liquid, said two hollow connection members projecting into the inside of the container, where they are connected with pipes mounted into the container and which open near its bottom.

3,826,427

## 360° SPRAY APPARATUS WITH MEANS FOR CHANGING SPRAY PATTERN

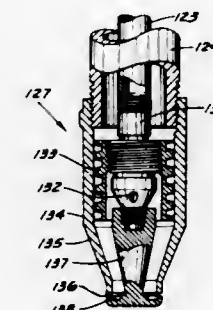
Harry Wayne Rutherford, 1661 Molina Ln., Gardena, Calif. 90248

Filed Apr. 17, 1972, Ser. No. 244,372

Int. Cl. B05b 7/04

U.S. Cl. 239—186

4 Claims



A spray apparatus with a 360° spray pattern is disclosed with means to allow one to change the pattern between a plane and a cone. The apparatus has a pair of coaxial tubes and the means includes a cylindrical body and a plug with a disk mounted on the end, and a post which plug is adjacent the end of the body. The body is slidably mounted on the outer tube and the plug is fixedly mounted onto the inner tube so that the axial length of a circumferential spacing between the disk and body is adjustable. A concave half-torus surface is formed internal on the disk and disposed around the post so that when the axial circumferential spacing is relatively close, a planar 360° spray pattern is formed and when the annular spacing is relatively wide, a conical 360° spray pattern is formed.

3,826,428

## SPRAYING APPARATUS

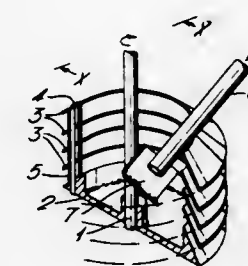
Ian Douglas Fergusson, Godstone, England, assignor to BP Chemicals International Limited, London, England

Filed Mar. 29, 1973, Ser. No. 346,016

Int. Cl. B05b 3/08

U.S. Cl. 239—222.11

4 Claims



An apparatus for producing a very fine spray or mist of liquid of droplet size between 25 and 250 microns, comprises a plurality of annular strips coaxially mounted with and radially supported by a rotatable shaft. A supply pipe which terminates within the space enclosed by the strips is capable of producing a fan jet of liquid, the longitudinal axis of symmetry of the jet being inclined to the longitudinal axis of the rotatable shaft. The optimum distribution of liquid on the annular strips is achieved by using a fan jet of the curled-plate type.



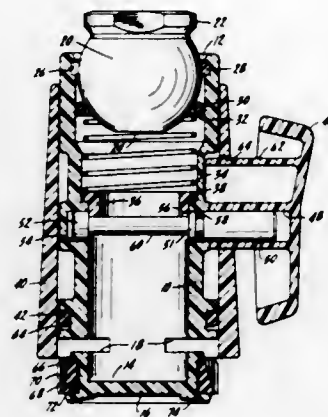
3,826,429

**ADJUSTABLE SHOWER HEAD**

Alfred M. Moe, 25 Lakeview Dr., Grafton, Ohio 44044  
Filed Apr. 23, 1973, Ser. No. 353,734  
Int. Cl. B05b 1/32

U.S. Cl. 239-460

10 Claims



An adjustable shower head in which a spray forming member having sealing properties is recessed into a groove in the body member of the shower head.

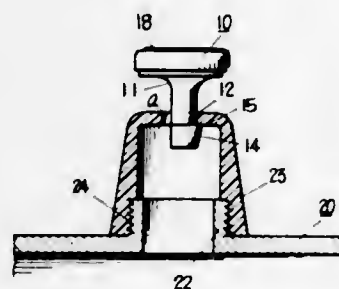
3,826,430

**SPRAYER FOR SPRAYING A GREAT VOLUME OF LIQUID THROUGH A WIDE ANGLE WITH A LOW PRESSURE**

Katsumi Akabane, and Shogo Otsuka, both of Kyoto, Japan, assignors to Kabushiki Kaisha Saneh, Kyoto, Japan  
Filed June 11, 1973, Ser. No. 368,590  
Int. Cl. B05b 1/26

U.S. Cl. 239-523

4 Claims



This invention provides a sprayer featured by a specific arrangement of a nozzle assembly having a diffusing face which is divergent and curved from the proximal end toward the upper inside portion, whereby the liquid supplied into said nozzle is spread out in the form of a film along said diffusing face and dispersed out in atomized form from the widened edge of the nozzle. Thus, according to the sprayer of the present invention, a great volume of liquid can be sprayed through a wide angle with a low pressure.

3,826,431

**MULTIPLE SPRAY HEAD**

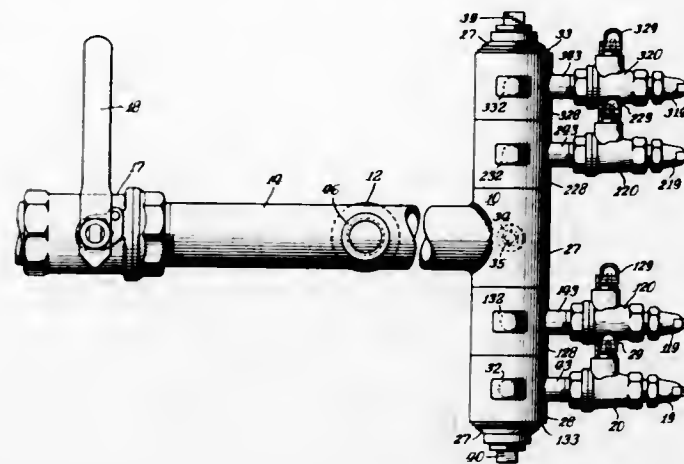
Donald E. Teige, Kansas City, Mo., assignor to Velsicol Chemical Corporation, Chicago, Ill.  
Filed Apr. 16, 1973, Ser. No. 351,405  
Int. Cl. B05b 1/20

U.S. Cl. 239-551

1 Claim

Disclosed is a liquid spray head having multiple nozzles

which can be rotated into any desired position and through which the flow of liquid can be independently controlled to



adjust both the quantity and the distance to which the liquid is sprayed.

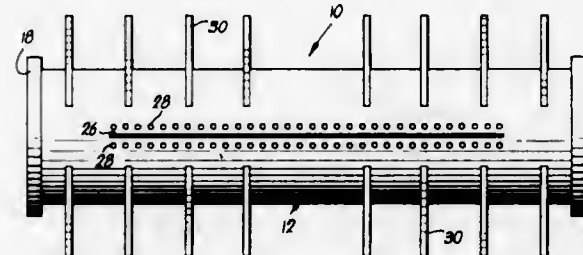
3,826,432

**BURNER FOR ATOMIC ABSORPTION SPECTROSCOPY**

Maw Shiu Wang, 1573 Ross, St. Louis, Mo.  
Filed June 12, 1972, Ser. No. 262,154  
Int. Cl. B05b 1/14

U.S. Cl. 239-556

10 Claims



A scientific burner for use in atomic absorption spectroscopy has a hollow, cylindrical body provided with two laterally spaced, longitudinally extending rows of outlet holes and a single, longitudinally extending outlet slit disposed centrally between the two rows of holes. The size of the holes and the size of the slit as well as the relative spacing therebetween permits the burner to supply individual, low intensity reducing flames in addition to a single, high intensity oxidizing flame, and freedom from internal plates and like structure within the chamber of the burner eliminates the possibility of preignition or flashback. Removable plugs at opposite ends of the chamber provide access to the latter for thorough cleaning, and the smooth, arcuate configuration of the chamber wall facilitates complete removal of all contaminants therefrom after each analysis.

3,826,433

**PROCESS FOR REMOVING BARK FROM WOOD CHIPS**

John R. Erickson, Houghton, and William A. Hillstrom, Laurium, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 1, 1973, Ser. No. 366,187

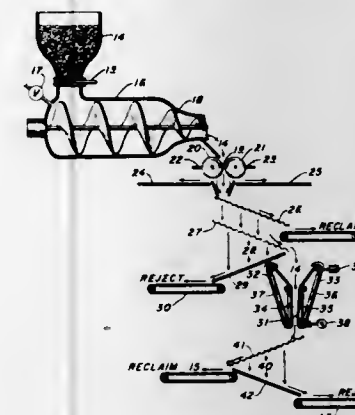
Int. Cl. B02c 21/00

U.S. Cl. 241-14

10 Claims

A process to remove the bark from wood chips by breaking the bond between the bark and wood fractions followed by segregation of the bark particles from the clean wood chips. The process includes the steps of: steaming the wood chip mass to weaken the bark-wood bond and render the bark

tacky; mechanically compressing the chips to partially break the bond between the bark and wood and to break a portion of the bark fraction into smaller particles; removing these particles, some of which adhere to the compressing medium, from further processing; subjecting the partially beneficiated chips



to unique abrasion or milling processes to fragmentize the remaining bark; and segregating the resulting clean wood chips from the fragmented bark. The sequence of steps may be varied and the bark is removed from processing at different stages.

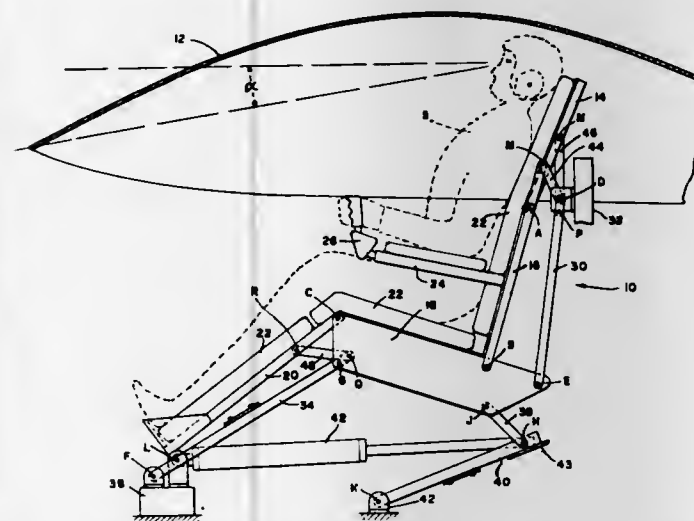
3,826,434

**PELVIS AND LEGS ELEVATING G-PROTECTIVE SEAT**

Harald J. Von Beckh, P.O. Box 1220, Hatboro, Pa. 18974  
Filed May 18, 1973, Ser. No. 361,730  
Int. Cl. B64d 25/02

U.S. Cl. 244-122 R

13 Claims



A pelvis and legs elevating (PALE) acceleration-protective seat for positioning an occupant within a vehicle in either a sitting position or a supine position while maintaining unobstructed forward vision out of the vehicle. At a preselected acceleration level substantially along the spinal axis of the occupant in the sitting position, the seat elevates the pelvis and legs while the head remains stationary relative to the vehicle.

3,826,435

**APPARATUS FOR DISPERSING PIGMENTS IN A LIQUID PHASE**

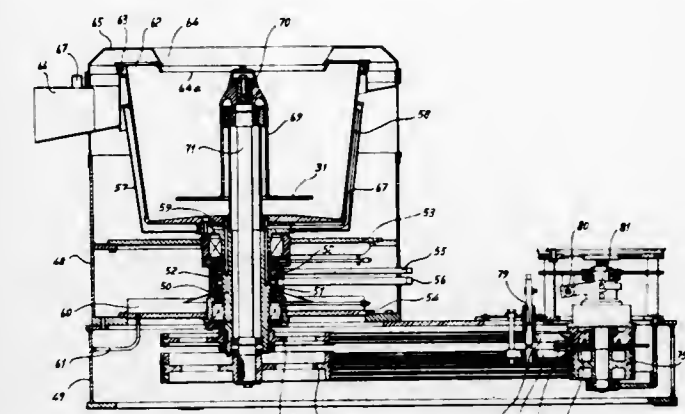
Carlos Oliver Pujol, Badalona, Spain, assignor to Oliver and Battle, S.A., Badalona, Spain  
Filed Sept. 22, 1972, Ser. No. 291,395  
Claims priority, application Spain, Feb. 12, 1972, 339720; Sept. 4, 1972, 406388  
Int. Cl. B02c 17/16, 17/24; B011 15/02

U.S. Cl. 241-171

9 Claims

A ball mill for dispersing a pigment in a liquid carrier, which ball mill includes an upwardly opening cup-shaped tub

mounted for rotation about a substantially vertical axis. A hollow exterior drive shaft is fixed to the bottom wall of the tub and projects upwardly and downwardly therefrom, and rotatably supports in the interior thereof a drive shaft which has the upper end thereof fixed to a downwardly projecting skirt having a stirring disk secured to the lower edge thereof.



A single drive motor is provided for rotating the interior and exterior shaft. A first transmission means drivingly connects the drive motor to the interior shaft, and a second transmission means drivingly connects the drive motor to the lower portion of the exterior shaft, said second transmission means including a disengageable clutch device.

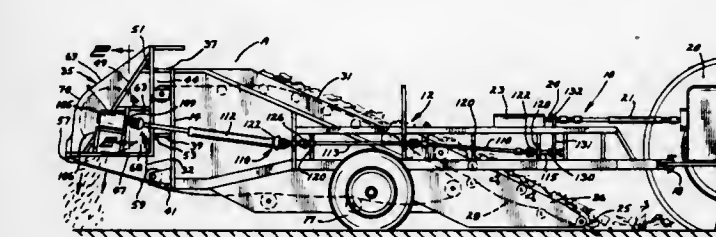
3,826,436

**VINE REDUCING APPARATUS FOR COMBINE**

Frank A. Cetrulo, Fort Thomas, Ky., assignor to National Factors, Inc., Cincinnati, Ohio  
Filed Nov. 10, 1972, Ser. No. 305,448  
Int. Cl. B02c 13/02

U.S. Cl. 241-186 R

3 Claims



A potato vine reducing apparatus for a potato combine consisting of a housing supported on said combine and including a plurality of swinging flails carried by a rotating member, said flails receiving said vines from a conveyor of said combine, a plurality of stationary knives in said housing operatively associated with said flails and means carried by said rotating member to eliminate variations in the speed of rotation of said member which would otherwise result from unusually heavy loads of vines received thereby.

3,826,437

**DEMOLITION MILL**

Fred E. Warren, Jr., Tigard; Kenneth F. Flng, Sherwood, and Gary R. Moore, Hillsboro, all of Oreg., assignors to Ecolo-Tech, Inc., Sherwood, Oreg.

Filed Feb. 16, 1973, Ser. No. 333,401

Int. Cl. B02c 13/04

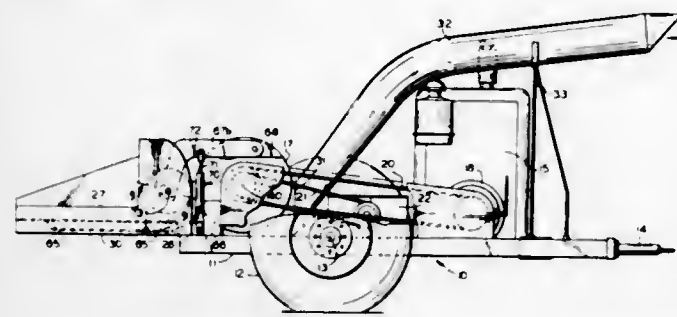
U.S. Cl. 241-186 R

5 Claims

A demolition mill for solid debris utilizes free swinging demolition hammers rotatably mounted on shafts interconnecting solid metal wheels journaled in a housing. The hammers extend radially of the wheels under the action of centrifugal force to break, shatter or pulverize all kinds of solid debris. A hydraulic feed rotor is journaled adjacent the housing inlet and includes a cylindrical feed roller driven by a



hydraulic motor mounted in a tube positioned within the roller. Lengths of chain or serrated bars welded to the



periphery of the roller assist in feeding material to the hammers.

3,826,438

## STRAND TREATMENT

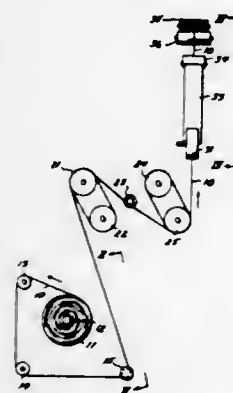
Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., North Kennett Square, Pa.

Division of Ser. No. 386,489, July 31, 1964, Pat. No. 3,317,977. This application Dec. 30, 1966, Ser. No. 606,420. The portion of the term of this patent subsequent to Aug. 25, 1981, has been disclaimed.

Int. Cl. B65h 59/02, 59/38

U.S. Cl. 242-45

2 Claims



Tension in a textile strand being unwound from a traverse-wound package is equalized by passing the strand sequentially about portions of a plurality of rolls near the package, a friction-free guide, and a pair of variably spaced rolls whose spacing controls braking of the package.

3,826,439

## GOLF BALL RETRIEVER

Paul G. Moon, 9614 Dona Ct., Crown Point, Ind. 46307

Filed May 25, 1973, Ser. No. 363,999

Int. Cl. A63b 69/36; B65h 75/00

U.S. Cl. 242-54 R

6 Claims

A compact golf ball retriever including a housing having a golf ball disposed on the outside thereof with a retrieving line wound upon a winding and storage spool located in the housing with one end of the line attached to the spool and the opposite end of the line extending through an opening in the housing and attached to the golf ball, a windup rotor operatively associated with the spool and adapted for movement between an inoperative position freeing and spool for substantially drag free unwinding of the line therefrom and on operative position engaging the reel for winding the line thereupon, a drive shaft extending longitudinally through the central axis of the spool and rotor adapted for driving operation of the rotor as well as selectively shifting the rotor between the operative and inoperative positions, a ball receiving member generally aligned with the housing opening and axially moveable relative thereto in directions towards and away therefrom

with the retrieving line passing through an axial aperture in the ball receiving member, the top end of the drive shaft being adapted to engage and move the ball receiving member in a direction outwardly of the housing upon outwardly directed axial movement of the drive shaft so as to urge the golf ball outwardly therefrom, a drive gear connected to the bottom end portion of the drive shaft and engageable by an electric motor to effect the rotative movement of the drive shaft and the connected rotor about its axis to effect rewinding of the line when the rotor is in the operative position, the axial movement of the drive shaft being controlled by a solenoid operatively connected thereto for shifting the drive shaft and con-



nected rotor between the operative and inoperative positions while also effecting the contact of the top end of the drive shaft with the ball retrieving member to propel the golf ball outwardly therefrom, and electrical circuit means for electrically connecting the motor to a suitable power source to effect rewinding of the line upon the spool, the circuit including elements therein for automatically rendering the motor ineffective upon completion of the rewinding of the line upon the spool along with elements therein for automatically returning the rotor to the inoperative position permitting the free movement of the spool and line upon completion of the rewinding of the line about the spool.

3,826,440

## TAPE CARTRIDGE

Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

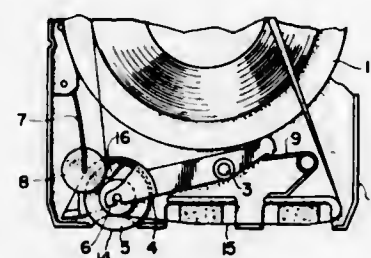
Filed Dec. 20, 1972, Ser. No. 316,786

Claims priority, application Japan, Dec. 20, 1971, 46-119452[U]

Int. Cl. B65h 17/48

U.S. Cl. 242-55.19 A

3 Claims



In an endless tape cartridge in which a pinch roller having a larger diameter portion and a smaller diameter portion is pivotably supported such that, when the cartridge is in use, the larger diameter portion abuts under pressure against the tape recorder capstan and the smaller diameter portion abuts under pressure against a pivotably supported press roller which cooperates with the smaller diameter portion to drive the tape and, when the cartridge is not in use, the pinch roller is pivoted away from the press roller, a projection is provided

which cooperates with the press roller to grasp the tape firmly when the cartridge is not in use, thereby preventing the tape from getting damaged.

3,826,441

## LAMINATED WEB PACKAGE

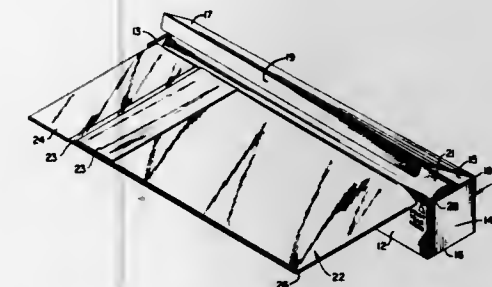
Gilbert De Wayne Miles, Ossining, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,109

Int. Cl. B65d 65/02, 85/67, 85/72

U.S. Cl. 242-55.53

4 Claims



A web of wrapping material in the form of a constant width sheet of synthetic plastic film having parallel bands of metal foil secured along opposite side edges is longitudinally folded, prior to winding into a supply roll, about an offcenter fold region in the film so that the fold region is at one end of the roll and the foil bands lie in laterally spaced non-overlapping relation at the other end of the roll, thus providing a short roll requiring a shorter container and facilitating clean severance of a leading end length wound off the roll.

3,826,442

## APPARATUS FOR CONTROLLING THE TENSION ON WEB MATERIAL

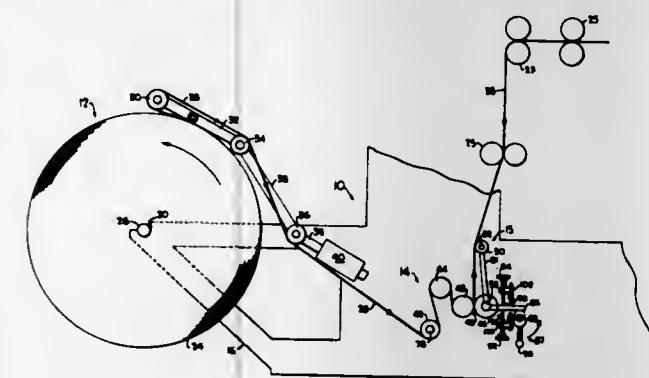
Erwin Bethke, Erkelenz-Keyenberg, Germany, assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Jan. 30, 1973, Ser. No. 328,134

Int. Cl. B65h 25/04

U.S. Cl. 242-75.5

11 Claims



Web material is unwound from a roll and supplied to a web unwind unit having a tension sensing mechanism mechanically connected thereto. The web material having a desired tension is drawn by an envelope machine drive at a first preselected linear speed through the web unwind unit into abutting contact with the tension sensing mechanism. The tension sensing mechanism includes a tension sensing roll arranged for rotation with an eccentrically supported shaft by a pair of tension arms. The tension sensing roll is arranged to apply a preselected pressure upon the web material so that the tension sensing roll responds to an increase in web tension by rotating with the tension arms in clockwise direction about the eccentrically supported shaft. The eccentrically supported shaft revolves in clockwise direction to move a pressure roll rotatably supported thereon toward a feed roll urging the web

material into frictional engagement therebetween. The web material is fed by the pressure roll and the feed roll at an increased preselected linear speed to decrease the web tension. The tension sensing roll responds to a decrease in tension by rotating in counterclockwise direction with the tension arms. The eccentrically supported shaft also revolves in counterclockwise direction to release the web material from frictional engagement between the feed roll and the pressure roll restoring the web material to the slower preselected linear speed as provided by the envelope machine drive.

3,826,443

## STRAP DISPENSING APPARATUS

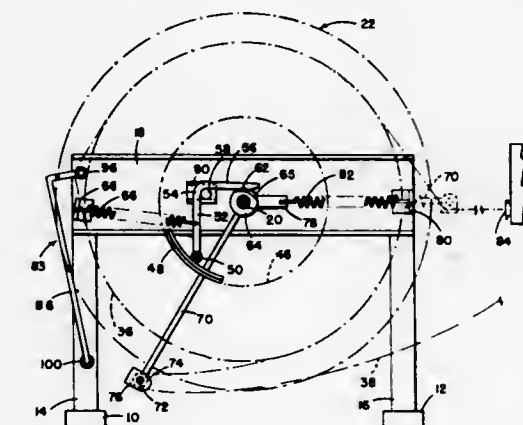
George F. Goodley, Media, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 9, 1972, Ser. No. 305,120

Int. Cl. B65h 17/52

U.S. Cl. 242-105

7 Claims



Apparatus for dispensing package strapping from a mill wound coil includes a reel for rotatably supporting the coil and a guide or aligner for directing the traversed windings of the coil toward the center line of the reel at a point well in advance of the point where the strapping actually leaves the reel. This prevents a sharp pull on the strapping from causing a winding at the edge of the coil to slip from the edge and possibly jam between the coil and a flange of the reel. The disclosed arrangement also enables the use of a simple guide for controlling rather precisely the path of the strapping as it leaves the apparatus even though on the coil the strapping windings may be traversed over a distance of several inches.

3,826,444

## AXIALLY TELESCOPING PACKAGE CARRIER FOR THE TREATMENT OF THREAD AND YARN

Gerhard Herbert Hahn, 8, Carla-Seidlung, Aachen, Germany

Filed May 5, 1972, Ser. No. 250,776

Claims priority, application Germany, May 10, 1971, 2122965

Int. Cl. B65h 75/24, 75/14

U.S. Cl. 242-118.11

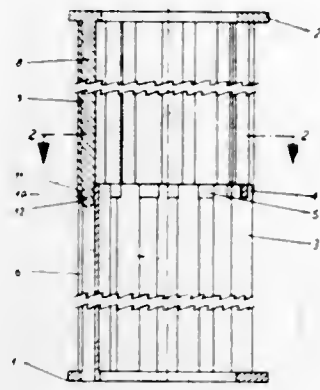
37 Claims

A telescopic package carrier for treatment of thread and yarn, the carrier comprising two axially spaced rings and two sets of axially extending, peripherally spaced carrier members collectively constituting a uniform yarn-supporting cylindrical periphery. Each carrier member of a given set has guide portions for positively guiding a corresponding carrier member of the other set. The carrier members of the first set engage with their free ends in a positive complementally engaging interlocking manner with the free ends of the carrier members of the other or second set. Corresponding members have their free ends positively engaged over their entire overlap length at any given time. Each carrier member, at its point of connection with the respective ring, may be constructed to have a lower resistance to bending, or a greater degree of resiliency



thereat, thereby being adaptable to be subjected to any compressive forces applying a radially inwardly directed force

bers. During normal operation the venting conduits within the vacuum chambers are blocked by valves to restore normal



### 3,826,445 YARN TUBE

Clement D. Le Hardy, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

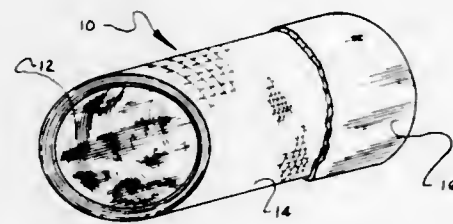
Filed Dec. 23, 1971, Ser. No. 211,229

Int. Cl. B65h 75/10

U.S. Cl. 242-118.32

6 Claims

vacuum tension within the chambers compatible with capstan drive.



A yarn carrier having a penultimate ply of embossed paper upon which a smooth, soft ply of material such as parchment, or film is applied to form a resilient slip resistant surface for textile yarns.

### 3,826,446 PNEUMATIC TAPE REWIND SYSTEM

Hale M. Jones, Playa del Rey, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 14, 1972, Ser. No. 225,866

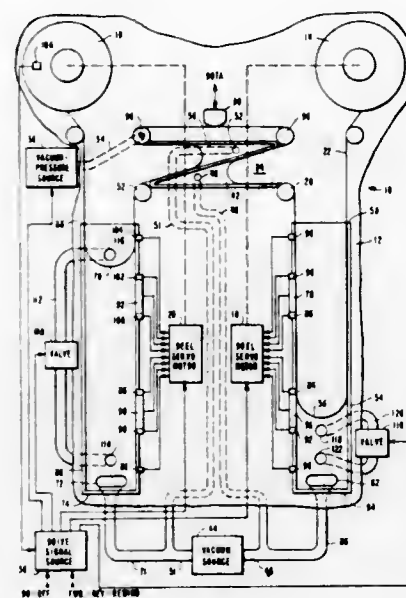
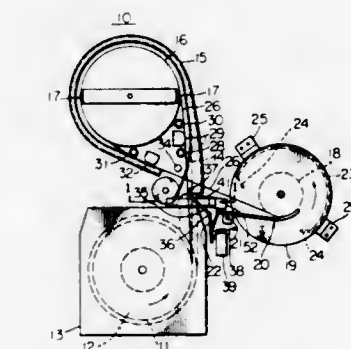
Int. Cl. G11b 15/58

U.S. Cl. 242-185

7 Claims

A magnetic tape transport system is provided in which a capstan used to drive the tape bidirectionally and intermittently during normal operation is coupled to a pressure source so as to disengage from and act as an air bearing with respect to the tape during rewind, permitting the tape to be driven by differences in tension on loops of the tape within a pair of vacuum chambers. The tension differential is produced by an arrangement of valves and conduits which partially vent the interior of the upstream vacuum chamber to atmosphere to maintain the tape loop therein at a nominal short loop position and which vent the interior of the downstream vacuum chamber to atmosphere only when the loop therein becomes too long so as to maintain the loop at an optimum long loop position. Thus capstan drive is eliminated during rewind with system performance being slaved to the performance of the reel motor-servo combinations which function to maintain the tape loops at the nominal positions within the vacuum cham-

Means for detecting an accidental stoppage of a lead tape attached to one end of a reel of recording tape while the lead tape is advanced from the supply reel, through a circular arc shaped guide member, to the take-up reel. The detecting means comprises a first circuit for detecting the movement and stoppage of the lead tape, a second circuit for detecting the feed of the lead tape drawn from the supply reel, and switching means selectively operated in a predetermined sequence in response to the first and second circuits for de-energizing the tape drive when a stoppage of the lead tape is detected.



### 3,826,447

#### AUTOMATIC TAPE THREADING MECHANISM

Toshiomi Yabu; Hideki Sakumoto, and Yoshiteru Namoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Filed Dec. 1, 1972, Ser. No. 311,377

Claims priority, application Japan, Dec. 1, 1971, 46-97361; Dec. 1, 1971, 46-97363; Dec. 1, 1971, 46-97379; Dec. 1, 1971, 46-97380; Dec. 27, 1971, 47-595; Dec. 27, 1971, 47-596

Int. Cl. B65h 59/38; G03b 1/04; G11b 1/52

U.S. Cl. 242-188

4 Claims

### 3,826,448 DEPLOYABLE FLEXIBLE VENTRAL FINS FOR USE AS AN EMERGENCY SPIN-RECOVERY DEVICE IN AIRCRAFT

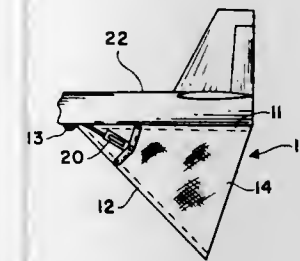
Sanger M. Burk, Jr., Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 14, 1972, Ser. No. 289,018

Int. Cl. B64c 5/12

U.S. Cl. 244-91

5 Claims



A flexible fin device for mounting on an aircraft to effect spin recovery. The device may be selectively deployed to provide a triangular planform of flexible material to provide spin recovery, and retracted for compact storage during non-use. A single flexible fin may be deflected in a specific direction depending on direction of spin rotation, or two flexible fins forming an inverted "V" configuration may be used according to the invention. The device may be mounted on the underbody of the aircraft.

### 3,826,449

#### INFLATION AND EVACUATION SYSTEM FOR AN AIR CUSHION LANDING SYSTEM

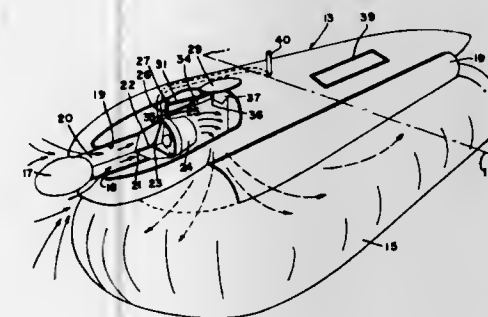
Bud D. Nelson, Kent, and William M. Brennan, Edmonds, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 21, 1973, Ser. No. 400,769

Int. Cl. B60v 3/08

U.S. Cl. 244-100 R

7 Claims



An air cushion landing system (ACLS) for an aircraft including a pair of wing pod-mounted inflatable trunks, and an air supply and exhaust system for inflating and deflating the air cushion trunks. For inflating, a swiveled fan driven from a high pressure turbine engine compressor bleed source directs incoming air from a sealable intake port to the respective trunk. For deflating, an actuator connected to a linkage network swivels the fan, plugs the intake port and opens an exhaust door positively drawing air out of the trunk and exhausting it to the atmosphere.

### 3,826,450

#### LANDING GEAR FOR STOL AIRPLANES

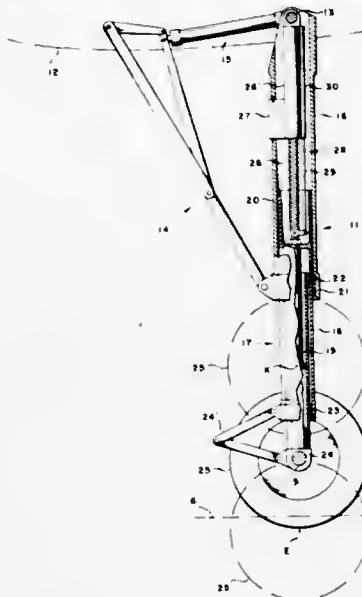
Norman S. Currey, Atlanta, and John H. Renshaw, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 4, 1973, Ser. No. 366,793

Int. Cl. B64c 25/58

U.S. Cl. 244-103 R

6 Claims



An airplane main landing gear is designed to provide abnormally high ground clearance at touchdown, for minimum ground effect and maximum nose-down angle, and then to slowly sink to normal ground clearance during the landing roll. This gear may be contracted to lower or "kneel" the airplane. In addition, differential lengthening of left and right gears is provided to permit the airplane to land in a banked attitude for crosswind landings, thereby obviating the necessity to fully straighten-out the airplane before touchdown during such operations. The latter feature also provides a crosswind gear which is operationally less complicated than conventional crosswind gears which necessitate turning/steering all gears or wheels.

### 3,826,451

#### MANGETOHYDRODYNAMIC GENERATOR FOR BALLISTIC MISSILES

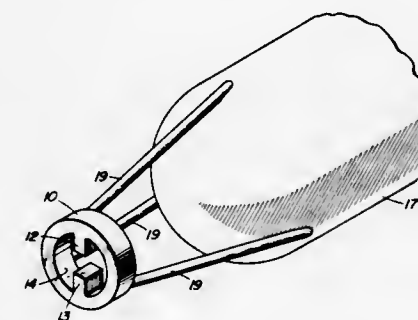
Rodney E. Grantham, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1963, Ser. No. 320,225

Int. Cl. B64g 1/00

U.S. Cl. 244-1 SS

10 Claims



1. A power supply for re-entry vehicles, comprising: a magnetohydrodynamic generator having a magnet, electrodes positioned in the field thereof, and conductors extending from said electrodes to equipment in said vehicle, and



means for supporting said generator on said vehicle in position to have atmospheric air pass through the field of said magnet as the vehicle passes through the atmosphere.

### 3,826,452 ELECTRICAL CONTROL DEVICE FOR A RE-ENTRY VEHICLE

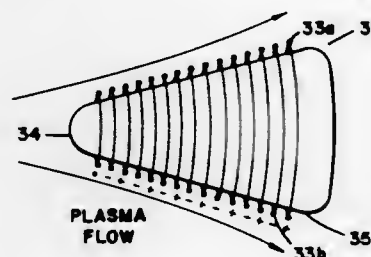
William A. Little, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1973, Ser. No. 363,905

Int. Cl. B64g 1/00

U.S. Cl. 244-1 SS

4 Claims



An Electron-Deflection Device comprising an electron gun, a Chladni deflector. The Chladni deflector is comprised of a double helix ring electrode assembly. The nose of the re-entry body is encircled by a series or plurality of ring electrodes which are alternately positively and negatively charged. Upon re-entry the plasma generated by the leading edge of the nose would be deflected away from the skin of the re-entry body. This concept would allow communication with the vehicle by external RF signals.

### 3,826,453 GANGING CHAIRS

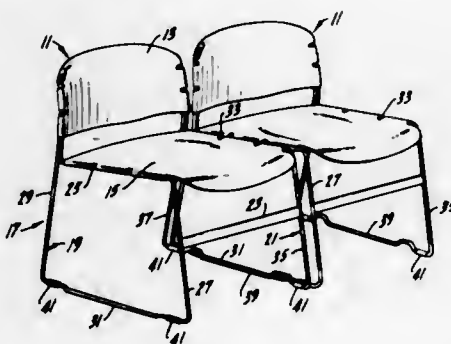
Arleigh C. Hitchcock, Grand Rapids, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Feb. 21, 1973, Ser. No. 334,457

Int. Cl. A47c 15/00

U.S. Cl. 297-248

11 Claims



A chair having metal rod legs and base rails with ganging members formed as integral parts of the base rails. The ganging members prevents both lateral and fore and aft movement of the chairs relative to each other yet do not interfere with stacking of the chairs.

### 3,826,454 ADJUSTABLE MOUNTING ARRANGEMENT FOR HAND-HELD SHOWER HEAD

Claus D. Zieger, Covina, Calif., assignor to Interbath, Inc., Covina, Calif.

Filed July 24, 1972, Ser. No. 274,511

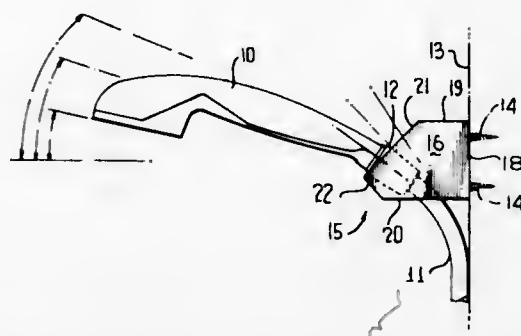
Int. Cl. B05b 15/08

U.S. Cl. 248-75

6 Claims

An adjustable mounting arrangement for hand-held shower heads includes a frusto-conical hose coupling, secured to the

shower head, and a wall-mounted bracket in which the coupling is supported. The bracket includes opposed sidewalls containing a plurality of opposed pairs of channels of tapered arcuate cross-section such that each channel pair is capable of supporting the frusto-conical hose coupling. Each channel pair is oriented at a different angle relative to the vertical



whereby the shower head is supported at a different angle by each channel pair. The hose coupling is rotatable, about its own longitudinal axis, within each support channel pair to provide additional positioned adjustment of the shower head. The front end of the bracket is opened to permit the hose to fit therethrough when the shower head is being placed in or removed from the bracket.

### 3,826,455 BREAD WRAPPER HOLDER

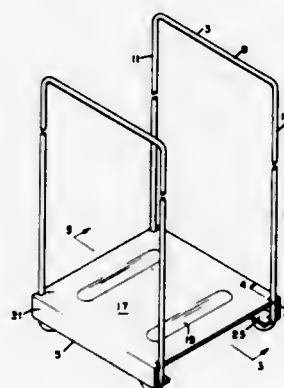
William J. O'Donnell, 18 Scotch Pine Dr., Voorheesville, N.Y. 12186

Filed Apr. 9, 1973, Ser. No. 349,307

Int. Cl. B65b 67/12

U.S. Cl. 248-97

5 Claims



Discloses a bread wrapper holder having two U-shaped frames and a base mounting an empty bread wrapper for use as a disposable trash and garbage bag. The sides of the bread wrapper are disposed between the U-shaped frames and cuffed over the U-shaped frames. The U-shaped frames have terminal portions received in aligned slots and holes formed in the base to assemble the U-shaped frames in removable, positive-locked relationship with the base.

### 3,826,456 ROCKING CHAIRS

Arthur Tranter, West Hagley, and John Dillwyn Olson, Wightwick, both of England, assignors to Vono Limited, Tip-ton, England

Continuation-in-part of Ser. No. 93,122, Nov. 27, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 332,175

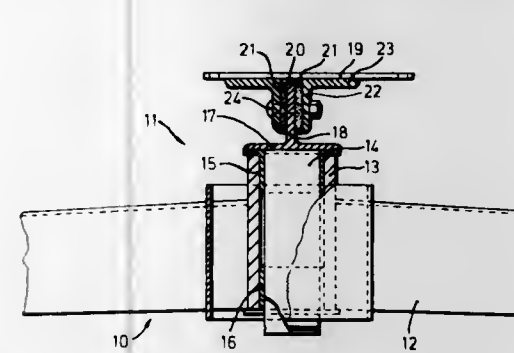
Int. Cl. A47c 3/18

U.S. Cl. 248-375

5 Claims

A mount for tiltably mounting the seat of a chair on a base, and a chair including such a mount, the mount comprising a plurality of pads of resilient material such as rubber trapped between an upright centre plate and a pair of angle brackets

arranged with their upright webs parallel to the centre plate. The centre plate is attached to the base whilst the angle brackets are attached to the seat via a support plate or plates supported by, but not attached to the centre plate to take the major part of the weight of the seat.



brackets are attached to the seat via a support plate or plates supported by, but not attached to the centre plate to take the major part of the weight of the seat.

### 3,826,457 SUSPENSION DEVICE FOR A VEHICLE SEAT

Jacques-Albert Huot de Longchamp, Paris, France, assignor to Sable Freres International

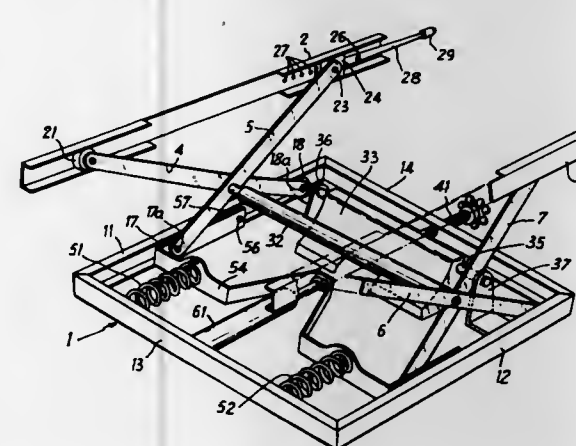
Filed June 21, 1973, Ser. No. 371,965

Claims priority, application France, Nov. 28, 1972, 72.42200

Int. Cl. A47c 3/22; B60n 1/06

U.S. Cl. 248-399

4 Claims



Two parallel and vertical pairs of levers of identical length are each coupled in articulated relation at an intermediate point and pivotally mounted at the upper ends in two parallel upper guides and at the lower ends in two parallel horizontal guides which support the complete suspension system. A shaft is mounted between the points of articulation and rotatably applied by elastic means against a cam having a concave cylindrical surface which is positionally adjustable with respect to the lower guides.

### 3,826,458 PLASTIC FASTENER

Julian Vernon Fisher, Carpentersville, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

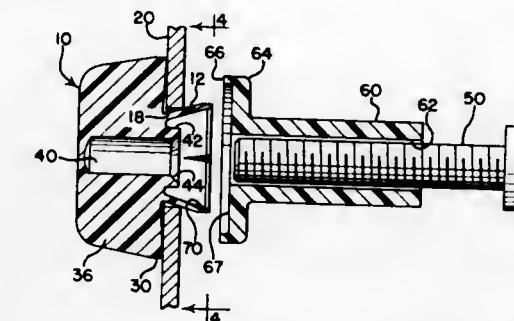
Filed Feb. 20, 1973, Ser. No. 333,574

Int. Cl. A47g 29/02

U.S. Cl. 248-239

16 Claims

A one piece plastic fastener for application to one side of a panel having a generally square aperture and adapted to cooperate with secondary means located on the opposite side of the panel. The fastener has a tapered thin-wall cup-shaped head for engaging said opposite side of the panel adjacent the edges of the aperture when the fastener is telescoped and then



fastener and cooperating with said aperture to prevent unintentional retrograde rotation.

### 3,826,459 ADJUSTABLE FORM SUPPORT BRACKET

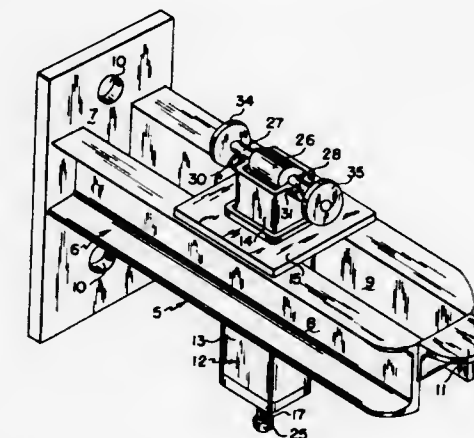
Wayne E. Warren, 3801 41st St., Tampa, Fla. 33610

Filed May 3, 1972, Ser. No. 249,796

Int. Cl. E04g 11/56

U.S. Cl. 248-287

1 Claim



A bracket for supporting overhead framework comprises a pair of telescoping sleeves supported between two horizontal parallel beams extending from a plate attachable to a vertical building column. The sleeves are supported vertically between the beams by a flange extending about the top portion of a first sleeve and resting on the beams. The second sleeve is elevated and lowered relative to the first sleeve by a screw rotatable in the first sleeve and threaded in the second sleeve. The second sleeve has a roller journaled in the top end which is adapted to be engaged by a beam of a frame to be supported and permits the beam to roll across the top of the bracket for placement and removal of the framework from a construction site. Discs at the ends of the roller and having larger diameters than the roller provide guides to maintain the beam on the roller.

### 3,826,460 MONOLITHIC STRUCTURE FORMING MEANS WITH METAL TUBULAR BRACING

Jack Cast, 2920 W. Holly, Phoenix, Ariz. 85009

Filed Sept. 13, 1972, Ser. No. 288,568

Int. Cl. E04g 11/02

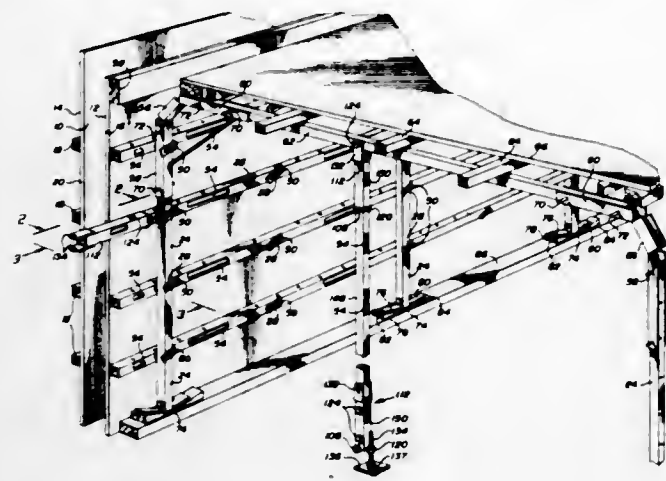
U.S. Cl. 249-27

4 Claims

A form means for casting monolithic concrete structures comprising a demountable hollow tubular metal frame structure adapted to support plywood panels such that the panels are reusable many times without damage; said metal frame structure including several channel shaped connector means serving as horizontal, vertical and diagonal connector means for the hollow tubular members of said frame structure; said



hollow tubular metal frame members also having slotted openings of varying length and spacing to receive tie rods at



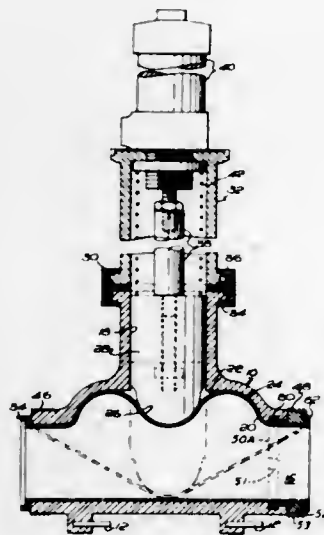
various modular spacing of the intersections of the vertical and horizontal frame members of the invention.

### 3,826,461 VALVES

Francis Summerfield, 9 Dunstan Dr., Adel, Leeds LS16 8EW, and Alexander Unthank, 22 Timber Ridge, Doncaster, Melbourne, Victoria 3108, both of Australia  
Filed Nov. 24, 1972, Ser. No. 309,070  
Int. Cl. F16l 55/14

U.S. Cl. 251-7

10 Claims



A pinch valve casing having two passages which in general define a T-shape, the casing being in two identical halves which are pivotally interconnected and can be opened for insertion or removal of a pinch tube. The casing preferably is provided at each end with a removable collar which forms its connection with the casing parts by the closing of the casing and can be removed by the opening of the casing.

### 3,826,462

**LARGE BORE ROTARY SAFETY VALVES FOR WELLS**  
Frank H. Taylor, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

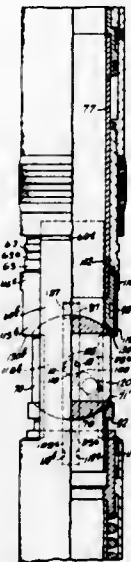
Filed Nov. 1, 1972, Ser. No. 302,661  
Int. Cl. F16k 31/12

U.S. Cl. 251-58

11 Claims

Rotary ball type safety valves for wells having a large bore therethrough for large flow capacity. Actuating means for the valves includes spring loading means disposed in a section of the valve spaced from the locking mechanism and adapted to

permit the valves to be redressed without disturbing the spring assembly, which also permits higher strength springs to be used in the valves. Multiple springs or modular springs and multiple or modular fluid pressure actuating mechanisms are provided for the valves, and equalizing structures provide for equalization of pressures across the valve closure before the



same is moved between open and closed positions. Stronger and more accurate actuating means structure for rotation of the rotary valve between open and closed positions is provided, and an open structure permits for escape of sand and foreign matter which might otherwise affect operation of the valves.

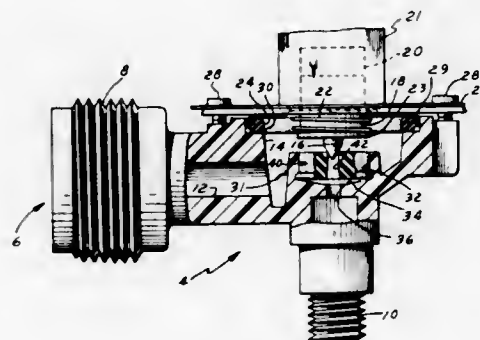
### 3,826,463 FLOW CONTROL VALVE

William W. Beauregard, Agawam, Mass., assignor to Springfield Wire, Inc., Springfield, Mass.

Filed Apr. 26, 1973, Ser. No. 354,754  
Int. Cl. F16k 47/08

U.S. Cl. 251-120

5 Claims



A flow control valve having a generally cylindrical, unitary resilient valve seat and flow control member having a toroidal lower, outer edge portion extending about the periphery thereof. The body of the valve has a conical valve surface such that the entire undersurface of said resilient control member, spans in spaced relation the entire conical surface when the control member is not flexed by fluid pressure. A recess is provided in the side wall of the valve body above the outer edge of the conical surfaces to receive the toroidal edge portion of the control member.

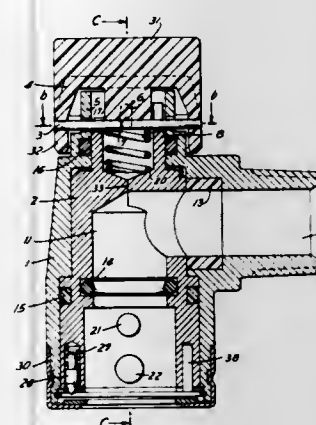
### 3,826,464

**DISENGAGEABLE SAFETY COUPLING FOR CONDUITS**  
Hans Berghofer, Alte Landstrasse 274, 2 Hamburg 65, Germany

Filed Apr. 9, 1973, Ser. No. 348,784  
Int. Cl. F16k 5/04

U.S. Cl. 251-149.9

10 Claims



A first coupling member has a first and a second port communicating with its interior, and a valve body is accommodated in the first coupling member and has a passage. The valve body is turnable relative to the first coupling member between a position permitting fluid flow between the ports, a position preventing fluid flow, and a coupling position. A second coupling member is insertable into and withdrawable from the passage of the valve body so as to be coupled and turnable with the latter but only when the valve body is in its coupling position. The valve body is provided with a collar coaxial with its turning axis and extending in sealing relationship through an opening of the first coupling member. This collar is provided with one or more circumferential first slots whose length corresponds to the angular distance between the fluid-flow blocking position and the coupling position and which has an axially recessed end portion. A second collar is provided on the first coupling member, surrounding the opening therein as well as the first collar, and having at the level of the first end portion a circumferentially extending second slot whose length corresponds to the angular distance between the fluid-flow permitting and fluid-flow blocking positions and which has an axially recessed second end portion extending to the level of the first slot. A control member is provided for effecting manual turning of the valve body between its positions. The control member is coaxial with the second collar and has at least one connecting member turnable with the control member and having portions extending into the slots. These portions are received in the first end portion when the valve member is located intermediate its fluid-flow permitting and fluid-flow blocking positions, and in the second end portion when the valve member is intermediate its fluid-flow blocking and coupling positions.

### 3,826,465 VALVE ASSEMBLY

Stanley James Whittaker; Cyril J. Astill, and Peter Janzen, all of Deep River, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

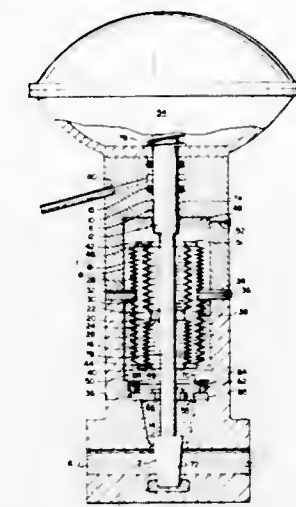
Filed Nov. 24, 1972, Ser. No. 309,455  
Int. Cl. F16k 31/365

U.S. Cl. 251-335 B

4 Claims

A valve assembly having an annular cavity around the valve stem in the casing, with two, coextensive pairs of bellows around the valve stem, each pair being arranged end-to-end and sealed to form a cavity between them. The inner pair of bellows is joined at their join to the valve stem, whilst the outer pair of bellows are joined to the casing. When the valve is opened to pass transport fluid, buffer fluids sealed between

the bellows and in an outer portion of the annular cavity beyond the bellows are brought to the pressure of the trans-



port fluid by flexing of the bellows. Thus should a bellows fail the transport fluid will only seep through that bellows into the buffer fluid.

### 3,826,466

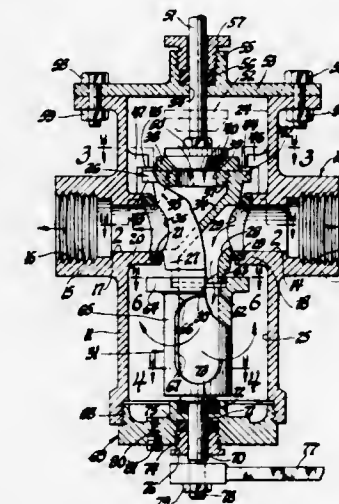
### FLUID FLOW CONTROL VALVE

Paul J. Scaglione, 30180 Richmond Hill Dr., Farmington, Mich. 48024

Filed Aug. 24, 1972, Ser. No. 283,574  
Int. Cl. B01d 35/02; F16k 5/02, 5/04, 5/06

U.S. Cl. 251-192

13 Claims



A fluid flow control valve having a valve body in which is formed a vertical elongated chamber. The valve body is provided with an inlet passage and an outlet passage, and with a stationary annular seal mounted around the inner end of each of said passages. A rotatable valve is operatively mounted between said annular seals. The rotatable valve is provided with means for releasably retaining the valve in a locked position when it is rotated to the closed position. The rotatable valve has a pair of chambers formed therein, with one of said chambers comprising an inlet chamber having an inlet port communicating with said inlet passage and a downwardly opening outlet port communicating with the lower end of said valve body chamber, and the other of said pair of chambers comprising an outlet chamber having an upwardly opening inlet port communicating with said valve body chamber and an outlet port communicating with said outlet passage, whereby fluid entering said inlet passage will pass through said rotatable valve inlet chamber and down into the lower end of said valve body chamber and thence upwardly around said rotatable valve and into said rotatable valve outlet chamber and into said outlet passage. The valve includes means



mounted in the lower end of the valve body chamber for rotating the rotatable valve between open and closed positions. The lower end of the elongated valve body chamber is adapted to function as a sediment and condensate collection chamber. A valve means is operatively mounted in the valve body for regulating the flow of fluid from the upper end of the valve body chamber into the rotatable valve outlet chamber.

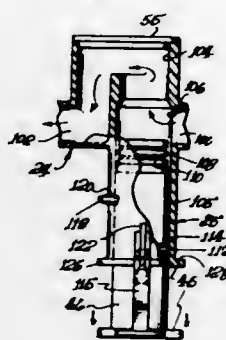
3,826,467

**EXTENDIBLE WATERING SYSTEM FOR FOWLS**

Harold W. Hart, and Warren H. Hart, both of Glendale, Calif., assignors to H. W. Hart Mfg. Co., Glendale, Calif.  
Division of Ser. No. 888,594, Dec. 29, 1969, Pat. No. 3,664,305.  
This application Dec. 16, 1971, Ser. No. 208,750  
Int. Cl. F16k 35/00

U.S. Cl. 251—284

5 Claims



A pipeline comprises plastic pipe lengths interconnected by plastic couplings with telescoped joints and with plastic valves in each coupling. The pipeline is enclosed and supported by an adjustably suspended sheet metal housing assembly with a charged wire thereon to keep off fowls.

3,826,468

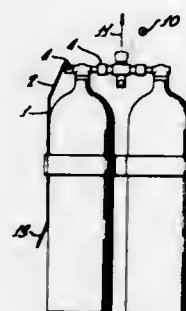
**RESERVE PULL ROD FOR SCUBA TANK**

Manfred Schuler, 4100 Patrice Rd., Newport Beach, Calif. 92660

Filed Mar. 26, 1973, Ser. No. 345,187  
Int. Cl. F16k 35/00

U.S. Cl. 251—293

1 Claim



The specification discloses a reserve pull rod which eliminates the possibility of accidental release.

3,826,469

**OVER-CENTER LOAD BINDER WITH VARIABLE MECHANICAL ADVANTAGE**

Ralph A. Ratcliff, and Bruce E. Ratcliff, P.O. Box 543, both of Belmont, Calif. 94002

Filed Oct. 7, 1971, Ser. No. 187,467  
Int. Cl. B66f 3/00

U.S. Cl. 254—78

28 Claims

An improved over-center type load binder having means to provide a variable mechanical advantage in conjunction with

binding or unbinding a load and to facilitate unbinding a load in quick release fashion under safe operating conditions. The binder is defined by an elongated operating lever having a clevis configuration at one end, a pivoted yoke mounted adjacent such end, and a movable shank also mounted adjacent such end. Curved slots are formed in the clevis arm of the lever and the shank is provided with a pin which extends into such slots for rolling engagement with edge margins thereof.



As the lever is moved towards the closed or load binding position, the location and configuration of the slots impart a variable mechanical advantage to the binder. Additionally, during movement of the lever toward the open or unbinding position, initial movement of the lever for a predetermined distance is under full control of the operator so that "flying" of the lever is obviated to minimize the chance of injury to the operator of the binder.

3,826,470

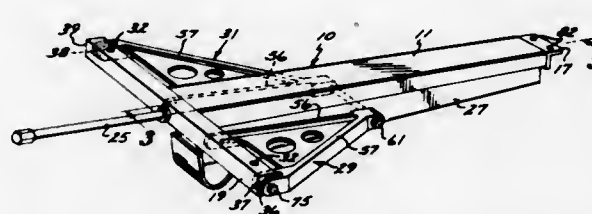
**TRAILER JACK**

Richard S. Spear, Perrysburg, Ohio, assignor to B-A-L Products Corporation, a Division of Nova Products, Gardena, Calif.

Filed May 21, 1973, Ser. No. 362,491  
Int. Cl. B60a 9/02

U.S. Cl. 254—86 R

7 Claims



In trailer jacks of the scissors type which include a support leg having one end thereof coupled to an elongated screw mounted for rotation in a horizontal frame, the leg being selectively lowered to a supporting position by advancing the one end along the screw and pivoting at the center thereof to a transverse frame member extending horizontally transverse from the frame, the improvement comprising triangular web structures formed in common with the link members to provide column support to said leg when extended. It is specifically contemplated that the web structure further provide longitudinal flanges along the adjacent interior edges thereof, the flanges forming radial extensions from a common central pivot of the leg. At the distal ends the link members include pivotal joints attaching to the extreme ends of the transverse member. In this manner a column structure is formed between the extreme ends of the transverse member of said frame and the central pivot of said leg for providing lateral support to said leg when extended.

3,826,471

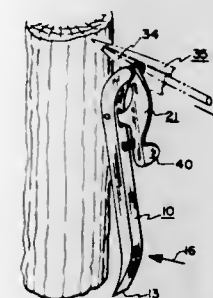
**DEVICE FOR PULLING ARROWHEADS FROM IMPLANTATION IN SOLID OBJECTS**

Hal L. Orton, 225 S. 100 East; George Duane Vanausdal, 29 E. 200 North, and Robert A. Rowley, 213 E. 200 North, all of Parowan, Utah 84761

Continuation-in-part of Ser. No. 190,755, Oct. 20, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,533  
Int. Cl. B66f 3/00

U.S. Cl. 254—131

7 Claims



A tool for removing arrows from locations of impaction such as trees, tree stumps and so forth. The subject tool includes a lever member and a retainer member pivoted together, with both of the same including uniquely constructed forward portions that effect, through mutual inter-cooperation, the retentive gripping of an arrowhead at its fin as well as a progressive tightening action, through use of a cam principal, in increasing such grip as pressure is applied the lever member. Protuberance means preferably in the form of a sharpened point are provided to penetrate or make a detent with respect to the generally soft metal of an arrowhead point. Spring pressure provides initial implantation of the protuberance whereas commencement of hand pressure upon the lever produces an increased retentive engagement of the tool with the arrowhead fin through a camming action of the forward jaw of the lever member and the pivoted retainer member provided with a cooperative cam follower surface. Progressive pressure on the rear of the tool effects a withdrawal of an arrowhead from its impacted position. Additionally, rear edge chisel means may be incorporated for stripping away bark as needed to gain access to an impacted arrowhead.

3,826,472

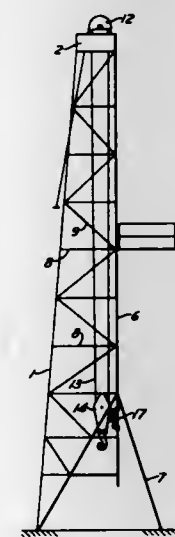
**OIL WELL DERRICK WITH GUIDE TRACK FOR TRAVELLING BLOCK DOLLY**

Homer J. Woolslayer, and Cecil Jenkins, both of Tulsa, Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

Filed Apr. 15, 1971, Ser. No. 134,127  
Int. Cl. B66c 23/60

U.S. Cl. 254—139

8 Claims



An oil well derrick has two front legs and two downwardly diverging back legs. Cross braces rigidly connect the back legs

and also rigidly connect the back legs to the front legs. The front legs extend downwardly from the top of the derrick in parallel relation for at least the major portion of the distance from top to bottom of the derrick and form the rails of a guide track. Mounted on this track is a travelling block dolly that is movable up and down the track. The front of the derrick between the track rails is open to allow stands of pipe to be moved through the track into and out of the derrick.

3,826,473

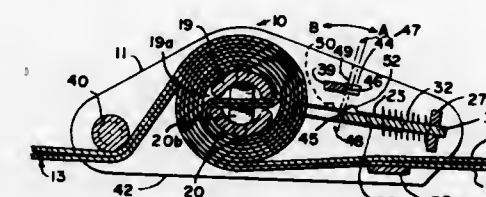
**SLIDABLE BUCKLE ASSEMBLY**

John Richard Huber, Holliston, Pa., assignor to Trans Technology Corporation, Saugus, Calif.

Filed Dec. 26, 1972, Ser. No. 318,027  
Int. Cl. B65d 67/02

U.S. Cl. 254—164

13 Claims



A strap adjusting and tensioning device to secure loads under tension which utilizes a ratchet mechanism for slack take-up and tensioning. The device, which may be positioned anywhere along the strap before wind-up is effected, includes a slotted reel having a pair of ratchet wheels cooperating with a radially-disposed, spring-loaded pawl which, in a preferred embodiment, is protected against accidental disengagement by requiring the use of a separate pawl-tripping tool.

3,826,474

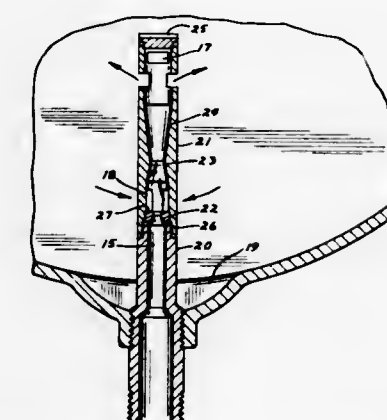
**JET AGITATOR ASSEMBLY**

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 18, 1972, Ser. No. 289,890  
Int. Cl. B01f 5/02, 5/10

U.S. Cl. 259—4

5 Claims



Venturi mixer means comprising a hollow cylindrical body with a rearward inlet port and a forward outlet port, and with replaceable orifice means being disposed rearwardly adjacent said inlet port. Venturi throat means having a throat area greater than the area of the orifice means are disposed forwardly of the orifice, with a plurality of radially disposed inlet openings being formed within said body between the orifice and the throat. The forward outlet port is preferably formed of a plurality of radially disposed openings for enhancing fluid agitation.

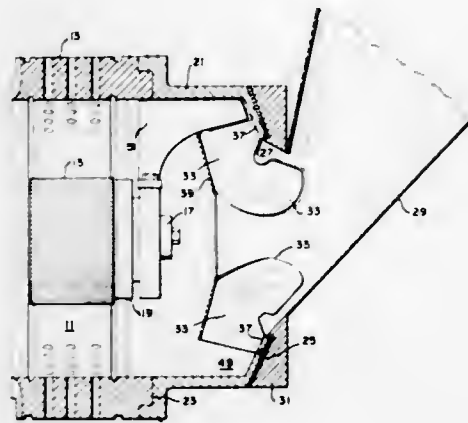


3,826,475

**DEFLECTOR AND IMPELLER COMBINATION**  
Robert W. Gilman, San Francisco, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.  
Filed July 21, 1972, Ser. No. 273,687  
Int. Cl. B01f 9/00

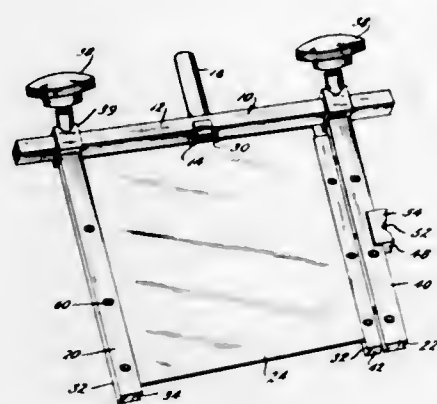
U.S. Cl. 259-14

14 Claims





the tension bar limited movement toward or away from the arm. Springs and a multiple position detent cooperate to lock tension bar close to arm so that a work piece can be placed



between the tension bar and arm. Release of the detent to a second position permits the springs to bias tension bar away from arm so as to grip the work piece between arm and tension bar with the force exerted by the springs.

### 3,826,484 WORKPIECE POSITIONING AND HOLDING APPARATUS

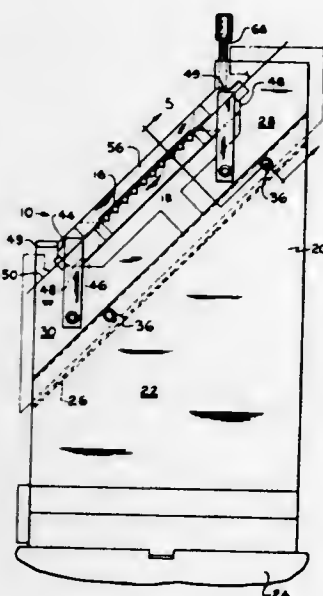
John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed Dec. 7, 1972, Ser. No. 312,815

Int. Cl. B23g 3/18

U.S. Cl. 269-299

8 Claims



Cassette-type apparatus in which a plurality of workpieces can be mounted in fixed positions on a body member prior to mounting of the body member in a fixed position in which work is to be done on the workpieces. The body member functions as the cassette and is provided with a plurality of locating surfaces. An adjustable support unit has surfaces located to support the body member locating surfaces in a position in which the workpieces will be disposed in predetermined positions. The body member is readily clamped in this position on the support unit, released and removed from the support unit and re-assembled in a turned-over position in which the workpieces are in predetermined angularly rotated positions relative to their original positions.

### 3,826,485 APPARATUS FOR SUCKING UP AND LIFTING THE UPPERMOST SHEET MATERIAL FROM A STACK OF SUCH SHEET MATERIALS

Masashi Shindo, Saitama-ken, Japan, assignor to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan

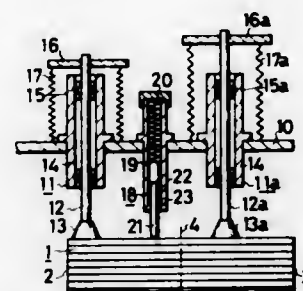
Filed Feb. 9, 1973, Ser. No. 330,975

Claims priority, application Japan, July 10, 1972, 47-068802

Int. Cl. B65g 59/04

U.S. Cl. 271-106

3 Claims



A sheet material is sucked at one end and at an intermediate portion between the central portion and the other end thereof, wherein said one end of the sheet material is lifted initially while the sheet material is pressed downwardly at a portion between the sucked portions to cause the sheet material to have a bend between the sucked portions.

### 3,826,486 SHEET CONVEYOR MECHANISM FOR PRINTING MACHINES

Paul Abendroth, Offenbach/Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG

Filed Nov. 24, 1972, Ser. No. 309,172

Claims priority, application Germany, Nov. 23, 1971, 2157993

Int. Cl. B65h 29/04

U.S. Cl. 271-204

4 Claims



A printing press sheet conveyor having a pair of endless chains mounted for movement around drive sprockets and a plurality of gripper carriages carried between said chains for receiving and transporting sheets between one transfer station adjacent a pair of said sprockets to a remote transfer station. The gripper carriages each include a shaft with a plurality of gripping pads and a corresponding number of grippers mounted for coaction with the pads. The gripper pads of each carriage are of progressively decreasing height from the ends of the shaft to the center thereof so that when the shaft is conveyed around chain support sprockets at a transfer station and deflects slightly outwardly due to the resulting centrifugal forces exerted on the shaft the bearing pads rise to a substantially common level for uniformly receiving a sheet at the transfer station. There is also disclosed an efficient method for producing a gripper carriage with gripper pads of such progressively different heights.

### 3,826,487 CONTROL APPARATUS AND METHOD FOR TRANSPORTING SHEETS

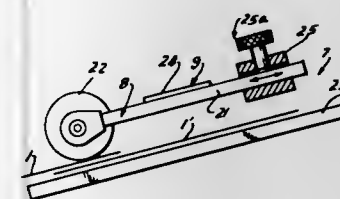
Karl-Heinz Forster, Dresden; Lothar Vetter, Radebeul, and Helmut Stange, Dresden, all of Germany, assignors to VEB Polygraph Leipzig, Leipzig, Germany

Filed Jan. 24, 1972, Ser. No. 220,204

Int. Cl. B65h 7/04

U.S. Cl. 271-263

12 Claims



An apparatus and a method for controlling the correct transport of sheets. The thickness of one or several superimposed sheets is sensed to determine how many sheets are simultaneously transported. Transducer means transform mechanical magnitude signals into signals having a different physical quality, for example electric signals, and the transformed signals are evaluated and supplied by an output selector to different outputs which are, respectively, correlated with different numbers of sensed superimposed sheets.

### 3,826,488 MOBILE RING TOY WITH RELATIVELY MOVEABLE SEAT ELEMENTS POSITIONED THEREIN

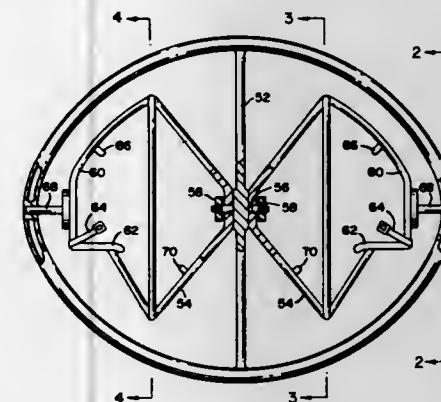
Edwin A. Hall, Jr., Lakeland, Fla., assignor to William H. Hermanns, Tampa and Mildred E. Hermanns, Brandon, both of Fla., part interest to each

Filed Dec. 18, 1972, Ser. No. 316,413

Int. Cl. A63g 29/02

U.S. Cl. 272-57 T

4 Claims



A game employing a device which can be ridden in by children. The device employs two rings of like diameter which are interconnected to intersect along a common diameter and which lie in mutually perpendicular planes. Inside these rings are positioned two relatively moveable seat elements. A child may sit in each of the seat elements whereby the rings can be rolled while the seats are maintained upright.

### 3,826,489 TAPE CASSETTE

Louis W. Watkins, Jr., Cambridge, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Division of Ser. No. 109,249, Jan. 25, 1971, abandoned. This application June 14, 1973, Ser. No. 370,034

Int. Cl. G11b 23/10; B65h 75/28

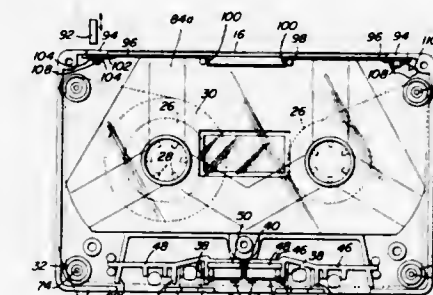
U.S. Cl. 360/132

9 Claims

This disclosure relates to improvements in the construction and operation of tape cassettes of the type which are adapted

to be received in a recording and/or playback device. One aspect of the disclosure relates to an arrangement by which a sensor in the recording/playback device may be actuated in response to insertion of the cassette into the device to control operation of the recording circuitry in the recording device. The recording or non-recording mode is selected by a switchable member on the cassette itself which determines whether or not the sensor in the device is or is not actuated.

Also disclosed is an improved arrangement for mounting the pressure pad which maintains the tape loop in firm engagement with the transducer in the recording/playback device. A pair of pressure pads are provided on a specially constructed leaf spring which, when engaged by the head, are wrapped about the head and maintain full and firm contact between the tape loop and the head. The construction of the leaf spring also avoids any tendency for the spring and pad to shift laterally with respect to the head thus orienting the pressure pads properly at all times.



The disclosure further includes improved arrangements for retarding variation in the heightwise position of the tape between the walls of the cassette so that as the tape is wound onto the reel in the cassette, it will do so evenly and smoothly and without forming any high spots. This is achieved by a specially formed sheet on the internal surface of the top and bottom cassette walls, the sheet having resilient, inwardly extending bumps which engage continually the edges of the tape. Even winding of the tape is enhanced further by providing a guide roller in each of the four corners of the cassette and biasing the guide rollers axially toward one or the other of the cassette walls. The provision of a guide roller in each of the cassette corners also minimizes any tendency for tape skew.

Also included in the disclosure is an improved construction for the tape reels about which the tape is wound which avoids the formation of any flats or creases on the wound tape.

The disclosure further includes an arrangement for the outer surface of the cassette which permits a label or the like to be imprinted directly on the cassette thus avoiding the requirement for separate printed labels which thereafter must be bonded to the outer surface of the cassette.

### 3,826,490 THERAPEUTIC EXERCISE APPARATUS

Vera L. Mossman, 5612 Griggs Dr., Flint, Mich. 48504

Filed Mar. 16, 1972, Ser. No. 235,139

Int. Cl. A61h 1/02; A61f 5/04

U.S. Cl. 272-58

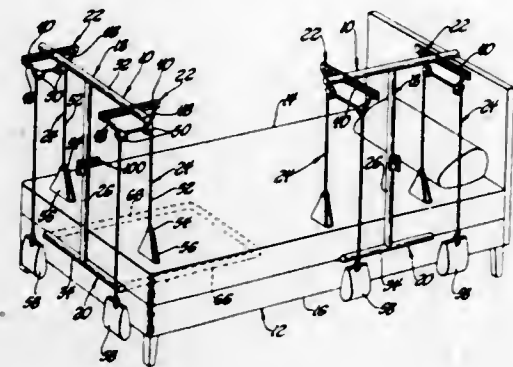
18 Claims

Therapeutic exercise apparatus for insertion beneath a patient occupied bed mattress. The apparatus has a base that is so constructed and arranged that it is conveniently insertable under any part of the bed mattress and has joined to it a weight support which includes a guide device and a cable device. The



cable device has a cable with variable weights on one end and a sling on the other. The weights resist movement of the sling

manner hanging downwardly therefrom and forming a loop in which a child may sit for swinging movement relative to the supporting beam or tree limb. The tubing may also include a



by the user of the apparatus. Additionally, the apparatus affords various adjustments and is foldable to facilitate portability and storage.

3,826,491

**EXERCISE TREADMILL**

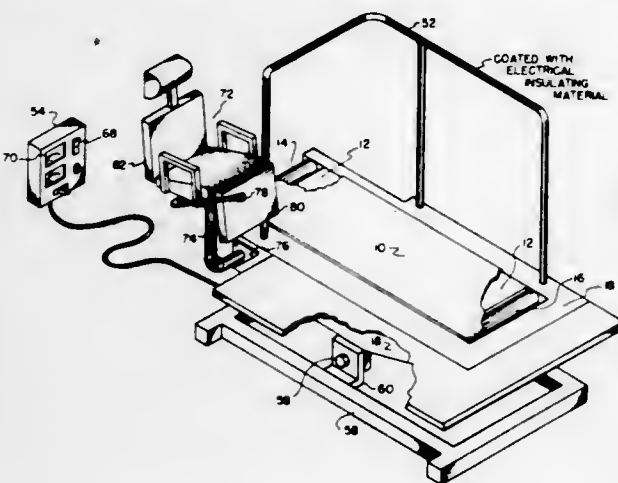
Boyd B. Elder, Redondo Beach, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed June 18, 1973, Ser. No. 371,066

Int. Cl. A63b 23/06

U.S. Cl. 272-69

8 Claims



An exercise treadmill is provided for diagnostic and therapeutic purposes, which includes, among other features, an eddy-current, variable speed drive to obtain a belt speed range from zero to maximum speed, and a differential drive through a slip clutch to the two rollers imparting motion to the belt. Safety of the subject is enhanced by an electrically non-conductive coating on the handrails to eliminate any possibility of grounding electricity through the patient's body. Incorporation of a chair as an integral part of the assembly assures a rest place in appropriate proximity to the walking surface. The treadmill walking surface is positioned and maintained at the desired inclination with minimum apparatus load by virtue of locating the fulcrum at approximately the center-of-gravity. The inclination is displayed on a remote control panel which also provides the capability of controlling all functions of the unit.

3,826,492

**SPRING SWING**

Robert M. Hagan, 9801 Gwynn Park Dr., Ellicott City, Md. 21043

Filed Jan. 3, 1974, Ser. No. 430,561

Int. Cl. A63g 9/00

U.S. Cl. 272-85

7 Claims

A swing formed of an elongated length of elastic tubing intended to be attached to an overhead beam or tree limb in a



seat molded integrally therein on which the child may sit. Still further, the tubing may include a pair of spaced apart foot pads molded therein and intended for a child to stand thereon when swinging on the tube.

3,826,493

**PLAYTHING COMPRISING MOVABLE SUPPORTS AND A RUNNING LINEAR FLACCID LINE**

Ford Crago Pethick, P.O. Box 61, Cranford, N.J. 07016

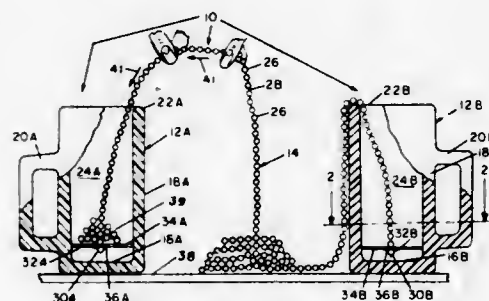
Continuation-in-part of Ser. No. 87,959, Nov. 9, 1970,

abandoned. This application Aug. 18, 1972, Ser. No. 281,922

Int. Cl. A63f 9/00

U.S. Cl. 273-1 R

16 Claims



A plaything comprising two mug-shaped receptacles and a linear flaccid line which may be a cord, a chain, a string of beads, or the like. One end of said line is held inside one receptacle, and the other end of said line is held inside the other receptacle, both of said receptacles being at least large enough to house substantially all of said line. Prior to using the plaything, the two receptacles are placed side by side on a horizontal surface and substantially all of said line is hand-fed into one receptacle so as to be amassed in a heap with the last fed-in parts resting on top of the previously fed-in parts. Then, when the receptacle housing most of said line is positioned above the other receptacle, said line — because of gravity — will run from the upper receptacle into the lower receptacle. When most of said line is amassed in a heap in the lower receptacle, the positions of the receptacles are interchanged and the direction of running of said line reversed. A receptacle having a spout for guiding the running of said line is disclosed as a modification. Also different types of lines which are suitable for use as part of the plaything of this invention are illustrated.

3,826,494

**SKIING GAME**

Richard A. Wainwright, and Stephen A. Wainwright, both of

9704 Kensington Pky., Kensington, Md. 20795

Filed Dec. 27, 1971, Ser. No. 212,321

Int. Cl. A63b 69/18, 71/02

U.S. Cl. 273-1 R

5 Claims



Apparatus and method for and of playing a skiing game, the game being played on either snow or in the water. First and second rows of receptacles are positioned on opposite sides of a hazard. Each receptacle in the first row contains a removable object. When the game is played on snow, the hazard is a ridge or bump formed between the first and second rows; and when the game is played in water, the hazard is a crest of a wake left by a boat which passes between the first and second rows. The player passes the outer edge of a receptacle in the first row, picks up the object, crosses the hazard, passes the outer edge of a corresponding receptacle in the second row and deposits the object in the receptacle. The player again crosses the hazard, passes the outer edge of another receptacle in the first row, picks up another object, recrosses the hazard again, passes the outer edge of another corresponding receptacle in the second row, deposits the other object in that other corresponding receptacle and so on. Additional rows of receptacles and objects can be added on opposite sides of the hazard in order that more than one player can simultaneously play the game.

3,826,495

**METHOD OF FITTING GOLFER WITH PUTTER AND IMPROVING PUTTING ACCURACY**

Vance V. Elkins, Jr., 42 Hampton Dr., Freehold, N.J. 07728

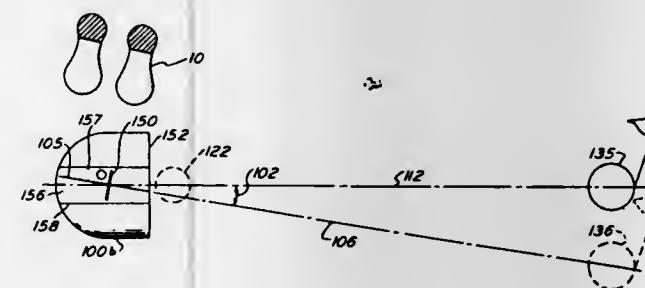
Division of Ser. No. 156,904, June 25, 1971, Pat. No.

3,680,860. This application Mar. 26, 1973, Ser. No. 344,585

Int. Cl. A63b 69/36, 53/00, 53/04

U.S. Cl. 273-32 R

10 Claims



An individual's sighting error may be measured when he is adjacent a point and sights a target with the plane formed by

the front of his body being substantially parallel to a line between the point and where the target appears to be. A sight line is rotated about the point until it appears that the sight line is pointed directly at the target. The sighting error is detected as an angle between a true line and a projected extension of the sight line and as a directional deviation to the left or right of the true line by the sight line extension.

A golf club is provided to compensate for that individual's sighting error. The golf club provided includes a correction line which is sloped relative to the striking face of the club at an angle equal to the individual's sighting error angle. In using the club, the golfer lines up the correction line normal to his front body plane.

3,826,496

**EDUCATIONAL SPACE GAME**

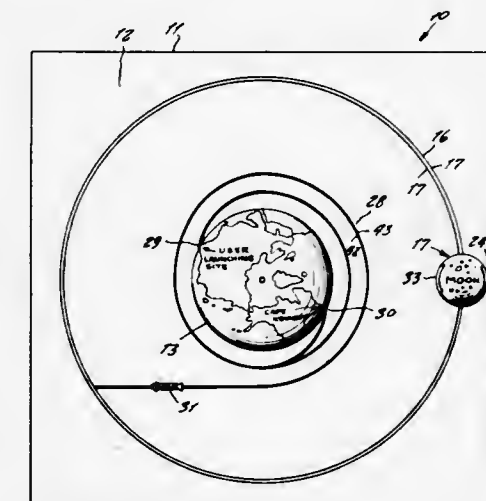
Frank Summa, 22 Starbuck St., Staten Island, N.Y. 10304

Filed Aug. 20, 1973, Ser. No. 389,855

Int. Cl. A63f 3/00

U.S. Cl. 273-108

7 Claims



An educational and instructive game for children and adults. The game comprises a game board showing a representation of the earth at the center and about which the moon is rotatable by a motor. The game further includes several space ships which travel orbital tracks for movement between the earth and moon.

3,826,497

**MAGNETIC SPINNER**

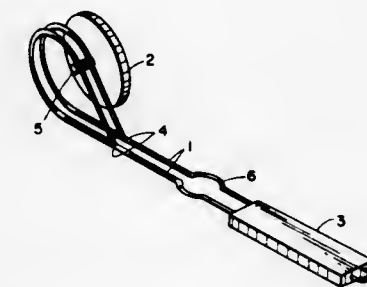
Thomas Thomason, 12522 Magoun St., Cedar Lake, Ind. 46303

Filed Feb. 8, 1973, Ser. No. 330,734

Int. Cl. A63b 67/14

U.S. Cl. 273-109

6 Claims

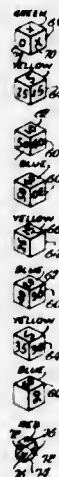


An amusement device comprising a track and a spinner to be moved along said track, said track consisting of two parallel steel wires which are formed into a loop at one end and which are provided with a handle at the other end, said spinner consisting of a plastic disc and a magnetized steel rod inserted and glued at a predrilled hole at the center of said disc; the rod is



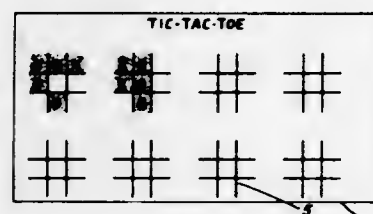
placed on the track such that its length extends across the track and the disc being positioned at one side of the track; the handle is then manipulated to cause the disc to rotate whereby the magnetized rod will rollingly cling to the track; movement of the disc too rapidly will cause the rod and disc to fall away from the track.

**3,826,498**  
**GOLF BOARD GAME APPARATUS**  
Francis H. Monek, 120 Madison Bldg., Chicago, Ill. 60602  
Filed Jan. 12, 1973, Ser. No. 322,933  
Int. Cl. A63f 3/00  
U.S. Cl. 273-134 AD 5 Claims



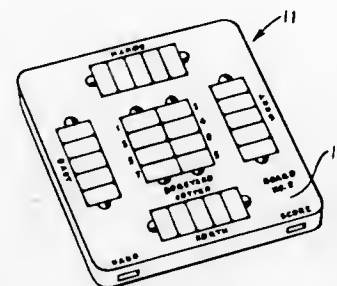
A golf game including a game board bearing designations of a golf hole including the tee, the green, the fairway and the rough. Yardage designations are on the game board as well as designations of hazards, penalties and bonuses. The game also includes four sets of distinguishable dice. The dice of two sets bear numerical indicia and one or more of the dice of each set may be rolled to generate a yardage indication. A table is provided designating various golf clubs and the dice of the first two sets that should be employed to obtain such yardage. The third and fourth sets of dice each consist of a single die, with the die of the third set bearing designations indicating whether a putt has been sunk or missed and the die of the fourth set having designations regarding shot direction.

**3,826,499**  
**INVISIBLE INK MARKINGS IN DEFINED AREAS OF A GAME DEVICE RESPONSIVE TO COLOR CHANGING CHEMICAL MARKER**  
Leon G. Lenkoff, 3203 Alden Dell, Louisville, Ky. 40207  
Filed Oct. 4, 1972, Ser. No. 294,821  
Int. Cl. A63f 3/00; G09b 3/02  
U.S. Cl. 273-130 B 5 Claims



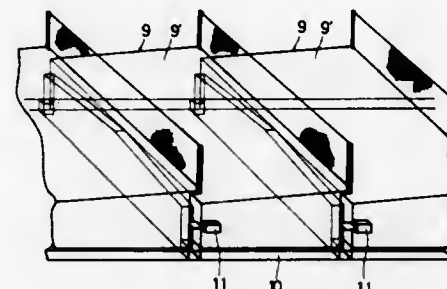
A game device including defined areas having differing invisible ink markings whereby the marking of one of said areas by a player with a color changing chemical marking means provides a differing game scoreable response from the marking of the other area.

**3,826,500**  
**BOARD FOR PREARRANGED DOMINO HANDS**  
James L. Stratta, 96 Maple Leaf Way, Atherton, Calif. 94025  
Filed Aug. 24, 1973, Ser. No. 391,450  
Int. Cl. A63f 9/20  
U.S. Cl. 273-151 7 Claims



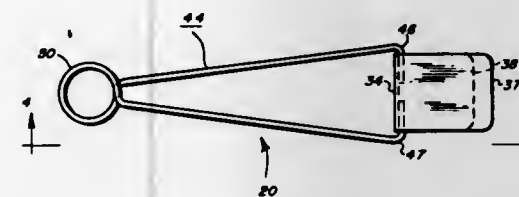
A domino board having areas thereon denominating separate hands and adapted to contain the dominoes thereof and also having a separate area with numbered domino spaces for containing the remainder or boneyard of dominoes in predetermined sequence together with a score card receptacle.

**3,826,501**  
**APPARATUS FOR PLAYING A GAME OF GOLF**  
Akihisa Hiromachi, 18-12 Kamiya 3-chome, Tokyo, Kita-ku, Japan  
Filed Mar. 19, 1973, Ser. No. 342,771  
Claims priority, application Japan, Mar. 24, 1972, 47-34650 [U]; Mar. 21, 1972, 47-28359  
Int. Cl. A63b 69/36, 67/02  
U.S. Cl. 273-176 A 1 Claim



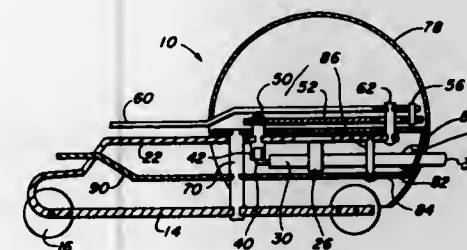
A range for playing a golf game including, at the tee-off end, fairway grass, rough, a bunker, and a green on which putting takes place. The putting green includes indicia thereon designating distances from the cup in the green. Extending beyond the putting green, and located between fences defining side boundaries, is a continuous sequence of rectangular plates, each having an upper surface slanting to one side, to permit any golf ball landing thereon to roll into an adjacent ball return trough communicating with all the plates. Associated with each plate is a switch for operating ball distance indicating apparatus. The most remote end of the driving range includes a vertical wall with apertures therein, at various heights, through which apertures driven golf balls may pass and ultimately be returned to the tee-off end, by way of the aforementioned trough. Ball distance indicating apparatus also is associated with each of the apertures in the vertical wall. Some of the plates are provided with target greens, and hazards, such as a bunker and a water hazard, to simulate the conditions found on golf course fairways.

**3,826,502**  
**GOLFING ACCESSORY**  
Arthur L. Sorge, 10404 Notabene Dr., Parma Heights, Ohio 44130  
Filed Feb. 2, 1973, Ser. No. 328,961  
Int. Cl. A63b 69/36  
U.S. Cl. 273-183 B 1 Claim



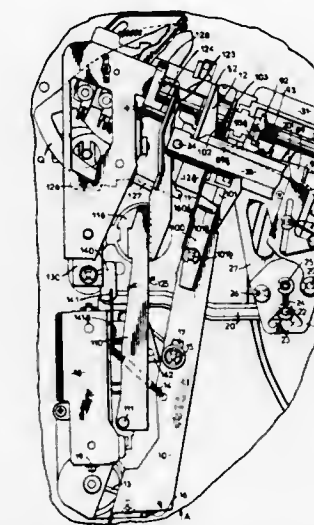
A golfing accessory for removable attachment to the brim of a golfer's cap which includes in combination a clamping member comprising a unitary member having two parallel flat sides of different lengths connected by a bent U-shaped portion. The two flat sides are the parts of the accessory that are adapted to receive the brim of the golfer's cap therebetween. A one-piece wire member is provided which has first and second end portions secured to the bent portion of the clamping member and these two end portions extend outwardly to an intermediate portion of the wire member which is bent into a closed loop. The first and second portions of the wire member preferably extend at an acute angle to the sides of the clamping member so as to appropriately position the closed loop in the line of vision of a golfer wearing the cap so that the line of sight of the golfer goes through the closed loop to view a golf ball on a tee. In order to make the best use of the golfing accessory, it is desirable that the golfer's line of vision not vary from that just described throughout the back-swing and at least through impact of a golf club with the golf ball.

**3,826,503**  
**PUTTING STROKE ANALYSER**  
Robert E. Rawson, 9521 Harriet Ln., Anaheim, Calif. 92804  
Continuation-in-part of Ser. No. 251,514, July 21, 1972, Pat. No. 3,788,646. This application Dec. 12, 1973, Ser. No. 424,183  
Int. Cl. A63b 69/36  
U.S. Cl. 273-183 C 8 Claims



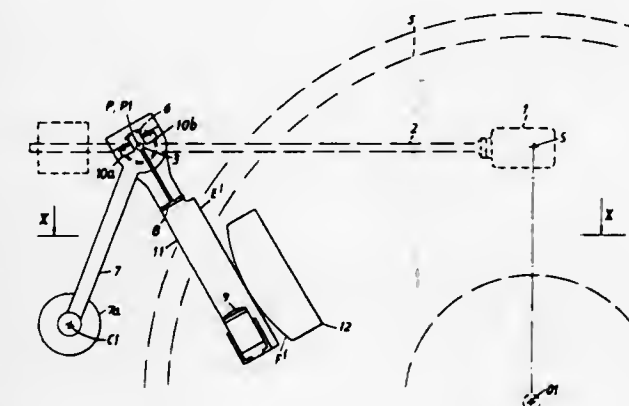
An analytical instrument for indicating putting stroke direction and putter-address deviation angles with respect to an intended direction of putt, including a freely movable carriage with paired sensors extending behind the carriage and linked with a pointer for indicating the angle of putter address prior to stroking and with a simulated golf ball pivotally mounted on the carriage and linked with a pointer for recording putting stroke direction; complete separation of function of the two angle indicating systems is provided through attaching each system independently to the carriage.

**3,826,504**  
**AUTOMATIC RECORD PLAYERS**  
Philip Henry Evans, Stourbridge, and Norman Lane, Halesowen, both of England, assignors to BSR Limited, Warley, England  
Filed May 15, 1972, Ser. No. 253,139  
Claims priority, application Great Britain, May 13, 1971, 14654/71  
Int. Cl. G11b 17/06  
U.S. Cl. 274-15 R 10 Claims



An automatic record player having mechanism to enable a stack of records of the same size to be played automatically using a record-stacking centre spindle, and to enable a single record of a selected size (7 inches, 10 inches or 12 inches) to be played automatically or under manual control using a short stub centre spindle. The mechanism has a single cam shaft carrying a number of cams which control the various movements in a cycle of automatic operations, viz. raising the pick-up arm, moving it inwardly and lowering it to engage the pick-up with the record, raising the pick-up arm after playing the record, swinging it out and lowering it on to its rest, and switching off the record player after playing a single record, or playing the last record in a stack.

**3,826,505**  
**PICKUP GUIDANCE MECHANISMS**  
Richard Wykeham Beaufoy Birch, Strelley Barn, Woodham Mortimer, Maldon, Essex, England  
Filed Mar. 22, 1972, Ser. No. 236,911  
Claims priority, application Great Britain, Mar. 25, 1971, 7821/71  
Int. Cl. G11b 3/38  
U.S. Cl. 274-23 A 6 Claims



A pickup guidance mechanism for gramophone disc records comprises a first arm on which the pickup is carried and which is pivoted for rotation in a plane parallel to the record, a



second arm pivoted for rotation in a plane parallel to the record and which carries the pivot of the first arm, sensing means adapted to produce a command signal when the first arm departs from a mean position in which the angle in the plane containing the record subtended at the first arm rotation axis by the pickup stylus and the second arm rotation axis is of a desired magnitude uniquely related to the distance at the time between the stylus and the record center, and correcting means responsive to said command signal, adapted to effect movement of the first arm towards its mean position.

3,826,506

## TORIC SEAL, NONCIRCULAR SECTION

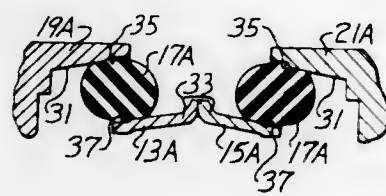
Edwin Joseph Eckert, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 29, 1972, Ser. No. 310,245

Int. Cl. F16j 15/34

U.S. Cl. 277-92

4 Claims



A retainer-torus-seal ring combination for a face-type seal has a toric member constructed with a noncircular cross section for producing (1) a rapid increase in face load with initial inward axial movement of the retainer with respect to the ring (during initial assembly) and (2) then a relatively constant face load during an extended amount of axially inward movement of the retainer with respect to the seal ring (as occurs during operation of a face seal).

3,826,507

## PNEUMATIC SPRING FOR RAILROAD CARS

Werner Brand, Bergisch-Neukirchen, and Hermann Haarkotter, Krefeld, both of Germany, assignors to Waggonfabrik Verdingen AG, Dusseldorf, Germany

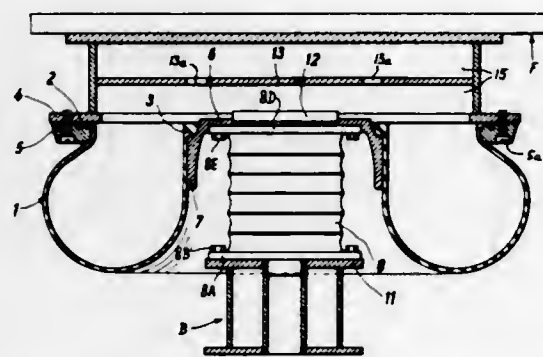
Filed Dec. 10, 1971, Ser. No. 206,632

Claims priority, application Germany, Dec. 11, 1970, 2060960

Int. Cl. B61f 5/10, 5/50; F16f 9/04

U.S. Cl. 267-3

9 Claims



A pneumatic spring for use between the lateral frame members of the frame and bogie in a railroad car or a streetcar has a torus-shaped diaphragm having two coplanar ring-shaped beads the outer of which is sealingly secured to the frame and the inner of which is sealingly secured to a cap which is coupled to the bogie, preferably by way of a rubber spring. The coupling between the cap and the frame member of the bogie may comprise an antifriction bearing or a friction bearing to reduce the stressing and wear on the diaphragm. The interior of the diaphragm communicates with a plenum chamber in the

frame member of the frame and the cap is provided with a projection which abuts against a partition in the frame forming the compartments of the plenum chambers in the event of a failure of the pneumatic spring.

3,826,508

## RING MANUFACTURE, PRODUCTIVE OF LINE CONTACT SEAL

Norman M. Packard, Des Plaines, Ill., assignor to International Harvester Company, Chicago, Ill.

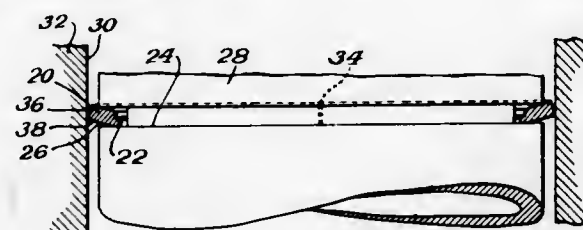
Division of Ser. No. 757,973, Sept. 6, 1968, Pat. No.

3,587,155. This application Oct. 1, 1970, Ser. No. 77,163

Int. Cl. F16j 9/20

U.S. Cl. 277-216

3 Claims



Methods, apparatus, and improved structure having as their common basis the sequence of collapsing a piston ring in a fixture approximating engine bore diameter, and lapping a locality at the side of the ring while so collapsed, until a circumferentially continuous portion—narrow in width and preferably line size—of the side is flat in the range of at least about 10 to 5 light bands. That is to say the out-of-flatness of the circumferentially continuous portion, state another way, is limited to a range equivalent to about 5 to 10 light bands at standard inspection wavelength. One of the broadest methods disclosed is the use exclusively of rings so carefully made and so lap inspected as above on a percentage basis that the inner peripheral edge at the side has all points thereon in coplanarity to a degree equivalent to the stated range to seal in absolute contact in a substantially continuous sealing ring.

3,826,509

## SAFETY SKI BINDING

Thomas Gordon Smolka, Wlen-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland

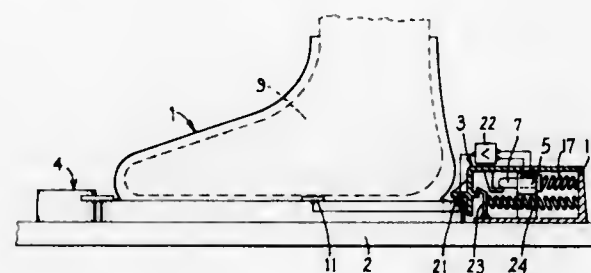
Division of Ser. No. 159,789, July 6, 1971, Pat. No. 3,776,566.

This application May 24, 1973, Ser. No. 363,536

Int. Cl. A63c 9/08

U.S. Cl. 280-11.35 M

5 Claims



Safety release bindings for action between a ski and a ski boot. Means are provided for utilizing muscular stress of the skier and utilizing a preselected value of same for releasing the binding. In certain embodiments, the muscular stress is measured by the bio-electrical output of the skier's muscles. In other embodiments the muscular stress is measured by physical movement of the skier's foot within or with respect to his ski boot. In one embodiment, a primary measurement is made of such muscular stress while a secondary measurement is made of the stress between the ski boot and the ski, both of said stresses being required to coincide in order to release the ski.

3,826,510

## COMBINATION SKI LOCK AND SAFETY STRAP

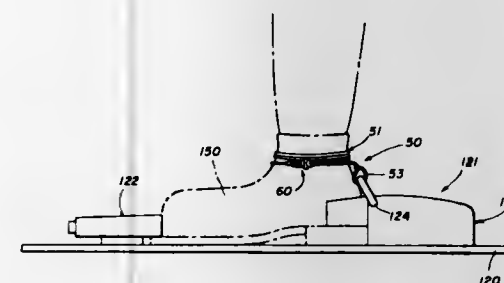
John C. Halter, 248 Miami, Park Forest, Ill. 60466

Filed May 11, 1973, Ser. No. 359,510

Int. Cl. A63c 11/02; E05b 73/00

U.S. Cl. 280-11.37 K

11 Claims



A combination ski lock and safety strap including an elongated cable having a male member on one end and a female member on the other end forming a lock mechanism. A control mechanism is operative to permit the male member to be securely maintained within the female member while at the same time preventing movement of the lock mechanism to the locked position thereof. The control mechanism is operative to permit easy release of the male member from the female member or to permit the lock to function in the normal manner.

3,826,511

## COLLAPSIBLE BEACH TOTE BARROW WITH BALL COMBINATION

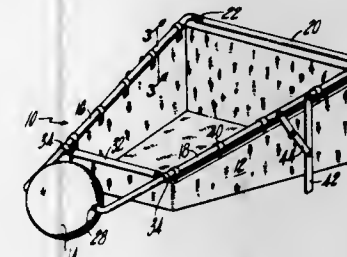
William N. Frank, 487 Denslow St., Windsor Locks, Conn. 06096

Filed Nov. 17, 1972, Ser. No. 307,505

Int. Cl. B62d 11/00

U.S. Cl. 280-36 R

4 Claims



This invention relates to a collapsible beach tote cart fabricated from tubular aluminum having means for releasably securing the wheel combining as a beach ball and having folding means securing the frame elements so as to permit the main side frame structure to be collapsible and movable relative to each other to form a compact, easily storable unit.

3,826,512

## CART

Wesley G. Palmer, Corpus Christi, Tex., assignor to Clayton Specialties, Inc., Corpus Christi, Tex.

Filed Feb. 16, 1973, Ser. No. 333,310

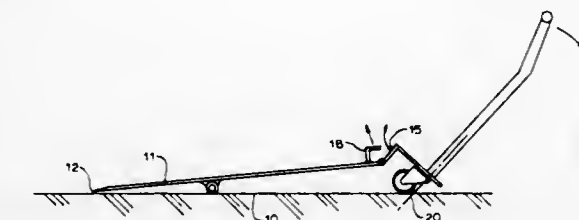
Int. Cl. B62d 33/08

U.S. Cl. 280-43.12

8 Claims

A cart for picking up and transporting articles, particularly trays, from a surface, which cart has a wheel-supported platform carrying surface hingedly connected to a rear structural

member having a handle and a centered swiveling rear wheel. Pulling the handle rearwardly and downwardly causes the



front edge of the platform to drop to the floor level where it may be easily inserted under articles to be picked up.

3,826,513

## TRIPOD CARRIER

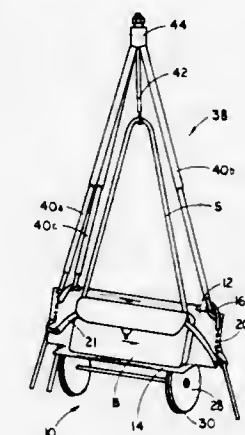
Leopold Wolf, 2320 Bermuda Ln., Hayward, Calif. 94545

Filed Nov. 29, 1973, Ser. No. 420,133

Int. Cl. B62b 1/02

U.S. Cl. 280-79.1

6 Claims



The disclosure is of a camera tripod and equipment transport including a panel of relatively rigid material which may be mounted across a pair of the legs of an erected tripod. The panel has a shelf with restraining means for a camera equipment container. Wheels are mounted on the panel whereby, with the third leg also releasably secured to the transport, the tripod may be tilted back and pulled along on the wheels.

3,826,514

## VEHICLE BANKING ARM CONSTRUCTION

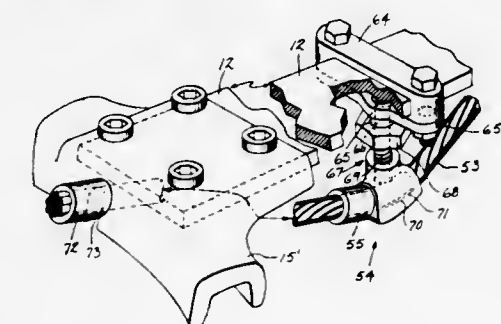
Joachim Kolbe, 5126 Haskell Ave., Encino, Calif. 91316

Filed May 9, 1972, Ser. No. 251,831

Int. Cl. B62d 9/02

U.S. Cl. 280-96.2

6 Claims



In a vehicle banking arm suspension each banking arm employs a flexible torsion spring member with means to stiffen it against flexing in the generally vertical direction. The spring specifically disclosed is a single leaf of generally uniform width and thickness disposed substantially horizontal and reinforced



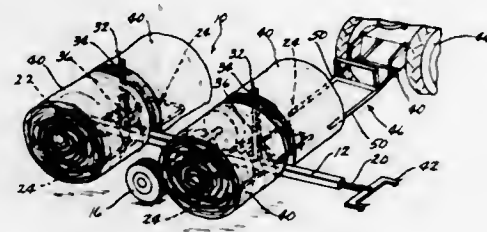
against vertical bending by one or more cables extending from end to end thereof and secured to the ends with an adjustable spacer arching the cable away from the leaf intermediate the ends to provide a truss.

### 3,826,515 HAY BALER TRIALER

Darrell E. Slayton, R.R. 1, Casey, Iowa 50048  
Filed Nov. 29, 1973, Ser. No. 420,265  
Int. Cl. B62d 21/04

U.S. Cl. 280—106 T

8 Claims



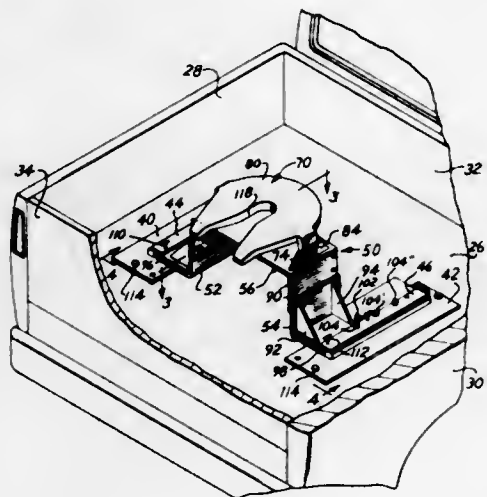
A trailer for hay bales includes a center longitudinally extending frame member supported on a single axle having wheels at its opposite ends. The trailer is pivotal about the axis of the axle. Forwardly and rearwardly of the axle on opposite sides of the frame member are bale supports cantilevered to the main frame and extending laterally outwardly therefrom for supporting a total of four large round bales. The width of the supports is such that a pair of fork lift fingers can straddle the hay supports when a bale of hay is being transferred onto the support. A pair of center spacer telescopic posts are provided on the main frame between the bale supports.

### 3,826,516 FIFTH WHEEL MOUNTING STRUCTURE

Charles A. Weber, Elkhart, Ind., assignor to Back Products, Inc., Elkhart, Ind.  
Filed Apr. 5, 1973, Ser. No. 348,198  
Int. Cl. B62d 53/08

U.S. Cl. 280—407

9 Claims



A fifth wheel mounting structure for connecting a trailer such as a recreational vehicle and a pick-up truck having a bed thereon, in which a frame mounted on the bed has a fifth wheel platform thereon for receiving the fifth wheel pin extending downwardly from the forward end of the trailer. The frame is adjustable in height and in forward and rearward positions in the bed in order to properly distribute the weight on the wheels of the two vehicles and over the rear axle of the truck. The frame may include two downwardly extending vertically positioned legs having an adjustment means therein for varying the elevation of the fifth wheel, and may also contain a

pair of spaced track means for receiving outwardly extending flanges on the respective legs and for rigidly securing the frame after an adjustment has been made longitudinally in the truck bed.

### 3,826,517 COUPLING DEVICE

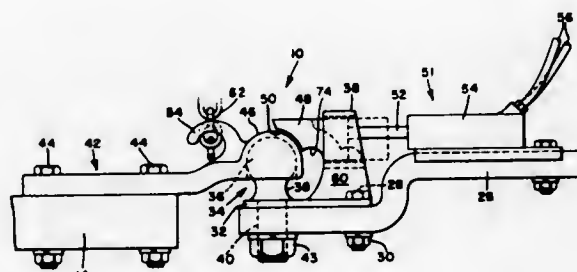
George Dwight Hunter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 16, 1973, Ser. No. 333,316

Int. Cl. B60d 1/06, 1/12

U.S. Cl. 280—511

5 Claims



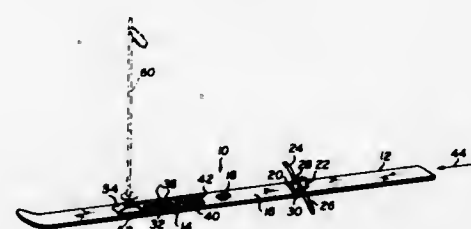
A power operated coupling device includes a ball hitch mounted on the drawbar of a tractor and a ball hitch-engaging member mounted on the tongue of an implement. A keeper which is hydraulically remotely controlled between latching and unlatching positions, confines the tongue of the implement to movement about the ball. The draft links of the tractor carry a pick-up bale which engages a pick-up hook on the tongue of the implement to either raise or lower the tongue into engagement with or disengagement from the ball hitch.

### 3,826,518 BOOT SCRAPER FOR APPLICATION TO A SKI

Don B. Hennig, Roz Box 418, Aldamont, N.Y. 12009  
Filed Aug. 2, 1972, Ser. No. 277,168  
Int. Cl. A63c 5/06

U.S. Cl. 280—11.13 T

5 Claims



A boot scraping means for application to a ski includes an elongated member connected to the upper surface of the ski in front of the toe binding. The member is provided with upwardly projecting parts which extend across the ski in several directions relative to the longitudinal axis of the ski. The parts are rigid and are adapted to receive the lower part of a ski boot from substantially any direction in a frictional engagement to thereby dislodge snow from the boot. Control of the ski is provided during use of the boot scraper by an upwardly projecting crown piece having a receptacle large enough to receive a ski pole in a snug engagement. Pressure on the ski pole restrains movement of the ski while the boot is passed over the boot scraper.

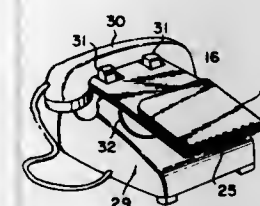
### 3,826,519 TELEPHONE PAD

Thomas W. Gavin, 3380 Merrick Rd., Seaford, 11783, and Arthur S. Friedman, 2144 Seneca Dr., Merrick, both of N.Y. 11566

Filed Mar. 21, 1973, Ser. No. 343,242

Int. Cl. G09f 3/04

U.S. Cl. 281—15



A looseleaf pad for listing selected telephone numbers is mounted on binder means that provides a hinge connecting the aligned outer ends of a rectangular blank of light cardboard or the like which is doubled upon itself on a center line of fold to constitute a two-ply pad holder. The holder is apertured to engage over the front pair of handpiece cradle posts of a cradle type telephone, or to engage over the ends of the handpiece holder fork lever of a conventional wall mounted telephone.

Each section of the blank between its outer end and the center line of fold is formed with an additional line of fold parallel to the center line, whereby the portions of the sections between the center line and the additional lines of fold may be flattened in a common plane to provide the base or floor of a tent-shaped structure whereof the remaining portions of the sections are the sides and the binder is the ridge. In this condition, the assembly is usable independently of a telephone, simply as a desk or table top pad and holder.

### 3,826,520 MECHANICAL DOOR INTERLOCK SYSTEM

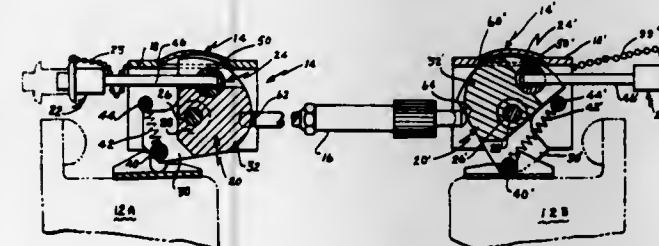
Gerald D. Ross, Des Plaines, and Douglas E. Cromwell, St. Charles, both of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1973, Ser. No. 343,315

Int. Cl. E05b 53/00, 63/14; E05c 19/10

U.S. Cl. 292—30

8 Claims



A mechanical door interlock system having a mechanical locking section used to prevent the opening of one door to a chamber or the like if an opposing door is not closed. The opening motion of one door allows a cam plate, under tension, to rotate and move a connecting rod. The motion of this rod prevents the rotation of the locking section of the other door, with the effect of locking this door.

### 3,826,521 GLUED REPLACEMENT UNIT FOR REPAIRING RUPTURED PIPE

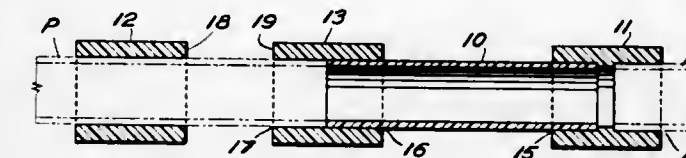
Paul C. Wilhelmsen, 281 Livorna Heights Rd., Alamo, Calif. 94507

Filed Oct. 30, 1972, Ser. No. 301,947

Int. Cl. F16l 13/00, 47/00

U.S. Cl. 285—15

1 Claim



A method of effecting a repair to a damaged section of a rigid, plastic pipe system, utilizing a short replacement section, a conventional coupling and two sleeve type couplings.

### 3,826,522 QUICK ACTING CONTACT COUPLING

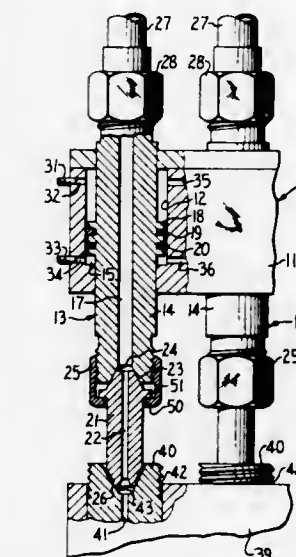
Stanley G. Dawes, Oakland, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 28, 1972, Ser. No. 248,606

Int. Cl. F16l 35/00, 28/50

U.S. Cl. 285—18

11 Claims



A quick-acting contact coupling for making a fluid-tight connection between a source of pressurized fluid and a work member, such as a fuel pump. A pressure actuated mechanism including a piston member having a contact sealing member connected thereto accomplishes a quick fluid-tight connection between the coupling assembly and the work member without the use of threaded fasteners or connectors. The contact sealing member has a hardened tip portion and a relatively flexible stem portion which allows minute alignment adjustments between the sealing and work members.

### 3,826,523 QUICK CONNECT TUBE COUPLING JOINT

John T. Eschbaugh, Chesterland, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 22, 1972, Ser. No. 308,804

Int. Cl. F16l 35/00

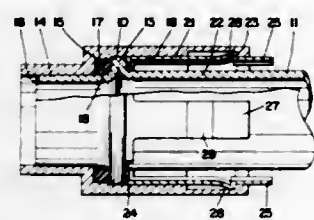
U.S. Cl. 285—39

7 Claims

A tube coupling joint in which a beaded tube with a packing ring and a collet with spring fingers mounted on the tube is attached to a coupling body by simply pushing the tube into the body. Upon such insertion the collet fingers spring radially behind a shoulder in the nut to prevent withdrawal of the tube.



The spring fingers are accessible from the exterior of the body to radially deflect the same inwardly for releasing the collet to permit withdrawal of the tube from the housing. Also, at least one of the collet fingers is axially offset from the others for en-



gaging the body shoulder after release of the initially engaged collet fingers and breaking of the coupling seal by partial withdrawal of the tube to thus provide a safety measure in that the tube is retained by the coupling while fluid pressure is being bled therefrom.

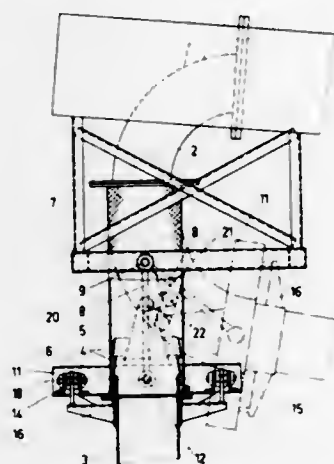
3,826,524

**FLEXIBLE CONNECTION FOR CONVEYING PIPES**  
Johann Heinrich Abderhalden, Dietikon, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland  
Filed Dec. 18, 1972, Ser. No. 316,349

Claims priority, application Switzerland, Dec. 21, 1971, 18772/71

Int. Cl. F16I 3/00

U.S. Cl. 285-61



A flexible connection for use between two pipes of a suction conduit to convey gritty substances, the angle between the two pipes being variable, comprises a frame pivoted to one pipe about a first axis transverse to the central axis of one pipe, a carrier spaced apart from the frame fixed in relation to the other pipe, means interconnecting the frame and the carrier, said means being pivoted to the frame and to the carrier on substantially parallel second axes, the pivot axis between the said interconnecting means and the frame being substantially perpendicular to the first axis, an articulated conduit portion including a series of annular members articulated together and a flexible hose surrounding said annular members and connected to said two pipes.

3,826,525

**WELL PUMP TORQUE ABSORBER ASSEMBLY**  
James N. Zehren, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed Aug. 27, 1971, Ser. No. 175,634

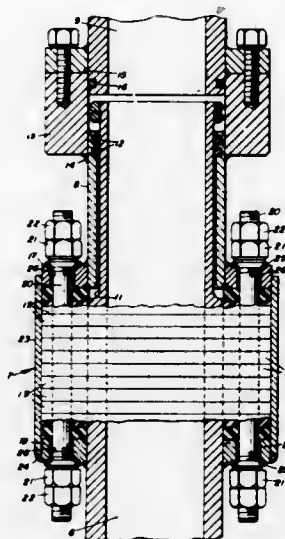
Int. Cl. F16I 27/00

U.S. Cl. 285-223

4 Claims

A torque absorber assembly for use with a conventional centrifugal pump installation for liquid producing wells which are of insufficient depth to accommodate a normal liquid discharge pipe of a length to provide the required absorption

of torque produced by the pump in operation. The assembly comprises a series of annular rubber-like disc rings which are arranged in concentric superposed relation and surround a relatively short discharge extension leading from the pump discharge head. The disc rings are mounted between upper and lower circular flange plates, the lower plate being affixed to and extending radially from a discharge extension pipe leading from the pump discharge head and the upper plate



being affixed to and extending radially from an adapter depending from and attached to the lower end of the main well discharge line leading to ground level. A series of bolts having threaded tightening nuts, extend through the plates and the intervening disc rings for adjusting the degree of friction between the disc rings and retaining the disc rings in the proper relation. The entire assembly is enclosed within a cylindrical housing secured to the lower disc ring supporting plate.

3,826,526

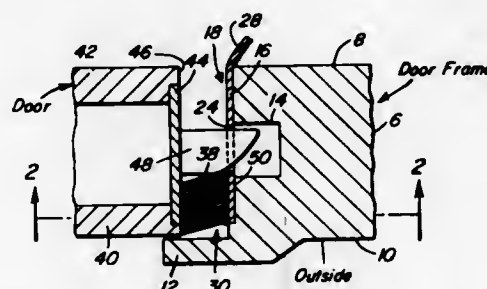
**LATCH BOLT PROTECTOR**  
George B. Wepsala, Jr., 2398 N.E. 28th St., Lighthouse Point, Fla. 33064

Filed Mar. 16, 1973, Ser. No. 341,949

Int. Cl. E05c 21/00

U.S. Cl. 292-346

3 Claims



The hereindisclosed concept pertains, broadly construed, to novel safeguarding and tamper-preventing means designed and structurally adapted to be installed in a gap existing between the usual jamb-supported striker plate and coordinating door supported latch bolt, and wherein said means is located and carried by the jamb, is associatively oriented with the latch bolt, is made up of tough interrelated brush-bristles and intercepts and blocks access to the latch bolt. The space-spanning bristles provide a formidable guard and prohibit unauthorized insertion of the commonly used plastic probing card or any equivalent jimmying implement, thus rendering the latch bolt virtually inaccessible. Specifically, the bristles can (1) be permanently built into and as part of the striker plate, (2) fastened as an accessory to a surface of the door-jamb, or (3) made up and sold as an applicable attachment for said striker plate.

3,826,527

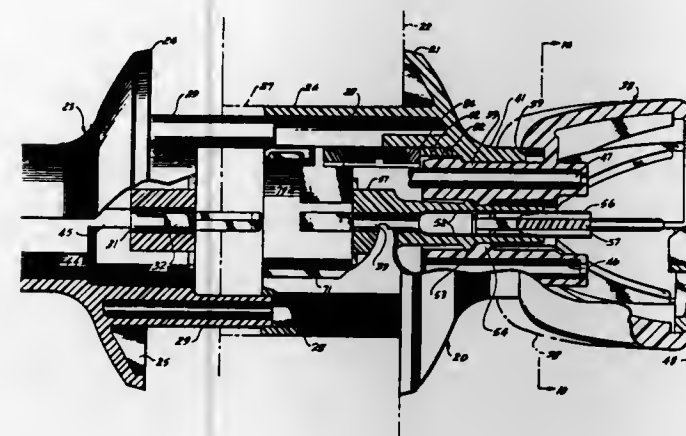
**DETENT FOR LOCKING KNOB OF A PRIVACY LOCK**  
Joe E. Ramsey, Walnut, Calif., assignor to Acme General Corporation, Monrovia, Calif.

Division of Ser. No. 261,516, June 9, 1972. This application Oct. 24, 1973, Ser. No. 409,236

Int. Cl. E05b 13/00

U.S. Cl. 292-359

4 Claims



A door latch, the knobs of which may be turned either clockwise or counterclockwise for operating the latch bolt is described. One of the knobs engages the corresponding escutcheon when the knob is pushed towards the door to prevent rotation and provide a privacy lock. Translation of the locking knob is inhibited by an elastic detent in the form of bendable fingers on the knob escutcheon engaged by a bullet-shaped member on the knob. The door latch is made of injection molded plastic and the two escutcheons are held together by a single axial screw.

3,826,528

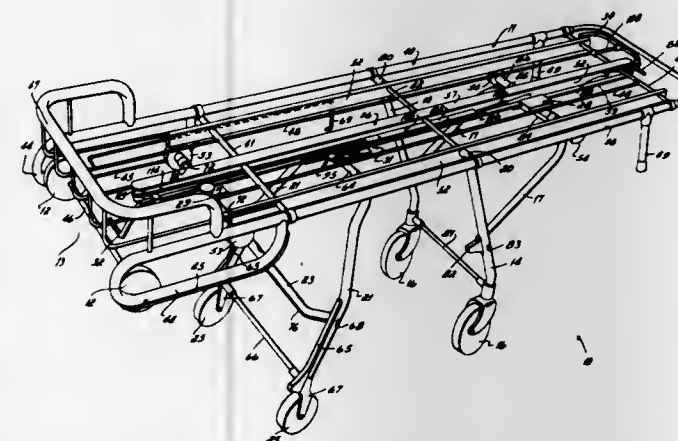
**ONE MAN MULTI-LEVEL CART**  
Donald East, Greenfield, Ohio, assignor to Burt Weil, Cincinnati, Ohio

Filed Sept. 22, 1972, Ser. No. 291,205

Int. Cl. A61g 1/02

U.S. Cl. 296-20

14 Claims



A one man multi-level cart having forward and rearward depending legs and slidable braces for the legs, the braces normally being locked and being releasable by the operator. The forward legs are also slidably mounted to the cart frame. The cart is adapted to be collapsed as by thrusting it into the rear of a vehicle, collapse being effected by the legs swinging rearwardly and their braces sliding along the frame. The level of the cart is adapted to be adjusted, adjustment being effected by the legs spreading apart, through the sliding of the brace for the rear legs and the rearward sliding of the upper end of the forward leg.

3,826,529

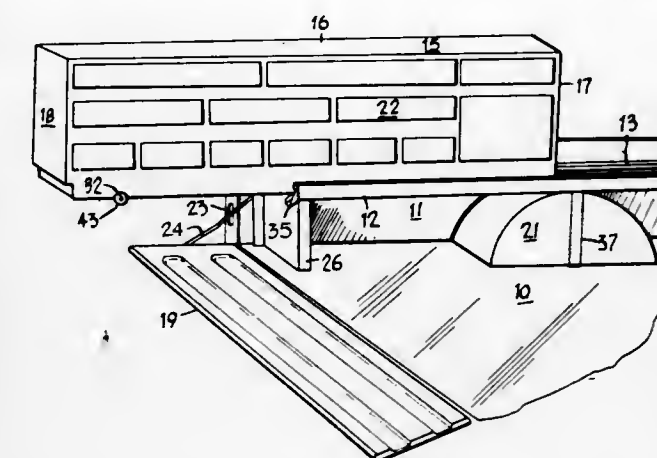
**TRUCK BODY WITH SUSPENSION RACK**  
Robert J. Wood, 3938 Sassafras St., Erie, Pa. 16508

Filed May 12, 1972, Ser. No. 252,564

Int. Cl. B60p 1/52; B62d 33/04

U.S. Cl. 296-37 R

2 Claims



An automotive vehicle body, such as a pickup truck, with a rack for tools or the like. The rack is in the form of a cabinet and supported on a track. The rack can be pulled completely from the vehicle to provide access to the contents of the rack.

3,826,530

**RIDING TRACTOR**

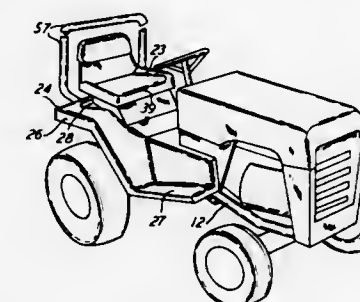
Knud H. Hoffmeyer, Racine, and Sherman C. Heth, Sturtevant, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed July 3, 1972, Ser. No. 268,519

Int. Cl. B60n 1/08

U.S. Cl. 296-65 R

10 Claims



A riding tractor having ground wheels supporting spaced-apart beams forming the tractor frame, and having a forwardly located engine and a rearwardly located operator's seat. The beams extend inclined upwardly, and a member connects the rear portions of the beams, and the operator's seat is slidably supported on tracks which are on an incline parallel to that of the beam rear portions. The member connecting the beams also extends downwardly and supports the rear wheel axle, and a sheet piece is interposed between the beam rear portions and the operator's seat, and the sheet piece has lateral portions which extend over the rear wheels to present rear fenders. The engine is located over the front wheel axle, and the operator's seat is over the rear wheel axle, and provision is made for inclusion of a roll-bar.

3,826,531

**DENTAL CHAIR**

Richard W. Page, P.O. Box 258B, Chatham, Mass. 02633

Filed May 15, 1972, Ser. No. 253,395

Int. Cl. A47c 7/62; A61c 19/00

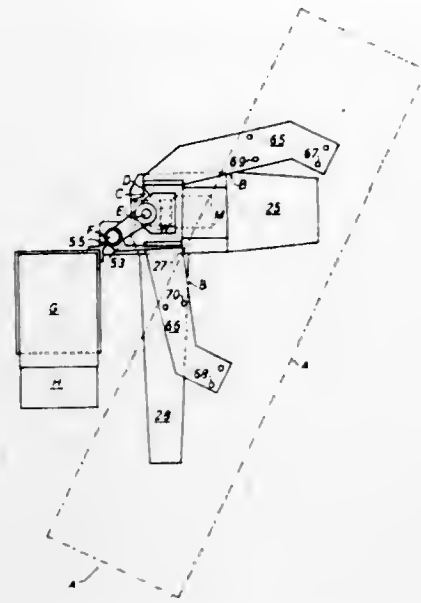
U.S. Cl. 297-188

8 Claims

The patient-supporting structure of the chair is carried on a vertically adjustable platform which rides up and down on a



laterally displaced post; the platform is kept level by vertically spaced opposed rollers riding on vertical tracks formed on the post, there being two sets of rollers acting in planes at right angles to each other so that lateral displacement and angular



movement are prevented. The platform may move down practically to floor level. An instrument console is mounted for horizontal pivoting and vertical sliding on an offset shaft and has a lost motion connection to the platform so that it follows it only in the upper part of its adjustment range.

#### ERRATUM

For Class 297—248 sec:  
Patent No. 3,826,453

3,826,532

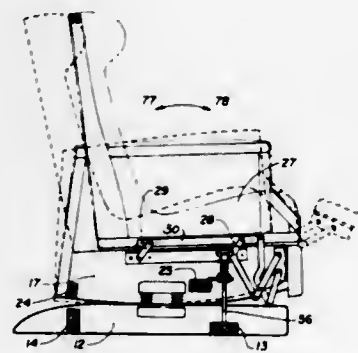
#### ROCKING RECLINER WITH ROCKER LOCK AND ANTI-OVERTURN SHOCK ABSORBER

Daniel F. Caldemeyer, 4300 Jennings, Evansville, Ind. 47712  
Filed Nov. 16, 1972, Ser. No. 307,087

Int. Cl. A47c 3/02

U.S. Cl. 297—270

13 Claims



A rocking recliner chair includes a lock for locking the chair with respect to the base at any of a number of possible attitudes, and has a shock absorber associated with the chair and base to limit the extent of travel during rocking of the chair. It is a simplified footrest mechanism and a simplified full bed mechanism.

3,826,533

#### ARTICLE OF FURNITURE

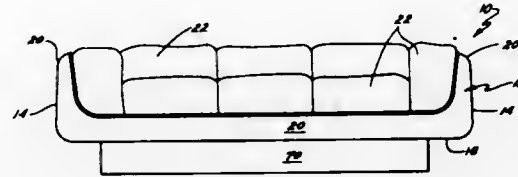
William C. Andrus, Wyoming, and Thomas H. Wlenszkowski, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Aug. 31, 1972, Ser. No. 285,435

Int. Cl. A47c 4/02, 7/00

U.S. Cl. 297—445

14 Claims



A molded plastic seating body for sofas, chairs, and the like including an integral, generally continuous, recessed channel formed in the bottom of the body for receiving one edge of a plastic strip base member, the ends of the strip being joined to form a continuous band-type supporting base for spacing the body from a supporting surface. The channel includes spaced, enlarged areas for receiving securing means for securing the strip member in the channel. The body includes additional recessed hand holds intermediate the channel and the periphery of the bottom of the body for the grasping and lifting thereof.

3,826,534

#### DUMP BODY FOR PICK-UP TRUCK

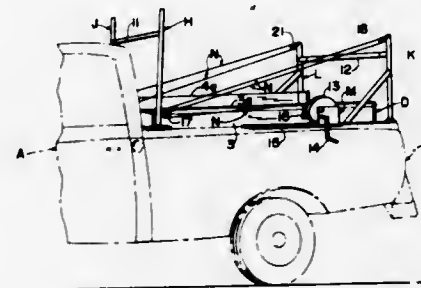
Gottfried G. Ruff, P.O. Box 57, Wilseyville, Calif. 95257

Filed May 9, 1973, Ser. No. 358,658

Int. Cl. B60p 1/00

U.S. Cl. 298—1 A

5 Claims



A dump body for a pick-up truck in which the dump body is placed within a truck body and has its rear end pivotally mounted adjacent to the rear end of the truck body. A pair of rear posts are mounted on the sides of the truck body and a pair of front posts are also removably secured to the truck body sides. Pulleys are mounted at the tops of the rear posts and a cable mechanism has a cable extending from a winch on the truck body to a pulley on a front post and then the cable extends to a top pulley on a rear post and from there the cable is passed through two pulleys mounted at the two front corners of the dump body. The cable then extends to the top pulley of the other rear post and the end of the cable is secured to the other front post. This cable arrangement provides a compound lifting effect to the front of the dump body when the cable is wound upon the winch drum. The dump body has a spreader gate and a pair of laterally swingable half covers normally close the top of the dump body.

3,826,535

#### COAL PLANER AUTOMATIC REVERSING DEVICE

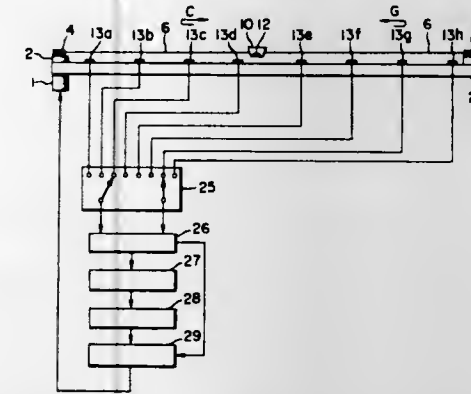
Masao Fujimori, Tokyo, and Shigeo Nakajima, Koshiro, both of Japan, assignors to Taiheyo Coal Mining Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,565

Int. Cl. E21c 27/34

U.S. Cl. 299—1

3 Claims



A coal planer having an elongated stationary main body, forward and rear sections with a gate side drive frame extending between these sections along one side thereof, upper and lower portions to said main body, and a coal planer body extending along said one side for longitudinal motion. A drive chain extends along said frame on said one side to drive said coal planer body, with driver units coupled to drive said chain including a ranging arm towards said rear section and a return wheel towards said front section. A conveyor trough is operatively coupled to and driven by said chain. On the upper portion is a magnet. A plurality of reed switches on said conveyor trough are disposed so as to magnetically couple to said magnet as they pass before said magnet. Reversal means are operatively coupled to said reed switches and to said driver units.

3,826,536

#### MINING AND TUNNELING PROCESS INVOLVING ALTERNATED APPLICATION OF THERMAL AND MECHANICAL ENERGY

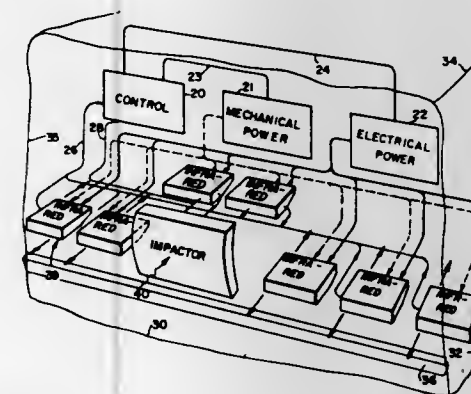
James Boyd, New York, N.Y.; Lawrence A. Garfield, Colorado Springs, Colo.; Clifford Hanninen, Madison, Wis., and Eugene Maki, White Pine, Mich., assignors to Cooper Range Company, White Pine, Mich.

Division of Ser. No. 100,213, Dec. 21, 1970, Pat. No. 3,759,575. This application Feb. 15, 1973, Ser. No. 332,550

Int. Cl. E21c 37/18

U.S. Cl. 299—14

10 Claims



A mining or tunneling apparatus is provided for continuous underground excavation through rock of relatively high to relatively low hardness. The apparatus comprises impactors

and heaters having alternately operative and inoperative modes which are selected in reference to the condition of the excavation face. Functional relationships between the applied thermal and mechanical energy are given. Optional separation of ore and gangue at the mining face is outlined.

3,826,537

#### MINING AND TUNNELING PROCESS INVOLVING ALTERNATED APPLICATION OF THERMAL AND MECHANICAL ENERGY

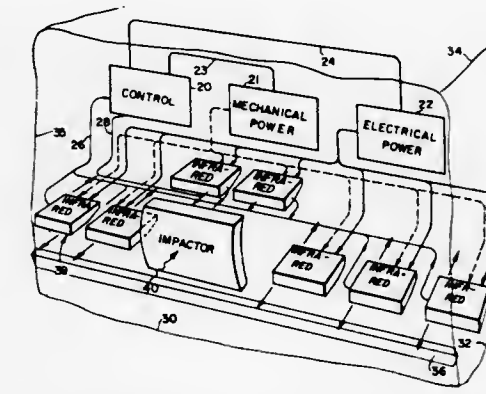
James Boyd, New York, N.Y.; Lawrence A. Garfield, Colorado Springs, Colo.; Clifford Hanninen, Madison, Wis., and Eugene Maki, White Pine, Mich., assignors to Copper Range Company, White Pine, Mich.

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Int. Cl. E21c 37/18

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3,826,538

#### AUTOMOTIVE WHEEL

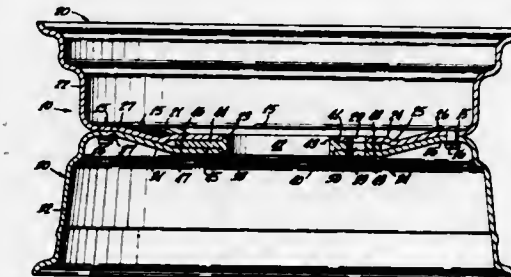
Ray W. Lipper, Newport Beach, Calif., assignor to Center Line Tool Co., Inc., Los Angeles, Calif.

Filed Feb. 9, 1973, Ser. No. 331,041

Int. Cl. B60b 3/08

U.S. Cl. 301—63 DD

1 Claim



A drawn aluminum wheel for use with automotive vehicles. The present wheel comprises: first and second generally cup-shaped wheel halves, each of the wheel halves having a center section, an integral rim section, and a central opening in the center section, the wheel halves being positioned with the center sections back-to-back and the central openings coaxial; and a centering element including a disc-shaped portion having a central opening therein and an integral cylindrical collar along the inner circumference thereof, the centering



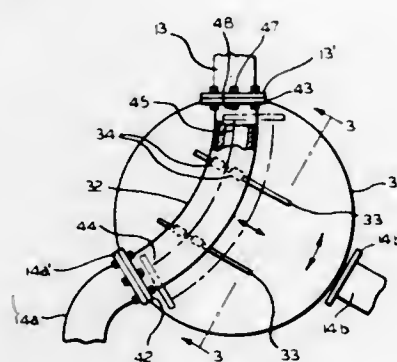
element being positioned between the wheel halves with the collar extending into the central openings therein, thereby aligning the wheel halves. O rings positioned within grooves on opposite sides of the disc-shaped portion of the centering element form an air-tight seal between the centering element and each of the wheel halves. The wheel halves are connected together, preferably by rivets.

**3,826,539**  
**METHOD AND APPARATUS FOR DIRECTIONAL SWITCHING OF PNEUMATIC MATERIAL TRANSPORT PIPING**

Robert Irwin Kunz, Verona; John Gibb Oram, Gibsonia, and Eberhard G. Schempp, Pittsburgh, all of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.  
Filed Oct. 10, 1972, Ser. No. 295,862  
Int. Cl. B65g 53/36, 53/56

U.S. Cl. 302-27

14 Claims



A method and apparatus for directing the flow of material between a plurality of storage bins and metallurgical vessels each having a coupling pipe connected thereto. Each of a plurality of interconnected directional switches is coupled to at least one storage bin and vessel and including rotatably mounted pipe coupling sections for connecting alternate flow paths between various bins and vessels when in various alternate positions.

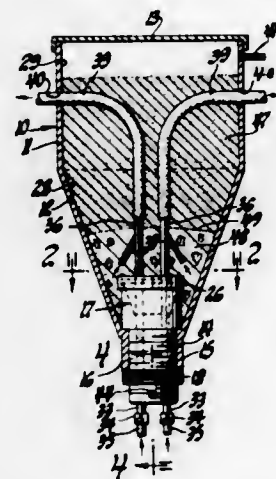
**3,826,540**  
**POWDER HOPPER FOR ELECTROSTATIC POWDER SPRAYING APPARATUS**

Frederick K. Jensen, Farmington, Mich., assignor to Elektro-  
lon, Inc., Farmington, Mich.

Filed Mar. 21, 1973, Ser. No. 343,229  
Int. Cl. B05b 5/02

U.S. Cl. 302-57

6 Claims



A powder hopper for supplying fluidized powder to an electrostatic powder spraying apparatus which includes a hopper body having a conical chamber at the lower end thereof, in

which is operatively mounted at least one venturi powder pump means. A fluidizing air chamber is operatively mounted in the lower end of the hopper body, and it has an open upper end which is covered by a diffuser membrane. The venturi powder pump means is provided with an intake conduit disposed above the diffuser membrane. The fluidizing air chamber is operatively connected to a first source of pressurized air for distributing pressurized air into the conical chamber to agitate and fluidize the powder in the lower end of the conical chamber. The venturi powder pump means is operatively connected to a second source of pressurized air at a higher pressure for drawing fluidized powder from the conical chamber and conveying the same to an electrostatic powder spraying apparatus.

**3,826,541**  
**VEHICLE BRAKE SYSTEMS USING SKID CONTROL DEVICES**

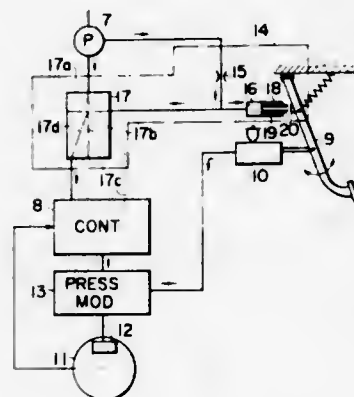
Hiroshi Arai, and Jun Ota, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Division of Ser. No. 137,858, April 27, 1971, abandoned. This application Nov. 2, 1972, Ser. No. 303,142

Claims priority, application Japan, May 1, 1970, 45-36802  
Int. Cl. B60t 8/00

U.S. Cl. 303-21 F

12 Claims



In the disclosed brake system, a control circuit that responds to deceleration of a wheel actuates an oil pressure modulator when the control circuit determines the wheel is likely to slip or skid. The oil pressure modulator then eases the braking pressure in the wheels' brake cylinder. A switch responding to effort applied to the brake pedal enables the control circuit only when the brake pedal is actually depressed hard enough to try to stop the vehicle. The switch disables the control circuit at other times. The switch prevents the circuit from easing the brake pressure in response to rapid wheel decelerations that have nothing to do with braking, such as decelerations due to downward shifting of gears.

**3,826,542**  
**VEHICLE ANTI-SKID BRAKING SYSTEM**  
Marco Peruglia, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed Dec. 6, 1972, Ser. No. 312,521

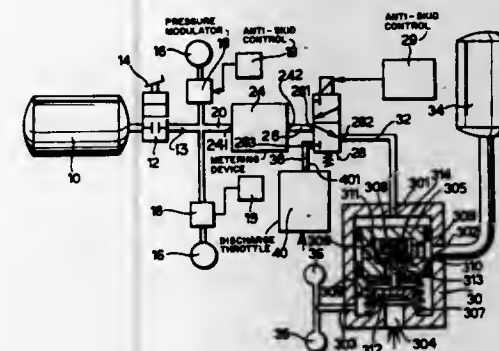
Claims priority, application Italy, Dec. 11, 1971, 71050/71  
Int. Cl. B60t 8/12

U.S. Cl. 303-21 F

1 Claim

An anti-skid braking system for a vehicle according to this invention has a main source of fluid pressure connected to a first (e.g. front) brake actuator group of a vehicle and controlled externally, and an ancillary source of fluid pressure connected to a second (e.g. rear) group of brake actuators, or trailer brake actuators, via a repeater valve which is controlled

by the pressure of the main pressure source. In this invention the main pressure source is connected to the repeater valve



through an anti-skid braking control system which is preferably controlled in response to the dynamic state of the wheels of the second group.

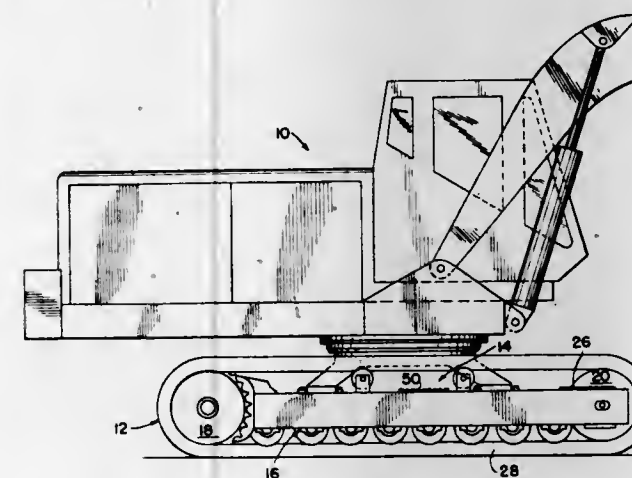
**3,826,543**  
**TRACK TENSIONING AND RECOIL APPARATUS**  
Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 13, 1972, Ser. No. 297,196

Int. Cl. B62d 55/30

U.S. Cl. 305-10

12 Claims



A track tensioning and recoil system is used in a vehicle having a track frame, front and rear rotatable members associated therewith, and a track entrained thereabout. The system includes a cylinder and piston combination which defines a chamber into which is pumped pressurized grease or the like. The piston, upon movement thereof due to the introduction of such pressurized grease, urges a push rod separate from the piston and connected to the front rotatable member to move the front rotatable member away from the rear rotatable member to tension the track. The cylinder is associated with the rear rotatable member by means of a recoil spring which allows recoil of the first rotatable member toward the second rotatable member against the biasing force thereof.

**3,826,544**  
**TRUNNION MOUNTED MARINE THRUST BEARING/VIBRATION REDUCER**  
Hugh G. Anderson, Jr., Lanham; Jai R. N. Rajan, Bowie, both of Md., and Wade H. Morse, Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1973, Ser. No. 357,296

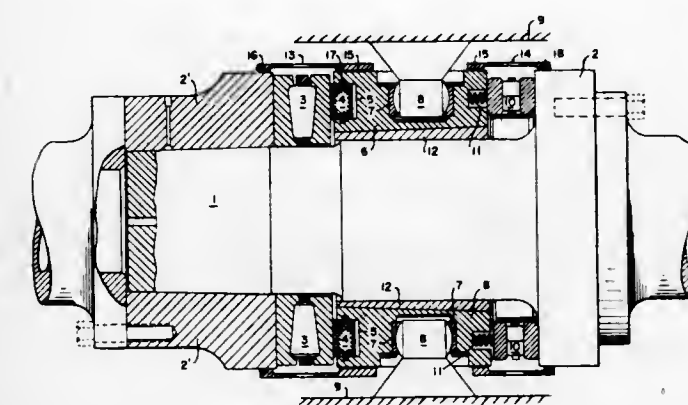
Int. Cl. F16c 17/04

U.S. Cl. 308-160

7 Claims

The instant invention is a marine bearing device which compensates for a shaft misalignment. No housing is necessary for

the bearing since the flanges of the shaft are used as bearing surfaces and partial enclosures of the bearing apparatus. This saves space and eliminates the need for traditionally used hardware. Two concepts are melded to become substance of the instant invention and provide an exceptionally efficient vibration reducing thrust bearing. First is the concept of using



two shaft flanges as thrust collars so that both forward and aft thrust bearings can be serviced and mounted on a single and compact vibration reducer housing. The use of the single vibration reducer housing facilitates the use of the second concept which is that of permitting the entire bearing to rotate freely about an axis perpendicular to the shaft by trunnion mounting the vibration reducer.

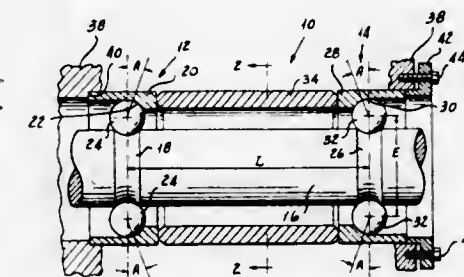
**3,826,545**  
**READILY ASSEMBLED TEMPERATURE COMPENSATED DUAL ANGULAR CONTACT BEARING ASSEMBLY**  
Lewis W. McKee, Brookfield, Conn., assignor to The Borden Corporation, Danbury, Conn.

Filed May 24, 1972, Ser. No. 256,498

Int. Cl. F16c 13/00

U.S. Cl. 308-189 R

7 Claims



An assembly of a pair of spaced ball bearings in which axially spaced circumferential grooves formed in a shaft provide spaced inner raceways for receiving sets of balls which are disposed in angular contact raceways of outer rings the raceways of which open axially away from each other and in which a spacer is so constructed as to permit it to be inserted between the outer rings after the bearings are assembled on the shaft and in which the spacer is selected to have a length providing a ball contact angle the tangent of which is the ratio of the diameter of the locus of the ball centers of each set to the axial distance between the ball centers of the sets so that the change in residual clearance of the balls in the raceways tends to be reduced owing to radial expansion of balls and shaft at approximately the rate at which the clearance tends to be increased as a result of axial shaft expansion.



3,826,546

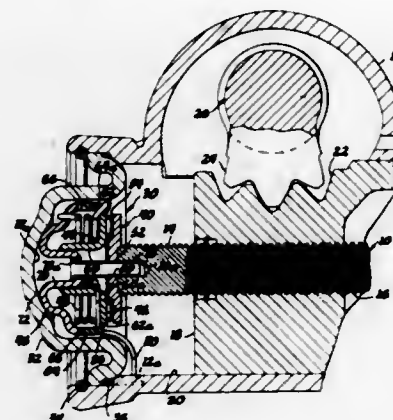
**SELF-ADJUSTING THRUST BEARING ASSEMBLY**  
Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 362,481

Int. Cl. F16c 19/10

U.S. Cl. 308—234

5 Claims



A thrust bearing assembly as for the shaft of the power steering gear of a vehicle, the assembly including a thrust plate engaging the screw end of the steering shaft journaled in the steering gear housing, a needle bearing assembly being positioned between the thrust plate and a pair of cup-shaped cam elements, one of which is centered and held axially within the steering gear housing by an end cap of the housing, a torsion spring being connected at opposite ends to the cam elements to cause them to rotate relative to each other to effect axial spreading of the cam elements for taking up end play of the steering shaft.

3,826,547

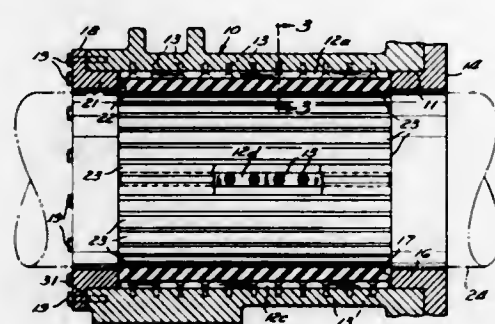
**WATER LUBRICATED RUBBER BEARING**  
Donald W. Finefrock, Burton, Ohio, assignor to The Johnson Rubber Company, Middlefield, Ohio

Filed Apr. 27, 1973, Ser. No. 355,206

Int. Cl. F16c 27/02

U.S. Cl. 308—238

7 Claims



A water lubricated bearing is disclosed providing a housing formed with a cylindrical bore in which a plurality of symmetrically spaced keys are mounted. A complement of staves formed entirely of elastomeric material are positioned in the bore and directly compressed by a removable compression head to cause tight engagement between the bore and keys. Removal of the compression head allows the staves to assume their unstressed condition in which clearance is provided with respect to both the bore and the keyways.

3,826,548

**DISPENSER FOR HAND TOWELLING**  
Conrad W. Schnyder, Triesenberg, Liechtenstein, and Danilo Cambiagli, Cologno Monzese, Italy, assignors to Nemco Apparatebau AG, Zug, Switzerland

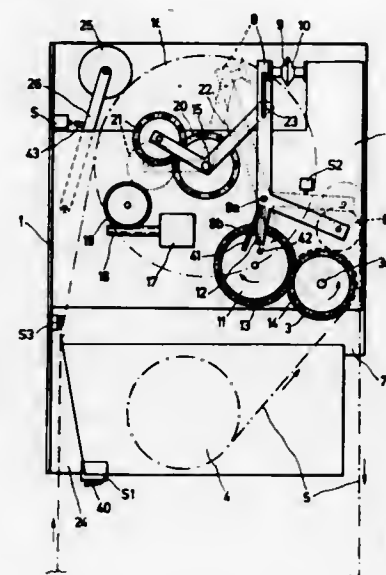
Filed Jan. 22, 1973, Ser. No. 325,649

Claims priority, application Sweden, Jan. 28, 1972, 1309/72; June 19, 1972, 9162/72

Int. Cl. B65h 19/00

U.S. Cl. 312—38

13 Claims



A dispenser for hand towelling in web form is disclosed, having a supply roll of fresh hand towelling, a dispensing roller over which towelling can be withdrawn from the supply roll, and a winding-up roller for drawing used towelling in and winding it up on a roll. The winding-up roller is driven by an electric motor which is switched on automatically after a predetermined time of use of the withdrawn hand towelling, so that in the rest condition of the dispenser the towelling is always tensioned over the cabinet, and also the end of the towelling, when the supply is used up, is automatically drawn into the cabinet and wound up. As fresh towelling is withdrawn manually from the supply roll, used towelling may at the same time be dispensed from the used towelling roll to a limited extent.

3,826,549

**PIVOT FILE**

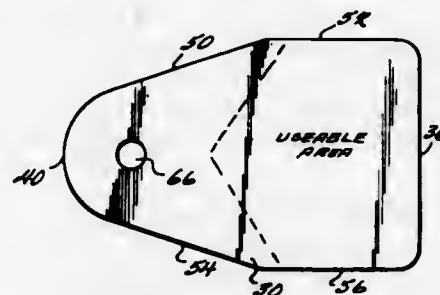
Richard P. Scholfield, Peekskill, N.Y., assignor to Wheeldex Manufacturing Company Inc., Peekskill, N.Y.

Filed Jan. 9, 1973, Ser. No. 322,149

Int. Cl. A47f 63/00, 1/00; B65h 1/00

U.S. Cl. 312—59

25 Claims



A card file and card wherein information bearing flat cards are pivotably mounted in a tray for movement between a storage and inspection position. In one embodiment, the cards are mounted on a guide rod while in another embodiment each card has a base portion with a circular edge extending more than 180° and the cards pivoted about the base portion while held by guide rods, suitable mating contours or the like.

3,826,550

**STACKABLE DRAWER AND COVER**

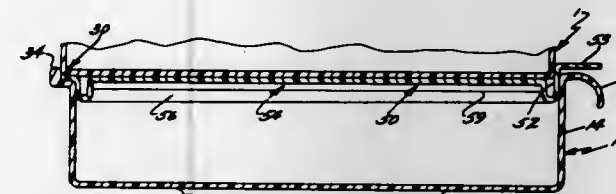
Robert L. Propst, Ann Arbor, and James O. Kelley, Spring Lake, both of Mich., assignors to Herman Miller Inc., Zeeland, Mich.

Division of Ser. No. 128,250, March 26, 1971. This application Mar. 13, 1973, Ser. No. 340,687

Int. Cl. A47b 77/00, 87/00

U.S. Cl. 312—107

8 Claims



A drawer includes a stacking recess around its top perimeter into which another similar drawer can be placed in order to stack the drawers one on top of the other. The drawer includes a cover which is thinner in cross section than the depth of the stacking recess in order that the cover can be positioned on the drawer without interfering the stacking of one drawer on top of another. The cover includes outwardly biased, resilient ribs which extend below the stacking recess when the cover is in place and which press against the drawer walls to insure a tight fit.

The drawer is supported in a structure having opposite sides with inwardly projecting guide flanges for embracing glide flanges projecting outwardly from the drawer. The stacking recess is formed in the drawer glide flanges and the cover rests on the glide flanges such that it is also embraced by the guide flanges of the support and cannot be removed from the drawer when the drawer is closed.

3,826,551

**DOORS, DRAWER FRONTS AND LIKE STRUCTURES FOR CABINETS, CLOSETS AND FURNITURE**

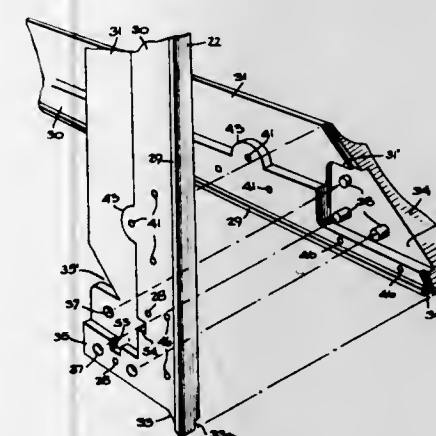
Michael S. Schwartz, Great Neck, N.Y., assignor to Ariel Creative Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,369

Int. Cl. A47f 3/00; A47b 17/04, 43/00

U.S. Cl. 312—140

21 Claims



A modular construction for rectangular doors, drawer fronts and like components of cabinets, closets, articles of furniture and the like is disclosed. Any such component includes a peripheral frame composed of four interlocked, preferably mitred, end butted side members, and a center panel or insert overlying the central opening of the frame and removably retained in place at the rear of the frame. The side members of the frame are injection molded of styrene or other suitable synthetic plastic material to basically identical constructions, each member being provided at one end thereof with an integral male connecting portion and at its other end with a

matching recessed or female connecting portion to enable the four side members of the frame to be snapped together firmly at perfect right angles to each other. After assembly, the side members of the frame may be permanently cemented or bonded to one another at their junctures, and detachable back members may be screwed or otherwise secured to the back of the frame to assist in retaining the insert in place. All the structural units, i.e., the side and back members and the inserts, can be produced in a wide range of sizes. The invention thus makes it possible for a dealer to stock a relatively small selection of side members, inserts and back members of various sizes while yet being able to form therefrom a far larger number of combinations. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,826,552

**INSULATED TAPE FILE**

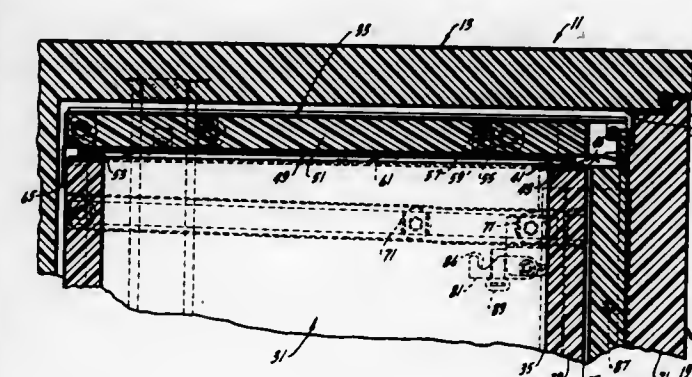
Clarence A. F. Anderson, Fruitport, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Jan. 29, 1973, Ser. No. 327,749

Int. Cl. A47b 81/00

U.S. Cl. 312—214

9 Claims



A fire resistive filing cabinet having a file drawer which carries an insulated inner container for storing easily damageable data storage materials such as microfilm and magnetic tape. The inner insulated container protects the data storage materials from the deleterious effects of heat and moisture which may exist inside a fire resistive filing cabinet which is subjected to fire. The insulated inner container is equipped with a cover which must be closed before the file drawer can be shut. Proper closure of the cover can be positively ascertained before the file drawer is shut.

3,826,553

**FRONT LOADING DISHWASHER EMPLOYING PLASTIC TUB CONSTRUCTION**

Donald S. Cushing, and Thomas E. Jenkins, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,203

Int. Cl. A47b 77/08

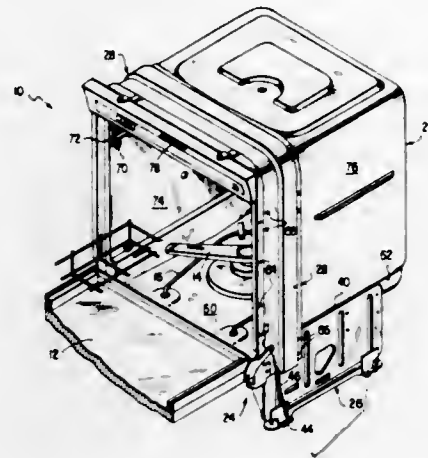
U.S. Cl. 312—253

8 Claims

A unipartite plastic tub is employed in a front loading dishwasher in substitution for the usual solid, lined or coated metal tubs. The disclosure relates, broadly, to those problems arising as a function of the substitution and, more specifically, to the



use of a supporting frame in combination therewith to rigidify the open front end of the tub, to provide a rigid anchor base



for dishwasher load component mountings and to constitute a firewall separating the plastic tub from the electrically operated equipment.

3,826,554

**DRAWER CONSTRUCTION**

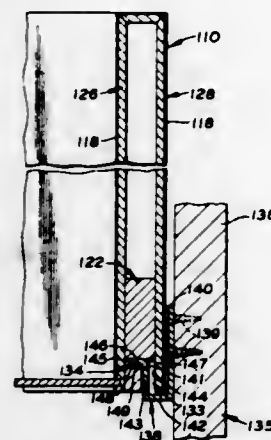
Richard R. Cornell, Newcomerstown, Ohio, assignor to Groov-fold, Inc., Newcomerstown, Ohio

Filed Sept. 9, 1971, Ser. No. 178,939

Int. Cl. A47b 88/00

U.S. Cl. 312—330

6 Claims



A drawer in which the side rails and at least one end wall are constructed from a sheet of material. A pair of mitred, first grooves are precisely incised in the sheet so that the sheet may be folded along the grooves to form a beam. Mitred second grooves are precisely incised transversely of the beam so that it may be folded to form the side walls and at least one end wall of the drawer. By selectively locating the first grooves the spacing between the opposed walls of the side rails can be controlled to permit slide means to be concealed therein. The slide means coact with, and move along, support means as the drawer is opened and closed, and the support means may also be concealed within the side rails so that the drawer, or a plurality thereof, can present a finished appearance without the necessity of being housed within a cabinet. Suitable reinforcing means may also be secured to the sheet at selected locations before it is folded in order that desired areas of the finished drawer can be strengthened.

3,826,555  
**HOLOGRAPHIC CAMERA FOR FORMING PLANAR OR VOLUME HOLOGRAMS**

Kazuya Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

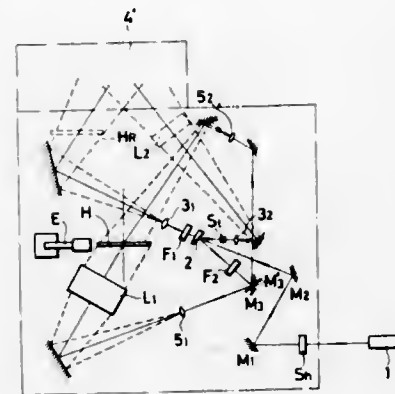
Continuation of Ser. No. 55,453, July 16, 1970, abandoned.

This application Mar. 2, 1972, Ser. No. 231,431

Claims priority, application Japan, July 21, 1969, 44-57299  
Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

8 Claims



A holography device which comprises a beam splitter arranged in the optical path of an incident beam from a beam source, said beam splitter splitting said incident beam into at least three beams, i.e., at least one transmitted beam and at least two reflected beams, said transmitted beam and at least one of said reflected beams being used as illuminating beam for the object and the other reflected beam being used as a reference beam, said object transferring its illuminating beam into a signal beam.

3,826,556

**HOLOGRAPHIC MEMORY WITH FLEXIBLE LIGHT CONDUCTING FIBERS**

Peter Graf, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

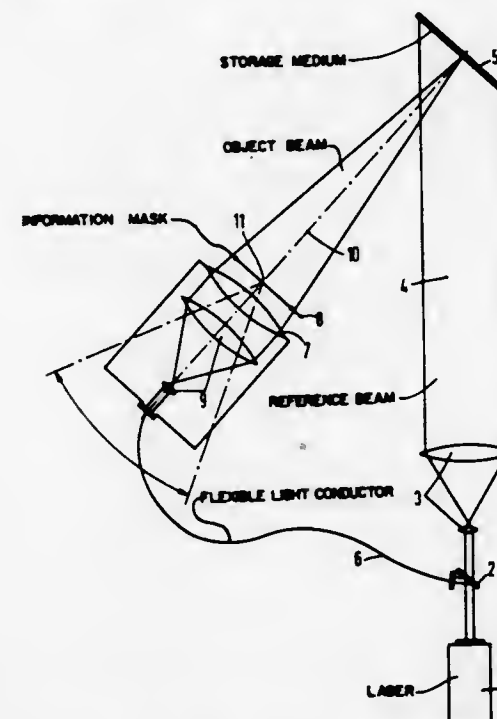
Filed June 6, 1972, Ser. No. 260,136

Claims priority, application Germany, June 21, 1971, 2130831

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

8 Claims



A device for recording information as a sub-hologram or a single holographic frame of a matrix of holographic frames on

a holographic storage medium having an illuminating source having a beam-splitting device which provides a reference beam which is projected through a beam expansion system onto the holographic storage medium and an object beam which is expanded by an optical beam expansion system, which expanded beam is focused by an optical lens system through an information mask onto the storage medium to form the sub-hologram or single holographic frame characterized by the object beam being conducted from the beam-splitting device to the optical beam expansion system by at least one flexible light conducting fiber and by the end of the fiber, the optical beam expansion system and the optical lens system being mounted on a structural unit with their optical axes on a single optical axis and by the structural unit having pivotal movement around a center of rotation lying on the single optical axis. Preferably, the lenses of the optical beam expansion system are movable relative to the lens of the optical lens system to maintain the focal point in a given plane as the structural unit is pivoted on the center of rotation. If desired, the reference beam can be expanded by a beam expansion system and a light conducting fiber can be utilized for conducting the reference beam from the beam splitting device to the light expansion system, which may also be pivoted about a center of rotation.

3,826,557

**ILLUMINATING AND IMAGING SYSTEM FOR OPTICAL PROBE**

Daniel Richard Lobb, Farnborough, and Archer Michael Spooner, Henley-on-Thames, both of England, assignors to Redifon Limited, London, England

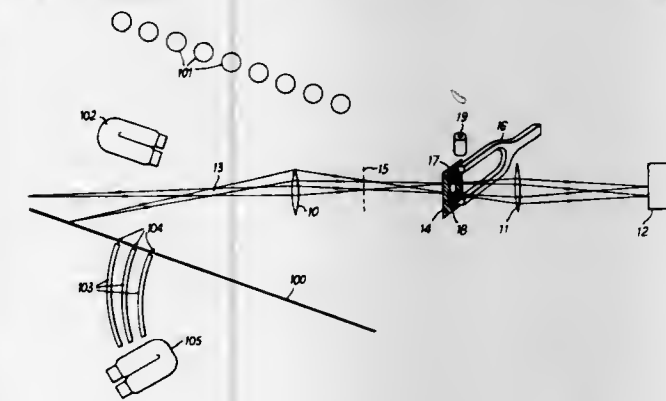
Filed Dec. 4, 1972, Ser. No. 311,505

Claims priority, application Great Britain, Jan. 20, 1972, 2834/72

Int. Cl. G02b 23/00

U.S. Cl. 350—17

11 Claims



An optical imaging system, particularly for use with an optical probe moved over and viewing an illuminated terrain model for providing a visual display for flight simulation apparatus. General illumination is provided over the whole terrain model area together with strobed illumination of areas close to the probe. Cyclically and in phase with the strobed illumination, when it is on, the aperture of the optical system is reduced or the system is re-focused, to provide better focus of the near areas when the strobed illumination is on.

Additionally, model lights simulating terrain lights may be strobed similarly to provide better image definition thereof.

3,826,558

**MECHANICAL ROTARY TILT STAGE**

Phillip P. Rasberry, Durham, and Donald R. Whitaker, Raleigh, both of N.C., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 21, 1972, Ser. No. 274,030

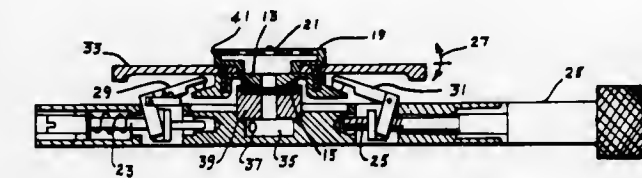
Int. Cl. G02b 21/26

U.S. Cl. 350—90

3 Claims

A mechanical stage capable of tilting in any direction and rotated 360 degrees at any tilt angle includes a hemispherical

support base which rests upon an O-ring bearing allowing tilt and rotary motion so that an object located at the center of the hemisphere at a point in space above the plane of the bearing



can be tilted and/or rotated without shifting its position in X or Y. A rotatable plate forming the top of the hemisphere has a vacuum chuck positioned thereon for holding the object during examination.

3,826,559

**ADJUSTABLE TENSION CONTROL MEANS FOR MICROSCOPES**

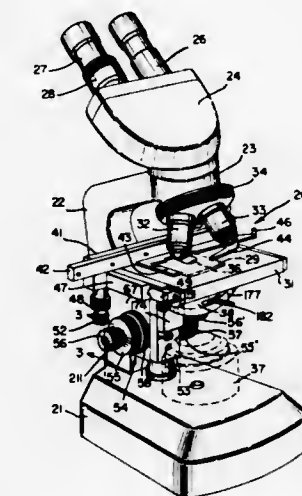
Emanuel R. Berlner, New York, and Harukichi Ishii, Tokyo, Japan, assignors to Bristoline Inc., Island Park, N.Y.

Filed Jan. 3, 1973, Ser. No. 320,707

Int. Cl. G02b 21/26

U.S. Cl. 350—86

4 Claims



Coarse adjustment tension control means have been provided in a microscope in connection with the coarse adjustment control to permit the regulation of friction upon the coarse adjustment according to the users focusing preference and as well by the same control means permit frictional locking of the coarse control mechanism to the vertically-adjustable block on the vertically extending arm and the specimen platform so that it need not float or settle by gravity. This tension control adjusts for wear upon the coarse control and gears. A turn-knob is provided upon a gear housing extending through the main block that is actually adjustable upon a supporting bracket for the coarse adjusting pinion gear that meshes with a rack on the upstanding arm of the microscope and this knob engages with a plurality of short rods that slide through the bearing support plate by a turn knob and engage with a longitudinally shiftable ring having a plastic friction washer adapted more or less for engagement with a cooperating flange of the coarse adjustment gear case to thereby control the tension and permit the locking of the coarse adjustment control parts in their adjusted positions.



3,826,560

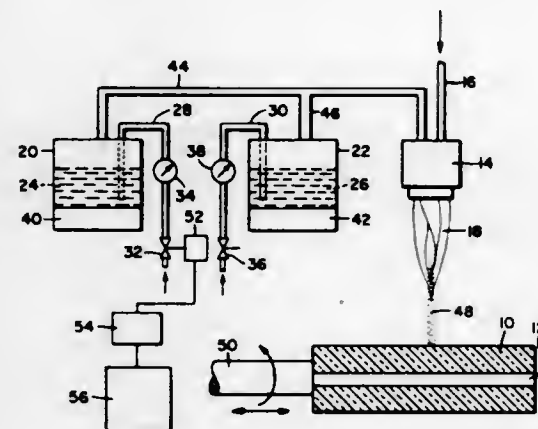
**METHOD OF FORMING A LIGHT FOCUSING FIBER WAVEGUIDE**

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,496  
Int. Cl. G02b 5/14; C03b 23/20, 25/00

U.S. Cl. 350—96 WG

20 Claims



A method of forming an article such as a light focusing fiber waveguide by applying to a substantially cylindrical starting member a layer of soot having a radially varying composition by means of flame hydrolysis. The starting member is removed and the resulting substantially cylindrical hollow cylinder is heated and drawn to reduce the cross-sectional area and to collapse the hole to form a fiber having a solid cross-sectional area with a radially varying composition.

3,826,561

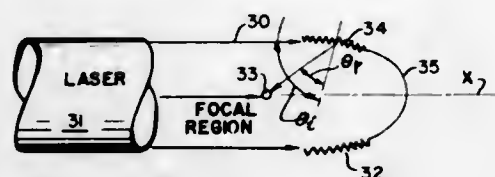
**LASER PULSE TAILORING METHOD AND MEANS**

David W. Gregg, Lafayette, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 3, 1973, Ser. No. 356,864  
Int. Cl. G02b 27/40, 3/00

U.S. Cl. 350—204

2 Claims



A method and means for time-tailoring the intensity of focussed laser radiation in the focal region by permitting stepwise shaping in space and time or by providing a continuous pulse shape which are basically accomplished by dividing up and reassembling portions of the laser beam. Stepwise shaping is accomplished by reflector assemblies which divide the pulse and redirect the portions thereof to allow arrival at a selected time and direction. Continuous pulse shaping is accomplished by the combination of a blazed diffraction grating reflector and a paraboloidal reflector, whereby a selected profile can be established to satisfy time intensity of the laser.

3,826,562

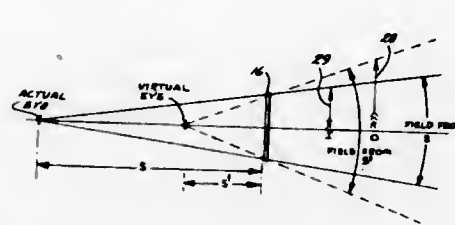
**VIEW EXPANDING AND DIRECTING OPTICAL SYSTEM**

John D. Baumgardner, and Dorothy J. Ebeling, both of Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Division of Ser. No. 252,611, May 12, 1972. This application May 29, 1973, Ser. No. 364,688  
Int. Cl. G02b 5/04

U.S. Cl. 350—286

28 Claims



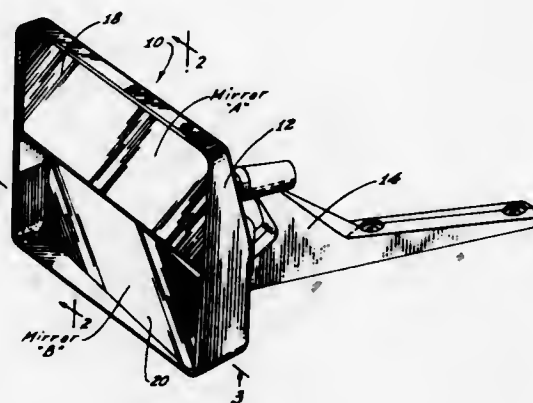
A view expanding and directing optical system for use in viewing around obstacles and the like comprising in combination a negative Fresnel lens and a Fresnel prism disposed in separate planes immediately adjacent one another. In the preferred embodiment, the system is mounted on a vehicle, at the rear thereof, whereby the system provides an expanded and demagnified viewing area to the rear of and below the level of the rear window and/or laterally of the vehicle. In other embodiments, the system may be coupled to means for extending or retracting it at desired times, and may be used in conjunction with vision aiding elements, such as mirrors and rearview mirrors.

3,826,563

**SIDE VIEW MIRROR ATTACHMENT FOR MOTOR VEHICLE**Bernard E. Davis, 553 N. Harwood St., Orange, Calif. 92667  
Continuation-in-part of Ser. No. 238,065, March 27, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 314,176  
Int. Cl. G02b 5/08

U.S. Cl. 350—303

2 Claims



A mirror assembly is provided for attachment to a motor vehicle, and which is intended to be mounted on the vehicle as a "side view" mirror. The mirror assembly of the invention, in the embodiments to be described, comprises an upper flat mirror and a lower flat mirror, both of which are mounted in the same casing. The first and second mirrors are supported in essentially vertical planes, and they are inclined to one another so that when the assembly is attached to the motor vehicle, the two mirrors provide separate reflected fields, for increased coverage by the assembly, as compared with the usual prior art side view mirror. The casing of the assembly may be pivotally mounted on the motor vehicle, in the same manner as the usual side view mirror, for adjustment to a desired position.

3,826,564

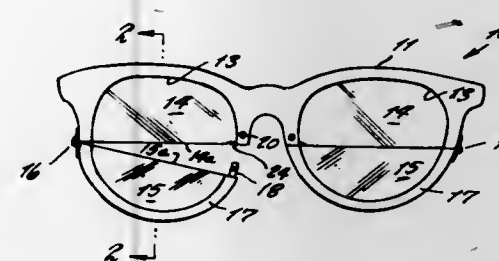
**EYE GLASS FRAME FOR REPLACEABLE LENSES**

Francis D. Werling, Sr., c/o George Spector 3615 Building 233 Broadway, New York, N.Y.

Continuation-in-part of Ser. No. 85,915, Nov. 2, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 292,269  
Int. Cl. G02c 7/10, 1/08

U.S. Cl. 351—45

2 Claims



An improved pair of eye glasses in which each lens rim opening of the eye glass frame has a removable upper and lower lens for interchange with other clear or tinted lenses, the present invention including a latch that automatically locks the upper lens from dropping out accidentally when the lens frame is opened during lens interchanging operation.

3,826,565

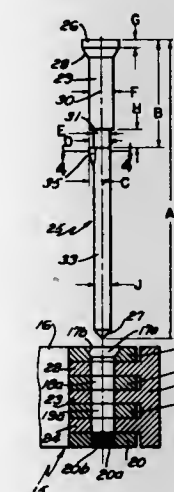
**SPECTACLE FRONT HINGE PINNING SYSTEM**

Ronald Arthur Wenzel, Norfolk, Mass., assignor to The Hillsinger Corporation, Plainville, Mass.

Filed Apr. 26, 1973, Ser. No. 354,772  
Int. Cl. G02c 5/22; E05d 5/12

U.S. Cl. 351—121

5 Claims



A spectacle front hinge pinning system having a front hinge connecting the temples of the spectacle to its frame. The front hinge has a plurality of mating barrels, each having its own bore with these bores being aligned. The spectacle hinge pin is inserted downwardly through the aligned bores in the barrels to maintain the barrels in aligned arrangement. The hinge pin has an elongated body made of a plastic material with a head formed on one of its ends. It has a shank portion extending from the head. A relieved section is formed adjacent the shank portion and it has a diameter less than that of the shank portion. A lead portion is located adjacent said relieved section and it has a barb formed thereon that extends transversely with respect to the axis of the lead portion outwardly beyond the outer surface of said relieved section to extend radially beneath the end lower barrel of the hinge.

3,826,566

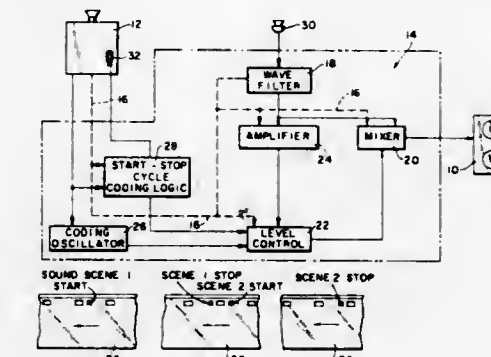
**APPARATUS FOR THE SYNCHRONIZATION OF SEPARATE PICTURE AND SOUND RECORDS**

Michael W. Csontos, North Chili, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,182  
Int. Cl. G03b 31/04

U.S. Cl. 352—12

9 Claims



Apparatus usable with an ordinary magnetic tape recorder for preparing sound motion pictures includes a camera adapted to code mark film and to produce a sync pulse signal for magnetically marking the sound record. An accessory box couples the camera and recorder for activating the camera film coding mechanism in response to receipt from the camera of the first and last sync pulse signal of a sound scene and for converting the sync pulse signal into frame rate and scene identification signals, which, after being mixed with the scene sound signal, are applied to a sound track of the tape recorder.

3,826,567  
CAMERA

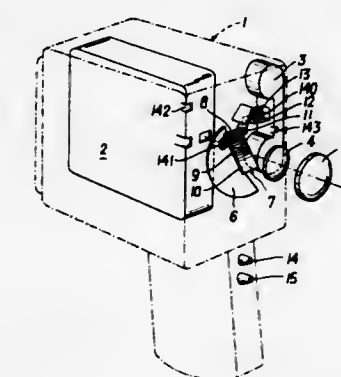
Karl Vockenhuber; Otto Freudenschuss, and Peter Revy Von Belvard, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hanser, Vienna, Austria

Filed June 1, 1973, Ser. No. 366,217  
Claims priority, application Austria, June 6, 1972, 4838/72; June 6, 1972, 4837/72; July 4, 1972, 5721/72; July 12, 1972, 5966/72

U.S. Cl. 352—137

Int. Cl. G03b 19/18

26 Claims



A camera is able to receive simultaneously a still photographic film and a cinematographic film. It has an optical system which is, at least in part, common to both types of film. Release mechanisms for respective still and cine shutters are connected to one another and to a mirror which is displaceable between positions in which it directs light to the still and cine films respectively, so that release of the still shutter is inhibited while the mirror is in its cine position and vice versa. The shutter release mechanisms may be operated by respective controls or a two-position common control. The optical system may be adjustable to suit the different frame sizes of the films.



the still and cine films, and may include arrangements for compensating for the different film sensitivities. The films may be in respective cassettes bearing sensitivity codes sensed automatically by the camera.

3,826,568

## SHEET TRANSPORT SYSTEM

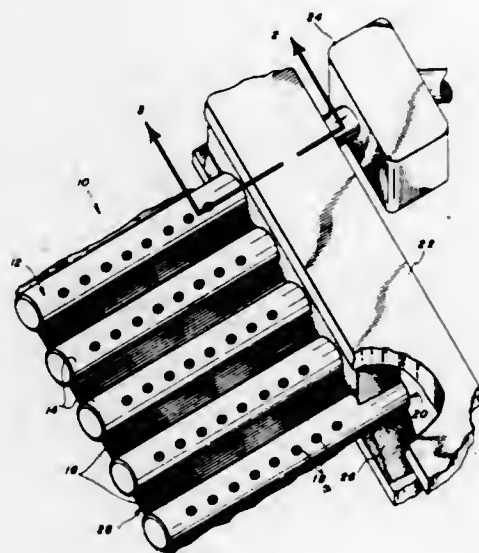
Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1973, Ser. No. 391,196

Int. Cl. B65g 15/00

U.S. Cl. 355-3

15 Claims



An endless vacuum belt system for transporting sheets, particularly suited for transporting copy sheets in electrostatic transfer systems, where the belt is made up of a multiplicity of flexibly connected small diameter hollow tubular, rigid vacuum chambers, each adapted to have a vacuum applied through its end, and where the tubular vacuum chambers extend transverse the belt and have sheet-retaining vacuum openings.

3,826,569

## EXPOSURE SAFEGUARDING DEVICE FOR PHOTOCOPYING MACHINE

Hisashi Sakamaki, Yokohama, and Yoshimasa Kimura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

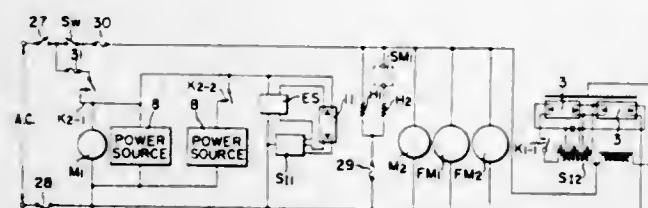
Filed Feb. 27, 1973, Ser. No. 336,377

Claims priority, application Japan, Mar. 3, 1972, 47-22140

Int. Cl. G03g 15/00

U.S. Cl. 355-14

8 Claims



This invention provides a safety device for preventing the under exposure in a photocopying device. The device includes a sensitive element for detecting the temperature around the exposure light source, and delay means for varying the delay time according to the temperature difference detected by the sensitive element.

### 3,826,570 PHOTOCONDUCTOR-CARRYING DRUM ASSEMBLY

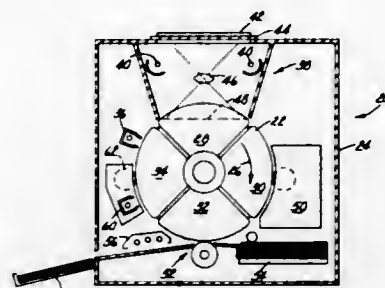
James Andrew Kolibas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 3, 1973, Ser. No. 421,258

Int. Cl. G03g 15/00

U.S. Cl. 355-3 R

32 Claims



A photoconductor-carrying drum assembly is provided comprising a plurality of frame structures each with a pair of pivotal support members which normally mate together to define a curved surface with a flexible photoconductor element resting thereon. The support members of each frame structure swing inwardly when the structure reaches a predetermined angular position upon rotation of the drum assembly, whereby the photoconductor element assumes a substantially planar configuration for exposure. Each photoconductor element extends between supply and take-up spools carried by the frame structure together with a mechanism for periodically advancing the photoconductor in the imaging area.

3,826,571

## LENS MECHANISM

Harry Arthur Hele Spence-Bate, 85 Seabourne Rd., Southbourne, Bournemouth, England

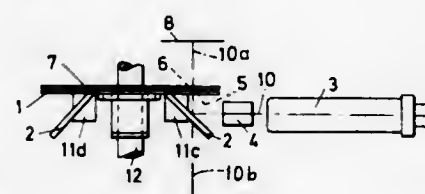
Filed Apr. 6, 1973, Ser. No. 348,622

Claims priority, application Great Britain, Apr. 8, 1972, 16341/72

Int. Cl. G03b 27/70

U.S. Cl. 355-46

8 Claims



A camera for selectively filming at least two separate types of input images through a first and second object lenses respectively. A mask is positioned between the film and a rotatable lens carrier upon which is mounted the first object lens and mirror which directs the image of the second object lens to the film. The camera may be a microfiche camera for recording a document through the first object lens and for recording the image from a cathode ray tube through the second object lens.

3,826,572

## PHOTOGRAPHIC PLATE PRINTER

Dennis C. Duerr, 22426 Abordo, Saugus, Calif. 91350

Filed Jan. 18, 1973, Ser. No. 324,824

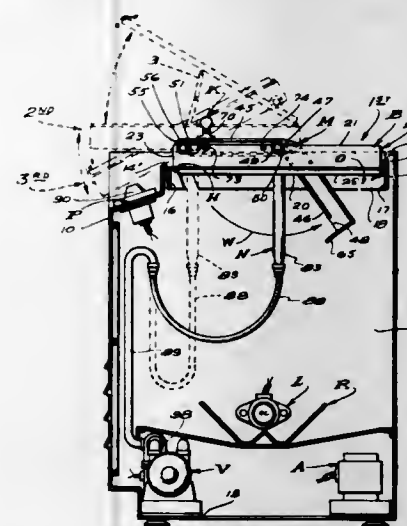
Int. Cl. G03b 27/04

U.S. Cl. 355-93

11 Claims

A photographic plate printer comprising a box-like cabinet with a front side and an opening in the top, a light source in the cabinet below and disposed toward said openings, a flat carrier with a plate supporting surface and mounting means

pivotal and shiftably mounting the carrier to the cabinet whereby the carrier is shiftable from a working position where it occurs above and forwardly offset from the top of the



cabinet with its support surface disposed upwardly to an exposing position where it occurs within the opening in the cabinet with its support surface disposed downwardly.

3,826,573

## METHOD OF RECORDING AND REPRODUCING INFORMATION IN THE FORM OF ELECTRICAL CONDUCTIVITY DIFFERENCES

Paul Heinzer, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed June 16, 1971, Ser. No. 153,807

Claims priority, application Switzerland, June 17, 1970, 9151/70

Int. Cl. G03b; B41m 5/18

U.S. Cl. 355-133

22 Claims

Information recording material sensitive to the action of activating radiation, at least part of the thickness of which from the surface thereof, consists of a homogeneous dispersion of electrically conductive particles in an insulating binder essentially consisting of a substance or composition having swelling and/or solubility properties that can be modified through exposure to activating radiations. This material is able to yield a recording of information in the form of electrical conductivity differences after firstly being exposed to said radiations, modulated according to the information to be recorded, and secondly being treated to cause the exposed parts and the unexposed parts to swell differently. This material can be used, for instance, for reproducing documents, for taking X-ray pictures and for taking pictures in electronic microscopy.

3,826,574

## NEPHELOMETER

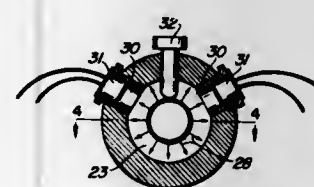
Fon R. Brown, Jr., Hyrum, Utah, assignor to Continental Distributors, Inc., Los Vegas, Nev.

Filed Feb. 12, 1973, Ser. No. 332,014

Int. Cl. G01n 21/00

U.S. Cl. 356-103

12 Claims



A nephelometer or the like is constructed with a light-integrating chamber opening into a sample-receiving test

chamber, so light from a beam of light directed longitudinally through a test tube holding a sample of liquid to be tested, which light is transversely scattered by particles of matter within the liquid, will be received by such light-integrating chamber. Means for reflecting and diffusing the received light is provided within the light-integrating chamber, so the received light will, in effect, be conserved and stored for transmittal of a maximum amount thereof to light-detecting means. As preferably constructed, the light-integrating chamber is annular and concentrically surrounds and opens into the test chamber, the light reflecting and diffusing means being a circumferential, unpolished but reflective, machined wall surface backing the annular chamber and confronting the test chamber, and the light detecting means being one or more sensors exposed to light from the light-integrating chamber through one or more ports provided in the diffusely reflective wall surface. In this way, signals of normal intensity are obtained by a light beam of less intensity than normal, thereby reducing heat and resulting turbulence of the sample, and the light received by the detectors is more representative of conditions in the sample than is normally the case. Electronic circuitry is employed that gives linear current output proportional to the amount of light detected. Thus, direct read-out of light measurements are possible.

3,826,575

## HIGH PERFORMANCE RING LASER GYROSCOPE WITH MAGNETO-OPTICAL BIAS

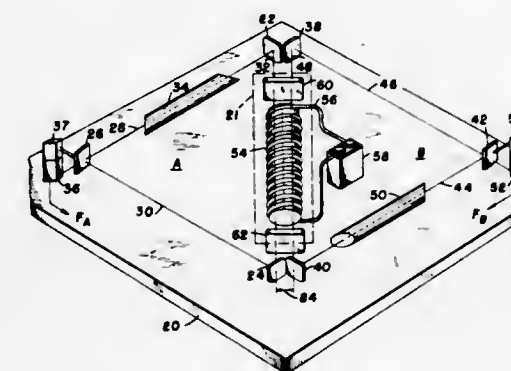
John F. Walter, Jr., Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1973, Ser. No. 373,212

Int. Cl. G01b 9/02

U.S. Cl. 356-106 LR

9 Claims



A ring laser gyroscope capable of producing an output signal at low rates of angular rotation. A differential magneto-optical bias system eliminates the requirement of extreme stability in the bias system.

3,826,576

## LASER MEASURING OR MONITORING SYSTEM

Eugene E. Stewart, Canton, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 20, 1972, Ser. No. 316,793

Int. Cl. G01b 9/08

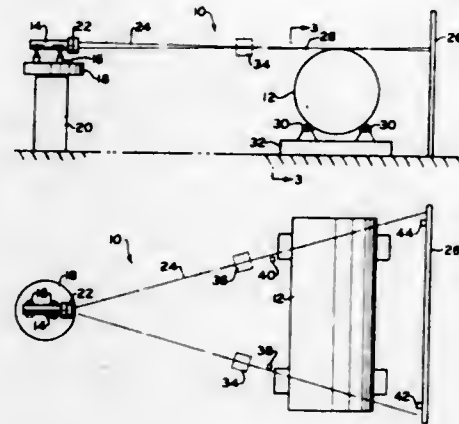
U.S. Cl. 356-164

11 Claims

A system in which a reference plane is established by passing a laser light beam through a lens assembly to create a focusable diverging planar beam of light. In one illustrated embodiment of the invention, the reference beam is projected tangent to a cylindrical surface of an object with the beam being focused at a point closely adjacent but forward of the surface and projected onto a screen rearwardly of the object. The position of the beam is precisely controlled and any devia-



tion in the diameter of the object is indicated as an interruption of the beam on the screen. Systems for directing the light



into a beam of substantially uniform rectangular cross section are also enclosed.

3,826,577

## GAS ANALYZING APPARATUS

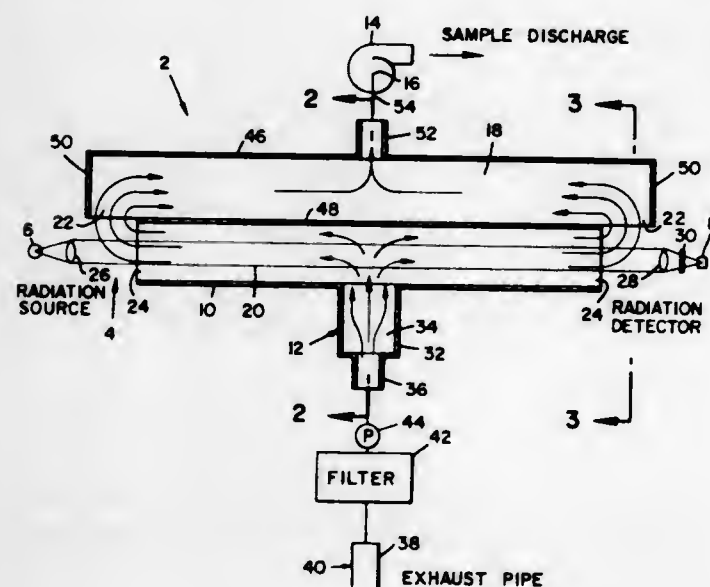
Charles P. Irwin, Cupertino, Calif., assignor to Commercial Electronics, Inc., Mountain View, Calif.

Filed Dec. 7, 1972, Ser. No. 313,006

Int. Cl. G01n 21/26

U.S. Cl. 356-201

19 Claims



Gas analyzing apparatus in which one or more components in a gas are detected by measuring the rate at which the gas absorbs radiation such as light. The analyzer is defined by an open ended tube disposed concentrically about the optical path of the radiation and a vacuum chamber disposed over the length of the tube and having ends adjacent the tube ends. The vacuum chamber is outside the optical path to prevent its interference therewith. Gas is introduced into the tube, preferably at the middle thereof, thereafter flowed parallel to the optical path to the open tube ends and is then completely withdrawn from the optical tube ends by the vacuum prevailing in the vacuum chamber so that the gas is unable to contact and contaminate either the radiation source or the radiation detector.

3,826,578

## SCANNING INSPECTION SYSTEM AND METHOD

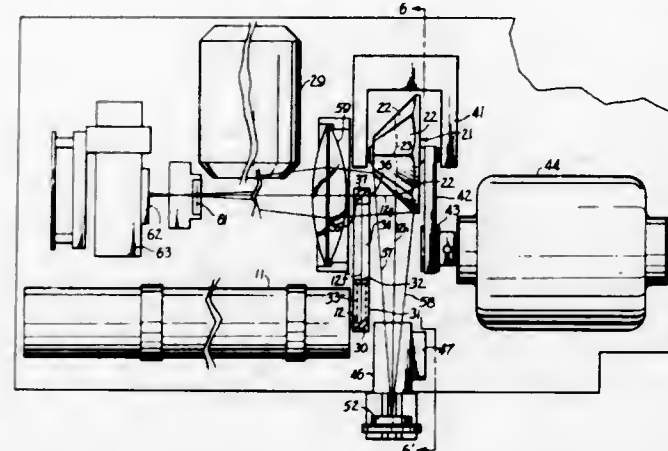
Gordon J. King, and George Gugliotta, both of Ridgefield, Conn., assignors to Laser Sciences, Inc., Bethel, Conn.

Filed Dec. 8, 1972, Ser. No. 313,328

Int. Cl. G01n 21/32

U.S. Cl. 356-237

4 Claims



A small cross-sectional beam of radiant energy from a source such as a laser is directed by way of an optical scanning device onto a surface to be inspected. The intensity of the radiant energy reflected from the surface of the object is measured to determine the quality of the surface. The intensity may be equalized by focusing the reflected energy and providing aperture means so located that energy from mid-scan areas passes through the equalizing means relatively unimpeded to be measured while energy from points closer to the mid-scan point is intercepted to a greater degree. If the surface to be inspected is moving in a direction having a component perpendicular to the direction in which the beam is deflected by the scanning device, the scanning device need only deflect the beam in one plane. If the object is stationary, the scanning device may include two deflecting means in tandem, one deflecting the radiant energy beam in one direction and the other deflecting it in a perpendicular direction.

3,826,579

## MICROFILM NAVIGATION SYSTEM

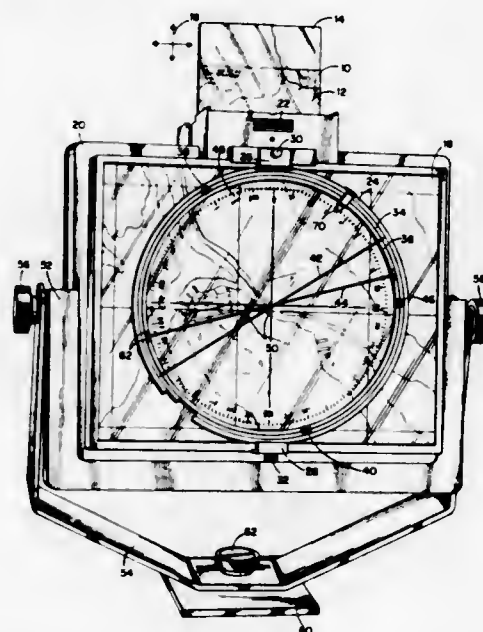
Herbert L. Schurgin, 26 Juniper St., Wenham, Mass. 01984

Filed Mar. 5, 1973, Ser. No. 338,331

Int. Cl. G03b 21/11

U.S. Cl. 356-247

7 Claims



A compact portable microfiche chart display system especially adapted for use in marine navigation and piloting. A

projection screen on which a chart is displayed has provided thereon a compass rose and one or more rotatable course indicators to enable plotting to be made directly in association with the displayed chart. The system can be oriented with the projected chart in a horizontal plane such that the course indicator can be employed to take pelorus sightings in direct relation to charted position.

3,826,580

## ADHESIVE DISPENSER

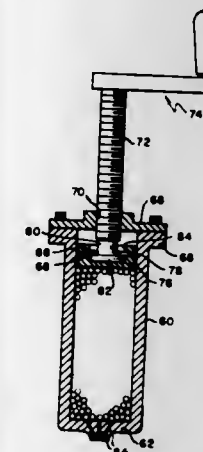
William H. Bohll, Catonsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 13, 1971, Ser. No. 180,086

Int. Cl. B43k 5/14

U.S. Cl. 401-132

4 Claims



A dispenser for applying an adhesive mixture, the constituents of which are contained within the dispenser in the form of small capsules, including a hollow cylindrical housing having a piston member slidably positioned therein and sealingly closing one end thereof. The other end of the housing includes a closure portion having a plurality of bores formed therein, the bores having a diameter of a size smaller than the capsules. Means for moving the piston member are provided which enable the piston member to crush the capsules, mix the adhesive constituent and force the mixture through the bores provided in the closure portion.

3,826,581

## FOUNTAIN LIQUID APPLICATOR

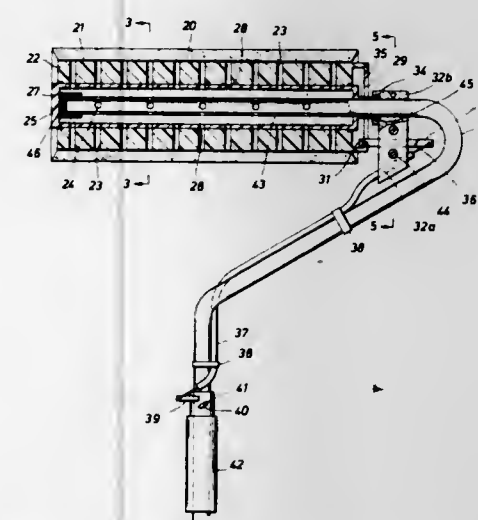
Bee Henderson, P.O. Box 353, Del Rio, Tex. 78840

Filed Aug. 10, 1972, Ser. No. 279,609

Int. Cl. B44d 1/00; A46b 11/00

U.S. Cl. 401-197

1 Claim



There is disclosed a pressured liquid applicator which feeds the liquid to the applying surface in an even flow and at the

control of the operator. In each embodiment there is a plurality of delivery tubes, and each tube has a positive open-close operation so that substantially the same force is applied to the liquid passing through each delivery tube, thus achieving the even distribution of the liquid. The actuation of the open-close operation is at the operator's hand, requiring a minimal disruption in the application of the liquid while the applicator surface is being resupplied. In several embodiments of the applicator, the pressure of the liquid being supplied is used to automatically return and maintain the applicator in the closed position unless the operator applies a positive action to open the applicator for resupply of the liquid.

3,826,582

## LOOSE LEAF BINDER FILE HANGER DEVICES

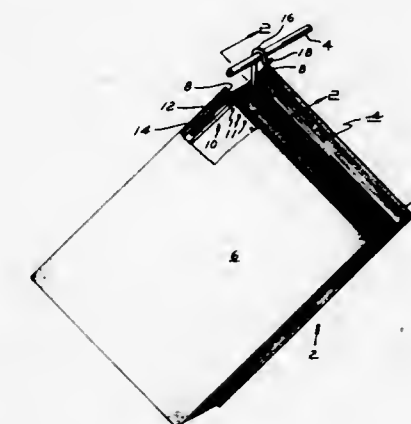
Edward Podosek, Wilbraham, Mass., assignor to National Blank Book Company, Inc., Holyoke, Mass.

Filed Aug. 2, 1972, Ser. No. 277,483

Int. Cl. B42f 3/00, 15/00

U.S. Cl. 402-4

1 Claim



A file suspension hook device for bound loose-leaf file assemblies having "Acco" fastener type compression strips with flexible post elements securing the sheets together at corner edges thereof, said hook device having an outer looped end for engaging a file suspension bar and an inner end for releasable mounting on the corner post element between sheets for rotation on the post to and from a nested substantially concealed position at the adjacent marginal edge portion of the sheet pack and a position of extension from said bound corner. A single hook may be used to hang a binder at its corner for free swinging movement from a hanger rod or bar, or hooks may be clipped at each end of the binding for hanging between horizontally spaced suspension file rods.

3,826,583

## LEAF SPRING PAVEMENT JOINT SEAL

Robert Lee Pare, 27 Chiswick Rd., Edgewood, R.I. 02903

Filed Nov. 9, 1972, Ser. No. 304,906

Int. Cl. E01c 11/08

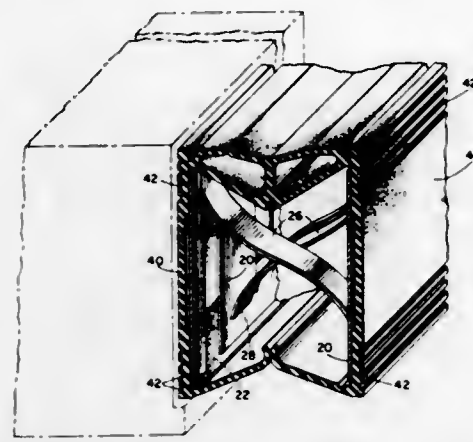
U.S. Cl. 404-67

23 Claims

An expansion joint for roadbed slabs. Two parallel and elongated plates are each provided with resilient struck-out tongues. The tongues of one plate engage opposite portions of the other plate, and vice versa. In an embodiment, the tongues



press against one another. Another embodiment has a central plate from which the tongues are struck out or to which the



tongues are attached. An elastomer sheath partially or completely surrounds the springs and plates to make sealing contact with edges of adjacent modular slabs.

3,826,584

# PROCESS AND APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

Max Mengerlinghausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

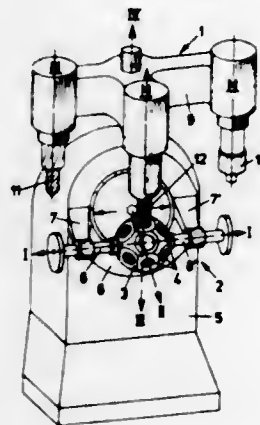
Filed Jan. 31, 1972, Ser. No. 222,111

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b 39/20

U.S. Cl. 408—35

2 Claims

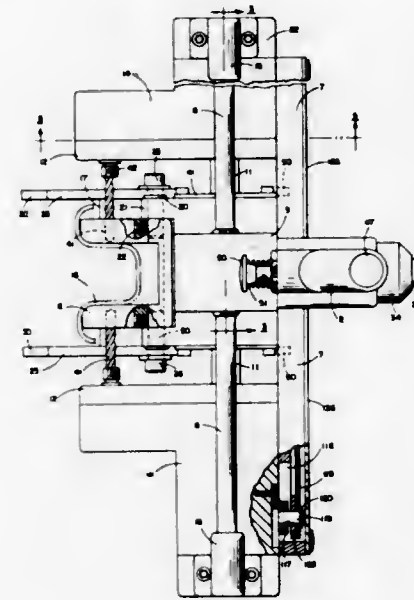


In producing spherical and polyhedral connectors for space frameworks from blanks a tapped through hole is first formed through the center of the blank. The blank is then engaged by its through hole in a clamping device that is rotatable along the axis of the through hole, the clamping device being mounted on an element that is rotatable on an axis at right angles to the axis of the through hole and which intersects the axis of the through hole at right angles. Tool means positioned adjacent the clamp to work on the blank engaged thereby operate along an axis disposed perpendicular to the first two mentioned axes, the tool means being operative to machine the blank at fixed spatial positions to which the blank is adjusted by movement about the first two axes, the tool means boring holes in the blank, machining flats around said holes at right angles to the holes and tapping the holes. Between these machining operations the tool means are moved relative to the clamping device and the connector blank about a further axis common to the tool means and the clamping device. The connector blank is then positioned to a new predetermined spatial position by the clamping device and the tool means produce another hole while the blank is maintained in the original clamping device by its through hole whereby a plurality of accurate spaced holes are produced in the connector blank.

3,826,585  
DUAL HEAD DRILL DEVICE  
Ray E. Horton, Hawthorne; Ernest S. Harris, Inglewood, and Granville P. Leffel, South San Gabriel, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.  
Filed Aug. 13, 1973, Ser. No. 387,897  
Int. Cl. B23b 45/04

U.S. Cl. 408—41

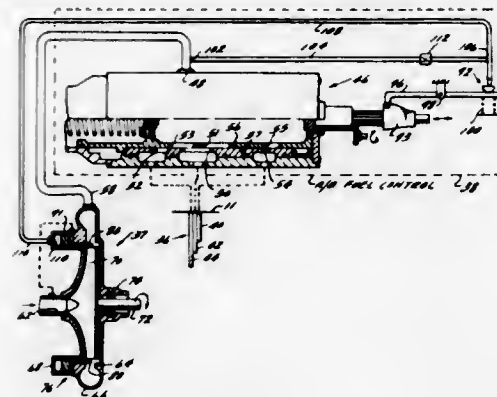
8 Claims



A hand-held air operated dual head drilling device adapted to automatically and simultaneously drill holes in a part from opposite sides thereof. An air operated mechanism is contained in the center section including a master cylinder, two opposed slave pistons in the cylinder and fixed to the drill motor heads, and dual triggers for operating the drill motors and slave pistons respectively.

3,826,586  
VARIABLE DIFFUSER CENTRIFUGAL PUMP SHUTTER CONTROL  
John C. Richards, Mason, Ohio, assignor to General Electric Company, Cincinnati, Ohio  
Filed Dec. 29, 1972, Ser. No. 319,219  
Int. Cl. F02c 9/04; F01b 25/00; F02c 9/08  
U.S. Cl. 415—42

14 Claims

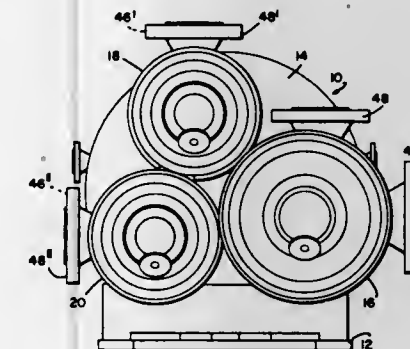


A fluid delivery system includes a shuttered diffuser, constant speed, centrifugal pump, a metering valve for distributing fluid delivered by the pump, and a control system for positioning the shutter in response to the operation of the metering valve. The shutter includes a dual area annular piston, one face of which is subjected to the outlet pressure of the pump, while the other face of which is subjected to a signal pressure which is controlled by means of a signal valve associated with the metering valve. The signal valve operates to open the

shutter at high flow rates and close the shutter at low flow rates, thereby reducing fluid temperature rise otherwise associated with a constant speed, centrifugal pump.

3,826,587  
CENTRIFUGAL GAS COMPRESSOR UNIT  
Hanns Hornschuch, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliff, N.J.  
Filed Apr. 10, 1973, Ser. No. 349,656  
Int. Cl. F01d 15/08, 13/00, 5/00  
U.S. Cl. 415—60

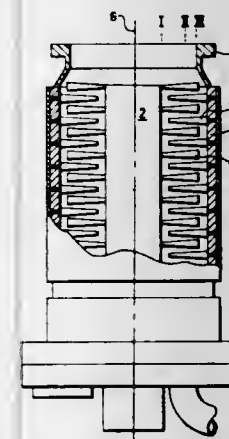
10 Claims



A multi-housing compressor having a plurality of gas compressing stages in each of parallel housings, the housings being integral with and extending perpendicularly from a gear housing. Rotor assemblies and associated diffusers are slidably replaceable from the respective housings, obviating any requirement to dismantle the gear housings. While the housings each receive gas, sequentially, for further compression, impellers and shafts in a plurality of the compressor housings are of identical weight, with the impellers thereof of identical axial length albeit of differing diameters.

3,826,588  
TURBOMOLECULAR VACUUM PUMP  
Rudiger Frank, Cologne, Germany, assignor to Leybold-Heraeus-Verwaltung GmbH, Koln-Bayental, Germany  
Filed June 19, 1973, Ser. No. 371,372  
Claims priority, application Germany, June 19, 1972, 2229724  
Int. Cl. F01d 1/36; F03b 5/00; F01d 1/02  
U.S. Cl. 415—90

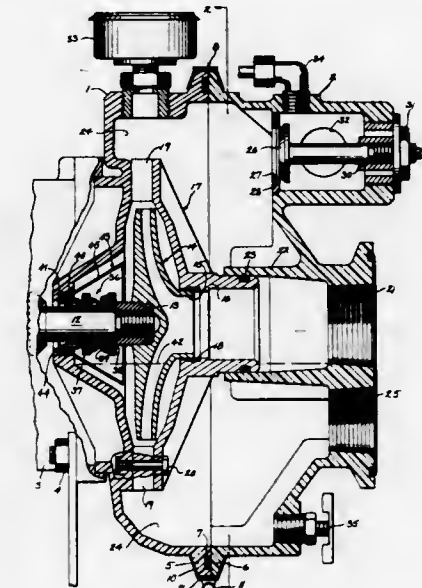
4 Claims



In a turbomolecular vacuum pump which has axially spaced pump stages each formed of a stator blade wheel and a cooperating rotor blade wheel, the pitch angle of the blades in at least one pump stage increases in a direction radially outwardly from the blade ends attached to the pump rotor or pump stator for maintaining the compression ratio in that pump stage at least approximately constant in the radial direction.

3,826,589  
PLASTIC PUMP CONSTRUCTION  
Raymond W. Frank, and William M. Kralovec, both of Delavan, Wis., assignors to Sta-Rite Industries, Inc., Delavan, Wis.  
Filed June 22, 1972, Ser. No. 265,347  
Int. Cl. F04d 29/10, 29/40  
U.S. Cl. 415—170 A

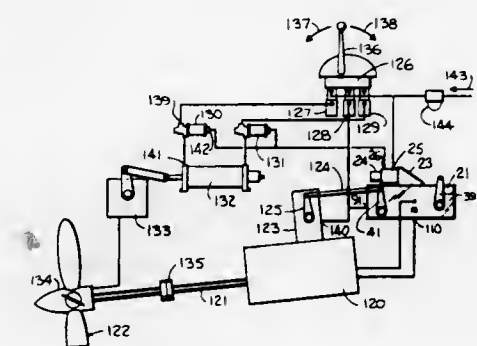
9 Claims



A pump construction having a housing composed of a pair of plastic housing sections. The abutting ends of the housing sections are provided with mating flanges which are joined together by a clamping ring to provide a continuous peripheral connection for the housing sections. To compensate for deflection in the plastic housing sections under operating pressure, a sliding axial connection is provided between the inlet of the diffuser of the pump and one of the housing sections. Heat is dissipated from the area of the drive shaft seal by means of a metallic shield having a base secured to one of the plastic housing sections, and the body of the shield extends outwardly within the pumping chamber in spaced relation to the seal and to the housing section.

3,826,590  
ENGINE LOAD CONTROL  
Jack R. Kobelt, 6110 Oak St., Vancouver 13, British Columbia, Canada  
Filed Aug. 28, 1972, Ser. No. 283,904  
Int. Cl. B63h 3/10; B64c 11/34  
U.S. Cl. 416—27

11 Claims

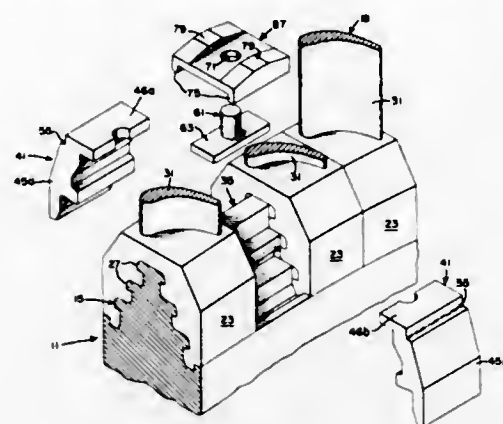


This disclosure pertains to an engine load control which combines mechanical and fluid control devices whereby continuously to monitor and modify an engine load in conformance with an engine speed governor setting and fuel demand. A valve actuating bridge is suspended in a frame by cam following means riding on separate speed and fuel cams.



At least one of the cams comprises adjustable segments whereby the response of the bridge may be matched with an engine speed-fuel relationship. The bridge actuates a two-stage spool-valve which permits sequentially a large flow of fluid followed by a relatively small flow of fluid into a linear actuator; this two-stage valving permits rapid response to sudden load changes followed by a slow stabilization or return to equilibrium without hunting. The linear actuator operates a pressure varying control valve in a pneumatic control circuit. The speed cam is actuated by a pneumatic positioning linear actuator and the fuel cam is actuated by the fuel rack of an engine speed control governor. An illustrated application of my invention is variation of blade pitch in a reversible controllable pitch propeller. Blade pitch is changed by a hydraulic servo-mechanism; the servo-mechanism is controlled by a pneumatic circuit having a single lever control, a pair of pressure regulating relay valves, and a double-acting self-centering positioning linear actuator. Blade pitch is operatively determined by the lesser of the pressures established by the single lever control and the pressure varying control valves actuated by the engine load control.

The split locking piece includes a pair of oppositely disposed legs which straddle the turbine wheel at the bucket admission slot and include radially outward flanges which join to form a



platform. A cap straddles the platform holding the two legs together while a radially outwardly extending pin secures the cap to the platform.

3,826,591

**CENTRIFUGAL MARINE PROPELLER**

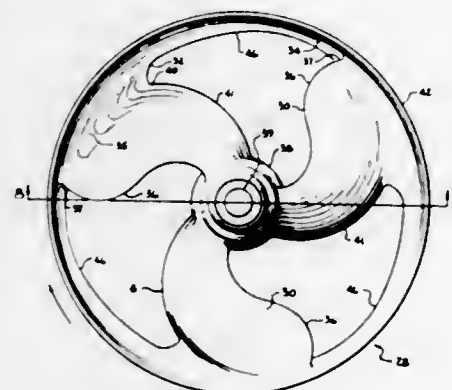
Ernest V. Wilson, Green Acres Trailer Ct., 1501 N. 6th St., Box 6, Grants Pass, Oreg. 97526

Continuation-in-part of Ser. No. 117,830, June 2, 1971. This application Dec. 22, 1971, Ser. No. 210,959

Int. Cl. B63h 1/16

U.S. Cl. 416—177

1 Claim



Marine propellers having helical blades are enshrouded in and integral with tapered shells which convert radially moving water to axially moving water, and also minimize turbulence.

3,826,592

**SPLIT LOCKING PIECE FOR CIRCUMFERENTIAL DOVETAIL ON TURBINE WHEEL**

Robert G. Raboin, Fitchburg, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 117,830, June 2, 1971. This application Dec. 22, 1971, Ser. No. 210,959

Int. Cl. F01d 5/32

U.S. Cl. 416—222

3 Claims

A turbine wheel includes a circumferential dovetail for retaining a plurality of circumferentially mounted turbine buckets. The circumferential dovetail includes a reduced dovetail portion or bucket admission slot for admitting the buckets onto the turbine wheel. A split locking piece is positioned in the bucket admission slot for closing the same after all the buckets have been mounted onto the turbine wheel.

**3,826,593  
PULSEFREE PERISTALTIC PUMP AND METHOD OF OPERATING SAME**

Wolf Von Casimir, Almeidaeweg 33, D813 Starnberg, Germany

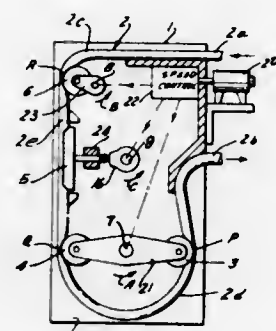
Filed May 11, 1973, Ser. No. 359,528

Claims priority, application Germany, May 12, 1972, 2223354

Int. Cl. F04b 43/08, 43/12, 45/06

U.S. Cl. 417—53

10 Claims



In a peristaltic pump in which at least two impeller rollers move codirectionally along spaced-apart portions of a flexible tube with intermittent blocking of the flow at both portions simultaneously, the part of the tube upstream of the flow-blocking leading roller is placed under a pressure equaling that prevailing downstream of that roller just before the latter is lifted off the tube wall to give passage to a limited volume of the conveyed fluid. The equalizing pressure may be exerted by a plunger or another codirectionally moving roller, or by intermittently driving a third roller upstream of the trailing roller at an increased speed with reference to the flow-blocking leading roller just before the intervention of the trailing roller.

3,826,594

**GAS COMPRESSOR**

Hanns Hornschuch, and Leroy M. Krouse, both of Easton, Pa., assignors to Ingersoll-Rand Company, New York, N.Y.

Continuation of Ser. No. 159,130, July 2, 1971, abandoned.

This application Oct. 17, 1973, Ser. No. 407,252

Int. Cl. F04b 3/00; F01d 13/00

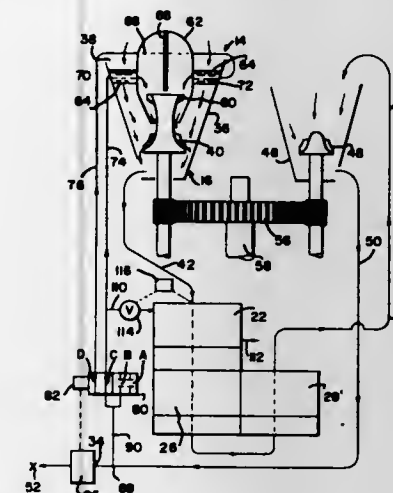
U.S. Cl. 417—245

24 Claims

The machine has a primary gas inlet for the first of two motor-powered compressing stages with two, separate, secondary gas inlets confined within walls of the primary inlet housing. The first compressing stage has a compressor wheel with a turbine wheel integral therewith, the turbine wheel having

compressed gas addressed thereto, selectively, either not at all, or by either one or both of the secondary inlets from a compressed gas discharge line for energy recovery to help drive the compressor wheel while also controlling surge and

mally or often has seven internally extending teeth and holes are normally provided in the seven teeth to accommodate seven screw bolts used for clamping together the casing parts. In the machine hereof the gerotor ring member is clamped between two side disks which in turn are disposed in counter-



maintaining compressor operation at an optimum design level. The machine further includes means for preventing an icing-up of the first compressing stage even under below-freezing environmental conditions.

3,826,595

**ELECTRICALLY DRIVEN PUMP**

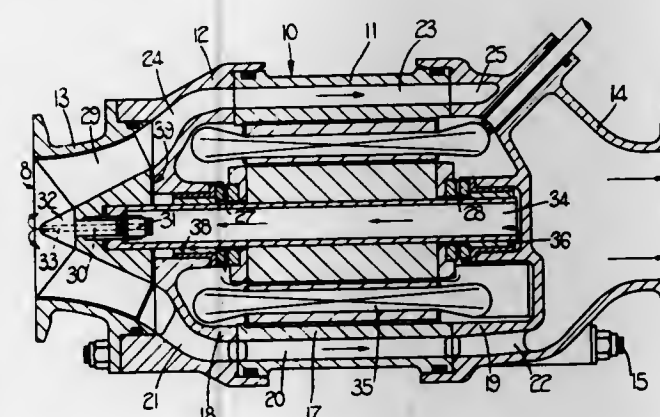
Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 7, 1973, Ser. No. 338,959

Int. Cl. F04b 17/00

U.S. Cl. 417—370

4 Claims



An electrically driven pump has a housing which contains the stator and rotor of an electric induction motor. A portion of the liquid urged through the pump by an impeller driven by the rotor is passed through the bearings of the pump and across the stator windings before returning to the pump inlet.

3,826,596

**ROTARY PISTON MACHINE WITH SPLINED INTERNAL SHAFT**

Gunnar Lyshoj Hansen, Nordborg, and Rolf Christensen, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 21, 1973, Ser. No. 343,444

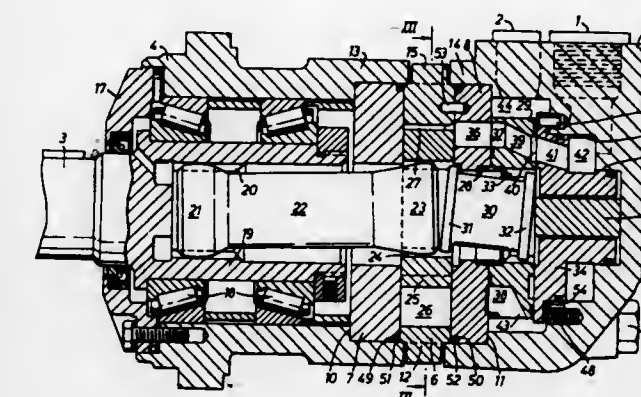
Claims priority, application Germany, Apr. 26, 1972, 2220391

Int. Cl. F04c 17/06

U.S. Cl. 418—61 B

5 Claims

The invention relates to a rotary piston type machine of the type which utilizes a gerotor mechanism for the expandable chambers. In the prior art the ring member of the gerotor nor-



bores of concentric casing collar portions which collar portions are in axially spaced relation to each other when in their clamped positions. Only four screw bolts are utilized for clamping together the casing parts and these bolts are positioned radially externally of the gerotor ring member and the two side disks thereof.

3,826,597

**COMPRESSOR WITH CARTRIDGE ASSEMBLY**

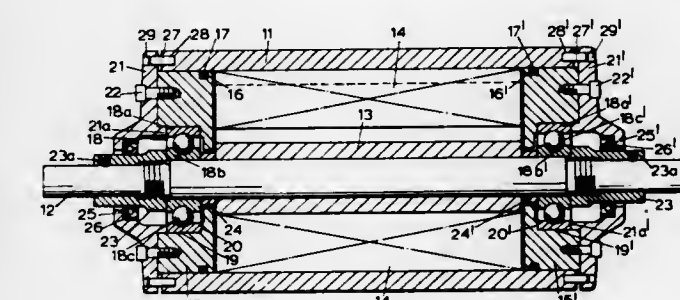
Lothar Peter Schmitz, Pudsey, near Leeds, England, assignor to The Drum Engineering Co. Limited, Dudley Hill, Bradford, England

Filed Oct. 19, 1972, Ser. No. 299,064

Int. Cl. F01c 19/08; F04c 15/00, 27/00

U.S. Cl. 418—131

8 Claims



The invention relates to a vane type compressor comprising a tubular body having inlet and outlet ports, end plates closing the ends of said tubular body, a rotor supported for rotation in said tubular body and sliding vanes supported by said rotor, one of said end plates being axially retained with said rotor and axially displaceable relative to said tubular body.

3,826,598

**ROTATING GAS JET APPARATUS FOR ATOMIZATION OF METAL STREAM**

Albert R. Kaufmann, Lexington, Mass., assignor to Nuclear Metals, Inc., Concord, Mass.

Division of Ser. No. 202,351, Nov. 26, 1971, Pat. No.

3,725,517. This application Jan. 15, 1973, Ser. No. 323,347

Int. Cl. B22d 23/08

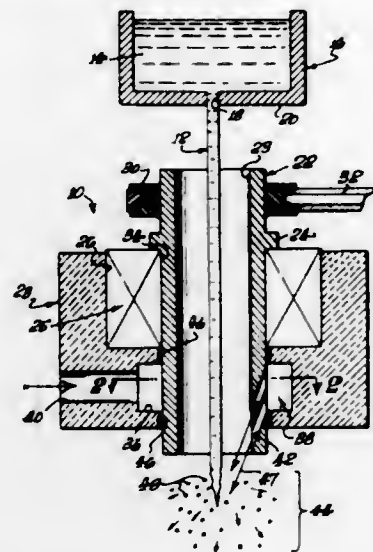
U.S. Cl. 425—7

5 Claims

This method comprises striking a stream of liquid metal with a jet of gas which is rotated about the liquid metal stream so that it strikes the latter at an angle of between about 5° and about 90° with respect to the flow axis of the liquid stream to break up the liquid metal into small drops which solidify as a powder. The width of the gas jet is preferably less than that of



the liquid metal stream. The rotational velocity of the gas jet about the liquid metal stream is sufficient to circle the liquid stream at least once before the latter moves out of the gas impingement zone. The apparatus employed comprises a vertically-aligned tube which is rotatably mounted in a stationary housing which, together, define an annular plenum chamber located concentrically about the tube. The wall of the rotatable tube defines an aperture which is angled between about 5°



and about 90° with respect to the axis of the tube so that a stream of gas flowing therethrough is centered on the vertical axis of the rotatable tube along which liquid metal is gravity flowed from a pour cup positioned above the rotatable tube. As the latter is rotated, a gas is flowed into the plenum chamber and through the angled tube aperture to strike the liquid metal stream flowing downwardly through the tube. The resulting fine metal particles are collected after solidification in a chamber placed below the rotatable tube.

3,826,599

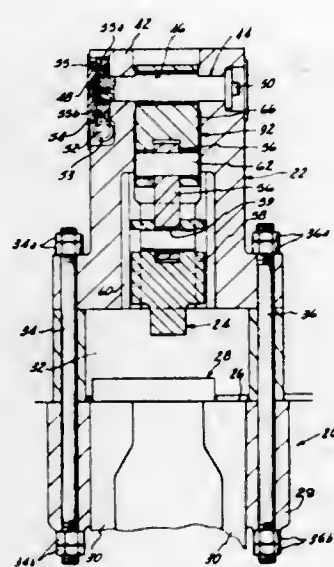
#### ADJUSTING MECHANISM AND PROCESS FOR POWDER COMPACTING PRESS

Raymond P. DeSantis, Royal Oak, and George D. DeTroyer, Grosse Ile, both of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed June 1, 1972, Ser. No. 258,720  
Int. Cl. B30b 11/02, 11/14, 11/22

U.S. Cl. 425-78

9 Claims



A press having both upper and lower punch operations with controlled action stroke for both upper and lower punches slidable in opposed directions with relationship to a multiple cavity die plate. The upper ram and punches are operated in

the downward stroke by a toggle and rocker arm mechanism which incorporates a readily adjustable eccentric means for controlling the length of upper ram stroke. The mechanism further includes a combination of first and second class levers which are cam driven in a cyclical press operation.

3,826,600

#### APPARATUS FOR THE PRODUCTION OF GRAMOPHONE RECORDS WITH LABELS ATTACHED THERETO

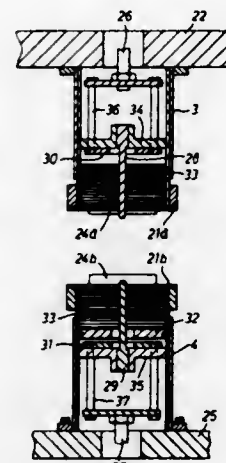
Henry James Hutton, Pinner, and Alan Thompson, Uxbridge, both of England, assignors to EMI Limited, Hayes, England  
Filed June 30, 1972, Ser. No. 268,169

Claims priority, application Great Britain, July 5, 1971, 31316/71

Int. Cl. B29f 1/10

U.S. Cl. 425-123

5 Claims



Apparatus of, and a method for, the production of gramophone records is described. Mouldable material is extruded, to form a shot, into a shot forming cavity which is at least partially closed during formation of the shot by a label magazine. In a preferred embodiment, the shot is formed in a cavity which is partially bounded by each of two label magazines.

3,826,601

#### APPARATUS FOR PRESSING CHIPBOARD PANELS

Wilhelm Hutter, Krefeld, Germany, assignor to Becker & van Hullen Niederrheinische Maschinenfabrik, Krefeld, Germany

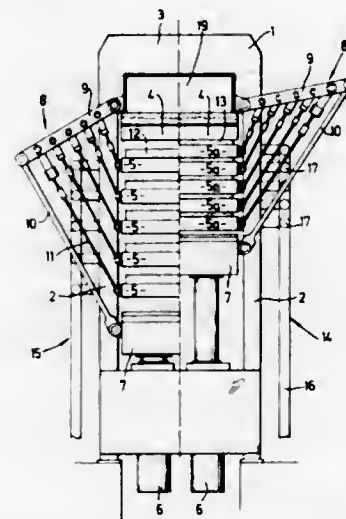
Filed June 7, 1972, Ser. No. 260,671

Claims priority, application Germany, June 8, 1971, 2128427

Int. Cl. B29j 5/00; B29c 3/00

U.S. Cl. 425-338

5 Claims



A multi-deck heating press having vertical frame members at spaced points along its length, and conduits carrying liquid

heating medium for the individual press decks, which pass close alongside some of these frame members, causing them to heat up, while other frame members remain cool. To eliminate differential thermal expansion due to some vertical frame members being heated while others remain cool, the said frame members have passageways provided therein, and fluid medium is circulated through these passageways. In one embodiment, heating medium is circulated through the cold frame members; in another coolant is circulated through the heated frame members; and in a third form, heating medium is circulated through some frame members and coolant through others. All vertical frame members of the press are brought to substantially the same temperature by the fluid medium, thereby eliminating thermal distortion in the press.

3,826,602

#### FLEXIBLE ADAPTER FOR CONVEYING MATERIAL FROM EXTRUDER TO DIE

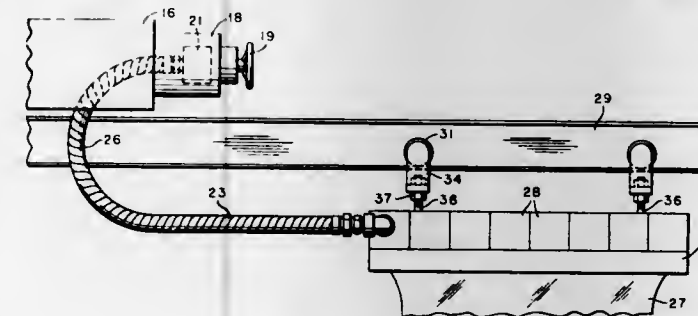
Ronald L. Shaffer, Downingtown, and Frederic P. Stambaugh, West Chester, both of Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed Sept. 29, 1972, Ser. No. 293,440

Int. Cl. B29f 3/08

U.S. Cl. 425-378

8 Claims



A flexible conduit secured to the outlet of an extruder, the opposite end of said conduit being fastened to a die. Heating means encompass the conduit to maintain the material therein in a flowable condition. The flexible conduit allows relative movement between the die and the extruder.

3,826,603

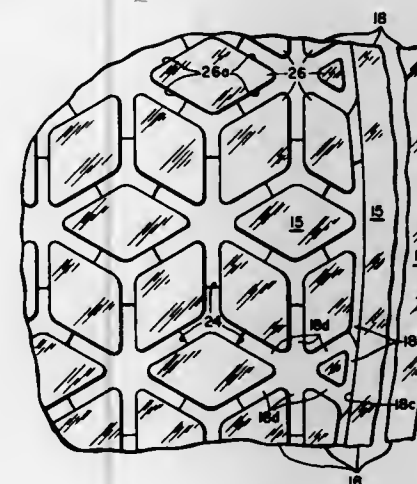
#### EXTRUSION DIE

Robert F. Wiley, 3 Oakwood Dr., Corning, N.Y. 14830  
Division of Ser. No. 280,508, Aug. 14, 1972. This application  
Nov. 30, 1973, Ser. No. 420,660

Int. Cl. B29d 7/22

U.S. Cl. 425-461

4 Claims



An extrusion die for forming ceramic material into core members or bodies for catalytic converters. A multiplicity of relatively minute passages are selectively etched through a plurality of similar relatively thin and flat plates or disks of a photosensitive glass or glass-ceramic material, the etched plates are stacked to form a laminated structure and are then fused into a substantially homogeneous or unitary die. The

bottom plate of the laminated stack embodies a multiplicity of relatively minute and closely spaced apart columns each having a cross-sectional planar configuration which is substantially that of a rhombus with acute oblique angles of generally or on the order of about sixty degrees and with the relatively narrow passages between the columns extending continuously or coextensively but colinearly or in straight lines only a minimum distance in the direction across the plane of the bottom plate. The passages are etched into the bottom plate with only a very thin layer of the material of the plate left remaining adjacent to and beneath the bottom surface thereof for temporary support of the columns. The thin support layer is ground off of the bottom of the bottom plate to expose the passages and columns following the fusing of the plurality of plates into the homogeneous die, the columns then being supported by their having been previously fused to parts of the plate next above. The rhombus-shaped columns in the die provide for extrusion of cellular ceramic core members or bodies each having a multitude of passages extending longitudinally or axially therethrough parallel with each other and of minimum planar cross-sectional area with exposed wall surfaces each of a maximum areal extent for deposition of a catalytic agent thereon, such walls extending continuously but non-linearly in short straight-line directions normal to the longitudinal axes of the members or bodies so that some of the thermal expansion of the core members in such normal directions and upon subsequent heating of each member or body is contained or taken up within the member or body itself.

3,826,604

#### METHOD AND APPARATUS FOR CHEMICAL WASTE DISPOSAL

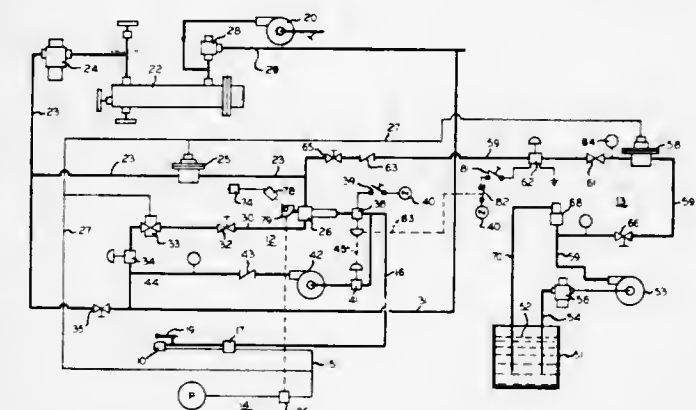
Roy M. Rulseh, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Aug. 23, 1972, Ser. No. 283,085

Int. Cl. F23n 1/02

U.S. Cl. 431-12

10 Claims



A method and apparatus for disposing of flammable fluids by burning and including means for selectively injecting the fluids into the primary fuel supply of burner means at a controlled rate of injection.

3,826,605

#### DIRECT BURNER IGNITION SYSTEM

Melvin E. Hantack, St. Louis, Mo., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 16, 1972, Ser. No. 281,067

Int. Cl. F23n 5/00

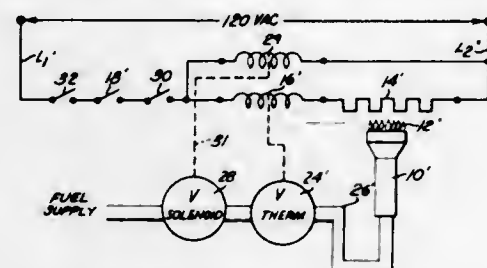
U.S. Cl. 431-66

18 Claims

A fuel igniter element having a resistance value which varies inversely as a function of element temperature is mounted proximate to a burner outlet and is electrically series connected to a substantially constant resistance heater element. The heating element is operable to actuate a thermal valve at a predetermined current heating value to provide fuel to the burner. The series circuit is switchably connected to an electrical power source which when applied heats the igniter ele-



ment to the fuel ignition temperature of the fuel used. At this temperature, the lowered resistance of the igniter element allows the current flow to increase to the predetermined current



value thereby actuating the thermal valve. Upon actuation, the thermal valve allows fuel to flow from the burner which is then ignited by the igniter element.

### 3,826,606 SEGMENTED CANDLE

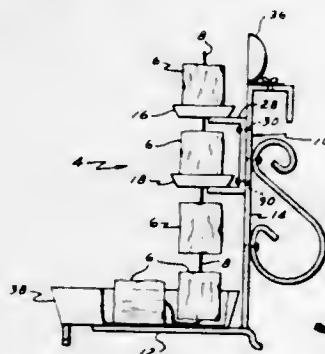
Burton G. Hicks, 55 Ridgcrest Cir., Westfield, Mass. 01085

Filed Aug. 7, 1973, Ser. No. 386,300

Int. Cl. F23d 3/16

U.S. Cl. 431-295

3 Claims



A candle having a plurality of wax segments disposed in spaced relation along a continuous wick with a candle holder

having at least two vertically spaced support platforms for holding the upper segments of the candle in fixed relationship.

### 3,826,607

#### COMBUSTION CHAMBER FOR DRYER

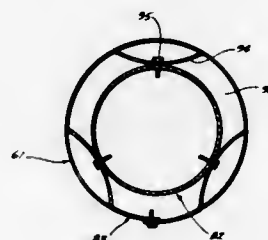
L. Dean Kuhn, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed July 26, 1973, Ser. No. 382,866

Int. Cl. F23r 1/10; F26b 11/02

U.S. Cl. 432-105

7 Claims



A clothes dryer includes a fuel combustion chamber comprising a pair of telescoped housing portions defining a generally annular secondary air intake intermediate the opposite ends of the combustion chamber formed by the housing portions. The annular secondary air intake formed by the telescoped housing portions permits more complete combustion of the fuel while achieving a decreased surface temperature of the combustion chamber wall.

## CHEMICAL

### 3,826,608

#### PROCESS AND COMPOSITION FOR DYEING OF HUMAN HAIR

Erik Wiskott, Bottmingen, Basel-Land, Switzerland, assignor to Therachemie Chemisch Therapeutische G.m.b.H., Dusseldorf, Germany

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,305

Claims priority, application Germany, Oct. 2, 1969,

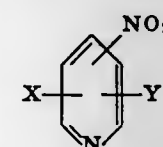
P 19 49 750.8

Int. Cl. A61k 7/12

U.S. Cl. 8-10.1

10 Claims

A process for the dyeing of living human hair consisting essentially of treating human hair at a temperature of from about 10° C. to 40° C. with an aqueous solution containing a nitropyridine having the formula



wherein X and Y are amino or substituted amino groups, and aqueous dyestuff compositions containing said nitropyridines.

### 3,826,609

#### METHOD OF DYEING SYNTHETIC FIBERS AND BLENDS

Shiro Shimauchi, Norihiro Minemura, Takeshi Matsui, and Kenji Ito, Osaka, and Takeo Shima, Shoji Kawase, and Masataka Oshima, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Original application Mar. 4, 1969, Ser. No. 804,294, now Patent No. 3,666,403. Divided and this

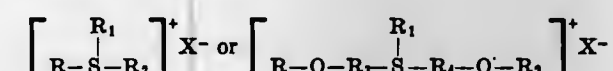
application May 16, 1972, Ser. No. 253,767

Int. Cl. D06p 3/82, 1/76

U.S. Cl. 8-21 R

5 Claims

A method of dyeing a textile fiber selected from the group consisting of a modified polyester, polyvinyl chloride, polyacrylonitrile and cellulose acetate fibers, which comprises dyeing the fibers with an anionic dyestuff in the presence of at least one compound selected from sulfonium salts of the formula



wherein R, R<sub>1</sub> and R<sub>2</sub> are each selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl and aralkyl groups of 1-18 carbon atoms, R<sub>3</sub> and R<sub>4</sub> are each alkyl groups of 1-5 carbon atoms and X is selected from the group consisting of halogens, alkoxy sulfate and OH group.

### 3,826,610

#### PULVERULENT MIXTURE FOR TANNING RAW ANIMAL HIDES AND LEATHER

Ernst Komarek, Leverkusen, and Heinrich Spahrkas, Bergisch-Neunkirchen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 15, 1972, Ser. No. 263,076

Claims priority, application Germany, July 8, 1971,

P 21 34 070.5

Int. Cl. C14c 3/06, 9/02

U.S. Cl. 8-94.26

5 Claims

A pulverulent mixture for tanning hides and leather comprising (a) a chrome tanning agent, (b) a product of the chlorination of paraffin hydrocarbons of about 8-24 carbon atoms and having a chlorine content of about 20-50% by weight, and (c) an adduct of about 20 to 70 moles of ethylene oxide to one mole of an alkylphenol, arylalkyl-

phenyl or fatty alcohol. The mixture disperses readily in water to form stable tanning emulsions which yield leathers characterized by softness, smoothness and superior grain characteristics.

### 3,826,611

#### CONTINUOUS TREATMENT OF A POLYACRYLONITRILE AT ELEVATED TEMPERATURES ON A POROUS ROLL

Dagobert E. Stuetz, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Original application Oct. 10, 1969, Ser. No. 865,334, now

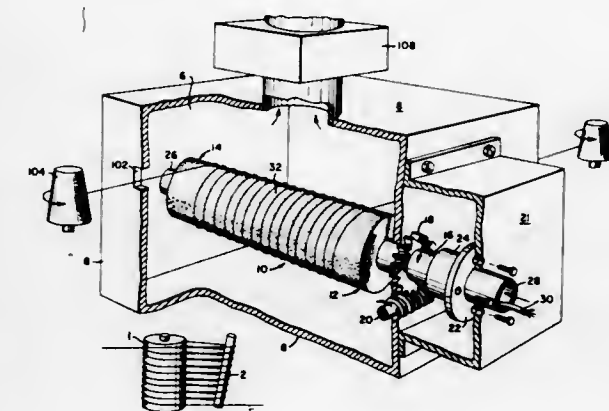
Patent No. 3,632,092. Divided and this application Aug.

4, 1971, Ser. No. 169,044

Int. Cl. C01b 31/07; D06m 3/22

U.S. Cl. 8-115.5

5 Claims



An improved continuous process and apparatus are provided for the uniform stabilization of a strand of polymeric fibrous material which is capable of undergoing thermal stabilization. The strand is continuously wound in a plurality of turns and continuously unwound from at least one rotating roll having a porous surface while a gas at an elevated temperature is expelled outwardly through the surface of the porous roll and penetrates the fibrous configuration of the strand wound upon the roll. In a preferred apparatus in accordance with the present invention the porous roll situated within a heat treatment chamber is internally provided with a plurality of individually adjustable heating elements along its length. The resulting stabilized material retains its original fibrous configuration essentially intact, exhibits enhanced thermal stability, and is capable of undergoing carbonization. In a particularly preferred embodiment of the invention the precursor is an acrylonitrile homopolymer and air having a temperature of at least about 260° C. is expelled through the surface of the rotating porous roll.

### 3,826,612

#### AUTOClave

Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404

Application Aug. 19, 1971, Ser. No. 173,237, now Patent

No. 3,717,434, which is a continuation of abandoned

application Ser. No. 813,537, Apr. 4, 1969. Divided

and this application July 10, 1972, Ser. No. 270,306

Int. Cl. A61l 3/00

U.S. Cl. 21-94

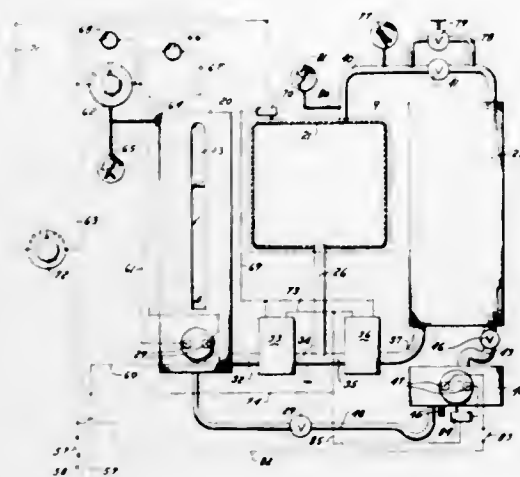
2 Claims

An autoclave, particularly adapted for use as a sterilizer, and in which the functions of steam generation and sterilization are performed in separate steam generating and autoclaving chambers, with provision for controlled delivery of steam from the generating chamber to the autoclaving chamber. A feed water system is also provided



incorporating a receptacle for receiving sequential batches of feed water and for heating such batches to a tempera-

photometric detector. The results are indicated and/or recorded automatically, accurately and rapidly. The ap-



ture providing a pressure adequate to deliver the batch into the steam generating chamber.

3,826,613

### DETECTION AND TITRATION OF VIRUSES AND ANTIBODIES USING LATEX

Gokaldas C. Parikh and Thomas C. Sorensen, Brookings, S. Dak., assignors to the United States of America as represented by the Secretary of the Navy  
No Drawing. Filed Mar. 6, 1973, Ser. No. 338,495  
Int. Cl. G01n 31/00

U.S. Cl. 23-230 B

10 Claims

A method of counting viruses and antibodies, employing uniform diameter, latex particles in a suspension to which an unknown amount of virus particles or antibody molecules is added. The adsorption of the virus particles or antibody molecules on the latex causes agglutination of the latter. The types and amount of agglutination can be determined by using a Coulter Counter. From the sizes and the amounts of the specific aggregates formed, the type and quantity of virus particles or antibody molecules can be determined by comparison with data for known samples. The time for comparison may be reduced by precoating the latex particles with viruses or antibodies before the unknown antibody or virus containing sample is added. Tagging the unknown virus particles with a fluorescently tagged enzyme will also reduce comparison time. Alternatively, the fluorescence of the tagged virus particles can be employed to determine the number of virus particles in an unknown sample.

3,826,614

### TOTAL MERCURY MONITOR

Italo A. Capuano, Orange, Conn., assignor to Ionics, Incorporated, Watertown, Mass.

Continuation-in-part of applications Ser. No. 75,927, Sept. 28, 1970, now Patent No. 3,713,776, and Ser. No. 115,175, Feb. 16, 1971, now Patent No. 3,704,097. This application May 17, 1972, Ser. No. 254,251  
Int. Cl. G01n 21/26, 31/10, 33/18

U.S. Cl. 23-230 R

14 Claims

Apparatus and method are provided for analyzing liquid streams for their content of mercury including elemental mercury, ionic mercury and undissociated mercury compounds such as phenyl mercury and methyl mercury. The sample is automatically measured and first treated with an acidic metal salt reagent containing an oxidant for oxidizing elementary mercury in the sample to ionic mercury and then with hydrazine to form a suitable catalytic colloid. Elementary mercury is then formed by the action of hydrazine and the catalytic colloid on the ionic and combined mercury and is transferred to a

paratus and method are especially useful in the control of mercury contamination in the environment and also for monitoring chemical process streams.

3,826,615

### FLUID SYSTEM FOR INCLUSION IN A TOTAL AUTOMATED FLUID SYSTEM OF A SAMPLE ANALYZER

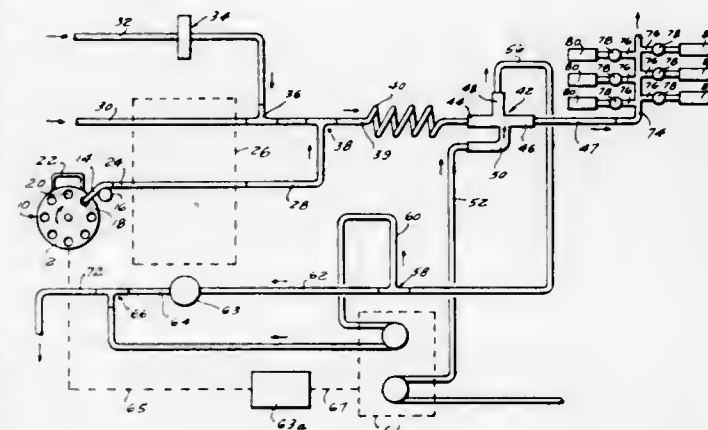
William J. Smythe, Tarrytown, and S. Lawrence Bellinger, Lake Luzerne, N.Y., Herman G. Diebler, North Haledon, N.J., and Robert Dannewitz, Yonkers, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 9, 1972, Ser. No. 261,481

Int. Cl. G01n 1/18, 33/16

U.S. Cl. 23-230 R

18 Claims



A fluid system for inclusion in an automated fluid system for analyzing a series of liquid samples flowing serially, the first-mentioned system serving to dilute each sample for subsequent division into a large number of parts. Each diluted part is intended for flow to one of a large number of different subcombinations of the total system. In each of the subcombinations the diluted sample part may receive a special treatment, such as mixing with a particular reagent or reagents under controlled temperature conditions for example, prior to analysis of that sample portion as by photometry for example. Each diluted

sample part may be subjected to a different test or analysis. There is involved in the first-mentioned system the same and equal dilution treatment of each sample as the series. Also involved in the first-mentioned system is the effective inhibition of cross contamination of samples from the point of introduction of the samples into the dilution system to the point, after division of the samples as aforesaid, where the samples flow into the respective ones of the aforesaid analysis subcombinations.

3,826,616

### METHOD OF DIAGNOSING PREGNANCY IN MILK-PRODUCING ANIMALS BY PROGESTAGEN ASSAY

John Archibald Laing, Lower Meadow, Ayot St. Lawrence, Welwyn, England

No Drawing. Filed July 18, 1972, Ser. No. 272,947

Claims priority, application Great Britain, July 22, 1971, 34,519/71

Int. Cl. G01n 33/04, 33/16

U.S. Cl. 23-230 B

10 Claims

Method of diagnosing the condition of pregnancy in milk-producing animals wherein the milk of the inseminated animal is subjected to progesterone assay to detect an increase in progesterone concentration therein.

3,826,617

### METHOD FOR DETERMINING SUGAR/STARCH CONTENTS IN AQUEOUS SOLUTIONS

Roy M. Chatters, Pullman, Wash., James E. Kimbrell, Monroeville, Pa., and Shelby D. Slater, Pullman, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed Oct. 31, 1972, Ser. No. 302,452  
Int. Cl. G01n 23/00, 33/18

U.S. Cl. 23-230 M

6 Claims

A method for determining simple reducing sugar concentration in aqueous solutions comprises rendering the solution strongly basic, adding a solution consisting of potassium iodide and  $^{203}\text{HgI}_2$  to the basic solution, heating the resulting solution to an elevated temperature near boiling for a period of time to reduce the radio-mercury to elemental mercury, sorbing said elemental mercury on diatomaceous earth, separating the diatomaceous earth-mercury solids and thereafter analyzing the retained solids for  $^{203}\text{Hg}$ . In an alternative embodiment, nonradioactive mercury (as mercury iodide) may be used with neutron activation to form a radio-mercury isotope, such as  $^{203}\text{Hg}$ , which can then be analyzed. Starch concentration may also be determined by first converting any starch present to a simple reducing sugar by enzymatic hydrolysis and the thus formed sugar concentration determined by this method.

3,826,618

### AUTOMATIC MERCURY MONITOR

Italo A. Capuano, Orange, Conn., assignor to Ionics, Incorporated, Watertown, Mass.

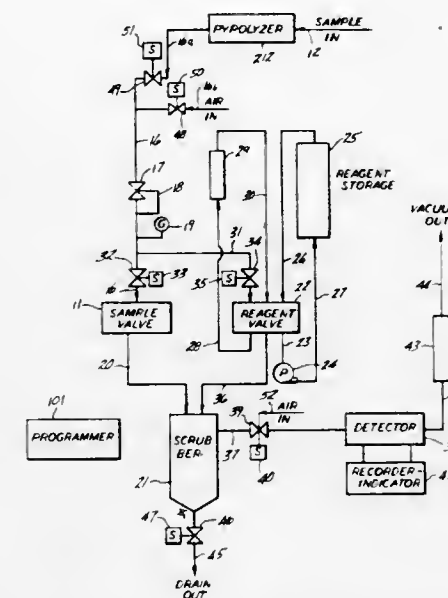
Continuation-in-part of application Ser. No. 75,927, Sept. 28, 1970, now Patent No. 3,713,776, dated Jan. 30, 1973. This application July 10, 1972, Ser. No. 269,995  
Int. Cl. G01n 21/24, 31/06

U.S. Cl. 23-232 R

10 Claims

Apparatus and method are provided for analyzing gas streams for their content of ionic, elemental and organic mercury even in the presence of other contaminants, including elemental or available chlorine or organic matter. The sample is first pyrolyzed and then automatically measured and treated with aqueous reducing reagent. The resulting elemental mercury is transferred to a photometric detector and the results are indicated and/or re-

corded automatically, accurately and rapidly. The apparatus and method are especially useful in the control of



3,826,619

### TEST APPARATUS FOR DIRECT RADIOIMMUNOASSAY FOR ANTIGENS AND THEIR ANTIBODIES

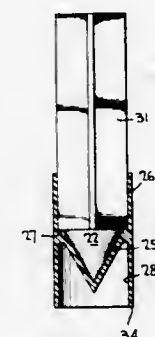
Nicholas George Bratu, Jr., Evanston, and James Frederick Jeffries, Jr., Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1971, Ser. No. 210,511

Int. Cl. G01n 33/16

U.S. Cl. 23-253 R

14 Claims



Test apparatus for direct radioimmunoassay for antigens or their antibodies are either coated test tubes or coated inserts which are designed to either fit snugly into the base of a test tube or allow space for free mixing of the test solution.

3,826,620

### NITRITE CONCENTRATION CONTROL DEVICE FOR WATER BASE METALWORKING FLUIDS

Charles A. Simpson, Aston, Pa., and Robert H. Davis, Pitman, and Michael Sedlak, Woodbury, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,632

Int. Cl. G01n 31/22

U.S. Cl. 23-253 TP

10 Claims

A device is provided for determining nitrite concentration of liquids by saturating a cellulosic material impregnated with potassium iodide and starch with a solution of a non-volatile acid having a pKa of from about 2 to about 5 and a non-volatile reductant, and drying the cellulosic material thus treated.



3,826,621

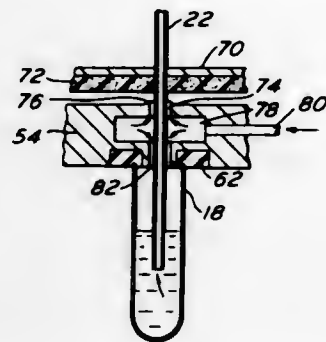
**APPARATUS FOR TRANSFERRING A LIQUID FROM ONE CONTAINER TO ANOTHER**

Edgar G. Johnson, Jr., Huntsville, and James J. Cornellson, Gurley, Ala., assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed May 1, 1972, Ser. No. 248,919  
Int. Cl. G01n 1/14

U.S. Cl. 23—259

21 Claims



Liquid in selected quantities is transferred through a conduit from a container to the operative section of an analytical instrument by applying gas pressure to the surface of the liquid for a predetermined amount of time. The chamber for coupling the gas pressure to the surface of a liquid is provided with a gas bypass to prevent spraying of the liquid. The gas pressure is directed onto the surface of the conduit to remove any liquid that remains on the conduit after a selected quantity has been transferred to the operative part of the analytical instrument.

3,826,622

**CONTAINERS FOR USE IN AN AUTOMATED CENTRIFUGE**

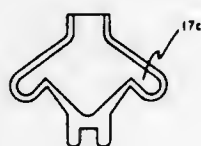
Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corporation, Santa Ana, Calif.

Continuation-in-part of application Ser. No. 845,992, July 30, 1969, now Patent No. 3,722,790. This application May 15, 1972, Ser. No. 253,167

Int. Cl. B011 3/00; B04b 7/00

U.S. Cl. 23—259

11 Claims



System for the sequential treatment of liquid chemical samples comprising the steps of depositing the samples in a series of top-like containers having a peripheral side chamber. The containers are placed on a belt and move past a centrifugal field wherein the containers are rotated. The containers are then removed at a terminal zone and the heavier sample component remains in the side chamber as the lighter components flow to the bottom of the container.

3,826,623

**EXOTHERMIC GAS GENERATOR**

Mamuel M. Delgado, La Mirada, Calif. (% John E. Wagner, attorney at law, 1041 E. Green St., Suite 201, Pasadena, Calif. 91106)

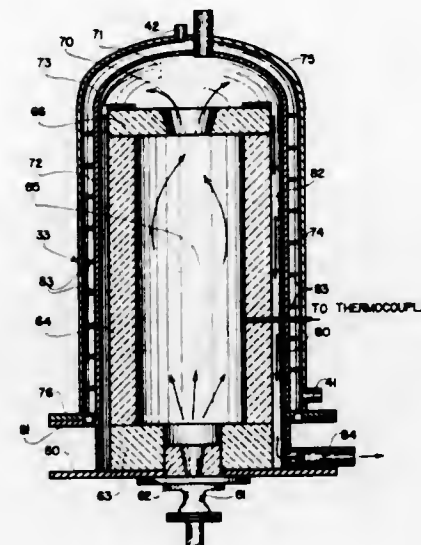
Filed Feb. 7, 1972, Ser. No. 224,058  
Int. Cl. B011 7/00; C10b 1/04

U.S. Cl. 23—251

14 Claims

A vertically oriented reaction chamber for the production of gaseous products from the combination of air and

fuel. The reaction chamber is contained within an outer shell with a flow path of incoming fuel and air at the bottom to the reaction chamber and a restricted outlet at the top of the reaction chamber communicating with



a domed space within the outer shell. A reentrant gas flow path is defined by the reaction chamber and the shell. Temperature and pressure responsive valves control either the discharge or collection of gaseous products.

3,826,624

**FLUID CATALYTIC CRACKING**

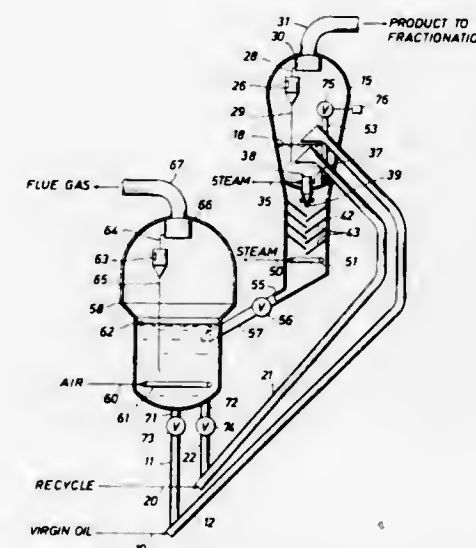
Henry B. Jones and Dorrance P. Bunn, Jr., Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed July 31, 1972, Ser. No. 276,619

Int. Cl. B011 9/20; C10g 35/14

U.S. Cl. 23—288 S

6 Claims



A fluid catalytic cracking unit wherein the reaction zone comprises one or more risers and a reaction vessel; wherein catalyst and oil vapors continually discharge from the risers into the reaction vessel; and wherein the reaction vessel is in communication with a stripping zone such that spent catalyst flows into the stripping zone. In operation, a selected inventory of catalyst is maintained in a fluidized state in the reaction vessel. Such selected catalyst inventory in the reactor vessel is maintained by means responsive to the pressure differential between the stripping zone and the reactor vessel. Means are also provided for controlling such pressure differential and thereby adjusting catalyst inventory in the reactor vessel.

3,826,625

**METHOD AND APPARATUS FOR GROWING CRYSTALLINE BODIES FROM THE MELT USING A POROUS DIE MEMBER**

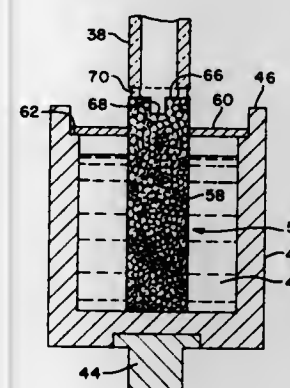
John S. Bailey, Charlestown, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,450

Int. Cl. B011 17/18

U.S. Cl. 23—301 SP

14 Claims



The invention is an improvement over the method described in U.S. Pat. No. 3,591,348 for growing crystalline bodies from the melt. The improvement essentially consists of using a porous forming member (also called a die) that is characterized by an interconnecting network of pores or cells of capillary proportions.

3,826,626

**ELECTRICAL CONDUCTOR HAVING A HIGH RESISTANCE TO ELECTROMIGRATION**

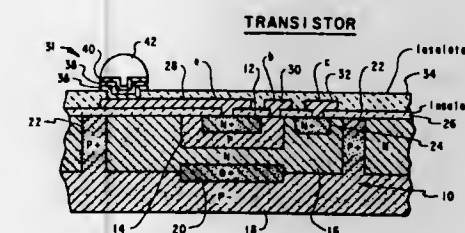
Harshad J. Bhatt and James W. Tuttle, Wappingers Falls, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Original application Dec. 17, 1970, Ser. No. 99,036, now Patent No. 3,631,305. Divided and this application Oct. 1, 1971, Ser. No. 185,713

Int. Cl. H01b 1/02

U.S. Cl. 29—191.6

9 Claims



This disclosure is directed to an improved semiconductor device, electrical conductor, thin film conductor, alloy and fabrication methods therefor. An aluminum-oxide-copper alloy conductor is disclosed which has a high resistance to electromigration and hence, a conductor lifetime greater by at least a factor of 10 than unalloyed aluminum conductors. Semiconductor devices utilizing this aluminum alloy in the thin film conductive

stripes interconnecting different conductivity regions or devices located in the semiconductor substrate are significantly improved and more reliable.

3,826,627

**DECORATIVE COMPOSITE ARTICLES**

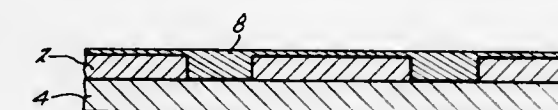
Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation

Continuation-in-part of application Ser. No. 78,899, Oct. 7, 1970, now Patent No. 3,676,292. This application Mar. 6, 1972, Ser. No. 231,834

Int. Cl. B32p 3/02, 3/06, 3/20

U.S. Cl. 29—195

7 Claims



The present invention relates to a decorative composite article having a decorative portion and comprising at least one first metal component and a second metal component of different composition from the first metal component bonded thereto wherein the first component has on its surface an aluminum oxide layer. The decorative pattern of the composite article is further coated with a glass or ceramic.

3,826,628

**COATED STEEL PRODUCT**

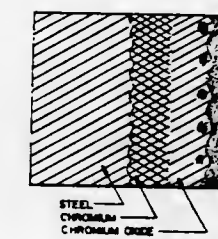
Ramon Leonard Addinall, Stoney Creek, William Trevor Lewis, Burlington, and Otokar Mudroch, Dundas, Ontario, Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada

Original application May 6, 1970, Ser. No. 35,102, now Patent No. 3,679,513, dated July 25, 1972. Divided and this application Apr. 24, 1972, Ser. No. 246,905

Int. Cl. B32b 15/18

U.S. Cl. 29—195

6 Claims



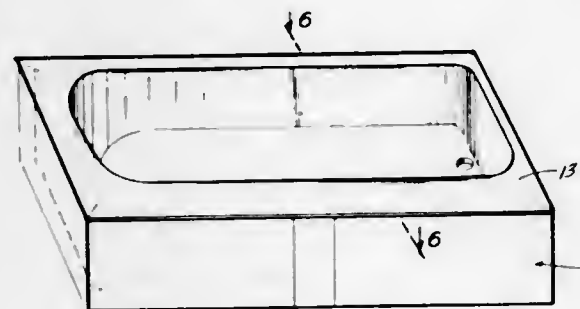
A coated steel product comprising a steel sheet substrate having a film of lower polyolefin or film of a copolymer of a major amount of a lower olefin with a minor amount of a copolymerizable monomer having polar functional groups coated thereon. The product is characterized by an intermediate layer of chromium/chromium oxide on the substrate on which the polyolefin film has been coated. The product exhibits excellent resistance to corrosion and delamination.



3,826,629

**PRODUCTS FORMED OF GLASS OR CERAMIC-METAL COMPOSITES**

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation  
Continuation-in-part of applications Ser. No. 78,899, Oct. 7, 1970, now Patent No. 3,676,292, Ser. No. 231,834, Mar. 6, 1972, and Ser. No. 254,666 May 18, 1972. This application July 7, 1972, Ser. No. 269,768  
Int. Cl. B23p 3/00; B32b 3/02  
U.S. Cl. 29—195 21 Claims



Articles having an aesthetically pleasing appearance and improved durability. The articles include plumbing fixtures, electrical fixtures, bathroom fixtures, household utensils, picture frames, jewelry, etc. The articles are formed of a glass or ceramic-metal composite comprising a glass or ceramic component bonded to a copper base alloy component. The copper base alloy component comprises about 2 to 12% aluminum and the balance essentially copper. Additional mechanical support may be provided by a backing, of metal plastic or wood affixed to the composite.

3,826,630

**COATING FOR DIAMONDS**

Alexander Rose Roy, Johannesburg, Transvaal, Republic of South Africa, assignor to De Beers Consolidated Mines Limited, Kimberley, Cape Province, Republic of South Africa  
No Drawing. Continuation-in-part of abandoned application Ser. No. 31,389, Apr. 23, 1970. This application Sept. 14, 1972, Ser. No. 289,141  
Int. Cl. B32b 15/04  
U.S. Cl. 29—195 3 Claims

A diamond having a coating which comprises a first layer of molybdenum chemically bonded to the diamond, and a second layer on the first layer selected from the group consisting of iron and an iron-containing alloy, the interface between the molybdenum layer and the iron-containing layer consisting of an alloy of iron and molybdenum formed by mutual solid state diffusion at a temperature not exceeding 800° C. This coated diamond is produced by depositing a layer of molybdenum on the uncoated diamond, depositing a layer of iron or iron-containing alloy on the molybdenum layer, and heating the coated diamond to a temperature of between 550° C. and 800° C. in an inert or reducing atmosphere.

3,826,631

**ODORANT COMPOSITION FOR LIQUEFIED PETROLEUM GASES**

Ashley Dwight Nevers, King of Prussia, Pa. (% Pennwalt Corporation, 1012 Pennwalt Bldg., Philadelphia, Pa. 19102)  
No Drawing. Continuation-in-part of abandoned application Ser. No. 153,853, June 16, 1971. This application Mar. 27, 1972, Ser. No. 238,541  
Int. Cl. C10I 1/24 9 Claims  
U.S. Cl. 44—52  
Improved odorant composition for liquefied petroleum gases includes an azeotropic mixture of an organic sulfur

compound selected from the group consisting of ethyl mercaptan and dimethyl sulfide and at least one relatively non-odorous, chemically inert material, such as methyl formate, n-pentane, isopentane, amylene, isoamylene, chloropropane and the like, capable of forming a minimum boiling point azeotrope with the organic sulfur odorant compound present.

3,826,632

**PETROLEUM FUEL OIL AND BLACK LIQUOR COMBUSTION**

Frederic L. Morgan, Sylacauga, Ala., assignor to Buckman Laboratories, Inc., Memphis, Tenn.  
No Drawing. Filed Jan. 25, 1972, Ser. No. 220,674  
Int. Cl. C10I 1/18 14 Claims

U.S. Cl. 44—66  
The efficiency of processes involving the burning of petroleum fuel oils and high solids content black liquor is improved by adding N,N-dimethylamides of unsaturated carboxylic acids to the petroleum fuel oils and black liquor.

3,826,633

**FUEL ADDITIVES**

Marvin D. Coon, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed Oct. 24, 1972, Ser. No. 296,372  
Int. Cl. C10I 1/24 5 Claims

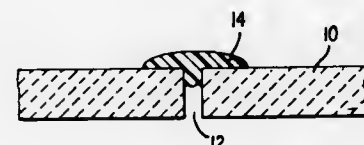
U.S. Cl. 44—72  
The present invention is concerned with more effective deposit control additives for hydrocarbonaceous fuels which are hydrocarbylamino polymethylenesulfonic acids. These additives are the reaction products produced by sulfoalkylating certain hydrocarbyl-substituted amines. The sulfoalkylation can be accomplished by reacting the hydrocarbyl-substituted amines with alkane sultones in approximate mol ratio 2-1:1-2. The hydrocarbyl substituent contains at least about 30 carbon atoms.

3,826,634

**PLUG SEALING OF HERMETIC ENCLOSURES**

Henry Leo Blust, Lyndhurst, and Norman Lee Lindburg, Berkeley Heights, N.J., assignors to RCA Corporation  
Filed Feb. 5, 1973, Ser. No. 329,616  
Int. Cl. C03b 29/00 2 Claims

U.S. Cl. 65—34



A plug comprising a viscous mass of glass powder in a liquid carrier is disposed within an exhaust port of the envelope of a device to be sealed. The plug mass is heated at a low temperature to drive-off the carrier leaving a plug adherent to and completely closing the exhaust port, the plug, however, being porous to gasses. The device is exhausted through the porous plug, and the plug then heated to fuse together the glass particles to hermetically seal the port.

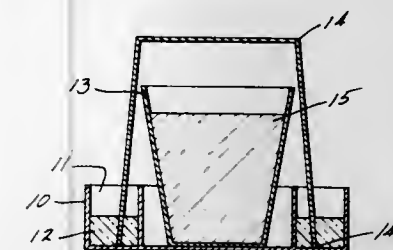
3,826,635

**GLASS MELTING**

Dallas P. Hall and Balent E. Yoldas, Toledo, Ohio, assignors to Owens-Illinois, Inc.  
Filed Jan. 5, 1973, Ser. No. 321,290  
Int. Cl. C03b 5/00, 5/08 3 Claims

U.S. Cl. 65—134  
Disclosed is a glass melting technique, which improves glass homogeneity, wherein the vapor phase generated by the melting of the glass batch materials is confined in the

vicinity of the glass melt by a liquid seal of molten glass. the ribbon by coordinating the distance between the flexible guide means, the speed of the ribbon, and the tension



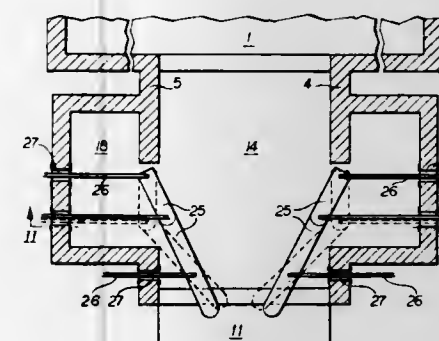
substantially the same composition as the glass being melted.

3,826,636

**CHANNEL FOR THE CONVEYANCE OF LIQUID GLASS**

Franz Classen, Porz-Grengel, Germany, assignor to Erste Deutsche Floatglas GmbH & Co. OHG, Porz-Cologne, Germany  
Continuation of abandoned application Ser. No. 885,499, Dec. 16, 1969. This application Dec. 20, 1971, Ser. No. 209,892  
Claims priority, application Germany, Jan. 4, 1969, P 19 00 388.4  
Int. Cl. C03b 18/00 6 Claims

U.S. Cl. 65—182 R



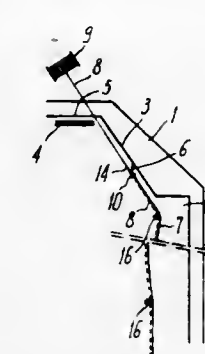
A channel for the conveyance of molten glass comprises a body of molten metal such as tin whose temperature can be regulated, and on which the glass floats. There are chambers located on opposite sides of the channel which communicate with the channel to supply molten tin to the channel. Both the chambers and the channel are equipped with heating and cooling elements. There are adjustably mounted lateral blocks having heating means within the blocks located toward the outlet end of the channel to limit the width of the molten glass stream therein.

3,826,637

**MANUFACTURE OF FLAT GLASS BY FLOTATION**

Jean Albert Lecourt, Villejuif, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France  
Filed Sept. 21, 1972, Ser. No. 290,874  
Claims priority, application France, Aug. 26, 1971, 7130968  
Int. Cl. C03b 18/02 7 Claims

U.S. Cl. 65—182 R  
A method of making flat glass which comprises depositing molten glass upon the upstream part of a molten flotation bath, drawing the glass downstream over the bath and spreading the glass over the bath between divergent retaining means by the forces of gravity and surface tension, thereby forming a moving ribbon, introducing moving, flexible guide means into the edges of the ribbon at an upstream location, and establishing the dimensions of



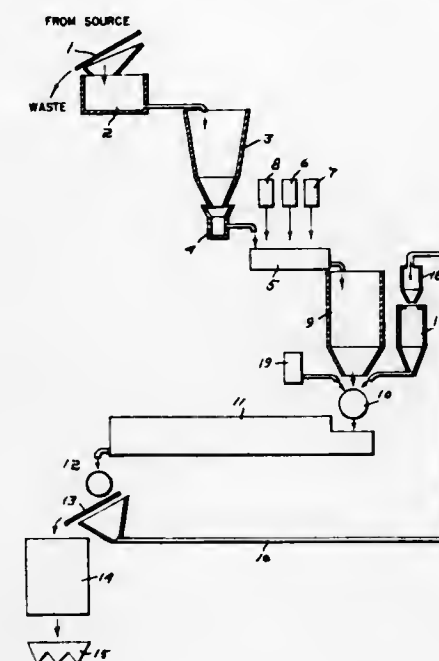
on the flexible guide means. Simple and effective apparatus are provided to carry out the process.

3,826,638

**ORGANIC FERTILIZERS AND THEIR PRODUCTION**

Franklin A. Whitman, Benton, Maine (R.F.D. 2, Waterville, Maine 04901)  
Continuation-in-part of application Ser. No. 362,548, Sept. 15, 1972, which is a continuation-in-part of application Ser. No. 200, Jan. 2, 1970, both now abandoned. This application May 21, 1973, Ser. No. 362,548  
Int. Cl. C05f 3/00 19 Claims

U.S. Cl. 71—21



An organic fertilizer and method of making the same is disclosed, the fertilizer being produced by mixing with wet manure at least .1% by weight of polyalkaline amine to that of the dry manure and at least the mole equivalent of an aldehyde. The product is then dried for a time and at a temperature such that the fertilizer is rendered sufficiently water insoluble to ensure that the available nitrogen is slowly released when the fertilizer is applied.

3,826,639

**AGENT FOR KEEPING CUT FLOWERS FRESH**

Ernst-Heinrich Pommer, Limburgerhof, and Hannelore Will, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed Feb. 4, 1972, Ser. No. 223,758  
Int. Cl. A01n 3/02 10 Claims

U.S. Cl. 71—68  
Agent for keeping cut flowers or other plant parts fresh which contains, in addition to conventional ingredients, a



chlorocholine salt, citric acid, a silver salt and a salt of N-nitroso-N-cyclohexylhydroxylamine, and a process for keeping cut flowers fresh with this agent.

3,826,640

# **SUBSTITUTED BENZOYLPHOSPHONATES AS HERBICIDES**

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,636

Int. Cl. A01n 9/36

U.S. Cl. 71-86

6 Claims

Substituted benzoylphosphonates form a class of compounds which exhibit herbicidal activity, and, of which, certain substituted benzoylphosphonates are novel compounds. In herbicide tests, the compounds of this invention are highly effective against undesirable grasses, such as Crabgrass, Yellow Foxtail grass, Johnson grass and Barnyard grass; and against undesirable broadleaf herbs, such as Pigweed. In low use concentrations, the compounds of the present invention retain their high effectiveness against undesirable grasses and broadleaf herbs while showing selectivity in favor of important crop species, such as cotton and corn.

3,826,641

# **METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS**

Clark A. Porter, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 12, 1973, Ser. No. 331,911

Int. Cl. A01n 9/36

U.S. Cl. 71-86

12 Claims

The sucrose content of growing plants is increased by treating the plants, prior to harvest, with 1-hydroxy-1,1-ethanediphosphonic acid or an alkali metal salt thereof.

3,826,642

# **HERBICIDE**

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,713

Int. Cl. A01n 9/14

U.S. Cl. 71-91

4 Claims

Herbicides containing a substituted benzothiadiazinone dioxide and at least one of a substituted decahydroquinazoline, a substituted polycyclic urea or a bromoamino-pyridazine derivative as an additional active ingredient, and a process for controlling the growth of unwanted plants with these mixtures.

3,826,643

# **METHOD OF CONTROLLING UNDESIRABLE PLANT SPECIES USING 3-NITROPYRIDINES**

Robert Eugene Diehl, Trenton, and Bryant Leonidas Walworth, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 658,589, Aug. 7, 1967, now Patent No. 3,547,935, dated Dec. 15, 1970. This application Aug. 3, 1970, Ser. No. 60,776

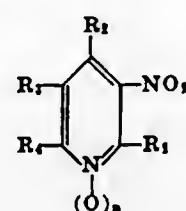
Int. Cl. A01n 9/22

U.S. Cl. 71-94

10 Claims

There is provided a method for the pre-emergence or post-emergence control of undesirable plant species by ap-

plying to soil, seed or foliage a herbicidally effective amount of a compound of the formula:



wherein R<sub>1</sub> stands for hydrogen, halogen, lower alkyl, halo lower alkyl or OR<sup>1</sup> wherein R<sup>1</sup> is lower alkyl or halo lower alkyl; R<sub>2</sub> is hydrogen, halogen, hydroxy, SR<sup>2</sup> or OR<sup>2</sup> wherein R<sup>2</sup> and R<sup>3</sup> are each hydrogen or lower alkyl; R<sub>3</sub> is hydrogen, halogen or nitro; R<sub>4</sub> is hydrogen, halogen, alkyl or halo lower alkyl; and n is either 0 or 1; and the salts of said compounds.

3,826,644

# **HERBICIDAL N'-ARYL-N-CHLOROCYCLO-ALKYLTHIO UREAS**

John W. Kobzina, Berkeley, Joseph F. Moore, Richmond, and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

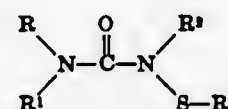
No Drawing. Original application July 14, 1970, Ser. No. 54,855, now Patent No. 3,711,530. Divided and this application Nov. 2, 1972, Ser. No. 303,190

Int. Cl. A01n 9/12

U.S. Cl. 71-98

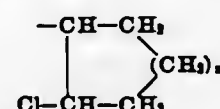
12 Claims

Compound of the formula



wherein R and R<sup>1</sup> are hydrogen, alkyl of 1 to 12 carbon atoms substituted with 0 or 4 halogen atoms of atomic number 9 to 35, cycloalkyl of 3 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, aryl of 6 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, nitro groups or alkoxy groups of 1 to 6 carbon atoms; R<sup>2</sup> is alkyl of 1 to 10 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 17 to 35, cycloalkyl of 5 to 10 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 17 to 35; and R<sup>3</sup> is either

(a)



wherein n is an integer of from 1 to 8, or

(b)

monochloronorbornyl

The compounds are herbicides.

3,826,645

# **MATERIAL FOR PRODUCING A METALLIC COATING ON THE INNER SURFACES OF A CATHODE RAY TUBE**

Frederick P. Scott, Syracuse, N.Y., assignor to King Laboratories, Inc., Syracuse, N.Y.

No Drawing. Filed May 8, 1972, Ser. No. 251,029

Int. Cl. B22f 1/00

U.S. Cl. 75-5 R

8 Claims

A metal support containing a quantity of a metallic mixture including an aluminum and magnesium alloy

which, when heated to the proper temperature will flash causing the magnesium to vaporize. The magnesium vapor will condense on the inside surfaces of the tube. The mixture also contains a metal in the free state which will combine with the aluminum during and subsequent to the vaporization of the magnesium preventing the formation of loose particles of aluminum, and also preventing molten aluminum from attacking the support.

3,826,646

# **METHOD FOR TREATING MELTS AND MEANS FOR CARRYING OUT THIS TREATMENT**

Gosta Karlsson, Harnevigatan 26; Per Samuelsson, Bangatan 17; and Per Erik Hammariund, Hasselvagen 6, all of Vasteras, Sweden

Continuation of application Ser. No. 866,161, Oct. 13, 1969, which is a continuation of application Ser. No. 538,633, Mar. 30, 1966, both now abandoned. This application Mar. 26, 1973, Ser. No. 344,514

Int. Cl. C21c 5/52, 7/10

U.S. Cl. 75-13

6 Claims

Molten metal is heated in a covered ladle equipped with electrodes and multi-phase electromagnetic stirring coils. Energization creates a toroidal pattern of movement within the melt. The melt is then degassed by the evacuation of the space over the melt.

3,826,647

# **METHOD OF OBTAINING LOW-PHOSPHORUS CONTENTS IN MEDIUM- AND HIGH-CARBON STEELS IN A BOTTOM-BLOWN OXYGEN STEELMAKING FURNACE**

Donald A. Dukelow, Mount Lebanon Township, Allegheny County, Phillip B. Hunter, Plum Borough, and Robert J. King, Churchill Borough, Pa., assignors to United States Steel Corporation

Continuation-in-part of abandoned application Ser. No. 205,353, Dec. 6, 1971. This application Nov. 13, 1972, Ser. No. 306,138

Int. Cl. C21c 7/02

U.S. Cl. 75-60

16 Claims

A method for directly producing medium and high carbon steels with low phosphorus contents in a bottom blown basic steel refining process in which finely divided lime is entrained in the oxygen stream. The improvement comprises employing an overall average lime load rate (L<sub>0</sub>) throughout the whole blow of about 0.09 to 0.16 lbs. lime/ft.<sup>3</sup> of oxygen, wherein the average rate for the first half of the blow (L<sub>1</sub>) is less than L<sub>0</sub> and the average rate for the second half of the blow (L<sub>2</sub>) is greater than L<sub>0</sub>. Phosphorus reduction is additionally enhanced by decreasing the blowing time, i.e., increasing the oxygen blowing rate.

3,826,648

# **METHOD OF PURIFYING ZINC SULPHATE SOLUTIONS**

Fernand Jacques Joseph Bodson, Angleur, Belgium, assignor to Societe des Mines et Fonderies de Zinc de la Vieille Montagne, Angleur, Belgium

No Drawing. Filed Sept. 7, 1972, Ser. No. 287,193  
Claims priority, application Belgium, May 16, 1972, 43,706

Int. Cl. C22b 15/12, 17/04, 23/04

U.S. Cl. 75-109

11 Claims

A zinc sulphate solution resulting from the leaching of zinc ores is treated by a method of purifying comprising adding to said solution which has been previously purified by means of coprecipitation of hydrolysable impurities with iron hydroxide, metallic zinc in an amount such that the copper and cadmium present are eliminated by cementation; separating the copper cement and cadmium cement from the solution; heating the solution to a temperature between 80° C. and its boiling point; add-

ing to the solution antimony and zinc powder in amounts such that the cobalt and the other impurities are eliminated by cementation from the zinc sulphate solution, and separating the cobalt cement and the other impurities from the solution.

3,826,649

**NICKEL-CHROMIUM-IRON ALLOY**  
Rolf Harald Söderberg and Clas Erik Helmer, Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

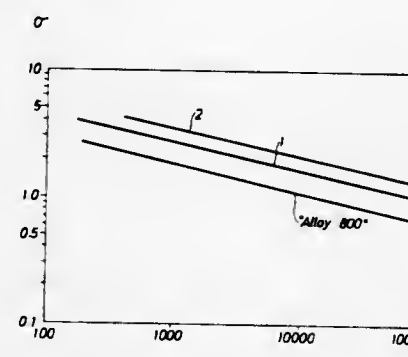
Filed Dec. 8, 1972, Ser. No. 313,322

Claims priority, application Sweden, Dec. 21, 1971, 16,378/71

Int. Cl. C22c 37/10, 39/02

U.S. Cl. 75-124

9 Claims



A stainless steel adapted for use at high temperatures contains from up to 4% by weight of tungsten, together with titanium and aluminum.

3,826,650

# **EPOXY PHOTOPOLYMER DUPLICATING STENCIL**

Sheldon I. Schlesinger, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of application Ser. No. 753,869, Aug. 20, 1968, now Patent No. 3,708,296, dated Jan. 2, 1973. This application Aug. 25, 1972, Ser. No. 283,629

The portion of the term of the patent subsequent to Jan. 2, 1990, has been disclaimed

Int. Cl. G03c 1/70

U.S. Cl. 96-35.1

19 Claims

A stencil is prepared from a support such as paper, silk or nylon, metal or metal coated material which is coated with an epoxy-diazonium composition, the surface of the material is exposed to an energy source, preferably actinic radiation, in an image wise manner to effect polymerization of said composition and unpolymerized composition is removed, preferably by washing with a solvent.

3,826,651

# **LAMINATED ALUMINUM ARTICLE AND METHOD**

Charles H. Weber III, Silver Spring, and John E. Pickard, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Original application May 13, 1971, Ser. No. 143,174. Divided and this application Apr. 23, 1973, Ser. No. 353,815

Int. Cl. G03c 1/94, 5/00

U.S. Cl. 96-35.1

11 Claims

The present invention is directed to a composite laminated article useful as a base plate for supporting a layer of liquid photocurable composition from which articles such as polymeric printing plates may be formed. The article is necessarily adapted to have a gold color and includes a sheet of aluminum-containing metal, an inorganic conversion coating over the sheet, and a coating of a specific vinyl resin over the conversion coat.



3,826,652

**PROCESS FOR DEVELOPING RADIATION-SENSITIVE ELEMENTS**

Vernon L. Bissonette, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 189,289, Oct. 14, 1971. This application Dec. 4, 1972, Ser. No. 312,169

Int. Cl. G03c 1/58, 5/22, 5/24, 5/32, 5/34, 7/00  
U.S. Cl. 96—48 PD 28 Claims

Photographic dye images can be produced by physical development of imagewise exposed elements containing a radiation-sensitive metal compound to form an imagewise distribution of catalyst. The resultant catalyst image is then treated in the presence of a color developer and a color coupler with an amplifier solution containing a cobalt(III) complex having a coordination number of six, wherein said treatment is accomplished under conditions which reduce cobalt(III) to cobalt(II) and, in turn, oxidize the color developer to thereby form image dye from the oxidized color developer and the color coupler.

3,826,653

**PHOTOGRAPHIC DEVELOPING SYSTEM AND METHOD**

John H. Jacobs, Altadena, and Richard A. Corrigan, Temple City, Calif., and Joseph Gaynor, Cleveland, Ohio, assignors to Bell &amp; Howell Company, Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 290,204

Int. Cl. C03c 5/26, 5/24, 1/48  
U.S. Cl. 96—50 R 13 Claims

An improved developing system for dry or essentially dry photographic processing comprises a pellicle containing photographic developer and a web containing activator for the developer. The system may also include nucleating materials and complexing agents for positive print production. The system is particularly suitable for silver halide microfilm processing and the like. In one embodiment the pellicle is laminated with the web and the combination laminated to a photographic emulsion bearing a latent image to transfer activator and developer to the emulsion. Following development and delamination, the pellicle remains with the web. In another embodiment, the pellicle is temporarily laminated with the web to imbed developer into the web whereupon the pellicle is removed and the web laminated with the photographic emulsion, as above. Nucleating and complexing agents can be included, to remain with the web, to provide a positive print by diffusion transfer or to aid in stabilization of the photographic emulsion.

3,826,654

**DEVELOPER FOR SURFACE- AND INTERNAL-IMAGE SILVER HALIDE PHOTOGRAPHIC MATERIALS**

George Raymond Weiss and John Oliver Helling, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1971, Ser. No. 148,771

Int. Cl. G03c 5/30  
U.S. Cl. 96—66 HD 16 Claims

A novel developing solution comprising a 3-pyrazolidone, an ascorbic acid, a thione or thiol substituted nitrogen-containing heterocyclic compound and an alkali metal iodide is an excellent developer composition for internal-and/or surface-sensitive silver halide photographic materials.

3,826,655

**PHOTOGRAPHIC FILM HANDLING IMPROVEMENT**

Robert J. Borel, Webster, James C. Foote, Jr., York, and Horace G. Warren, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 10, 1972, Ser. No. 270,407

Int. Cl. G03c 1/48  
U.S. Cl. 96—76 R 9 Claims

A self-processing film unit is provided with improved means for facilitating its handling in a processing camera and for permitting its use with simplified camera mechanisms. The film unit includes a first part, such as processing materials, and a second part, such as an image-recording section, that are releasably coupled together. Processing is initiated by endwise movement of the film unit between a pair of pressure-applying members and the first and second parts then are separated by diverting the first part into an arcuate path extending partially around one of the pressure-applying members while permitting movement of the second part in a straight line path extending beyond the pressure-applying members. The leading end of the first part is provided with a diverter, such as a transverse bar, that is profiled to divert it rearwardly around the one member and into engagement with appropriate guide means, without requiring that any part of the film unit be wider than the second or image-recording part.

3,826,656

**FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION SENSITIZED WITH A CYANINE DYE CONTAINING HETEROCYCLIC NITROGEN ATOM SUBSTITUTED WITH AN —OR GROUP**

Phillip W. Jenkins, Donald W. Heseltine, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application Jan. 13, 1971, Ser. No. 106,231, now Patent No. 3,770,451, which is a division of application Ser. No. 766,307, Oct. 9, 1968, now Patent No. 3,615,432. Divided and this application Apr. 2, 1973, Ser. No. 347,290

Int. Cl. G03c 1/36, 1/28, 1/40  
U.S. Cl. 96—100 16 Claims

A class of energy-sensitive compounds containing heterocyclic nitrogen atoms substituted with an —OR group fragment under the influence of various forms of energy to form a dye base, a proton and an aldehyde, these materials being useful in image reproduction.

3,826,657

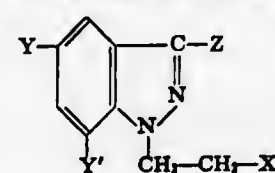
**SURFACE-COATING COMPOSITIONS THAT CONTAIN N<sup>1</sup>-(SUBSTITUTED ETHYL)INDAZOLES**

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Application Feb. 7, 1972, Ser. No. 224,294, which is a continuation-in-part of applications Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, and Ser. No. 141,999, May 10 1971, now Patent No. 3,741,979. Divided and this application Apr. 20, 1973, Ser. No. 353,078

Int. Cl. C09d 5/14  
U.S. Cl. 106—17 11 Claims

Compounds that have the structural formula



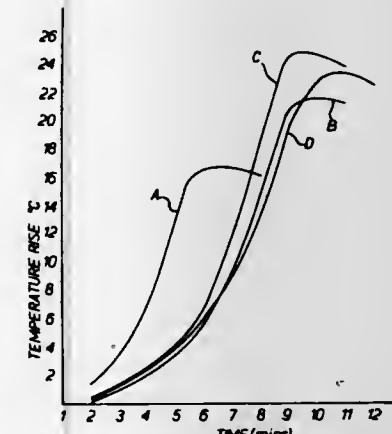
wherein X represents halogen, —SCN, —OR, or —N=R'; Y and Y' each represents hydrogen, halogen, lower alkyl, nitro, amino, acylamino, aroylamino, (halobenzyldene) amino, or —N=R'; Z represents hydrogen, halogen, acylamino, or —N=R'; R represents hydrogen, alkyl having 1 to 12 carbon atoms, haloalkyl having 1 to 4 carbon atoms, phenyl, or substituted phenyl wherein the substituent is halogen, hydroxyl, alkyl, or nitro; and R' represents an alkylene group having 1 to 8 carbon atoms, are used to protect surface-coating compositions from deterioration resulting from attack by bacteria and fungi. Illustrative of these N<sup>1</sup>-(substituted ethyl)indazoles is N<sup>1</sup>-(2-hydroxyethyl)-5-nitro-indazole.

3,826,658

**FOUNDRIY MOULDING MATERIALS**

Kenneth Ernest Lewis Nicholas, Birmingham, England, assignor to British Cast Iron Research Associates, Birmingham, England

Continuation-in-part of abandoned application Ser. No. 221,440, Jan. 27, 1972, which is a continuation of abandoned application Ser. No. 38,694, May 19, 1970. This application Mar. 26, 1973, Ser. No. 344,524

Int. Cl. B28b 7/34  
U.S. Cl. 106—38.3 5 Claims

The invention provides pourable foundry moulding compositions comprising refractory filler material, water, a bonding agent and a foaming agent selected from the class of anionic alkyl sulphate foaming agents such that it produces a foam structure in the composition of an inherently limited life ensuring dispersion of the foam shortly after pouring. A first such composition disclosed and claimed comprises 100 parts of refractory filler material, from 1 to 6 parts of water, about 6 parts of sodium silicate solution as bonding agent, and about 0.1 parts of a 2-ethyl hexyl sulphate foaming agent. The composition can be made self-hardening by the addition of a hardening agent such as calcium silicate which reacts exothermically with the sodium silicate solution and evolves a gas. The free escape of the gas from the moulded composition is ensured by arranging that the early dispersion of the foam occurs, and thereby renders the composition highly permeable, before the hardening reaction commences and produces the gas.

3,826,659

**HIGH ZIRCONIA CONTAINING GLASS CERAMICS**

Terence Stanley Busby and Geoffrey Charles Cox, Sheffield, England, assignors to National Research Development Corporation

No Drawing. Filed May 1, 1972, Ser. No. 253,669  
Claims priority, application Great Britain, May 5, 1971, 13,278/71; Nov. 27, 1971, 55,157/71Int. Cl. C03c 3/22, 3/04, 3/12  
U.S. Cl. 106—39.6 11 Claims

A glass ceramic material comprising by weight 20% to 45% ZrO<sub>2</sub>, 20% to 60% Al<sub>2</sub>O<sub>3</sub>, 0% to 25% SiO<sub>2</sub>, 0% to 30% CaO, 0% to 10% Na<sub>2</sub>O, the material including B<sub>2</sub>O<sub>3</sub> and/or PbO in the amounts up to 35% and 25% respec-

tively, B<sub>2</sub>O<sub>3</sub> in the absence of PbO being in an amount more than 5%, PbO in the absence of B<sub>2</sub>O<sub>3</sub> being in an amount more than 2%.

3,826,660

**HIGH INDEX OPTICAL GLASS**

James Matthew Wylot and Edgar Joseph Greco, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,497  
Int. Cl. C03c 3/10 2 Claims

An optical glass having a high index of refraction, high dispersion and low absorption in the visible region of the spectrum produced from melts comprising lead oxide (PbO), silicon dioxide (SiO<sub>2</sub>) and sodium chloride (NaCl). Glasses according to this invention may also include components selected from the group consisting of tellurium dioxide (TeO<sub>2</sub>) and lithium chloride (LiCl).

3,826,661

**HIGH INDEX OPTICAL GLASS**

Edgar Joseph Greco and James Matthew Wylot, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,498  
Int. Cl. C03c 3/10 2 Claims

An optical glass having a high index of refraction and low absorption in the visible region of the spectrum comprising lead oxide (PbO), tellurium dioxide (TeO<sub>2</sub>), and at least one material selected from the group consisting of silicon dioxide (SiO<sub>2</sub>), germanium dioxide (GeO<sub>2</sub>) and boric oxide (B<sub>2</sub>O<sub>3</sub>). Glasses according to the invention may also include amounts of aluminum oxide (Al<sub>2</sub>O<sub>3</sub>), arsenic pentoxide (As<sub>2</sub>O<sub>5</sub>), titanium dioxide (TiO<sub>2</sub>), sodium chloride (NaCl), sodium oxide (Na<sub>2</sub>O), lithium oxide (Li<sub>2</sub>O), lithium chloride (LiCl) and/or potassium fluoride (KF).

3,826,662

**REFRACTORY MIX FOR PATCHING THE REFRACTORY LINING IN A BLAST FURNACE CASTING FLOOR NETWORK**

Gregory F. Paolini, Perry Hall, Md., assignor to Bethlehem Steel Corporation

No Drawing. Filed Feb. 17, 1972, Ser. No. 229,166  
Int. Cl. C04b 35/52 13 Claims

A trowellable patching mix consisting of about 60% to about 80% coke breeze, about 10% to about 30% fireclay and up to about 20% pitch. The coke breeze is crushed so that 90% of the particles will pass a 1/8 inch screen. The fireclay has a PCE of about 19 to about 24, and the pitch has a softening point between about 300° F. and about 340° F. The mix is blended with water to obtain a desired consistency.

3,826,663

**PLASTER ADDITIVE AND PLASTER COMPOSITIONS**

Alexander S. Mimicozzi and Alexander S. Mimicozzi, Jr., Locust Valley, N.Y. (both % Arma Research Corp., 405 Oakwood Road, Huntington Station, N.Y. 11746)

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,156, Oct. 19, 1970. This application Oct. 27, 1972, Ser. No. 301,364

Int. Cl. C04b 7/02, 7/34  
U.S. Cl. 106—90 37 Claims

The invention provides a plaster additive comprising component (A) the saponified reaction product of at least one alkali metal carbonate with at least one fatty acid having about 16–18 carbon atoms, about 5.5 to about 8.5 parts by weight of aluminum potassium sulfate and about 25 to about 70 parts silica, the total of said saponified reaction product of said alkali metal car-



bonate and said fatty acid being about equal to the total of said two other noted components; and component (B) comprising at least two materials selected from the group consisting of (i) polyvinyl alcohol, (ii) polyvinyl acetate, and (iii) at least one alkali metal or ammonium salt of lignin sulphonate, each of said components (i), (ii) and/or (iii) when included in component (B) being at least 3% thereof; the ratio of component (A) to component (B) being from about 16:1 to 16:16. It also provides an improved lime plaster composition containing about 75 parts of hydrated lime and between about 1 and 7 parts of said additive. The invention further provides an improved cement plaster composition comprising about 75 parts of portland cement, between 20 and 150 parts of stone, a setting retarder, and between 1 and 7 parts of said additive.

3,826,664

#### METHOD OF MANUFACTURING HIGH FIRE-PROOF ALUMINOUS CEMENT

Miroslaw Grylicki, Gliwice, Franciszek Nadachowski, Krakow, and Stanislaw Pawlowski, Gliwice, Poland, assignors to Instytut Materialow Ogniotrwalych, Gliwice, Poland  
No Drawing. Filed Apr. 27, 1972, Ser. No. 248,140  
Claims priority, application Poland, Apr. 28, 1971, P 147,837

Int. Cl. C04b 7/32

U.S. Cl. 106—104 6 Claims  
Method of manufacturing a highly fire resistant aluminous cement by sintering raw materials containing CaO, Al<sub>2</sub>O<sub>3</sub>, and 3 to 50 percent addition of CaCl<sub>2</sub>, preferably 20 to 35 percent, in the temperature range between 800 and 1500° C., preferably 900 to 1300° C. The addition of CaCl<sub>2</sub> markedly lowers the temperatures of formation of calcium aluminates and enables the removal of iron and iron oxide contaminants from the cement, by the formation of volatile FeCl<sub>3</sub> and its vaporization during sintering. Instead of CaCl<sub>2</sub> other chlorides can be used, for example, MgCl<sub>2</sub>, NaCl, KCl, AlCl<sub>3</sub> and others.

3,826,665

#### SETTING AND HARDENING OF ALUMINOUS CEMENT

Christian Hovasse, Decines, and Pierre Allemand, Lyon, France, assignors to Rhone-Progil, Decines, France  
No Drawing. Filed Mar. 6, 1973, Ser. No. 338,427  
Claims priority, application France, Mar. 9, 1972, 7208902

Int. Cl. C04b 7/32

U.S. Cl. 106—104 8 Claims  
The inclusion of a composition comprised of (1) lithia or a water-soluble lithium salt and (2) a hydroxylated organic acid, or a salt or ester thereof, accelerates the setting and hardening times of aluminous cement and provides mortars, concretes, grouts, etc., derived from such modified high alumina type cements wherein the superior mechanical and handling properties generally characteristic of aluminous cements are not appreciably affected.

3,826,666

#### ENTERIC CAPSULES

Michihiro Hirai, Yokohama, and Toyokazu Shimizu, Sagami-hara, Japan, assignors to Parke, Davis & Company, Detroit, Mich.  
No Drawing. Filed July 20, 1972, Ser. No. 273,521

Int. Cl. A61k 9/04; C08b 21/08

U.S. Cl. 106—128 5 Claims  
Pharmaceutical capsules having enteric properties are formed from a homogeneous composition comprising gelatin and an alkali metal salt of hydroxypropyl methylcellulose phthalate, optionally with the inclusion of a plasticizer and/or a coloring agent. The capsules are soluble in or disintegrated by the alkaline intestinal secretions but are substantially insoluble or resistant to solution in the acid secretions of the stomach.

3,826,667

#### MAGNETITE COATING COMPOSITION

Ernest S. Cohen, Silver Spring, Md., and Roland H. Shubert, Reston, Va., assignors to the United States of America as represented by the Secretary of the Interior  
No Drawing. Filed Nov. 30, 1972, Ser. No. 310,721

Int. Cl. C08h 9/00, 17/04

U.S. Cl. 106—259 7 Claims  
A magnetite coating composition made by reacting an aqueous solution of ferric and ferrous salts with ammonium hydroxide, heating the resulting product to convert it to magnetite, adding a siccative oil to produce a dispersion of magnetite in oil and adding a solvent thinner to produce a coating composition suitable as a paint or a printing ink.

3,826,668

#### ELECTROLYTIC COPPER RELEASE AGENT

Howard M. Rue, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.  
No Drawing. Filed July 3, 1972, Ser. No. 268,431

Int. Cl. C08h 17/28; C09d 3/00, 3/60

U.S. Cl. 106—285 10 Claims  
A release agent composition applied on cathodes prior to the electrolytic deposition of copper comprising from about 60–98 volume percent solvent refined paraffin oil having a viscosity of 50 to 500 SUS at 100° F., 0–55 volume percent paraffinic bright stock having a viscosity of 150–200 SUS at 210° F., 0.5–3.0 volume percent of butyl stearate, 0.15–0.50 volume percent of a pour point depressant, 0.5–3.0 volume percent of an oxygen containing organic compound having from 1 to 2 vicinal epoxy groups per molecule. These compositions permit the stripping of deposited copper without damage to either the deposited copper or to the cathode.

3,826,669

#### COMPOSITIONS CONTAINING A REACTIVE HYDROXYL-CONTAINING VINYL CHLORIDE POLYMER AND A LIQUID POLY-EPOXIDE

George J. Antfinger, Avon Lake, and Harold E. Von Kamp, Elyria, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,602

Int. Cl. C08f 15/26, 37/18

U.S. Cl. 106—287 R 10 Claims  
Solvent resistant films are obtained from compositions containing vinyl chloride, vinylidene chloride, and a hydroxyl-containing monomer copolymerizable therewith, and a liquid polyepoxide, along with small amounts of chromium diisopropyl salicylate and stannic chloride as catalysts.

3,826,670

#### ENCAPSULATION OF ORGANIC PIGMENTS

Thomas C. Rees, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio  
No Drawing. Filed Nov. 7, 1972, Ser. No. 302,693

Int. Cl. C08h 17/14

U.S. Cl. 106—308 Q 17 Claims  
Novel pigments having improved heat and bleed resistance are made by precipitating an ionically-crosslinked linear polymeric acid salt of a polyvalent metal on a solid organic pigment core. The polymer-treated pigment is encapsulated with a hydrated metal oxide, which provides desirable chemical and physical properties for the pigment. The intermediate layer of polymeric salt can be formed *in situ* on the solid organic core by slurrying the pigment core in an aqueous solution of an ionized polycarboxylic acid polymer and precipitating the polymer by ionic crosslinking with a polyvalent metal, e.g. aluminum. The intermediate polymeric metal salt provides excellent adhesion for the subsequent application of hydrated metal oxide, e.g. silica.

3,826,671

#### METHOD FOR CONTROLLING WATER TRANSPIRATION IN PLANTS

Richard J. Petrucco, Laurel Springs, and John W. Schick, Cherry Hill, N.J., assignors to Mobil Oil Corporation  
No Drawing. Original application Jan. 27, 1971, Ser. No. 110,259, now abandoned. Divided and this application Dec. 7, 1972, Ser. No. 313,020

Int. Cl. A01n 5/00; C09d 3/60

U.S. Cl. 117—3 10 Claims  
Water transpiration in plants, without substantially interfering with the exchange of gases essential for photosynthesis, is controlled by application to the plant surface of an emulsion composition comprising a polymer, an emulsifier, wax, petrolatum and water.

3,826,672

#### NON-ELECTROSTATIC METHOD FOR PRODUCING ELECTROGRAPHIC IMAGE

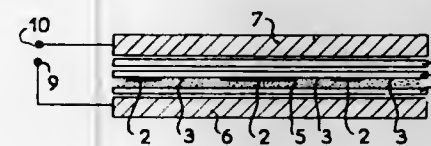
Marcus Cantarano, 47 Av. F. Roosevelt, Bat-B, Thiais (94), France  
Continuation-in-part of abandoned application Ser. No. 631,792, Apr. 18, 1967. This application June 9, 1971, Ser. No. 151,488

Claims priority, application France, Apr. 21, 1966, 58,525

The portion of the term of the patent subsequent to Dec. 4, 1990, has been disclaimed

Int. Cl. G03g 17/00

U.S. Cl. 117—17.5 11 Claims



A method for producing an electrographic image from an original provided with a conductivity pattern ranging from a portion having a greater conductivity to a portion having a lesser conductivity, comprising the steps of placing a thin layer of electrically chargeable particles in electrical contact with said conductivity pattern, disposing said original and said layer of electrically chargeable particles between a first and second electrode so that said original is interposed between said layer of electrically chargeable particles and said second electrode and generating an alternating electric field between said first and second electrodes of sufficient strength so as to charge said electrically chargeable particles whereby said particles receive electric charges having different maximum values according to the different conductivities of said portions of said conductivity pattern whereby the said electrically charged particles are attracted toward and away from said original whereby a portion of said electrically charged particles are removed and the remainder of said particles form an electrographic image on said original.

3,826,673

#### COATING PROCESS

Robert E. Batson, Newington, and Andrew G. Bachmann, Westogue, Conn., assignors to Loctite Corporation, Newington, Conn.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,313

Int. Cl. B44d 1/44

U.S. Cl. 117—62.2 15 Claims  
A process is presented for applying coatings to cylindrical objects, such as threaded fasteners, which involves a post-coating treatment with a congealing agent to increase the resistance of the coating to abrasion and damage during the period following the coating steps, but before the coating composition has dried to a significant extent.

3,826,674

#### HYDROPHILIC FOAM

E. C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 19,102, Mar. 12, 1970. This application Apr. 28, 1972, Ser. No. 248,491

Int. Cl. B44d 5/12; C08g 22/44

U.S. Cl. 117—62.2 9 Claims  
Polyurethane foams are rendered hydrophilic by coating an anhydride containing polymer onto the foam and thereafter reacting at least a portion of the anhydride groups with ammonia or a primary or secondary amine. The permanence of the foam's hydrophilic character can be enhanced by crosslinking the anhydride coated foam with a polyfunctional amine.

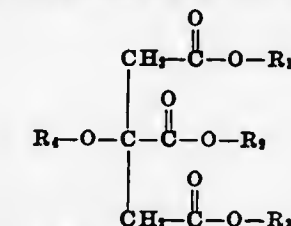
3,826,675

#### LUBRICATED METALLIC CONTAINER STOCKS AND METHOD OF PREPARING THE SAME AND APPLYING AN ORGANIC COATING THERETO

John R. Smith, Richmond, and James A. Bray, Salineville, Ohio, assignors to National Steel Corporation  
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,748

Int. Cl. B44d 1/16

U.S. Cl. 117—75 40 Claims  
Metallic container stocks are lubricated with citric acid esters. The improved lubricated container stocks of the invention are characterized by excellent wettability and adhesion of organic coatings in general and especially epoxy resin coating compositions. The citric acid ester lubricants are pharmacologically safe and are easily applied at low cost by electrostatic deposition and other methods presently used for applying prior art lubricating agents. The method of the invention is especially useful in lubricating tinplate strip, blackplate strip, blackplate strip having a chromium-containing coating thereon, and aluminum strip of container stock gauge with citric acid ester lubricants having the following structural formula:



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are individually selected from the group consisting of hydrogen and alcoholic residual containing 1–18 carbon atoms, R<sub>4</sub> is selected from the group consisting of hydrogen and carboxylic acid radicals containing 1–18 carbon atoms, and at least one of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> is an alcoholic residue. The invention further provides a novel method of applying an organic coating on lubricated metallic container stocks.

3,826,676

#### WATER VAPOR IMPERMEABLE SAUSAGE CASING MATERIAL

Wilhelm Helling, Bensheim-Auerbach, and Harald Hordt, Weinheim-Bergstrasse, am Drachenstein, Germany, assignors to Firma Carl Freudenberg, Weinheim-Bergstrasse, Germany

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,308

Claims priority, application Germany, Feb. 8, 1971, P 21 05 715.8

Int. Cl. A22c 13/00

U.S. Cl. 117—76 T 10 Claims  
A sausage casing material comprising an elastically prebonded fibrous skeleton, the pores of which are coated with a non-water-soluble, swellable and shrinkable filler and which is coated with a polyvinylidene chloride foil having a thickness between 10 and 20 microns; the method of preparing such sausage casing material which comprises forming an elastically prebonded fibrous skeleton, containing polyvinyl alcohol fibers, impregnating the same with a non-water-soluble, swellable and shrinkable



filler material and coating the same with a polyvinylidene chloride foil having a thickness between 10 and 20 microns.

3,826,677

**POLY-1-BUTENE COATED RELEASE PAPER**

Alfred Michels and Kurt Fleischer, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,510

Claims priority, application Germany, Mar. 12, 1971, P 21 11 884.3

Int. Cl. C08f 3/12; D21h 1/10

U.S. Cl. 117—76 P 8 Claims

A release coating, particularly for paper products, applied from a hot melt of predominantly isotactic poly-1-butene or copolymers of poly-1-butene having an average molecular weight of 700,000 to 2,000,000 and a melting range of about 120 to 130° C.

3,826,678

**METHOD FOR PREPARATION OF BIOCOMPATIBLE AND BIOFUNCTIONAL MATERIALS AND PRODUCT THEREOF**

Allan S Hoffman and Gottfried Schmer, Seattle, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed June 6, 1972, Ser. No. 260,237

Int. Cl. A61k 17/18, 23/02

U.S. Cl. 117—81 14 Claims

A method for the preparation of biocompatible and biofunctional surfaces is provided comprising radiation grafting a reactable compound selected from the group consisting of polymers and copolymers onto an inert polymeric substrate and thereafter chemically bonding a biologically active molecule to the reactable compound. Specific embodiments include chemically bonding of human serum albumin, heparin, streptokinase, prostaglandin E-1 and mixtures thereof to hydrogels of varying compositions with or without an intermediate smaller molecule or chemical "arm," such as  $\epsilon$ -amino caproic acid or 1,4 diamino butane, the hydrogels having been previously radiation-grafted to tough inert polymeric substrate.

A highly synergistic effect is achieved for hydrogels containing high water contents, e.g., above about 55%, when the chemically bonding of the biologically active molecules is carried out via an intermediate smaller molecule or chemical arm.

For thin film substrates having radiation-grafted there-to hydrogels with  $-\text{CO}_2\text{H}$  pendant functional groups which are activated with a carbodiimide solution, a quick wash of the thin film with ice water is required to effect subsequent chemical bonding of the biologically active molecules to the activated surface. The same technique is also required where a chemical arm is employed which has  $-\text{CO}_2\text{H}$  pendant functional groups.

3,826,679

**METHOD FOR MAKING ELECTRON ENERGY SENSITIVE PHOSPHORS FOR MULTI-COLOR CATHODE RAY TUBES**

Jack D. Kingsley and Jerome S. Prener, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Application Sept. 27, 1971, Ser. No. 184,292, now Patent No. 3,767,459, which is a division of application Ser. No. 843,401, July 22, 1969, now Patent No. 3,664,862. Divided and this application Mar. 22, 1973, Ser. No. 343,637

Int. Cl. B44d 5/00; C09k 1/12

U.S. Cl. 117—100 B 4 Claims

A method for preparing europium activated yttrium oxide phosphor particles having a non-luminescent core

and a luminescent outer region including forming crystals of yttrium hydroxide having a thin outer region of europium-yttrium hydroxide and firing the crystals to produce the resultant particles.

3,826,680

**METHOD FOR PREPARING POLYMER IMPREGNATED CEMENT ARTICLES**

Arturo Rlo, Marcello Cerrone, and Alberto Saini, Colloferro, Italy, assignors to Società Italiana per Azioni per la Produzione di Calci e Cementi di Segni, Rome, Italy

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,690

Claims priority, application Italy, Jan. 27, 1971, 47,996/71

Int. Cl. B32b 13/12; B44d 1/44

U.S. Cl. 117—119.6 1 Claim

A method for preparing polymer impregnated cement articles wherein a pre-formed cement article is impregnated with a liquid polymerizable composition, then immersed in water, heated at a temperature required for the polymerization of said polymerizable composition maintaining the impregnated cement article at such a temperature until polymerization in situ of the monomer has been completed.

3,826,681

**METHOD FOR PROTECTING A HOT ROLLED FERROUS PRODUCT**

Michel Vialle, Thionville, and Michel Turpin, Bourg-la-Reine, France, assignors to Societe Wendell-Sideler, Societe Anonyme, Hayange, France

Filed Feb. 4, 1971, Ser. No. 112,594

Claims priority, application France, Feb. 9, 1970, 7004451

Int. Cl. C23c 11/06

U.S. Cl. 117—135.1 10 Claims

A method for de-scaling a hot-rolled ferrous product, together with the de-scaled protected ferrous product produced thereby, characterized by the formation on the ferrous product as it leaves the rolling mill of a protective iron-silicon surface layer. More particularly, the ferrous product, as it leaves the rolling mill at a temperature of from between 800° C. to 1200° C., is sprayed with a de-scaling material comprising a chlorinated compound of silicon, and preferably a chlorinated derivative of silane.

3,826,682

**FABRIC CONDITIONING**

Marvin Liebowitz, Edison, and Neil M. McHugh, Bridgewater, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,549

Int. Cl. D06m 13/38, 13/40

U.S. Cl. 117—139.5 CQ 6 Claims

Stable foam fabric conditioning agents, preferably fabric softeners which also have antistatic activity, are made by dispensing a pressurized composition of fabric conditioning agent to the atmosphere, after which the foam is tumbled with fabrics in an automatic laundry dryer or similar machine while they are in a damp state, with hot drying air being circulated through the dryer. The most useful softening compositions for these products include higher fatty acyl amidopropyl di-lower alkyl glycolines and higher fatty alkyl di-lower alkyl glycolines. Preferably, these are formulated with water and a plasticizer or solvent such as glycerol, and are pressurized with a mixture of liquefied gases, such as those of the Freon or lower hydrocarbon type.

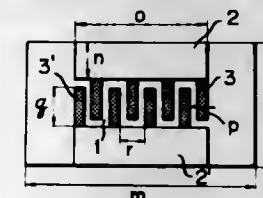
**3,826,683  
METHOD OF PRODUCING A PHOTO-CONDUCTIVE CELL**

Kazuhiko Ihaya, Tokyo, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Original application Feb. 21, 1968, Ser. No. 707,263, now Patent No. 3,594,683, dated July 20, 1971. Divided and this application Aug. 10, 1970, Ser. No. 62,608  
Claims priority, application Japan, Feb. 27, 1967, 42/12,442; Mar. 9, 1967, 42/14,902; May 31, 1967, 42/34,711

Int. Cl. B44d 1/18; C23c 13/04, 15/00

U.S. Cl. 117—212 3 Claims



This invention provides a photoconductive cell and means for producing the same for use in photometry having the specific property that current flowing through the cell is substantially proportional to the logarithm of the intensity of illumination of luminous flux. The electrodes of the cell have a resistance value corresponding to the intermediate value of specific resistance which the photoconductive body exhibits between the upper and lower limits within the photometric range. The electrodes of the cell have no rectifying property or only a little rectifying property between the electrodes and the photoconductive body, and that when it is difficult to obtain the desired specific resistance from a production point of view or by any other reason, material of the electrodes may be selected from one or more kinds of materials whose work function is the same or similar to that of the photoconductive body.

3,826,684

**NICKEL ELECTRODE CELL WITH IMPROVED HIGH TEMPERATURE CHARGE ACCEPTANCE**

Saverio F. Pensabene, Gainesville, Fla., assignor to

General Electric Company

Continuation-in-part of abandoned application Ser. No. 762,092, Sept. 24, 1968. This application Jan. 4, 1971, Ser. No. 74,818

Int. Cl. H01m 43/04

U.S. Cl. 136—28 2 Claims

Hydroxides of zinc, mercury of Group IIA metals are added adjacent the surfaces of a rechargeable positive nickel electrode containing nickel hydroxide as the active rechargeable material in the discharged state. The hydroxide additive improves the charge acceptance and energy storage capacity of cells with nickel electrodes charged at a temperature above 77° F.

3,826,685

**SEALED PRIMARY SODIUM-HALOGEN BATTERY**

Robert R. Dubin, Schenectady, William L. Mowrey, Burnt Hills, and William A. Gilhooley, Schenectady, N.Y., assignors to General Electric Company

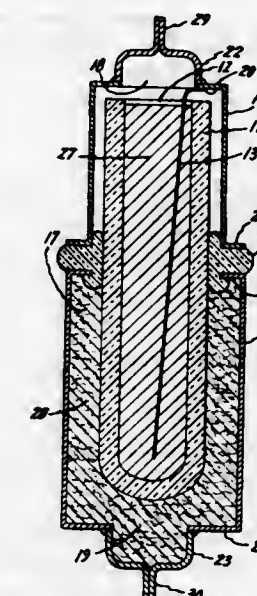
Filed Mar. 31, 1972, Ser. No. 239,890

Int. Cl. H01m 23/00

U.S. Cl. 136—83 R 2 Claims

A wall-sealed battery casing and a sealed primary sodium-halogen battery are disclosed wherein the casing includes an open ended inner vessel of a solid crystalline ion-conductive material, an electronic conductor within the interior of the inner vessel, two outer opposed open ended metallic portions each with an additional opening

surrounding the inner vessel, the two opposed vessel portions sealed together and to the outer wall of the inner vessel, and a fill tube associated with the respective additional opening in each outer vessel portion. A sealed primary sodium-halogen battery has the above type of



wall-sealed casing with a solid sodium containing ion-conductive inner vessel, a sodium anode and a cathode of a halogen in conductive material. The anode and cathode are positioned, respectively, in either the inner vessel or between the inner vessel and the outer vessel portion adjacent the closed end of the inner vessel.

3,826,686

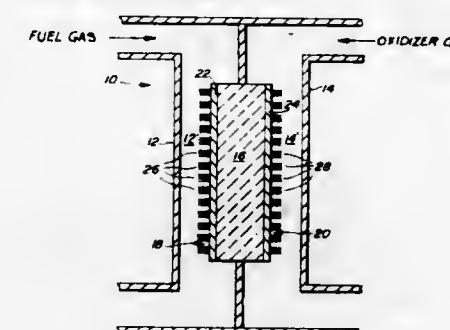
**ELECTROCHEMICAL ELECTRODES**

Sheldon L. Epstein, Wilmette, Ill., and Bernard W. Wessling, Winthrop, Mass., assignors to Brunswick Corporation, Chicago, Ill.

Original application July 24, 1969, Ser. No. 845,945, now Patent No. 3,660,888, dated May 9, 1972. Divided and this application July 6, 1971, Ser. No. 160,169

Int. Cl. H01m 13/06

U.S. Cl. 136—120 FC 7 Claims



The specification describes a molten carbonate fuel cell electric energy source incorporating a novel pair of electrodes comprising a pair of permeable thin metallic films painted on a magnesia electrolyte matrix and a plurality of fiber metal wicks flocked onto the films. During operation, the molten carbonate electrolyte permeates the wicks, which extend into the gas manifolds, to provide very large surface areas for 3-phase fuel cell reactions covered by thin films of electrolyte supplied by large reservoirs in the wicks to minimize cell overvoltage.

In addition to the preferred embodiment, a process for fabricating fuel cells and electrochemical electrodes is



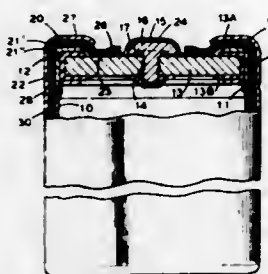
described. Also, applications to other types of fuel cells, batteries and electrochemical systems are described.

### 3,826,687 SEALS OF THE Li/SO<sub>2</sub> ORGANIC ELECTROLYTE CELLS

Arabinda N. Dey, Needham, Mass., assignor to  
P. R. Mallory & Co., Inc., Indianapolis, Ind.  
Filed May 7, 1973, Ser. No. 358,214  
Int. Cl. H01m 1/02

U.S. Cl. 136—133

8 Claims



A seal arrangement is provided for electrochemical cells commonly containing a gas component dissolved in the electrolyte. The arrangement also acts as a terminal and provides a gas-impermeable closure for the cell container while providing electrically conductive surfaces so that portions of said seal arrangement may serve as a terminal for the cell. A gas-impermeable seal element of the arrangement is a polymer film coated on both sides of an aluminum foil and bonded to said aluminum. The polymeric film provides a measure of gas-impermeability and provides heat-sealable surfaces and the aluminum foil provides strength and gas-impermeability. The arrangement provides for the positioning of the foil-polymer composite around the metallic upper portion of the cell assembly in a manner that the metallic elements may be heat sealed thereto including the container of the cell and a heat shrinkable overlaying sleeve.

### 3,826,688 ALUMINUM ALLOY SYSTEM

Sander A. Levy, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.  
Continuation-in-part of application Ser. No. 105,061,  
Jan. 8, 1971. This application Aug. 3, 1972, Ser.  
No. 277,605

Int. Cl. C22f 1/04

U.S. Cl. 148—2

29 Claims



Micrograph showing the surface of the Al-Cu-Mg alloy containing up to about 5% copper and up to about 2% magnesium as the

Wrought articles of Al-Cu-Mg alloy containing up to about 5% copper and up to about 2% magnesium as the

principal alloying elements by weight, within limits effective to achieve substantially single phase structure, and exhibiting improved fracture toughness in -T8XX condition; also, related practices and improved alloy compositions for making such articles, including plate.

### 3,826,689 AUSTENITE TYPE HEAT-RESISTING STEEL HAVING HIGH STRENGTH AT AN ELEVATED TEMPERATURE AND THE PROCESS FOR PRODUCING SAME

Sadao, Ohta and Yasuo Wataae, Kobe, Japan, assignors  
to Kobe Steel Ltd., Fukui-ku, Kobe, Japan  
Filed Mar. 9, 1972, Ser. No. 233,255  
Claims priority, application Japan, Mar. 9, 1971,  
46/12,983

Int. Cl. C22c 39/26, 39/40, 41/02

U.S. Cl. 148—3

5 Claims



An austenite type heat-resistant steel, containing in weight percent from 0.1 to 1% carbon, from 0.01 to 3% silicon, from 0.01 to 10% manganese, from 13 to 35% chromium, from 15 to 50% nickel, and the balance essentially impurities and iron, or additionally other elements such as Co, W, Mo, Nb, Ti, Al and/or N, which is characterized by high strength at elevated temperatures, and which is adaptable to forming by forging or centrifugal casting processes, is provided herein.

### 3,826,690 METHOD OF PROCESSING ALUMINUM ELECTRICAL CONDUCTORS

Warren Edward Bleinberger, Towson, Edward Louis Franke, Jr., Perry Hall, John Vernon Galloway, Timonium, George William Richardson, Glen Burnie, and Albert Richard Thomas, Baltimore, Md., and Palmer Doyle Thomas, Tucker, Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.  
Continuation of abandoned application Ser. No. 118,677,  
Feb. 25, 1971. This application Oct. 22, 1971, Ser. No. 191,628

Int. Cl. C21d 1/26, 1/40, 7/00

U.S. Cl. 148—11.5 A

10 Claims

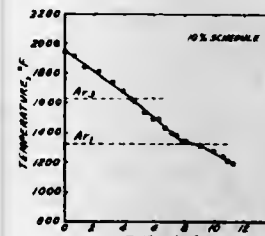
Aluminum or aluminum alloy wire having a relatively high percentage of elongation and a relatively high fatigue resistance in addition to substantially high yield and tensile strengths is manufactured by a continuous automatically controlled process involving the steps of cold working the wire by initially drawing the wire to a diameter near the final diameter and cleaning the wire in a solvent. Then the wire is strand annealed with a low frequency induction annealer with provisions for regulating the annealing temperature to precisely control the annealing by compensating for disturbing factors such as changes in line speed after which the wire is drawn in a specially controlled environment while controlling automatically the strand annealing and the heat loss between the strand annealing and the specially controlled environment to maintain the temperature of the wire being advanced into the specially controlled environment above the strain recrystallization temperature of the wire material. Then the wire is recleaned in a solvent after which insulation is extruded onto the wire, and stresses in the wire are distributed by reverse bending of the wire.

### 3,826,691 ROLLED FERRITE-PEARLITE ALLOY PLATE AND METHOD OF PROCESSING SAME

George F. Melloy, Bruce L. Bramfitt, and Arnold R. Marder, Bethlehem, Pa., assignors to Bethlehem Steel Corporation  
Filed Feb. 5, 1973, Ser. No. 329,473  
Int. Cl. C21d 7/14; C22c 39/00

U.S. Cl. 148—12

6 Claims



This invention relates to a ferrous alloy and a method for improving the strength and notch toughness of a ferrous alloy containing by weight up to about 0.35% carbon, a total up to about 3% of other elements, balance iron. More particularly, said invention is predicated on the discovery that by controlling the reduction aspects of the continuous thermal mechanical treatment schedule through the austenite, austenite-ferrite, and ferrite regions, a highly textured ferrous alloy results having improved properties.

### 3,826,692 PROCESS OF MANUFACTURING HEAT RESISTING STEEL SHEET FOR DEEP DRAWING

Kazuhisa Kinoshita and Tetsuo Yamaguchi, both %  
Gijutsu Kenkyusho, Nippon Kokan Kabushiki Kaisha,  
2730 Minamiwataridacho, Kawasaki-shi, Kanagawa-  
ken, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 79,685, Oct. 9, 1970. This application  
Dec. 29, 1972, Ser. No. 332,582

Claims priority, application Japan, Oct. 13, 1969,

44/81,399

Int. Cl. C21d 9/48; C22c 39/02, 39/14

U.S. Cl. 148—12

2 Claims

A method for manufacturing steel sheet having good cold formability comprising hot rolling steel which contains less than 0.10% C (less than 0.15% annealing for decarburization), less than 0.15% Si, less than 0.25% Mn, 0.4% to 1.5% Cr, less than 0.8% Mo, less than 0.5% Al and unavoidable impurities, cold rolling at a reduction rate of more than 30% and annealing for recrystallization at a temperature above 700° C.

### 3,826,693 ATMOSPHERE CONTROLLED ANNEALING PROCESS

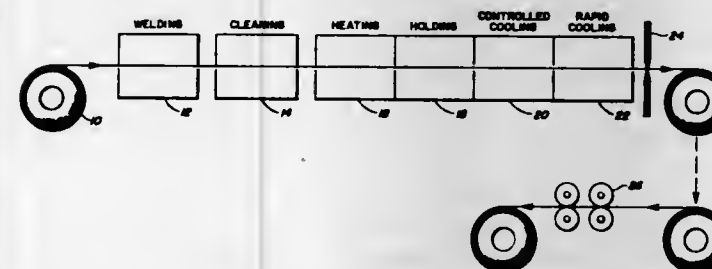
Thomas W. Fisher, Bethlehem, Pa., assignor to  
Bethlehem Steel Corp.

Filed Jan. 29, 1973, Ser. No. 327,537

Int. Cl. C21d 1/76

U.S. Cl. 148—12.1

4 Claims



A method of controlling the surface appearance of continuous annealed and temper rolled steel strip suitable for

use in the manufacture of metallic coated steel strip, such as tin plate. The bright and uniform appearance of the strip is achieved by providing a protective atmosphere containing a maximum of about 1.5% hydrogen during the controlled cooling down to about 1000° F., and a maximum of about 0.5% hydrogen during the rapid cooling down to below about 250° F.

### 3,826,694 THERMAL TREATMENT OF STEEL

John E. Woodilla, Jr. and Gordon W. Hunt, Torrington,  
and Willard B. Green, Jr., Harwinton, Conn., assignors  
to The Torrington Company, Torrington, Conn.

Filed May 18, 1972, Ser. No. 254,454

Int. Cl. C21d 1/46

U.S. Cl. 148—15 2 Claims  
A method of hardening hypereutectoid steels having less than about 10% total alloy content is described which results in a structure with an ultra-fine grain size (finer than ASTM #10) and a natural dispersion of very small excess carbides. The process includes high temperature solid solution of the carbide phase present in the material, controlled cooling through a selected area of the time-temperature-transformation for the material to form pearlite, (a ferrite and carbide lamellar structure) and cementite reheating to austenitize the material, and finally, quenching to produce a structure with an ultra-fine grain and a natural dispersion of very small excess carbides that results in an improvement of fatigue life and an increase in compressive yield strength.

### 3,826,695 FOAMED MOLTEN WELDING POWDERS WITH LOW BULK DENSITY

Wolfgang Leicher and Anton More, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Feb. 1, 1973, Ser. No. 328,821  
Claims priority, application Germany, Feb. 9, 1972,  
P 22 06 156.9

Int. Cl. B23k 35/34

U.S. Cl. 148—26 3 Claims  
A foamed molten welding powder with low bulk density to be used for submerged arc welding, advantageously for pore-free plating, said powder having the following chemical analysis:

	Percent by weight
SiO <sub>2</sub> -----	37-46.5
Al <sub>2</sub> O <sub>3</sub> -----	4-18
CaO -----	5-13
MgO -----	18-35
Na <sub>2</sub> O+K <sub>2</sub> O -----	3-6.5
Combined fluorine -----	3-6.5

### 3,826,696 RARE EARTH INTERMETALLIC COMPOUNDS CONTAINING CALCIUM

Robert E. Cech, Scotia, N.Y., assignor to  
General Electric Company

No Drawing. Application Aug. 16, 1971, Ser. No. 172,290, now Patent No. 3,748,193, which is a continuation-in-part of abandoned application Ser. No. 849,875, Aug. 13, 1969. Divided and this application Dec. 18, 1972, Ser. No. 315,813

Int. Cl. H01f 1/04

U.S. Cl. 148—31.57 1 Claim

A reduction-diffusion process for producing novel rare earth intermetallic compounds, for example, cobalt-rare earth intermetallic compounds, especially compounds useful in preparing permanent magnets. A particulate mixture of rare earth metal oxide, cobalt and calcium hydride is heated to effect reduction of the rare earth metal oxide and to diffuse the resulting rare earth metal into the cobalt to form the intermetallic compound.



3,826,697

**CORROSION RESISTANT EDGE TOOLS SUCH AS RAZOR BLADES**

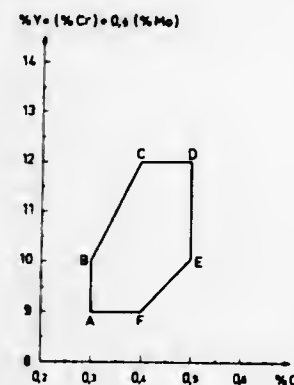
Jan-Christer Henrik Oveason Carlen and Claes Bertil Bergqvist, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Continuation of abandoned application Ser. No. 42,050, June 1, 1970. This application Oct. 17, 1972, Ser. No. 298,241

Int. Cl. C22c 39/14

U.S. Cl. 148—37

3 Claims



Steels suitable for making corrosion-resistant edged tools (e.g., razor blades) contain chromium and carbon, and may contain silicon, manganese, molybdenum, tungsten, copper, cobalt, nickel, niobium, tantalum, titanium, vanadium, zirconium, boron or beryllium. The ratio of chromium to carbon is less than 30:1; the carbon content is 0.3–0.5 wt. percent; and the chromium content is 9.0–10.8 wt. percent. A tool formed from a steel of this class has a hardness exceeding VPN 800 in the hardened condition, and a hardness after tempering up to 400° C. within the range VPN 650–800.

3,826,698

**PROCESS FOR FORMING A PEDESTAL BASE TRANSISTOR**

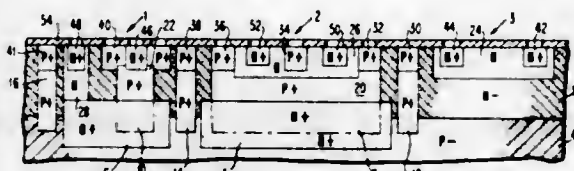
Igor Antipov, Pleasant Valley, and Paul Albin Meizer, Newburgh, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,381

Int. Cl. H011 7/44

U.S. Cl. 148—191

9 Claims



A process for forming a pedestal base transistor in which a buried layer of a first conductivity type is diffused into a substrate of a second conductivity type. Impurities of the second conductivity type, which have a higher diffusion rate than the dopant which forms the buried layer, are diffused into a limited area of the buried layer. An epitaxial layer is then formed on the surface of the semiconductor. During the growth of the epitaxial layer, the previously diffused regions outdiffuse into the epitaxial region. The outdiffusion of the second conductivity type, due to its faster diffusing characteristics, approaches the surface of the epitaxial layer more closely than does the buried layer, thereby forming a pedestal region. A second diffusion of the fast diffusing material is

made through the surface of the epitaxial layer and contacts the pedestal, thereby resulting in a highly doped pedestal base region. Diffused isolation regions and an emitter region are formed to complete the device in monolithic form.

A method for simultaneously forming a second transistor of the complementary type to the first transistor using the same process steps is also described.

3,826,699

**METHOD FOR MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT ISOLATED THROUGH DIELECTRIC MATERIAL**

Hajime Sawazaki, Tokyo, Kiyohide Sakai, Yokohama, Hiroshi Tsutsumi, Fujisawa, Yasusuke Sumitomo and Kazuo Niwa, Yokohama, and Eisaku Inaba, Kitakyushu, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 9, 1973, Ser. No. 358,701

Claims priority, application Japan, May 13, 1972, 47/47,382

Int. Cl. H011 7/36, 7/50, 19/00

U.S. Cl. 148—175

6 Claims



A method for manufacturing a semiconductor integrated circuit comprises steps of forming an enclosed groove in the surface of a semiconductor wafer, forming an inner dielectric layer on the surface of the groove, depositing an epitaxial layer on said surface of the wafer and the surface of the dielectric layer, forming an outer dielectric layer on the epitaxial layer, forming a support substrate on the outer dielectric layer, removing the wafer in a predetermined level to form an island region enclosed by the outer dielectric layer and forming a semiconductor element in the island region.

3,826,700

**WELDING METHOD FOR FABRICATING LARGE AREA SINGLE CRYSTALS AND THE PRODUCT THEREOF**

Ting L. Chu, Dallas, Tex., assignor to Texas Instruments Incorporated and Southern Methodist University, Dallas, Tex.

Filed June 28, 1972, Ser. No. 266,932

Int. Cl. H011 7/38

U.S. Cl. 148—177

18 Claims

A method of permanently "welding" together slabs of semiconductor materials cut from grown crystals such as, for example, gallium arsenide is disclosed. A thin film of alloying material such as, for example, germanium is formed on one edge of a slab of semiconductor material to be welded to the edge of another slab of the material. With the alloying material bearing slab edge and the edge of the slab to be welded thereto juxtaposed the resulting sandwich is heated in a suitable atmosphere such as, for example, a metallic vapor atmosphere above the eutectic point of the system to dissolve the alloying material in a thin dissolved layer of the semiconductor material to form a liquid solution with a composition determined by the phase diagram of the system. The temperature of the system is then lowered to room temperature to enable the liquid solution to solidify and grow onto the semiconductor material slabs to form an epitaxial layer welding the two sections together.

3,826,701

**CONTROLLABLE HEAT SEALING PROCESS FOR OPTIMUM SEAL STRENGTH**

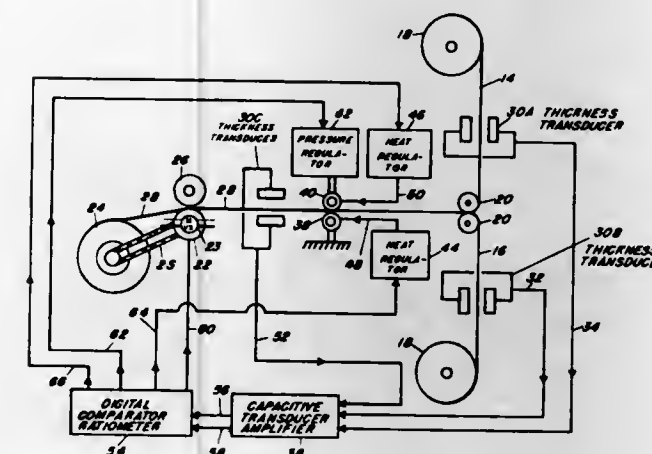
Donald Miller, Rockaway, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 31, 1972, Ser. No. 302,457

Int. Cl. G01b 5/06

U.S. Cl. 156—64

4 Claims



A method for sealing thermoplastic film materials to obtain optimum seal strength is achieved by automatically varying seal making parameters in response to a pre-established seal bead to film thickness ratio for a given seal efficiency. A combination of thickness sensing transducers, amplifier, ratiometer and variable speed motor is used to maintain and control the bead making process within a selected seal efficiency to thickness ratio range. The present process for heat sealing thermoplastic materials controls seal efficiency by non-destructive testing of the seal bead and film material and continuous control of the process.

3,826,702

**METHOD OF IN-SITU HEAT SEAL SLEEVING FOR LARGE ROLLS**

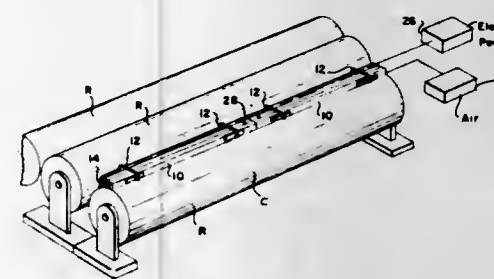
Harry Samuel Chapman, R.D. 3, Box 328, Hickory Hill, Oxford, Pa. 19363

Continuation-in-part of application Ser. No. 824,411, May 13, 1969, now Patent No. 3,660,210. This application Apr. 21, 1972, Ser. No. 246,268

Int. Cl. B65h 8/00

U.S. Cl. 156—86

14 Claims



Heat sealing organic polymeric materials, especially fluorocarbon films, to form tubular sleeves about large and elongated rolls prior to heat-shrinking the sleeve snugly about the roll, thereby to effect rapid in-situ roll sleeving.

3,826,703

**METHODS OF PRODUCING FIBROUS SILICATE PRODUCTS**

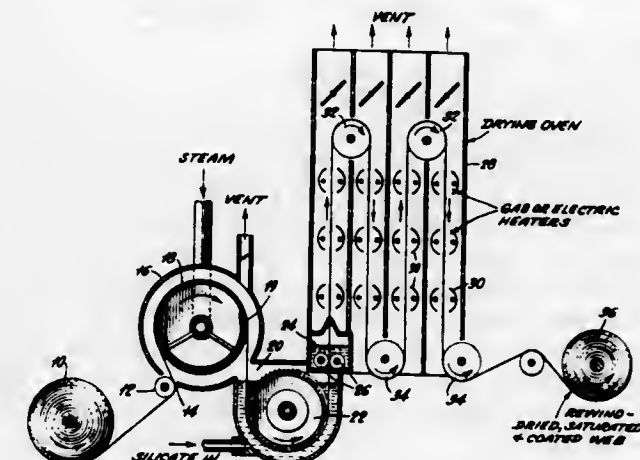
William Thornton Russell, Rte. 4, North Manchester, Ind. 46962

Application July 12, 1970, Ser. No. 55,672, now abandoned, which is a continuation-in-part of application Ser. No. 781,200, Dec. 4, 1968, now Patent No. 3,616,194. Divided and this application May 10, 1972, Ser. No. 252,049

Int. Cl. B05c 3/12; B31c 13/00; B32b 13/08

U.S. Cl. 156—189

19 Claims



The subject matter of the following specification involves new products comprising alkali metal silicates and a suitable substrate, especially a fibrous substrate such as a strong, dense paper. A wide variety of products in the form of panels, tubes, both round and multisided, containers, such as boxes and drawers for furniture, desks and the like, or formed by shaping and forming in the manner of laminating, for example, by heat and pressure in a press or a combination of press and mandrel. The stock material for the laminating operation in a preferred example comprises Kraft liner board stock as a sheet material in which the alkali metal silicate is present in the voids of the paper from surface to surface as viewed in cross section; and the paper may be fully saturated with the silicate or a selected quantity may exist in the paper randomly in the voids and through the paper as results from the manner of effecting the silicating of the paper stock. The silicated paper stock is produced extremely rapidly by techniques which cause the silicate to penetrate the paper in a surface manner, a particularly suitable technique involving steam displacement of air from the paper followed by exposure to a silicate solution which effects condensation of steam entrapped in the paper voids, whereby a high vacuum is set up in the paper voids. As a result, and together with other control factors, the silicate is found to become a substantially composite surface to surface mass as distinguished from mere surface residence. The silicated sheet is then dried to a water content such that it may be stored without adhesion of adjacent surfaces and yet the silicate of the stock may later be caused to undergo plastic flow, as by heat and/or pressure, in a shaping-forming laminating type of product manufacture. In the shaping-forming operation specifically set forth, the silicate within the stock, with its highly reduced moisture content rendering it possible to produce dry products, undergoes thermoplastic transition and the silicate of the layers of sheet stock superimposed upon each other is caused to merge across the interfaces and becomes united as a continuous mass of silicate existing in the completed product through its thickness. As a result, products which have not heretofore been conceived, and which are comparable or superior in substantially all respects to known construction materials are provided from two of the cheapest known raw materials.



### 3,826,704 METHOD OF BONDING POLYOLEFINE TO A SUBSTANCE

Shogo Ohya, 48 Jodoji Kamiminamidacho, Sakyo-ku, Kyoto, Japan; Katsuyuki Hara, 5-4 Ohatacho, Takatsuki, Osaka, Japan; Momoyoshi Takagi, B30-404, 167 Kozza Kanafuri, Aza Yahatacho, Yahatacho, Tsuzuki-gun, Kyoto, Japan; and Masao Kurokawa, 2-21-6-310 Hinomya, Meguro-ku, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 874,073, Oct. 9, 1969. This application Sept. 24, 1971, Ser. No. 183,685

Claims priority, application Japan, July 8, 1969,

44/53,665

Int. Cl. B32b 31/24; C09j 5/02

U.S. Cl. 156—306

1 Claim

A method of bonding polyolefine to a substance such as a steel plate. The polyolefine and the plate are heated to a temperature equal to the melting point of polyolefine plus at least 100° C., and the melted polyolefine is brought into contact with the plate and kept at the temperature for at least five minutes for producing bonding strength at the boundary surface between the polyolefine and the substance. The boundary surface is cooled by keeping it for at least ten minutes at a further temperature between the temperature  $T_m$  where the rate of crystallization is maximized and a temperature of  $T_m + 80^\circ \text{C.}$ , or by cooling it from this temperature at a rate of 8° C. per minute. The internal stress caused in the polyolefine is thereby prevented from being concentrated at the boundary surface.

### 3,826,705 LAP-JOINING RECORDING TAPE SPLICER

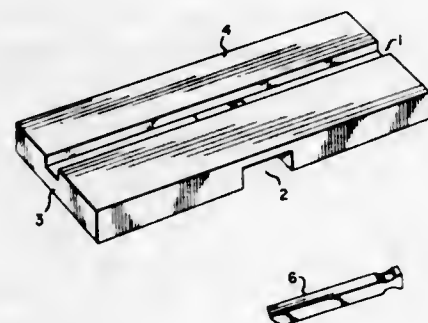
Lawrence L. Funk, Washington, D.C.  
(711 Eno St., Hillsborough, N.C. 27278)

Filed Dec. 20, 1971, Ser. No. 209,824

Int. Cl. B31f 5/00

U.S. Cl. 156—505

1 Claim



A device with which to splice long-playing magnetic sound recording tape without the use of pressure-sensitive splicing tape. The recording tape is lap-joined with a liquid acrylic solvent, and is prevented from curling into a useless shape while under the influence of the solvent by a channel which directs the tape over a pressure-sensitive surface.

### 3,826,706 ARRANGEMENT FOR AFFIXING OBJECTS TO TRAVELLING SHEETS

Hans Muller, Zofingen, Switzerland, assignor to Grapha Maschinenfabrik Hans Muller AG, Zofingen, Switzerland

Filed Aug. 7, 1972, Ser. No. 278,651

Claims priority, application Switzerland, Aug. 13, 1971, 11,964/71

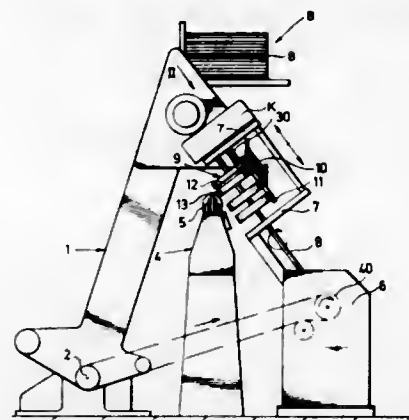
Int. Cl. B65c 9/00, 11/04

U.S. Cl. 156—546

12 Claims

A conveyor advances printed sheets in a given path and a supply arrangement supplies objects which are to be

affixed to the sheets, provides a line of adhesive on each



### 3,826,707 PYROLYTIC GRAPHITE COMPOSITES

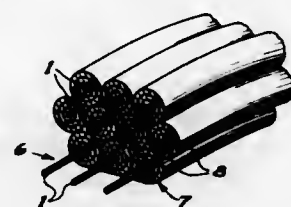
Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation

Filed June 28, 1971, Ser. No. 157,138

Int. Cl. B29h 17/28

U.S. Cl. 161—57

11 Claims



A shaped pyrolytic graphite article comprising a pyrolytic graphite matrix containing embedded therein at least one reinforcing refractory strand layer, the refractory being a refractory metal, carbide, boride, nitride, or oxide. The refractory strand layer comprises a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous refractory strands. The matrix comprises crystallite layers of pyrolytic graphite nucleated from each of the individual refractory strands and interconnected to form a continuous phase surrounding and interconnecting the individual strands comprising the embedded strand layer.

A method for making such pyrolytic graphite articles which comprises progressively positioning continuous refractory strand onto a shaped form and simultaneously pyrolyzing carbonaceous gas onto the strand at about the point of positioning contact to nucleate pyrolytic graphite from the strand, progressively positioning additional strand laterally spaced from previously positioned strand and, as the additional strand is positioned, simultaneously pyrolyzing the carbonaceous gas on the additional strand at about the point of positioning contact and on the pyrolytic graphite nucleated from previously positioned strand to form a continuous pyrolytic graphite matrix interconnecting laterally spaced strands.

### 3,826,708 ROCKET NOZZLE LINER CONSTRUCTION

Aram J. Dervy, Santa Monica, Calif., assignor to McDonnell Douglas Corporation

Original application May 18, 1970, Ser. No. 38,264, now Patent No. 3,701,704. Divided and this application Feb. 28, 1972, Ser. No. 230,149

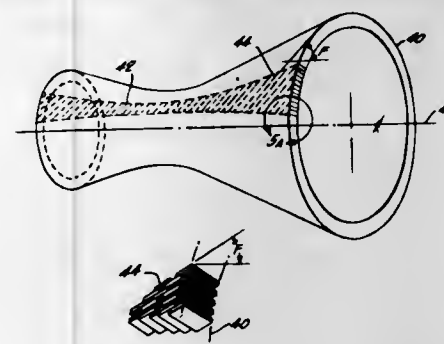
Int. Cl. B32b 5/16

U.S. Cl. 161—162

6 Claims

Rocket nozzle liner is formed from substantially identical longitudinal segments which have been circumferen-

tially fused together into an integral unit. Rectangular flakes are preferably cut from cloth material having good insulative and ablative properties to provide flakes of the same width but of different lengths, the length of a flake being a function of the nozzle liner thickness at the longi-



tudinal point where such flake is to be used. The flakes are preferably cut so that the dominant warp filaments of each flake are generally parallel to its length, and each liner segment is molded from suitably arranged flakes to provide a segment having predetermined warp filament orientations therein.

### 3,826,709 PROCESS FOR LAMINATING PHOSPHATE COATED STEEL WITH ABS RESIN

Darrel V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation

No Drawing. Original application Sept. 2, 1969, Ser. No. 854,721, now abandoned. Divided and this application Apr. 25, 1972, Ser. No. 247,390

Int. Cl. B32b 27/30, 27/32

U.S. Cl. 161—217

1 Claim

In forming a coating of acrylonitrile-butadiene-styrene (ABS) resin on a phosphated steel surface, a primer of an ABS resin is first applied to the steel in the form of a solution. After evaporating the solvent from the primer solution, and fusing the solid primer to the metal, sheet ABS resin is applied and molded by heat and pressure to the primed steel surface.

### 3,826,710 CARBONATION SYSTEM FOR RECOVERY OF SODIUM BASE PULPING LIQUOR

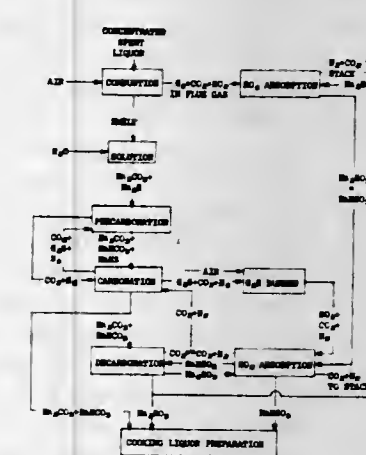
Clyde G. Anderson, Cincinnati, Ohio, assignor to Owens-Illinois, Inc.

Filed Apr. 21, 1972, Ser. No. 246,366

Int. Cl. D21c 11/02, 11/06

U.S. Cl. 162—36

2 Claims



This invention provides an integrated closed carbonation system for recovering sodium base sulfite pulping liquor which is of interest chemically, thermally and ecologically. The system includes in combination (1)

smelt solutions containing from 33 to 67 mol percent sodium sulfide with the balance primarily sodium carbonate, (2) self-sufficiency in carbon dioxide for displacement of the sulfide, (3) temperatures during carbonation of from 140°–180° F., (4) an intermediate concentration of CO<sub>2</sub> for carbonation, (5) systems for cycling various gas streams to conserve and reuse carbon dioxide while still purging the system of nitrogen and in particular the recycling of purge gases from a precarbonation zone to a main carbonation zone, (6) production of gases containing H<sub>2</sub>S at a concentration greater than 6% by volume suitable for direct combustion to SO<sub>2</sub>, and (7) purge gases essentially free of either H<sub>2</sub>S or SO<sub>2</sub>.

### 3,826,711 SHEETED CELLULOSE DERIVATIVE FIBERS

Howard Leon Schoggen, John Richard Holmgren, and Thomas Sanders Harris, Jr., Memphis, Tenn., assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,857

Int. Cl. D21h 5/26

U.S. Cl. 162—102

14 Claims

Coherent sheets of at least partially water soluble and water swellable carboxy methyl cellulose fibers having requisite physical properties for handling and comminution are prepared by slurrying said carboxy methyl cellulose fibers in aqueous organic slurry media and forming fibrous sheets from the fibrous slurries. The fibrous sheets are then dried after displacement of additional amounts of water from the formed sheets, by successive stages of aqueous alcoholic solution displacement washing of decreasing water content, so that final drying proceeds from a moist fibrous sheet containing 0.02 to 0.5, preferably 0.02 to 0.3, parts by weight of water to carboxy methyl cellulose fiber.

### 3,826,712 ACRYLIC SYNTHETIC PAPER AND METHOD FOR PRODUCING THE SAME ACRYLIC FIBERS WET SPUN FROM A BLEND OF HYDROLYZED AND UNHYDROLYZED ACRYLIC POLYMERS HAV- ING AT LEAST 60% ACRYLONITRILES BY WEIGHT AND PAPER MADE FROM SUCH FIBERS

Yoshinori Masuda, Hideo Sato, Tadahiro Kobayashi, and Yoshiaki Terada, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

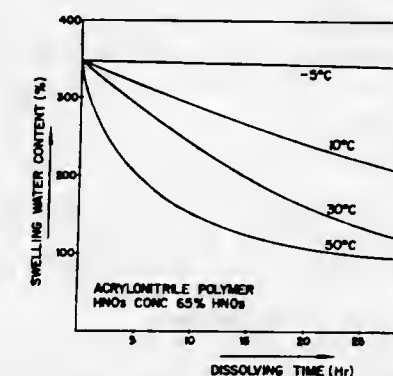
Filed Jan. 3, 1973, Ser. No. 320,763

Claims priority, application Japan, Jan. 18, 1972, 47/6,616; July 27, 1972, 47/74,663

Int. Cl. D21h 5/12

U.S. Cl. 162—157 R

6 Claims



Acrylic synthetic paper having an improved strength is provided. Acrylic polymer was dissolved and hydrolyzed in a concentrated nitric acid to obtain a polymer with a swelling water content being not more than 200%; the thus hydrolyzed polymer was blended with up to 95% by weight of an unhydrolyzed acrylic polymer having an acrylonitrile content of at least 30% such that the total



acrylonitrile content is at least 60% by weight, then the resulting blend was wet spun by nitric acid to obtain acrylic fiber; and further the resultant acrylic fiber was beaten, converted into a paper sheet and then dried to obtain the acrylic synthetic paper with an improved strength.

3,826,713

# PAPER MACHINE PRESS SECTION AND METHOD FOR USING SAME

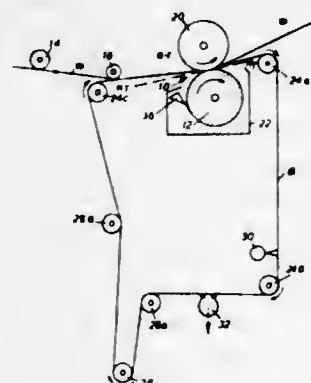
Erik A. Nykopp, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Continuation of abandoned application Ser. No. 753,490, Aug. 19, 1968. This application Apr. 28, 1972, Ser. No. 248,593

Int. Cl. B21f 11/00

U.S. Cl. 162-205

19 Claims



A paper web and its supporting felt or a felt only is dewatered employing a press assembly comprising a pair of press rolls in nip-defining relation wherein one of the press rolls is a blind drilled roll. On the off-running side of the nip the felt is guided away from the nip on the side of the nip tangent plane opposite the blind drilled roll at an angle defined between the felt and the common tangent plane. The blind drilled roll is disposed in a save-all having a side wall terminating at an upper edge spaced closely adjacent to the common tangent plane and the nip to prevent water from entering the felt on the off-running side of the nip.

3,826,714

# THERMOPHILIC GLUCOSE ISOMERASE ENZYME PREPARATION

Mikio Suekane, Saitama, and Matsuo Kanno and Shiro Hasegawa, Tokyo, Japan, assignors to CPC International Inc.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,313

Int. Cl. C12b 1/00

U.S. Cl. 195-31 F

16 Claims

Describes a new glucose isomerase enzyme preparation characterized by thermal stability and high optimum temperature of enzyme activity.

3,826,715

# NOVEL AMYLASE AND PROCESS FOR PREPARING THE SAME

Koki Horikoshi, Fujimi, and Yonosuke Ikeda and Yoshitake Tanaka, Tokyo, Japan, assignors to Rikagaku Kenkyusho, Saitama-ken, Japan

Filed Apr. 14, 1972, Ser. No. 244,046

Claims priority, application Japan, Apr. 19, 1971, 46/25,079

Int. Cl. C07g 7/02

U.S. Cl. 195-66 R

5 Claims

A novel amylase characterized by being a liquefying amylase having broad optimal pH values of 4.5, 7 and 9, and a method for preparing thereof characterized by fermentation of a strain of microorganism, *Bacillus* sp. No. 38-2 (ATCC 21783) in an alkaline culture medium containing a carbonate.

3,826,716

# METHOD FOR PREPARING $\alpha$ -AMYLASE

Georgy Ivanovich Kvesitadze, ulitsa Abasheli 7a, and Georgy Nikolaevich Kokonashvili, ulitsa Perovskoi 4, both of Tbilisi, U.S.S.R., and Raisa Vasilievna Fenikova, ulitsa Novoslobodskaya 67/69, kv. 167, Moscow, U.S.S.R.

No Drawing. Continuation of abandoned application Ser. No. 189,032, Oct. 13, 1971. This application Apr. 2, 1973, Ser. No. 346,785

Claims priority, application U.S.S.R., Oct. 20, 1970, 1,479,555

Int. Cl. C12d 13/10

U.S. Cl. 195-66 R

2 Claims

A method for preparing  $\alpha$ -amylase by depth cultivation of *Aspergillus oryzae* on a water nutrient medium containing the following ingredients: starch,  $\text{NaNO}_3$ ,  $\text{MgSO}_4$ ,  $\text{KCl}$ ,  $\text{FeSO}_4$ ,  $\text{KH}_2\text{PO}_4$ ,  $\text{Mg}(\text{NO}_3)_2$ ,  $\text{Mg}(\text{H}_2\text{PO}_4)_2$ , and 20 percent by volume of 20 percent extract of malt sprouts. The culture filtrate is dialyzed with phosphate buffer at pH 6.5-7.5. From the dialyzate, the  $\alpha$ -amylase is adsorbed on diethylamine ethylcellulose and then eluted with a phosphate buffer (from 0.04 to 0.12M) at pH 6.5-7.5 containing  $\text{CaCl}_2$  (0.0003-0.001M).

3,826,717

# QUANTITATIVE ANTIBIOTIC TEST CONTAINER

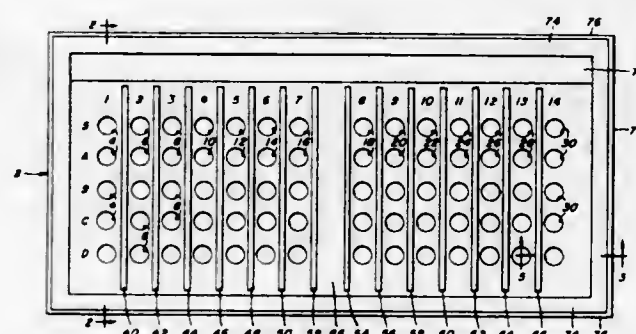
Verne E. Gilbert, Oak Ridge, Tenn., and Arnold B. Silverman, Pittsburgh, Pa., assignors to Verne E. Gilbert, Oak Ridge, Tenn.

Filed Feb. 26, 1973, Ser. No. 335,520

Int. Cl. C12k 1/04

U.S. Cl. 195-103.5 R

26 Claims



A quantitative antibiotic test container having a plate member provided with a plurality of integrally formed upwardly open test wells and an elongated upwardly open specimen receiving trough. The wells are preferably disposed in a number of generally parallel rows which are oriented generally transversely with respect to the trough. The wells are filled with a solid nutrient media, such as Trypticase Soy agar, and a predetermined concentration of an antibiotic, with the upper surface of the mixture being disposed generally at the well opening. A specimen distributor having a handle portion and an elongated head portion is provided with a specimen receiving section so configured as to be at least partially receivable within the specimen receiving trough. A cover member overlying the plate member. The plate member preferably has elongated barrier elements to resist flow of fluids between adjacent rows. An antibiotic is provided in a given row with a number of predetermined concentrations in successive wells with higher concentration in a given row preferably being in the well more remote from the trough. One or more standard wells having solid nutrient media but no antibiotic may be provided.

A method of effecting antibiotic sensitivity testing employing the container described.

3,826,718

# APPARATUS FOR AUTOMATICALLY EFFECTING VACUUM CONCENTRATION AND RECOVERY OF WASTE LIQUID

Kiyosumi Takayasu, 2, 5-chome, Horita-Dori, Mizuho-ku, Nagoya, Japan

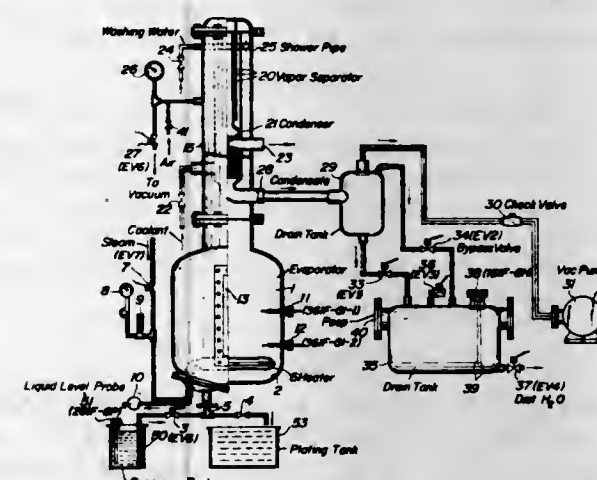
Filed Mar. 23, 1973, Ser. No. 343,952

Claims priority, application Japan, Mar. 25, 1972, 47/29,393

Int. Cl. B01d 1/00, 3/00, 3/42; F28b

U.S. Cl. 202-181

1 Claim



An apparatus for automatically effecting vacuum concentration and recovery of waste liquid comprising an evaporating vessel of which volume is relatively small and which is provided on its top with a steam riser tube which is occupied by a vapor separator and a condenser. The condenser is subjected through a drain tank consisting of two tanks connected in series, to vacuum. A waste liquid in a waste liquid recovery tank is supplied into the evaporating vessel and is heated by a steam heater and steam thus produced is condensed into distilled water by the condenser, the distilled water being discharged through the drain tank to the outside. The liquid level in the evaporating vessel, water level in the drain tank and liquid level in the waste liquid recovery tank are controlled by relays arranged on a control board in a manner such that the evaporating and concentrating operations of the waste liquid and discharge of distilled water are automatically repeated for a given number of times. The starting and stop of these automatic operations are manually effected.

3,826,719

# FRACTIONATOR CONTROL SYSTEM FOR REBOILING NARROW BOILING RANGE LIQUIDS

David M. Boyd, Clarendon Hills, and Charles E. Wood, Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation of abandoned application Ser. No. 7,024, Jan. 30, 1970. This application Mar. 17, 1972, Ser. No. 235,761

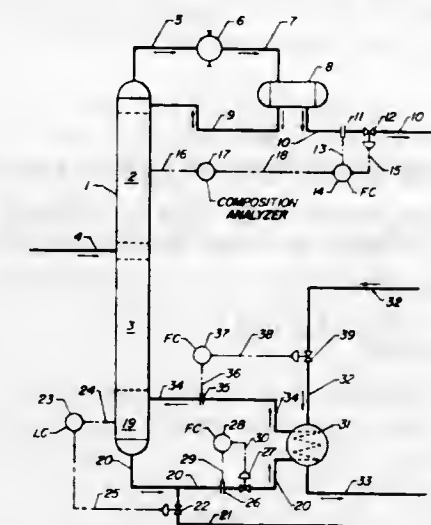
Int. Cl. B01d 3/42

U.S. Cl. 203-1

10 Claims

Method and system for controlling the reboiling function of a fractional distillation column. Means is provided for passing reboiler liquid from a lower section of the column to the reboiler at a constant predetermined rate of flow. Operatively associated with the reboiler, is a means to vary the heat input thereto. Operatively associated with the reboiler vapor return line is a means for establishing a flow signal representative of the rate of flow of heated fluid passing therethrough. Although the flow signal is not directly correlatable with the rate of flow of the heated fluid, since the heated fluid normally leaving the reboiler is a vapor-liquid mixture, the flow signal is passed to the heat input varying means, whereby heat input is regulated responsive to the flow signal. The phase dis-

tribution of the vapor-liquid mixture is thereby held constant, thus maintaining the column under conditions of thermal equilibrium. The invention has particular applica-



tion where the reboiler liquid is a substantially pure compound or a component mixture having a boiling range of about 10° F. or less.

3,826,720

# RECOVERY OF A MONOGLYCERIDE BY AZEOTROPIC DISTILLATION WITH AN ALCOHOL

Erlend Rupert Lowrey, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed May 1, 1972, Ser. No. 249,051

Int. Cl. B01d 3/36; C11b 3/12

U.S. Cl. 203-20

8 Claims

The recovery of surface-active agents from aqueous solvents by use of unsubstituted, low carbon aliphatic alcohol to form a heterogeneous, minimum boiling point azeotrope and removing said azeotrope from said surface active agent by conventional distillation and evaporation techniques. The process of this invention permits the recovery of surface-active agents from heterogeneous mixtures and a reduction of foaming to below a level which is considered significant.

## ERRATUM

For Class 204-1 see:  
Patent No. 3,826,971

3,826,721

# METHOD OF FORMING LITHIUM-DOPED GERMANIUM BODIES BY ELECTRODEPOSITION IN A FUSED LITHIUM ELECTROLYTE

Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,921

Int. Cl. C23b 5/00

U.S. Cl. 204-39

10 Claims

Heavily lithium-doped N<sup>+</sup> surface-adjacent regions are formed in high-purity germanium bodies by electrodeposition thereof from a bath of fused lithium salt at a temperature at which the solubility of copper in germanium is negligible.

3,826,722

# ELECTROLYTIC ACIDIC SOLUTION FOR CADMIATING OF VARIOUS PARTS

Maurice Roger Accaries, Bourg-la-Reine, and Maurice Emile Girard, Paris, France, assignors to Compagnie des Compteurs, Paris, France

No Drawing. Continuation of abandoned application Ser. No. 102,555, Dec. 29, 1970. This application Nov. 22, 1972, Ser. No. 308,789

Int. Cl. C23b 5/12, 5/46

U.S. Cl. 204-50 R

6 Claims

Electrolytic acidic solution for cadmiating of various



parts containing, in an aqueous demineralized carrier, a cadmium salt, a free acid, a brightening agent selected from the class consisting of a semithiocarbazonic compound attached to a thiourea group and a dithiocarbamic acid condensed with aldehyde phenol, and a wetting agent indifferently selected among nonionic, cationic or anionic wetting agents.

3,826,723

**PROCESS FOR RECOVERING GOLD AND SILVER**

Jack L. Woods, Ogden, and Tobe A. Pittman, Centerville, Utah, assignors to Elmet, Inc., Centerville, Utah  
No Drawing. Filed July 13, 1972, Ser. No. 271,545

Int. Cl. C23b 5/26, 5/28

U.S. Cl. 204—110

1 Claim

A unique, continuous extraction process for extracting gold and/or silver from ores containing such values. The process utilizes, in addition to one or more leaching compounds, a stabilized, oxidizing electrolyte or electrolytes which accelerates leaching in addition to providing an electrolyte for effecting the subsequent continuous electro-deposition of such metals.

3,826,724

**METHOD OF REMOVING A METAL CONTAMINANT**

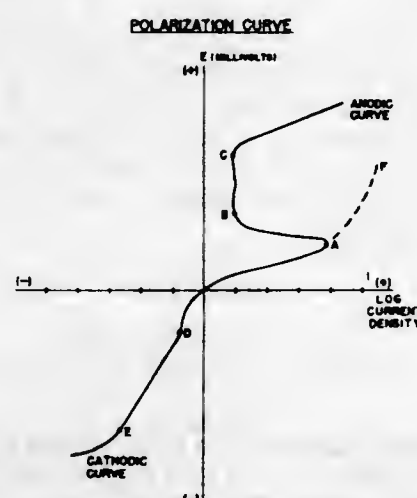
Olen Lonnie Riggs, Jr., 7119 NW. 32nd St., Bethany, Okla. 73008, and Lynn Stanley Surtees, 3028 Stonybrook Road, Oklahoma City, Okla. 73120

Filed Sept. 11, 1972, Ser. No. 289,934

Int. Cl. C23b 1/00; B01k 3/00

U.S. Cl. 204—140

7 Claims



The present invention relates to a method of conditioning a metal substrate. More particularly, the present invention relates to a method of removing a metal contaminant plated on a different metal substrate such as, for example, an electrode used in a metal electrodeposition process.

3,826,725

**BREAKING OF OIL-IN-WATER EMULSIONS**

John W. Schick, Cherry Hill, and Donald R. Cushman, Wemona, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Nov. 30, 1972, Ser. No. 311,030

Int. Cl. B01k 3/04; C02b 1/82

U.S. Cl. 204—149

8 Claims

A method is provided for breaking an oil-in-water emulsion, which comprises: adjusting the emulsion with an electrolyte to a pH not higher than about 4; and transmitting direct electric current through the thus-adjusted emulsion to obtain a pH of at least 5, whereby

the emulsion is resolved into a water phase and an oil phase.

3,826,726

**PRODUCTION OF PURE METALS**

Warren H. Philipp, North Olmsted, Stanley J. Marsik, Fairview Park, and Charles E. May, Rocky River, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Continuation-in-part of application Ser. No. 876,588, Nov. 13, 1969, now Patent No. 3,658,569. This application Apr. 18, 1972, Ser. No. 245,279

Int. Cl. B01j 1/10

U.S. Cl. 204—157.1 H

10 Claims

A process for depositing elements by irradiating liquids. Ultra pure elements are precipitated from aqueous solutions or suspensions of compounds. A solution of a salt of a metal to be prepared is irradiated, and the insoluble reaction product settles out. Some chemical compounds may also be prepared in this manner.

3,826,727

**BRIGHTENING COLORED  $\alpha$ -AMINOCARBOXYLIC ACIDS AND DERIVATIVES THEREOF**

Helmut Dant, Weisenheim am Sand, and Uwe Soenksen and Walter Wielant, Wiersdorff, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 4, 1972, Ser. No. 223,517

Claims priority, application Germany, Feb. 11, 1971, P 21 06 415.3

Int. Cl. B01j 1/10

U.S. Cl. 204—158 R

6 Claims

A process for brightening colored  $\alpha$ -aminocarboxylic acids and their derivatives which bear at least one carboxyl group or its anion in the  $\alpha$ -position on each basic nitrogen atom by means of high intensity radiation.

3,826,728

**TRANSPARENT ARTICLE HAVING REDUCED SOLAR RADIATION TRANSMITTANCE AND METHOD OF MAKING THE SAME**

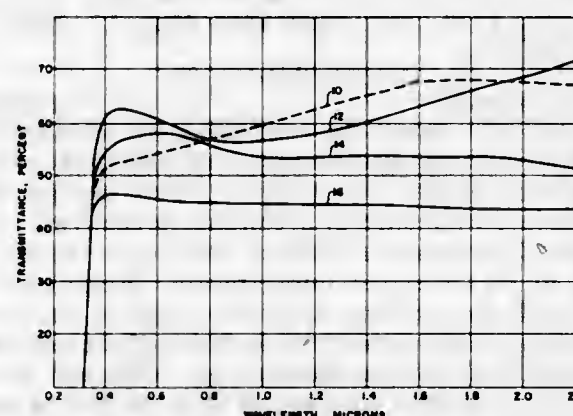
Douglas L. Chambers, Donald C. Carmichael, and Chong T. Wan, Columbus, Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Continuation of abandoned application Ser. No. 38,962, May 20, 1970. This application May 15, 1972, Ser. No. 253,278

Int. Cl. C23c 15/00

U.S. Cl. 204—192

2 Claims



A transparent article having reduced solar radiation transmittance which comprises a body of transparent

glassy siliceous material having a smooth continuous surface and a continuous film of nickel or nickel-base alloys sputter-coated on said continuous surface to a thickness of from 50 to 400 Å. The article may include a continuous protective layer of a siliceous or aluminum oxide material overlying the continuous film. The sputter-coating technique permits the metal film to be deposited with greater uniformity and purity. The resulting article minimizes the transmittance of radiation in the infra-red range for any selected transmittance of visible light.

3,826,729

**SPUTTERING HOLES WITH ION BEAMLETS**  
David C. Byers, North Olmsted, and Bruce A. Banks, Olmsted Township, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Sept. 27, 1972, Ser. No. 292,686

Int. Cl. C23c 15/00

U.S. Cl. 204—192

10 Claims

Ion beamlets of predetermined configurations are formed by shaped apertures in the screen grid of an ion thruster having a double grid accelerator system. A plate is placed downstream from the screen grid holes and attached to the accelerator grid. When the ion thruster is operated holes having the configuration of the beamlets formed by the screen grid are sputtered through the plate at the accelerator grid.

3,826,730

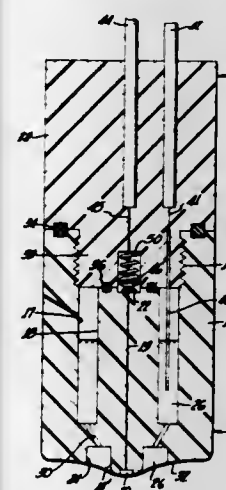
**DISPOSABLE ELECTROCHEMICAL ELECTRODE**  
Hideo Watanabe and John E. Leonard, Fullerton, Calif., assignors to International Biophysics Corporation, Irvine, Calif.

Continuation of abandoned application Ser. No. 91,975, Nov. 23, 1970. This application Sept. 5, 1972, Ser. No. 286,199

Int. Cl. G01n 27/46

U.S. Cl. 204—195 P

3 Claims



A disposable electrochemical cell electrode assembly for use in amperometric electrochemical cells. The disposable electrode assembly includes a selectively permeable membrane which is spaced a predetermined distance from the electrode. The disposable electrode assembly is threadably attached to a permanent electrode assembly to complete the electrochemical cell.

3,826,731

**BIPOLAR ELECTRODE**

Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 25, 1973, Ser. No. 364,202

Int. Cl. B01k 1/00, 3/06; C01b 11/26

U.S. Cl. 204—290 F

6 Claims

An improved dimensionally-stable bipolar electrode for use in electrochemical processes comprising a central

valve metal layer, suitable anodic material on the anode side of the support and a barrier layer of silicon on the cathodic side of the valve metal. Such bipolar anodes function at reduced hydrogen permeability rates during use in electrolytic processes.

3,826,732

**BIPOLAR ELECTRODE**

Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 25, 1973, Ser. No. 364,203

Int. Cl. B01k 1/00, 3/06; C01b 11/26

U.S. Cl. 204—290 F

10 Claims

An improved dimensionally-stable bipolar electrode for use in electrochemical processes, comprising a valve metal layer, suitable anodic material on the anode side of the valve metal, a barrier layer of tungsten on the cathode side of the valve metal, the tungsten layer coated with a layer of iron or nickel.

3,826,733

**BIPOLAR ELECTRODE**

Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 25, 1973, Ser. No. 364,204

Int. Cl. B01k 1/00, 3/06; C01b 11/26

U.S. Cl. 204—290 F

6 Claims

An improved dimensionally-stable bipolar electrode for use in electrochemical applications comprising a central valve metal layer, suitable anodic material on the anode side of the valve metal and a barrier layer of boron on the cathodic side of the valve metal. Such electrodes function at low hydrogen permeability rates during use in electrolytic processes.

3,826,734

**APPARATUS FOR USE IN LIQUID SAMPLE ANALYSIS**

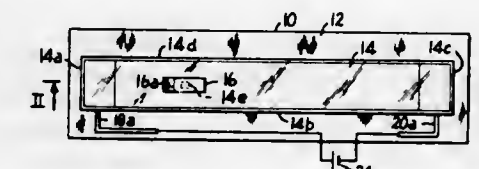
Frank W. Godsey, Jr., St. Petersburg, Fla., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed June 26, 1972, Ser. No. 266,449

Int. Cl. B01k 5/00

U.S. Cl. 204—299

10 Claims



An electrophoretic cell having an elongate electrolytic expanse is enveloped between an overlayer and a substrate, the overlayer including a closable opening through which a liquid sample may be applied to a preselected location on the elongate electrolytic expanse. The cell provides for separation of the constituents of the sample on application or preselected electric voltage to the cell electrodes.

3,826,735

**WAX COMPOSITION FOR PROTECTING RUBBERS AGAINST ATTACK OF OZONE**

Toshihiko Shinomura, Kawasaki, Japan, assignor to Nippon Oil Company, Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,674

Claims priority, application Japan, Mar. 8, 1972, 47/23,105

Int. Cl. C08h 9/00

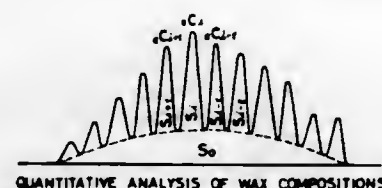
U.S. Cl. 208—21

3 Claims

Wax compositions are disclosed which are useful for preventing rubber from becoming degraded or otherwise



damaged in contact with ozone in the atmosphere, said compositions comprising two types of normal chain hydrocarbons, one having a carbon number greater than the



other. Selected weight percentages of the respective hydrocarbons permit the wax composition to exhibit and maintain the desired performance in a relatively widely varying temperature environment.

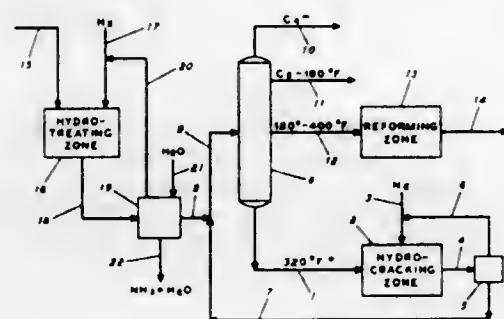
3,826,736

**HYDROCARBON CONVERSION CATALYST AND PROCESS USING SAID CATALYST**  
James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Application Apr. 12, 1971, Ser. No. 133,401, now Patent No. 3,764,562, which is a continuation of abandoned application Ser. No. 834,067, June 17, 1969. Divided and this application Mar. 1, 1973, Ser. No. 337,219  
Int. Cl. C10g 13/02, 37/06

U.S. Cl. 208—59

8 Claims



Hydrocracking processes using a hydrocarbon conversion catalyst consisting essentially of: (a) a gel selected from silica-alumina gel, silica-alumina-titania gel and silica-alumina-zirconia gel, (b) at least one hydrogenating component selected from Group VIII metals and oxides and sulfides thereof and combinations of Group VIII metals and oxides and sulfides thereof with tin, and (c) a hydrogenating component selected from manganese and oxides and sulfides thereof.

3,826,737

**PROCESS FOR THE CATALYTIC TREATMENT OF HYDROCARBON OILS**

Abraham A. Pegels, The Hague, and Johannes B. Wijffels, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 6, 1973, Ser. No. 330,142  
Claims priority, application Great Britain, Feb. 21, 1972, 7,948/72

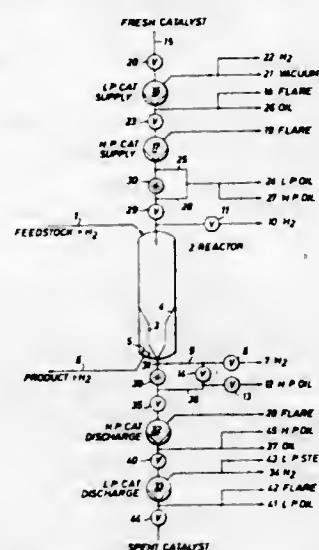
Int. Cl. C10g 23/08

U.S. Cl. 208—143

10 Claims

A continuous process and apparatus for the catalytic treatment of hydrocarbon oils wherein an oil is passed over a catalyst bed within a reactor, the bottom of which contains a catalyst discharge funnel incorporating a screen for separating catalyst and oil at a point above the exit of the funnel, fresh catalyst being introduced at the top of the catalyst bed and spent catalyst being withdrawn at

the bottom thereof while the process is operating. The catalyst discharge funnel preferably consists of at least



3,826,738

**FOLDED TRANSFER LINE REACTOR**

Frederick A. Zenz, Roslyn Harbor, N.Y.

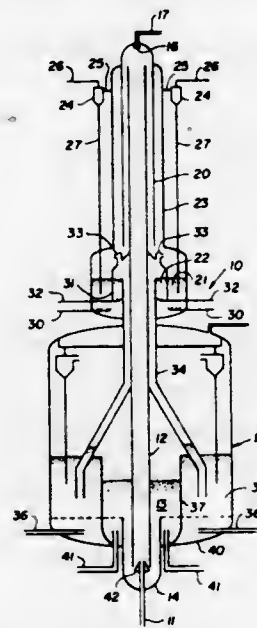
(Box 205, Rte. 9D, Garrison, N.Y. 10524)

Filed Mar. 23, 1972, Ser. No. 237,346

Int. Cl. B01j 9/16; B65g 53/00; C10g 13/14

U.S. Cl. 208—153

8 Claims



A folded transfer line reactor in which a reverse flow of gas or vaporized liquid is introduced at points of change in direction of gas and solid flow to cushion the following particles and thereby avoid erosion of the transfer line and attrition of the particles.

There is also disclosed a transfer line reactor in which recycled slurry is introduced into the reactor at a point intermediate the ends of the reactor (either a straight or folded reactor) to thereby control the degree of cracking of the recycled slurry.

3,826,739

**METHOD OF CONTACTING FLUIDS AND SOLID PARTICLES**

Junichi Kubo and Yoshio Tajima, Kawasaki, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 212,913

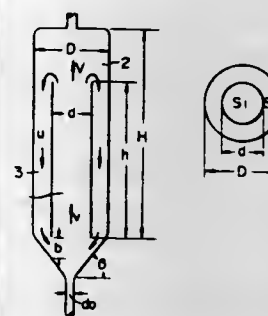
Int. Cl. C10g 23/10

U.S. Cl. 208—157

8 Claims

A process for contacting particulate solids intimately with liquid using a reactor comprising a contact zone (1),

a sedimentation zone (2) positioned in series with the contact zone, and an overflow zone (3) positioned above the zones (1) and (2) and having a cross sectional area larger than that of the contact zone, wherein the cross sectional area of the overflow zone and the speed of feeding the liquid upwards from the lower portion of the zone (1) are adjusted to proper values, whereby the particles are fluidized in zone (1) and overflowed from zone (1);



the overflowing particles immediately begin to be sedimented in zone (3) without fluidization; and the sedimented particles return from zone (2) to zone (1) without forming an undisturbed layer in the zone (2), in which the particulate solids are deposited, and thus, the liquid and the particles together are circulated from zone (1) to the lower portion of zone (3), zone (2), and zone (1) in this order.

3,826,740

**METHOD AND APPARATUS FOR TREATING MULTI-PHASE SYSTEMS**

Warren R. Jewett, 44 Russell Ave.,

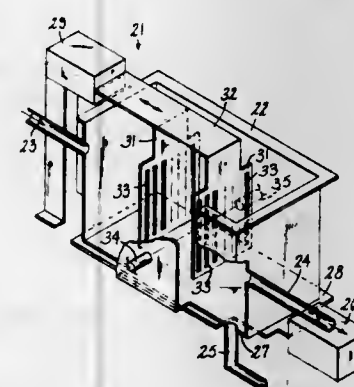
Orange, Conn. 06477

Continuation-in-part of abandoned application Ser. No. 258,014, May 30, 1972. This application Apr. 19, 1973, Ser. No. 352,549

U.S. Cl. 210—19

Int. Cl. C02c 1/00

15 Claims



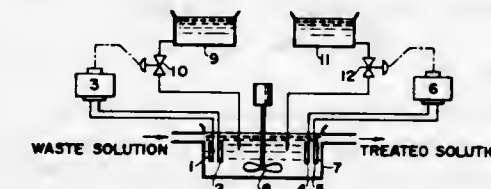
The method of treating a multi-phase system to enhance the separability of at least one discontinuous phase contained therein comprising subjecting the system to at least two disturbances propagated within the system to form at least two wave trains at two different frequencies within the audio frequency range, while avoiding cavitation within the system.

The present invention also discloses an apparatus for treating a multi-phase system having a liquid continuous phase to enhance the separability of a dispersed phase contained within the system, comprising means for confining a volume of the system to be treated, and first and second means for generating vibratory disturbances within the volume to form respective trains of waves there-within, the first and second generating means being positioned with respect to each other so that the respective wave trains formed within the volume mix.

3,826,741  
**METHOD OF TREATING WASTE SOLUTION CONTAINING CHROMATE ION OR CYANIDE ION**  
Toshihiko Nakamura, Yokohama, Japan, assignor to Nihon Filter Co., Ltd., Tokyo, Japan  
Filed Nov. 3, 1972, Ser. No. 303,636  
Int. Cl. C02b 1/34

U.S. Cl. 210—50

1 Claim



A method of treating a waste solution containing chromate ion or cyanide ion, wherein a redox potentiometer with a pH correction circuit is used instead of separate redox potentiometer and pH meter commonly used in the conventional treating method of waste solution, said redox potentiometer with a pH correction circuit has a redox potential detecting part and a pH detecting part for the detection of the redox potential and the pH electromotive force of the waste solution being treated and the output voltages are superposed within said pH correction circuit so that the variations of redox potential caused by the variations of pH value of the waste solution is compensated and a corrected output voltage which indicates the redox potential corresponding to a pre-set pH value of the waste solution is generated, the redox potential and the pH electromotive force of the waste solution being treated in the treatment tank are detected respectively by said redox potential detecting part and pH detecting part of said redox potentiometer with a pH correction circuit, and the amount of treating chemicals being fed into said treatment tank is adjusted, by a flow regulator which is controlled in response to the corrected output voltage delivered from said pH correction circuit of the redox potentiometer, to a quantity as the chemical reaction is carried out at the equivalence point.

3,826,742

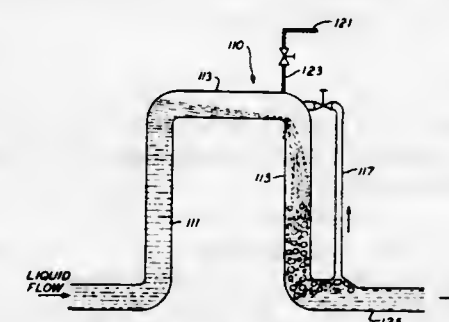
**GAS ABSORPTION SYSTEM AND METHOD**  
Bradley S. Kirk, Warren Township, Plainfield County, and Raymond M. Chappel, Mendham, N.J., assignors to Airco, Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,785

Int. Cl. C02b 3/08

U.S. Cl. 210—63

19 Claims



A gas absorption system for adding oxygen to a liquid phase flowing in the system. The liquid phase is subjected to fall through an enclosed gravitational fall zone, which zone is proportioned in relation to system flow as to permit simultaneous presence within the enclosure of the liquid phase and a gaseous oxygen phase. The oxygen is provided by injection means or the like, and means may



additionally be present for matching the rate of oxygen feed to the rate of consumption at the fall zone.

3,826,743

**DIE LUBRICATING COMPOSITION**

Frederick J. Kohls, South Milwaukee, Bruce W. Boldt, Milwaukee, and Wilfred A. Gouge, Sr., South Milwaukee, Wis., assignors to Ladish Co., Cudahy, Wis.

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,668

Int. Cl. C10m 1/20, 1/22

U.S. Cl. 252-14

12 Claims

A die lubricating composition for use in hot working and forming of metal. The composition comprises a suspension of a liquid hydrocarbon-impregnated wood flour particles and solid lubricant particles, such as graphite, in water. When applied to a heated die, the composition will provide the necessary lubrication as well as an explosive force to liberate the part from the die with minimal contamination of the environment.

3,826,744

**LUBRICANT FOR HIGH TEMPERATURE, NON-CHIP METAL FORMING**

Rüdiger Holinski and Oswald Schanzer, Munich, Germany, assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed June 30, 1971, Ser. No. 158,586

Claims priority, application Germany, Sept. 22, 1970, P 20 46 727.0; Feb. 24, 1971, P 21 08 738.7

Int. Cl. C10m 3/18, 3/04, 7/20

U.S. Cl. 252-23

2 Claims

A lubricant for high temperature non-chip metal forming consisting essentially of (I) 2 to 100% by weight of a mixture of (A) 35 to 47% by weight of an alkali metal sulfate, calculated in its anhydrous form, (B) 14 to 26% by weight borax, (C) 3.5 to 10% by weight of potassium chloride, (D) 3.5 to 10% by weight of sodium acetate trihydrate, (E) 10 to 32% by weight of pulverized graphite having a particle size not exceeding 10  $\mu$ , and (II) 0 to 98% by weight of water.

3,826,745

**COMPOSITIONS CONTAINING METAL DIALKYL DITHIOPHOSPHATES ARE INHIBITED AGAINST HAZE AND PRECIPITATES BY AMINE SALTS OF MIXED ACID PHOSPHATES**

Jack Ryer, East Brunswick, and Remi H. Renard, North Brunswick, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 30, 1972, Ser. No. 268,146

Int. Cl. C10m 1/48

U.S. Cl. 252-32.7 E

4 Claims

Amine salts of mixed acid phosphates are combined with metal dialkyl dithiophosphates to prevent and control haze and precipitation in compositions containing these dithiophosphate salts.

3,826,746

**LUBRICANT COMPOSITIONS**

John W. Schick, Cherry Hill, and Robert H. Davis, Pitman, N.J., and Charles A. Simpson, Aston, Pa., assignors to Mobil Oil Corporation

No Drawing. Filed July 18, 1972, Ser. No. 273,002

Int. Cl. C10m 1/32, 3/26

U.S. Cl. 252-51.5 R

6 Claims

Lubricant compositions are provided containing biocidal effective amounts of a substituted nitropyridine and an acid.

3,826,747

**TONER FOR ELECTROPHOTOGRAPHY**

Shinichiro Nagashima, Kaichi Tsuchiya, Yoshihiro Sakamoto, and Hiroshi Yamakami, Tokyo, and Seiji Tomari, Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 9, 1973, Ser. No. 358,534

Claims priority, application Japan, May 15, 1972, 47/47,896

Int. Cl. G03g 9/02

U.S. Cl. 252-62.1

5 Claims

A positive chargeable toner for electrophotography is prepared by dispersing a coloring agent and a chelate compound of ethylene diamine tetraacetic acid and a metal of bi-, tri- or tetravalence, into a binding resin.

3,826,748

**NON-PHOSPHATE AUTOMATIC DISHWASHER DETERGENT**

Patricia A. Finck, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 133,338, Apr. 12, 1971, now Patent No. 3,701,735.

This application Dec. 3, 1971, Ser. No. 204,751

The portion of the term of the patent subsequent to Oct. 31, 1989, has been disclaimed

Int. Cl. C11d 7/08, 7/14, 7/16

U.S. Cl. 252-99

14 Claims

An alkaline dishwasher detergent capable of inhibiting overglaze attack and essentially free of inorganic phosphates, containing at least 25% by weight of a water-soluble aminopolycarboxylic compound, about 1-20% sucrose and about 1-20% overglaze protector.

3,826,749

**DETERGENT COMPOSITION**

M. Yvon Demangeon, Ermont, France, and M. Per Hjorth Rasmussen, Copenhagen, Denmark, assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,480

Int. Cl. C11d 9/32

U.S. Cl. 252-121

3 Claims

A controlled foam profile detergent composition containing a C<sub>11</sub> to C<sub>13</sub> alkyl benzene sulfonate, a sodium soap of C<sub>14</sub> to C<sub>22</sub> fatty acid and an ethoxylated dinonyl phenol. The composition can also contain an alkaline builder salt.

3,826,750

**NOBLE METALS SOLVATION AGENTS—HYDROXYKETONES AND IODINE AND IODIDE**

Harold W. Wilson, El Paso, Tex., assignor to Golden Cycle Corporation

No Drawing. Original application Jan. 8, 1970, Ser. No. 1,563, now Patent No. 3,709,681. Divided and this application Sept. 25, 1972, Ser. No. 291,636

Int. Cl. C22b 11/04

U.S. Cl. 252-187 R

9 Claims

Processes for and compositions utilized in the recovery of noble metals from noble metal containing substances by subjecting such substances—preferably in comminuted form—to the action of a solvent preferably comprising diacetone alcohol as a major component, water, minor amounts of glacial acetic acid, potassium iodide and elemental iodine. Solvation of the noble metal occurs during agitation and heating of the slurry. The noble metal contents are removed from the noble metal pregnant solution by displacement onto a non-noble metal surface. The solid noble metal containing residue is treated with sufficient aqueous hydroxide solution to convert excess non-noble

metal into its water-soluble salt. The remaining insoluble material containing the noble metal recovered is rinsed to remove any remaining unreacted alkali and the soluble salts and is then digested with concentrated sulfuric acid to dissolve any remaining acid soluble impurities, the remaining acid insoluble residue is rinsed, dried and comprises substantially pure noble metal.

3,826,751

**SELECTIVE OPTICAL FILTER AND METHOD OF MANUFACTURE**

Norman U. Laliberte, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

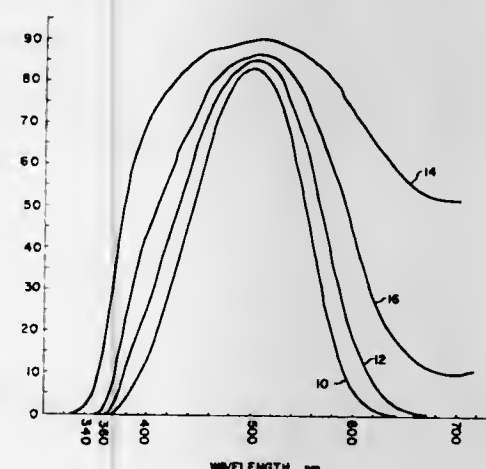
Continuation of abandoned application Ser. No. 95,434, Dec. 7, 1970. This application Aug. 15, 1972, Ser. No. 280,936

The portion of the term of the patent subsequent to Dec. 21, 1988, has been disclaimed

Int. Cl. F21v 9/04; G02b 5/12; G02c 7/10

U.S. Cl. 252-300

7 Claims



An improved high optical quality, plastic optical filter for red and near infrared wavelengths has very low transmittance in the red portion of the visible spectrum, a reduced near infrared transmittance, and a high abrasion resistance. The optical filter is formed by dissolving a sufficient quantity of cupric or cuprous chloride in a mixture of monopropylene glycol monomaleate, and allyl diglycol carbonate, mixing the solution with diisopropyl peroxydicarbonate initiator, filtering the resultant mixture, and casting the filtered mixture.

3,826,752

**PROTECTIVE AGENTS AGAINST LIGHT RAYS**

Jean Rody and Hans Lind, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Mar. 8, 1971, Ser. No. 122,132, now Patent No. 3,749,732. Divided and this application Apr. 25, 1973, Ser. No. 354,402

Claims priority, application Switzerland, Mar. 11, 1970, 3,601/70

Int. Cl. F21v 9/06; G02b 5/20, 7/10

U.S. Cl. 252-300

10 Claims

New 2-phenyl-4-(2',4'-dihydroxybenzoyl)-v-triazoles and ethers and esters of the 4'-hydroxy group thereof are used as protective agents against light rays for light-sensitive organic materials. They are prepared by dealkylating the corresponding 2-phenyl-(2',4'-lower-alkoxybenzoyl)-v-triazoles and reacting the compounds obtained with alkylating agents or acylating agents.

3,826,753

**STABILIZED URANYL NITRATE COMPOSITIONS AND URANIUM IMPREGNATION METHOD**

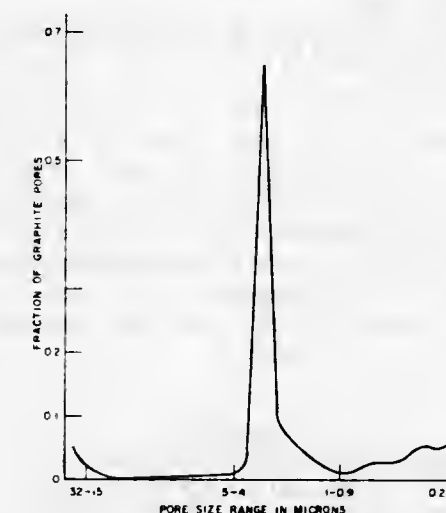
Robert E. Elson, Hayward, Raymond D. Heminger, Livermore, and Geoffrey R. Tully, Jr., Alamo, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 24, 1958, Ser. No. 769,520

Int. Cl. C09k 3/00

U.S. Cl. 252-301.1 R

14 Claims



Stabilized tertiary butyl alcohol solution for impregnation of graphite with uranyl nitrate dihydrate.

3,826,754

**CHEMICAL IMMOBILIZATION OF FISSION PRODUCTS REACTIVE WITH NUCLEAR REACTOR COMPONENTS**

Leonard N. Grossman, Livermore, Alexis I. Kaznoff, Castro Valley, and Howard V. Clukey, Saratoga, Calif., assignors to General Electric Company

No Drawing. Filed June 16, 1971, Ser. No. 153,897

Int. Cl. G21c 3/62

U.S. Cl. 252-301.1 R

30 Claims

This invention teaches a method of immobilizing deleterious fission products produced in nuclear fuel materials during nuclear fission chain reactions through the use of additives. The additives are disposed with the nuclear fuel materials in controlled quantities to form new compositions preventing attack of reactor components, especially nuclear fuel clad, by the deleterious fission products.

3,826,755

**PROCESS FOR PRECIPITATING METAL-CONTAINING COMPOUNDS AS GEL-PARTICLES DISPERSED IN AQUEOUS PHASE**

John Herbert Grimes, Basingstoke, Kenneth Thomas Bartlett Scott, Reading, and Norman James McKenna, Tadley, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,994

Claims priority, application Great Britain, Aug. 26, 1970, 41,160/70

Int. Cl. B01j 13/00; C09k 3/00; G21c 19/42

U.S. Cl. 252-301.1 S

13 Claims

To a salt solution or hydrous sol of the metal or metals is added a polymer which is either a polysaccharide having a main chain of 1-6 linkages, or of 1-4 linkages with sub-



stituent groups having ether or ester linkages, e.g. guar gum, or a polyalcohol, e.g. polyvinyl alcohol, which complexes with the metal ions present. A precipitating reagent, e.g. an alkaline solution, is added gradually to the viscous mixture thus formed while agitating the mixture, resulting in the formation of a gel-particulate precipitate.

### 3,826,756 PROCESS FOR PREPARING DISCRETE PARTICLES OF MICROENCAPSULATED LIQUID ANAEROBIC COMPOSITIONS

Andrew G. Bachmann, Westogue, and Gerald M. Litteral, Wetherfield, Conn., assignors to Loctite Corporation, Newington, Conn.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,285  
Int. Cl. B01j 13/02; B44d 1/02

U.S. Cl. 252—316 18 Claims

An improved process is disclosed for the encapsulation of polymerizable compositions composed of acrylate ester monomers and peroxy polymerization initiators. The composition is dispersed in an aqueous liquid, following which a redox polymerization catalyst system is added to the aqueous liquid to coact with the peroxy polymerization initiator at the interface between the droplets and the aqueous liquid, and thereby form an encapsulating shell of the acrylate polymer.

### 3,826,757 ROOM TEMPERATURE NEMATIC LIQUID CRYSTALS

Shi-Yin Wong, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed Sept. 18, 1972, Ser. No. 290,197  
Int. Cl. C09k 1/02

U.S. Cl. 252—408 12 Claims

The present invention involves formulation of room temperature nematic liquid crystals involving compounds which are solid at room temperature, but when dissolved in certain solvents become true liquid crystals.

### 3,826,758 METHOD OF PREPARING EXHAUST CATALYST

Gordon H. Hoffman, Towson, and Charles Philipp Brundrett, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed May 25, 1972, Ser. No. 256,922  
Int. Cl. B01j 11/06, 11/40

U.S. Cl. 252—455 R 5 Claims

The present invention is directed to an improved method of preparing catalytic systems containing copper oxide, chromic oxide, manganese dioxide, and palladium on a porous support. The method includes impregnating a support which may be activated alumina with aqueous copper dichromate solution, drying the impregnated support, impregnating the dried support with a manganese salt-palladium salt solution, drying the resulting catalyst system, and activating the catalyst by calcination. Catalysts prepared by this method are typically characterized with excellent crushing strength and improved resistance to shrinkage. The catalysts are especially useful for treating exhaust gases from internal combustion engines.

### 3,826,759 LOW-FOAMING DETERGENT COMPOSITIONS

Jack T. Inamorado, Westfield, and Robert E. Dickson, Belle Mead, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,322  
Int. Cl. C11d 3/28, 3/06, 3/08

U.S. Cl. 252—525 10 Claims

This invention relates to non-foaming detergent compositions which include nonionic detergent or a mixture of nonionic and anionic detergents, builder salt, and dialkyl melamine, the dialkylmelamine being present in sufficient proportion to make a combination of synthetic deter-

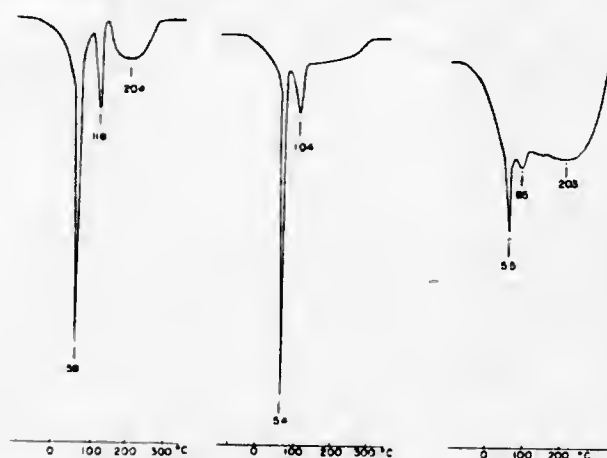
gent(s) and builder non-foaming or essentially non-foaming in wash waters of usual dilutions for washing machine use. The compositions are effective laundering agents, primarily intended for use in automatic washing machines and in almost all practical uses are non-foaming, even when used in the normally foam generating horizontal tumbler type of machine.

### 3,826,760 THERMOPLASTIC PLASTIC COMPOSITION

Yasuhiro Takeshita, Michitake Uoi, Yoshiyuki Hirai, and Mitsuru Uchiyama, Chiba, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,834  
Claims priority, application Japan, Dec. 26, 1970, 45/128,474, 45/128,475; Sept. 29, 1971, 46/75,427, 46/75,428

Int. Cl. C08f 1/86, 3/16; C08g 30/00 7 Claims  
U.S. Cl. 260—2 EP



Reversible cross-linking is imparted to polymers and copolymers especially of the vinyl, olefinic and olefinic oxide types by means of recurring dicyclopentadiene linkages. Difunctional dicyclopentadiene compounds can be polymerized directly into homopolymers or polymerized with comonomers to form copolymers. Alternatively, polymers carrying cyclopentadiene substituents can be prepared and the dimerization of the cyclopentadiene groups effected in situ to produce the cross-linkages. The dicyclopentadiene cross-linkages cleave on heating to a sufficient temperature so that the present polymers and copolymers have a thermoplastic character notwithstanding their normal cross-linked network structure.

### 3,826,761 METHOD OF SEPARATING CATION AND ANION EXCHANGE RESINS

James L. Short, Kenilworth, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,696  
Int. Cl. B01d 15/06; C02b 1/76

U.S. Cl. 260—2.1 R 8 Claims

In the method described in U.S. Pat. No. 3,582,504, which is assigned to the assignee of this application, contaminant cation-exchange resin is separated from anion-exchange resin in a contaminant separation zone by delivering an intermediate-density liquid to the resin in an amount sufficient to permit the anion-exchange resin to float and the contaminant cation-exchange resin to sink. The intermediate-density liquid has a density between the densities of the anion and cation-exchange resins. In accordance with the present invention, the intermediate-density liquid is continuously delivered to the resin, and is intermittently withdrawn from a lower portion of the contaminant separation zone. The intermittent withdrawal of liquid produces high flow rates through the resin, and aids in releasing cation-exchange resin that may have been entrained in the bed.

### 3,826,762 NON-BURNING POLYURETHANE FOAM CONTAINING A NON-POROUS FILLER, A HALOGEN SOURCE, AND A PHOSPHORUS-CONTAINING COMPOUND

Kenneth Treadwell, Rahway, N.J., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Original application July 23, 1969, Ser. No. 844,179, now Patent No. 3,635,821. Divided and this application Feb. 17, 1971, Ser. No. 116,265  
Int. Cl. C08g 22/44, 51/04, 51/54

U.S. Cl. 260—2.5 AJ 5 Claims

A flame retardant system is provided for polyurethane foams comprising an inert filler, a halogen source and a phosphorus containing compound, and, also, urethane foam compositions containing the flame retardant systems. In addition, methods are provided for making the systems including coating the individual particles of the filler with a composition containing the halogen source, and thereafter adhering the phosphorus containing compound to the coated particles, and also, methods for making the flame retardant urethane foam compositions.

### 3,826,763 SUPER-STIFF POLYURETHANE FOAM

Roland J. Lamplugh, Aston, and Rocco P. Triolo, Broomall, Pa., assignors to Scott Paper Company

No Drawing. Continuation-in-part of application Ser. No. 53,328, July 8, 1970, which is a continuation-in-part of application Ser. No. 701,035, Jan. 8, 1968, both now abandoned. This application Sept. 1, 1972, Ser. No. 285,953

Int. Cl. C08g 22/44 12 Claims

Flexible polyurethane foams having high load-bearing properties and improved tensile and tear strength are produced from a foamable polyurethane-forming reaction mixture comprising a high load-bearing imparting amount of a load-bearing agent which is a compound having one primary amino group bonded directly to an aromatic ring carbon atom, such as a compound having the formula



where A is phenylene, naphthalene, anthracene or phenanthrene; Y is the radical—R<sub>n</sub> where n is zero or an integer of from 1 to 5 and R is selected from the group consisting of hydrogen, C<sub>1</sub>–C<sub>8</sub> alkyl, phenyl, halogen, hydroxy, mercapto, nitro, carboxy, C<sub>1</sub>–C<sub>8</sub> alkoxy, phenyl-alkyl wherein the alkyl portion contains from 1 to 3 carbon atoms, C<sub>1</sub>–C<sub>3</sub> haloalkyl, C<sub>1</sub>–C<sub>3</sub> hydroxyalkyl, C<sub>1</sub>–C<sub>3</sub> mercaptoalkyl, C<sub>1</sub>–C<sub>3</sub> nitroalkyl, and carboxyalkyl wherein the alkyl portion contains from 1 to 3 carbon atoms; provided that when R is hydroxy, alkoxy, or alkyl and is ortho to the amino group, then no other hydroxy, alkoxy or alkyl group may be ortho- or para- to said amino group.

### 3,826,764 FOAMED FIRE RESISTANT SELF EXTINGUISHING COMPOSITIONS CONTAINING A FLAME EXTINGUISHING MATERIAL RELEASING FLAME EXTINGUISHING GASES SUCH AS CO<sub>2</sub> OR N<sub>2</sub> WHEN SUBJECTED TO HIGH TEMPERATURES AND METHOD OF MAKING

Wilhelm G. Weber, 20 Genrenackerstrasse, 4133 Pratteln, Switzerland

No Drawing. Filed Dec. 13, 1972, Ser. No. 314,590  
Claims priority, application Switzerland, Dec. 18, 1971, 18,597/71

Int. Cl. C08g 22/44, 51/56; C09k 3/28 1 Claim  
U.S. Cl. 260—2.5 AJ

A method of preparing a semi-rigid light-weight foamed fire-resistant packaging and shock-absorbing construction material which is capable of evolving large volumes of fire extinguishing gases through the pores thereof when heated at high temperature in which a liquid polyether polyol, amine catalyst and surface active agents are mixed heated at high temperature in which a liquid polyether

blowing agent e.g. cold liquid trichlorotrifluoromethane which expands the polyurethane formed by polyisocyanate reaction so that an open cell foam is developed when it is poured. The in situ polyurethane open cell foam before pouring is mixed therewith a flame extinguishing material which releases N<sub>2</sub> or CO<sub>2</sub> flame extinguishing gas when the foamed plastic is subjected to high temperature, and the flame extinguishing material may be used with an activating lead compound or an activating zinc compound, examples such as azo dicarbonamide, sodium bicarbonate, sodium sesquicarbonate, barium azo dicarbonate or 4,4'-bis (benzene sulfonyl-carbazide) which in the presence of activating lead compounds or zinc stabilizers serve to release copious quantities of flame extinguishing gases (CO<sub>2</sub> or N<sub>2</sub>) at temperatures above 125° C., generally 160–180° C. Fillers such as chlorinated paraffin and antimony oxide are added to impart flame resistance.

### 3,826,765 PROCESS OF MAKING ANTILUMPING EXPANDABLE STYRENE POLYMERS

Timothy Altare, Jr., Valencia, Pa., assignor to Arco Polymers, Inc.

No Drawing. Filed May 10, 1973, Ser. No. 358,984  
Int. Cl. C08j 1/26

U.S. Cl. 260—2.5 B 2 Claims

Expandable styrene polymer particles are surface-coated with poly(methyl methacrylate) to prevent the particles from lumping together during expansion. The coating is applied by adding a mixture of 0.03–0.30 of poly(methyl methacrylate) and 0.01–1.5 parts of tricalcium phosphate to 100 parts of expandable polymer particles suspended in an aqueous medium.

### 3,826,766 SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING BROMINATED ARYL BUTANES

Hilda Howell and Walter M. Kutz, Pittsburgh, Pa., assignors to Koppers Company, Inc.

No Drawing. Filed Oct. 10, 1972, Ser. No. 296,166  
Int. Cl. C08j 1/26

U.S. Cl. 260—2.5 FP 12 Claims

Polymeric compositions are rendered self-extinguishing by incorporating therein from 0.1 to 15% by weight of a bromo-compound selected from 1,2,3,4-tetrabromo-1,4-diphenylbutane and p-phenylene - 1,1' - bis(1,2,3,4-tetrabromo-4-phenylbutane).

### 3,826,767 ANIONIC DEXTRAN GRAFT COPOLYMERS

Merwin Frederick Hoover, Pittsburgh, Gloria Di Marco Sinkovitz, Bridgeville, and Raymond Joseph Schaper, Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,103  
Int. Cl. C08b 25/04; C08f 25/00

U.S. Cl. 260—17.4 GC 5 Claims

Novel anionic graft copolymers of acrylamide and/or certain polymerizable anionic monomers grafted onto a dextran substrate are disclosed.

### 3,826,768 PROCESS FOR PREPARING POLYURETHANE COMPOSITIONS

Isamu Suzuki, Yasuji Nakahara, Kiyoshi Ichikawa, and Kaoru Osonoi, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of abandoned application Ser. No. 872,835, Oct. 31, 1969. This application July 11, 1972, Ser. No. 270,731

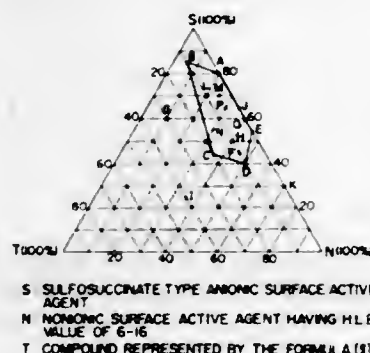
Claims priority, application Japan, Nov. 8, 1968, 43/81,274; Mar. 19, 1969, 44/20,399  
Int. Cl. C08g 22/14, 51/24

U.S. Cl. 260—29.2 TN 3 Claims

Process for preparing polyurethane compositions by dispersing a polyurethane containing isocyanate groups



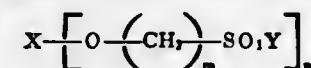
made from polyols and an excessive molar amount of organic isocyanates in water of an amount at least half the amount of the polyurethane in the absence or presence of a water-soluble compound containing at least two primary or secondary amino groups per molecule, the said polyols containing a polyethylene ether moiety of a molecular weight from 600 to 2,500 in a weight ratio of the polyethylene ether moiety in the polyols represented by the equation (1) from  $7.2-9 \log P/1000$  to  $100P/(500+P)$  (percent by weight) wherein P is the molecular



weight of a polyethylene ether moiety, said polyol being a member selected from the group consisting of

- a copolymeric polyol consisting of one polyethylene ether block and another block selected from the residues derived from the group consisting of polyesters, polyethers, polyester amides, polyester urethanes, polyether esters, polythioethers and polyhydrocarbon glycols, said polyethylene ether block having a molecular weight of 600 to 2,500 and said residue having a molecular weight of 500 to 5,000,
- a mixture of a copolymeric polyol under item (a) and another polyol selected from the group consisting of polyesters, polyethers, polyester amides, polyester urethanes, polyether esters, polythioethers and polyhydrocarbon glycols, said polyol having a molecular weight of 500 to 5,000, and
- a mixture wherein a member selected from the group consisting of polyesters, polyethers, polyester amides, polyester urethanes, polyether esters, polythioethers and polyhydrocarbon glycols having a molecular weight of 500 to 5,000 and a polyethylene glycol having a molecular weight of 600 to 2,500 are contained in a ratio represented by the equation [I],

and the dispersion being carried out in the presence of a combination of a sulfosuccinate type anionic surface active agent (S), a nonionic surface active agent having an H.L.B. value from 6 to 16 and being selected from the group consisting of a polyoxyethylene alkyl ether, a polyoxyethylene alkylphenol ether, a polyethylene glycol ether from higher alcohol and a fatty acid ester of polyethylene glycol, and a compound (T) represented by the formula



wherein X is a n-valent organic radical having a molecular weight from 500 to 5,000, said compound (T) being obtained by reacting a sultone with a low molecular polyol and treating the resulting addition product with alkali, Y is a monovalent alkali metal, m is an integer from 2 to 4 and n is an integer from 1 to 4, said compounds S, N and T being in a weight ratio within the limits encompassed by the line successively connecting the points

- A (S=80, N=20, T=0)  
 B (S=85, N=5, T=10)  
 C (S=45, N=35, T=20)  
 D (S=40, N=50, T=10) and  
 E (S=55, N=45, T=0)

on the triangular coordinates (represented by percent by weight) of FIG. 2.

3,826,769

#### SELF-EMULSIFIED POLYURETHANES PREPARED BY DIRECT SULFONATION OF ISOCYANATE

Robert C. Carlson, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn. No Drawing. Application July 14, 1969, Ser. No. 841,570, which is a continuation-in-part of abandoned application Ser. No. 749,573, Aug. 2, 1968. Divided and this application Aug. 14, 1972, Ser. No. 280,239

Int. Cl. C08g 22/26

U.S. Cl. 260—29.2 TN 11 Claims  
 The disclosed polymers are useful in self-emulsified polyurethane (including polyurethane-polyurea) latices formed by reacting an aromatic isocyanate-terminated polyurethane polymer with a strong sulfonating agent and chain extending the prepolymer with water, the chain extension being preferably subsequent to or simultaneous with a neutralization step.

3,826,770

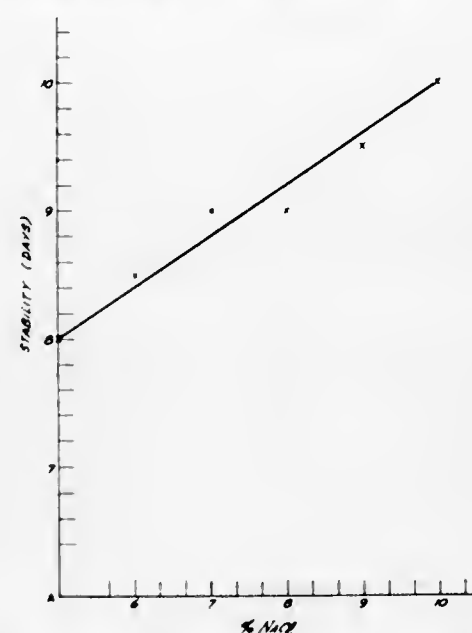
#### STABILIZED MIXTURE OF UREA FORMALDEHYDE AND METHYLOUREAS

Ross Leon Christensen and Paul Robitschek, Eugene, Oreg., assignors to Chembond Corporation, Springfield, Oreg.

Filed Mar. 13, 1972, Ser. No. 234,030

Int. Cl. C08g 51/24

U.S. Cl. 260—29.4 R 2 Claims



A method of making a storage stabilized aqueous solution of urea, formaldehyde, and nonpolymeric addition products thereof. The solution is stabilized to inhibit the crystallization of methylolureas by the inclusion of a dissolved, ionized, inorganic salt. A method of making a consolidated product from the stabilized solution is also disclosed.

3,826,771

#### STABLE HIGH SOLIDS WATER-IN-OIL EMULSIONS OF WATER SOLUBLE POLYMERS

Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 320,012, Jan. 11, 1973, which is a continuation-in-part of application Ser. No. 161,967, July 12, 1971, now abandoned. This application Nov. 6, 1973, Ser. No. 413,405

Int. Cl. C08f 1/13

U.S. Cl. 260—29.6 H 14 Claims  
 A water-in-oil emulsion which has a water-soluble vinyl addition polymer concentration between 20 and 50% by

weight based on emulsion which exhibits unusual stability properties.

3,826,772

#### ADHESIVE FOR BONDING ELASTOMERS TO METALLIC AND NONMETALLIC SUBSTRATES

Manfred Gebhard and Curt Nitzsche, Frankfurt am Main, and Simon Pfeffer, Messel, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,646  
 Claims priority, application Germany, Aug. 22, 1970, P 20 41 769.0

Int. Cl. C08f 45/28, 45/30, 45/36

U.S. Cl. 260—31.2 MR 5 Claims  
 A solvent-thinned adhesive for the bonding of rubber to metallic or nonmetallic substrates consisting essentially of halogenated elastomers or synthetic resins, a dioxime compound, an inorganic hexavalent chromium compound and an inorganic acid.

3,826,773

#### SILICONE COMPOSITION CONTAINING PRETREATED SILICA FILLER

Richard C. Cooke, Jr., Elmsford, N.Y., assignor to General Electric Company

No Drawing. Continuation of abandoned application Ser. No. 167,822, July 30, 1971. This application Apr. 11, 1973, Ser. No. 350,007

Int. Cl. C08g 51/04; C08k 1/02

U.S. Cl. 260—37 SB 15 Claims

A composition containing a polysiloxane resin and a silica filler which has been pretreated by calcining for at least about one hour at a temperature of at least about 250° C., and/or by washing with an aqueous medium. The composition is particularly useful as a molding compound such as in the transfer molding of transistor housings.

3,826,774

#### RESINOUS COMPOSITIONS BASED ON POLYVINYLIDENE FLUORIDE

Edmond Demillecamps, Wavre, and Ghislain Danguy, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Dec. 13, 1972, Ser. No. 314,664  
 Claims priority, application Luxembourg, Jan. 18, 1972, 64,603

Int. Cl. C08f 45/04

U.S. Cl. 260—41 B 9 Claims

The invention relates to resinous compositions based on poly(vinylidene fluoride) comprising from 30 to 55% by weight of a polyamide of high molecular weight resulting from the polycondensation of terephthalic acid and at least one branched diamine containing 6 carbon atoms in its main chain.

The resinous compositions have higher impact strength than poly(vinylidene fluoride).

3,826,775

#### MODIFIED ALUMINA HYDRATE FLAME RETARDANT FILLER FOR POLYPROPYLENE

Igor Sobolev, Orinda, and Elias A. Woycheshin, Livermore, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

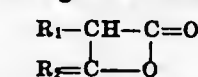
No Drawing. Filed June 21, 1973, Ser. No. 372,343

Int. Cl. C08f 45/04, 45/56

U.S. Cl. 260—42.14 8 Claims

Flame retardancy is imparted to polypropylene by the incorporation of 40–70% by weight of modified alumina hydrate, the percentage being based on the filled poly-

propylene. The alumina hydrate is made compatible with polypropylene by addition of 0.2–5% by weight of an alkylketene dimer of the general formula



wherein R<sub>1</sub> and R<sub>2</sub> each have 14–20 carbon atoms.

3,826,776

#### BLOCK COPOLYMERS AND OXIDIZED CARBON BLACK COMPOSITIONS

Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 28, 1971, Ser. No. 157,764

Int. Cl. C08c 11/18; C08f 19/08

U.S. Cl. 260—42.14 6 Claims

A process for, and high green strength rubbery compositions resulting from, compounding block copolymers with filler materials, comprising: admixing oxidized carbon black with thermoplastic elastomers selected from linear block copolymers and branched block copolymers wherein the copolymers have at least two resinous terminal polymer blocks and an elastomeric central block.

3,826,777

#### FLAME RETARDANT DIALLYLIC PHTHALATE MOLDING COMPOUNDS

James Larue Thomas, Hamilton Square, N.J., and Harry Hoyt Beacham, Langhorne, Pa., assignors to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 182,853, Sept. 22, 1971. This application Aug. 11, 1972, Ser. No. 279,878

Int. Cl. C08g 51/04

U.S. Cl. 260—42.18 6 Claims

Flame retardant diallylic phthalate molding compounds with such greatly improved thermal stability that they do not release corrosive gases during exposure to temperatures of 200° C. and above, in a sealed environment, are obtained by the use of hexabromobiphenyl in amounts of 0.5 to 20% together with 5 to 60% alumina trihydrate as synergist for the hexabromobiphenyl based on the allylic polymer. These novel compositions can contain reinforcing fibers, fillers, polymerization initiators, release agents, colorants, glass coupling agents, inhibitors and other incidental additives conventionally used in thermo-setting molding compounds. Allylic monomers are not required in the compositions of this invention.

3,826,778

#### TOOTH FILLING AND FACING COMPOSITIONS COMPRISING A RADIOPAQUE GLASS AND METHOD OF MAKING THE SAME

Earl D. Dietz, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original application Feb. 17, 1970, Ser. No. 12,109. Divided and this application June 30, 1971, Ser. No. 158,546

Int. Cl. C08f 45/04; C09k 3/00

U.S. Cl. 260—42.47 17 Claims

A filler composition for tooth filling and facing compositions comprising (1) a finely divided inorganic material, and (2) a barium aluminosilicate glass or other glass having an effective amount of radiopaque oxide that renders the resultant glass radiopaque to X-rays used by dentists. The filler composition is mixed with an organic polymer such as methyl methacrylate to provide a tooth filling and facing composition having an outstanding combination of desirable properties including a color resembling that of natural teeth, a suitable index of refraction, hardness,



wear resistance, a relatively low thermal expansion matching that of natural teeth, and being radiopaque to X-rays used by dentists.

### 3,826,779 ANTIOXIDANTS

Brian Thomas Ashworth, Kenneth Crawford, and Peter Michael Quan, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England  
No Drawing. Filed Feb. 18, 1972, Ser. No. 227,652  
Int. Cl. C08g 45/60, 51/60

U.S. Cl. 260—45.9 R 6 Claims  
Acyl derivatives of p-nitrosophenols, p-nitrosoanilines and p-nitrosophenylhydroxylamines are antioxidants for rubber which are resistant to extraction by solvents. The acyl derivatives are preferably prepared by acylation at 10–40° C. in a water-miscible solvent, best in admixture, in presence of a weakly basic acid binding agent.

### 3,826,780 COLOR IMPROVEMENT IN STABILIZED POLYOLEFIN RESINS

Kornel D. Kiss, Yonkers, N.Y., and Jan E. Vandegier, Wayne, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.  
No Drawing. Filed Apr. 9, 1973, Ser. No. 349,595  
Int. Cl. C08f 45/58

U.S. Cl. 260—45.85 B 12 Claims  
Polyolefin compositions containing trace quantities of multivalent metal residues, which compositions are relatively free of color when stabilized with phenolic or benzophenone type stabilizers are obtained by oxidizing said metal residues in the polyolefin to their highest valency state at temperatures where no significant degradation of the polymer occurs.

### 3,826,781 PRIMARY INSULATION FOR WATERPROOFED CABLE

Robert J. Turbett, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Dec. 4, 1972, Ser. No. 312,033  
Int. Cl. C08f 45/58

U.S. Cl. 260—45.85 S 9 Claims  
Composition comprising:  
ethylene polymer having a density of about 0.928 to 0.955,  
copper deactivating amounts of at least one organic compound which is an oxalyl dihydrazide, and  
antioxidant effective quantities of at least one organic compound having a molecular weight of  $\geq 550$  and which contains 2 or 3 hindered phenolic groups per molecule thereof.  
The composition is useful as primary insulation for copper conductors which are used in wire and cable which contain waterproofing filler and which is used under elevated temperature conditions.

### 3,826,782 ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES

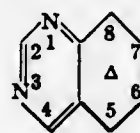
Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer Chemical Company, Westport, Conn.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 270,368, July 10, 1972. This application June 8, 1973, Ser. No. 368,427  
Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 E 3 Claims  
The invention relates to curable one-component organopolysiloxanes obtained from the reaction of a hydroxyl-terminated organopolysiloxane and the novel disilane cross-linking agents having functional groups which are hydrolyzable in ambient moisture.

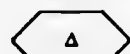
### 3,826,783 POLYQUINAZOLINES AND THEIR METHOD OF MANUFACTURE

Bertrand M. Bloch, Paris, France, assignor to Office National d'Etudes et de Recherches Aérospatiales  
No Drawing. Filed Nov. 19, 1970, Ser. No. 91,161  
Claims priority, application France, Nov. 21, 1969, 6940059  
Int. Cl. C08g 33/02

U.S. Cl. 260—47 CZ 23 Claims  
The polyquinazolines contain in their chains quinazoline nuclei of the formula:



in which



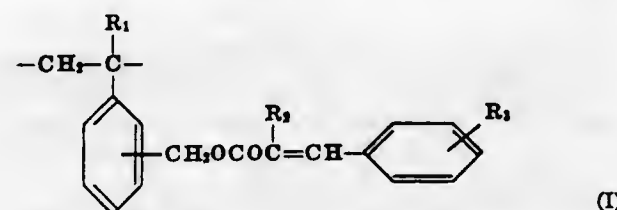
is a



nucleus.  $R_1$  is hydrogen or one of several lower alkyl substituents, lower alkoxy or halogen at one or several of the free positions on the ring. These quinazoline nuclei are linked, either at their 2-positions through a direct linkage or an arylene group and at their 4-positions through an arylene, alkylene or alkylarylene group; or at their 2-positions through an arylene group and at one of their 5-, 6-, 7- and 8-positions, through a direct linkage or a short chain or heteratomic bivalent radical, such as  $-\text{CH}_2-$ ,  $-\text{CO}-$ ,  $-\text{O}-$ ,  $-\text{SO}_2-$ ,  $-\text{S}-$ ; the quinazoline nuclei of the polyquinazolines thus obtained bearing an aliphatic or aromatic radical P, at their 4-positions, or at their 4-positions through a direct linkage or through an arylene, alkylene or alkylarylene group and at one of their 5-, 6-, 7-, 8-positions, directly or through a short chain or heteratomic bivalent radical, such as  $-\text{CH}_2-$ ,  $-\text{CO}-$ ,  $-\text{O}-$ ,  $-\text{SO}_2-$  or  $-\text{S}-$ ; the quinazoline nuclei of the polyquinazolines then obtained bearing an aromatic radical Q at their 2-positions.

3,826,784  
NOVEL REACTIVE CINNAMATE POLYMERS  
Masato Satomura, Sakuma, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
No Drawing. Filed July 6, 1973, Ser. No. 377,006  
Claims priority, application Japan, Aug. 18, 1972, 47/82,117  
Int. Cl. C08f 3/62, 15/02, 15/16

U.S. Cl. 260—47 UA 9 Claims  
Reactive polymers having monomer units represented by the following general formula:



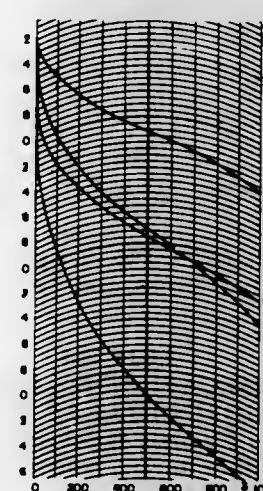
wherein  $R_1$  represents a hydrogen atom or an alkyl group having not more than 2 carbon atoms,  $R_2$  represents a hydrogen atom, cyano group, or a carbamoyl group, and  $R_3$  represents a hydrogen atom, a halogen atom, a nitro group, an acyl group or an alkoxy, e.g., methoxy group.

3,826,785  
ANIONIC LACTAM POLYMERIZATION PROCESS  
USING AN O=C=N CONTAINING ACTIVATOR  
Philippe Bruant, Billere, France, assignor to Societe Anonyme dite: Aquitaine Total Organico, Courbevoie, France  
No Drawing. Filed June 26, 1972, Ser. No. 266,051  
Int. Cl. C08g 20/18

U.S. Cl. 260—78 L 13 Claims  
This invention concerns a process for the anionic polymerization of lactams, using a new category of activators which allow the speed of polymerization to be properly controlled.

3,826,786  
POLYMERIZATION CONTROLLED DIALLYLIC  
PHTHALATE POLYMER COMPOSITIONS  
Carl Leonard Wright, Pasadena, and Harry Hoyt Beacham, Severna Park, Md., assignors to FMC Corporation, New York, N.Y.  
Continuation-in-part of abandoned application Ser. No. 101,004, Dec. 23, 1970. This application May 26, 1972, Ser. No. 257,439  
Int. Cl. C08f 3/58

U.S. Cl. 260—78.4 UA 4 Claims



Diallylic phthalate prepolymer compositions whose polymerization is controlled, and which compositions may contain polyphenylene ether polymers, are prepared by incorporating in the compositions 0.01 to 1.5% by weight of anthracene, based on the total polymerizable materials.

3,826,787  
REGULAR ALTERNATING COPOLYMERS OF  
STYRENE AND IMIDAZOLINES AND THEIR  
DERIVATIVES

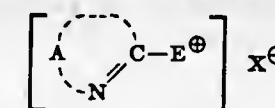
Richard Carl Capozza, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
Filed Sept. 21, 1973, Ser. No. 399,673  
Int. Cl. C02b 1/20; C08f 15/02

U.S. Cl. 260—85.5 R 7 Claims  
Completely alternating (1:1) copolymers of styrene and various imidazolines, their salt derivatives and methods of treating aqueous suspensions of water-insoluble, solid materials therewith, are disclosed.

3,826,788  
PROCESS FOR CROSSLINKING HYDROPHILIC  
COLLOIDS USING TRIAZINE DERIVATIVES  
Alfred Froehlich, Marty-le-Grand, Paul Tschopp, Marty, and Werner Denschel, Villars-sur-Glane, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland  
Filed Mar. 28, 1972, Ser. No. 238,896  
Claims priority, application Switzerland, Apr. 5, 1971, 5,019/71  
Int. Cl. C08f 3/34; C08h 1/06; C09h 7/00

U.S. Cl. 260—91.3 VA 12 Claims  
A process for crosslinking hydrophilic colloids, which comprises performing the crosslinking with a compound

having a half-life for decomposition in aqueous solution at 40° C. of at least 8 hours, of the formula



wherein

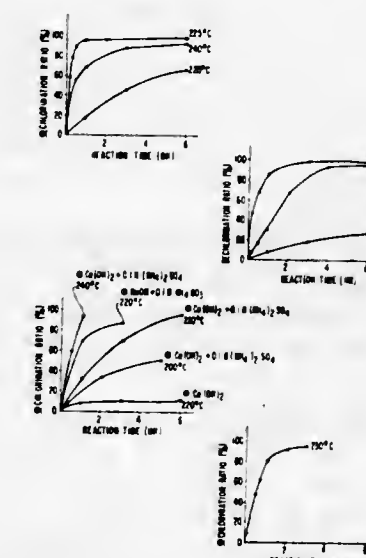


is a certain organic radical,  $E^\oplus$  is an anion radical and  $X^\ominus$  is an anion as well as a photographic material containing a colloid layer crosslinked with said compounds, are described.

### 3,826,789 PROCESS FOR PRODUCING HYDROCARBON COMPOSITION

Chikao Yokokawa, Kyoto, Japan, assignor to The Fujikura Cable Works Ltd., Tokyo, Japan  
Filed Dec. 8, 1972, Ser. No. 313,383  
Claims priority, application Japan, Dec. 9, 1971, 46/100,039  
Int. Cl. C08f 27/02

U.S. Cl. 260—92.8 A 10 Claims



A process for producing an hydrocarbon compound from polyvinyl chloride by heating the polyvinyl chloride in an aqueous solution of a basic inorganic material to release chlorine contained in the polyvinyl chloride into said aqueous solution as chlorine ions, to thereby obtain an organic high molecular weight polymeric material mainly comprising carbon, hydrogen and oxygen, is disclosed.

### 3,826,790 SOLUTION POLYMERIZATION PROCESS

Servaas van der Ven, 252 Evesham Road, Cherry Hill, N.J. 08003  
No Drawing. Filed Sept. 25, 1972, Ser. No. 292,027  
Claims priority, application Netherlands, Jan. 21, 1972, 7200923  
Int. Cl. C08d 1/20, 3/04, 3/08

U.S. Cl. 260—94.2 M 5 Claims  
A process for the polymerization of conjugated dienes optionally with monovinyl aromatic hydrocarbons to polymers having increased cis 1,4 content, which comprises polymerizing at least one conjugated diene in the presence of an initiator formed by reacting a hydrocarbon soluble lithium alkyl and a hydrocarbon soluble trihydrocarbyl boron compound in the presence of at least one conjugated diene or monovinyl hydrocarbon and maintaining during polymerization the ratio of boron to lithium of at least 0.5.



3,826,791

# **HETEROCYCLIC AMIDES OF 4-HYDROXY-2H-1-BENZOTHIOPYRAN-3-CARBOXYLIC ACID 1,1-DIOXIDE AND PROCESS FOR THEIR PRODUCTION**

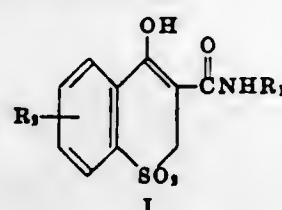
Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Original application Apr. 28, 1972, Ser. No. 248,509, now Patent No. 3,769,292, dated Oct. 30, 1972. Divided and this application Apr. 9, 1973, Ser. No. 349,354

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 C

Compounds of the formula:



wherein R<sub>1</sub> is an aromatic heterocyclic group and R<sub>2</sub> is hydrogen, alkyl, aralkyl, alkoxy, halogen, cyano, nitro, trifluoromethyl, etc., are disclosed. These compounds are useful as anti-inflammatory agents.

3,826,792

# **POLYMERIZATION OF ETHYLENICALLY UNSATURATED HYDROCARBONS**

Karl Ziegler, 1 Kaiser-Wilhelm-Platz, Heinz Brell, Erhard Holzkamp, and Heinz Martin, all of Mulheim (Ruhr), Germany; said Brell, Holzkamp and Martin assignors to said Ziegler, Maria Ziegler sole heir of said Karl Ziegler, deceased

Continuation of abandoned application Ser. No. 745,998, July 1, 1958, which is a continuation of applications Ser. No. 469,059, Nov. 15, 1954, now Patent No. 3,257,332, Ser. No. 527,413, Aug. 9, 1955, and Ser. No. 554,631, Dec. 22, 1955, both now abandoned and Ser. No. 514,068, June 8, 1955. This application Mar. 17, 1971, Ser. No. 125,151

Claims priority, application Germany, Nov. 17, 1953, Z 3,799; Dec. 15, 1953, Z 3,862; Dec. 23, 1953, Z 3,882; Aug. 3, 1954, Z 4,348; Aug. 16, 1954, Z 4,375; Dec. 27, 1954, Z 4,629

The portion of the term of the patent subsequent to June 21, 1983, has been disclaimed

Int. Cl. C08f 1/42, 3/06, 15/04

U.S. Cl. 260—94.9 B

32 Claims

A process for the polymerization of ethylenically unsaturated hydrocarbons, comprising the contacting of such hydrocarbons with a catalyst formed by mixing aluminum trihydrocarbons (with the hydrocarbons being either alkyl or aryl radicals) with a heavy metal compound (for example a salt, a freshly precipitated oxide or an hydroxide) of the metals of Groups IV-B, V-B and VI-B of the Periodic System, including thorium and uranium.

3,826,793

# **ANTICOAGULANT PEPTIDES RELATED TO FIBRINO PEPTIDES**

Gustav Erik Birger Blomback and Margareta Blomback, Stockholm, Per Ingemar Olsson, Vallingby, Lars-Gundro Svendsen and Bo Thuresson Af Ekenstam, Molndal, and Karl Goran Claesson, Vastra Frolunda, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

No Drawing. Continuation-in-part of abandoned application Ser. No. 769,370, Oct. 21, 1968. This application Sept. 10, 1970, Ser. No. 71,219

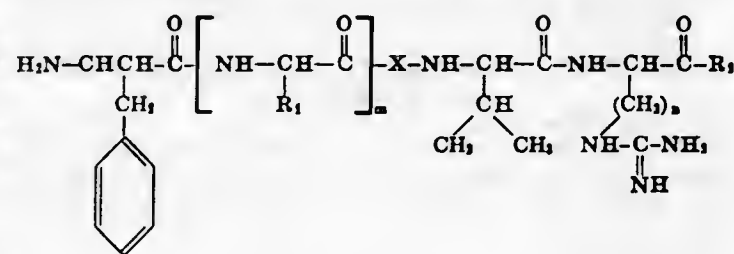
Int. Cl. C07c 103/52

U.S. Cl. 260—112.5

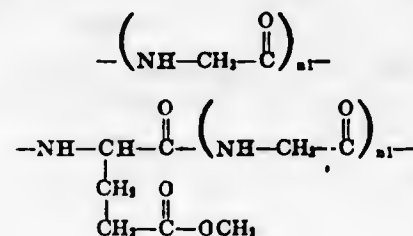
1 Claim

Polypeptides of natural amino acids having three to nine amino acids exhibit strong effects in reducing coagulation of the blood. The polypeptides exhibit principally antithromboplastic activity and in addition show some

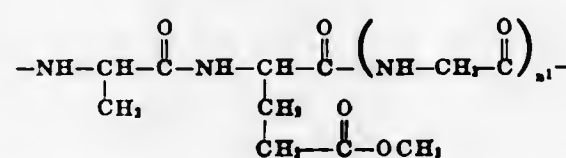
antithrombin and fibrinolytic activities. One amino acid end of the polypeptide is phenylalanine and the other is preferably arginine.



in which the optically active amino acids are of the L-configuration, and R<sub>1</sub> is isobutyl, sec-butyl or benzyl, m is 0 or 1, X is



or



n<sub>1</sub> being an integer from 0 to 3, R<sub>2</sub> an alkoxy group having up to eight carbon atoms, and n is 3.

3,826,794

# **PROTECTED DECAPEPTIDE DERIVATIVES OF GONADOTROPIN RELEASING HORMONE**

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,160

Int. Cl. C07c 103/52; C07g 7/00

U.S. Cl. 260—112.5

6 Claims

The synthesis of the protected decapeptide pyro-Glu-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide from the corresponding nonapeptide carrying easily removable protective groups is described. The decapeptide, upon removal of its protective groups, is identical with the gonadotropin-releasing hormone.

3,826,795

# **PROCESS FOR EXTRACTING A PROTEINACEOUS SWEETENING AGENT FROM DIOSCOREOPHYLLUM CUMMINSII BERRIES EMPLOYING HIGH SPEED HOMOGENIZATION AND U.V. IRRADIATION**

Okon A. Esiet, 2615 SE. 18th Ave., Portland, Oreg. 97202

Continuation-in-part of application Ser. No. 40,185, May 25, 1970, now Patent No. 3,687,693. This application July 10, 1972, Ser. No. 269,947

The portion of the term of the patent subsequent to Aug. 29, 1989, has been disclaimed

Int. Cl. A23j 1/14; A23l 1/26

U.S. Cl. 260—112 R

11 Claims

A valuable water soluble sweetening material which is many times sweeter than sucrose is recovered from the berries of the *Dioscoreophyllum cumminsii* vine, which is indigenous to Africa. The sweetening material material is a protein having a molecular weight of the order of 90,000 which is present as part of a carbohydrate-protein complex having a molecular weight of the order of 100,000. This complex is recovered in aqueous solution by steps including first removing the single seeds of the berries, homogenizing the remaining pulp and skin in the

presence of added water and separating a diluted juice from the solid material by filtration or centrifugation or a combination of both including washing the separated solid material with water and adding the water to the separated juice. The resulting aqueous material is optionally dialyzed in cellophane bags suspended in substantially pure water to remove impurities having molecular weight below approximately 10,000. This liquid can be further treated to liberate the carbohydrate from the protein and to then precipitate and centrifugally separate the precipitated protein. The separated protein can be further purified by a series of steps involving precipitation from water

aziridine compounds. The reaction products are particularly useful for imparting dispersancy to lubricant compositions. A representative dispersant is prepared by reacting polyisobutylene with phosphorus pentasulfide and then reacting the resulting phosphosulfurized polyisobutylene with ethylenimine. The products can be modified by further reaction with metal alcoholates or metal salts of fatty acids such as zinc acetate.

3,826,798

# **PHOSPHOSULFURIZED HYDROCARBON POLYMER STABILIZED WITH 2,5-BIS(ALKYLDITHIO)-1,3,4-THIADIAZOLE**

John H. Udelhofen, Wheaton, Roger W. Watson, Batavia, and Adam S. Kurasiewicz, Wheaton, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,379

Int. Cl. C07g 17/00

U.S. Cl. 260—139

9 Claims

Oleaginous crankcase lubricants containing phosphosulfurized hydrocarbon polymer resist deterioration during in-service use for internal combustion engine lubrication but the pungent, obnoxious odor and continual hydrogen sulfide evolution characteristic of such phosphosulfurized hydrocarbon during such use have prevented use of said oleaginous crankcase lubricants. Said odor and instability of such phosphosulfurized hydrocarbon are improved by adding thereto a minor amount of 2,5-bis(alkyldithio)-1,3,4-thiadiazole and the resulting composition provides inhibition to bearing metal corrosion and oxidative thickening of oleaginous crankcase lubricants.

3,826,799

# **COPPER CONTAINING AZO TRIAZINE COMPOUNDS**

David Richard Waring, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,788

Int. Cl. C09b 45/48

U.S. Cl. 260—146 T

4 Claims

Cellulose-reactive dyestuffs, providing usually green or brown shades of excellent fastness to light, washing and bleach treatments and providing a high level of fixation from alkaline, saline dyebaths are obtained by condensing together cyanuric chloride (2 moles) with one mole of a phenylene diamine sulphonic acid, one mole of a 1:1 copper complex aminoazo compound and one mole of nitroaminostilbene disulphonic acid or an amino mono-azo compound of the formula



where

R<sub>2</sub> represents H or CH<sub>3</sub>,  
R<sub>3</sub> represents a 1,4-naphthylene radical which may be substituted by SO<sub>3</sub>H and/or OCH<sub>3</sub>, or a 1,4-phenylene radical which may be substituted by CH<sub>3</sub>, OCH<sub>3</sub>, Cl, CO<sub>2</sub>H, SO<sub>3</sub>H, NHCONH<sub>2</sub> or NHCOR<sub>5</sub> where R<sub>5</sub> is H or an alkyl group of 1 to 3 carbon atoms, and  
R<sub>4</sub> represents a sulphonaphthyl radical or a mono- or di-cyclic radical of the benzene series which contains at least one SO<sub>3</sub>H group and which may be further substituted.

The condensations are carried out in such a manner as to provide a product of the formula:



where Tr are each monochlorotriazine residues, Bz is the residue of the phenylene diamine disulphonic acid and Me and Az are respectively the residues of the metal complex and the monoazo compounds.

3,826,796

# **p-GLU-HIS-LEU-ARG-PRO-GLY-NH<sub>2</sub> AND INTERMEDIATES**

Dimitrios Sarantakis, Audubon, William H. McGregor, Malvern, and Wayne A. McKinley, Wallingford, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 20, 1972, Ser. No. 317,042

Int. Cl. A61k 27/00; C07c 103/52; C07g 7/00

U.S. Cl. 260—112.5

3 Claims

The novel hexapeptide p-Glu-His-Leu-Arg-Pro-Gly-NH<sub>2</sub> and intermediates used in the synthesis thereof are described. This hexapeptide inhibits the release of luteinizing hormone.

3,826,797

# **DISPERSANT ADDITIVES CONTAINING PHOSPHORUS, SULFUR AND NITROGEN**

Stanley J. Brois, Englewood, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,985

Int. Cl. C07g 17/00; C10m 1/48

U.S. Cl. 260—125

13 Claims

To prepare additives for fuel and lubricant compositions, phosphosulfurized hydrocarbons are reacted with







3,826,813

**PROCESS FOR THE PREPARATION OF MULLITE BY A SOLID STATE REACTION**

Richard A. Gardner, Wappingers Falls, N.Y., and David L. Wilcox, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,676

Int. Cl. C01b 33/26

U.S. Cl. 423—328

4 Claims

A process for forming a high grade mullite



compound for use as an integrated circuit substrate including the steps of sintering an incompletely prereacted mullite and compensating for milling contamination by adjusting the stoichiometry of an initial mixture prior to a partial reacting step.

3,826,814

**PROCESS OF MAKING A FINELY DIVIDED SILICIC ACID HAVING REDUCING PROPERTIES**

Alfred Illgen, Lochau, Austria, and Walter Neugebauer, Constance, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of abandoned application Ser. No. 51,183, June 30, 1970. This application Mar. 28, 1972, Ser. No. 238,971

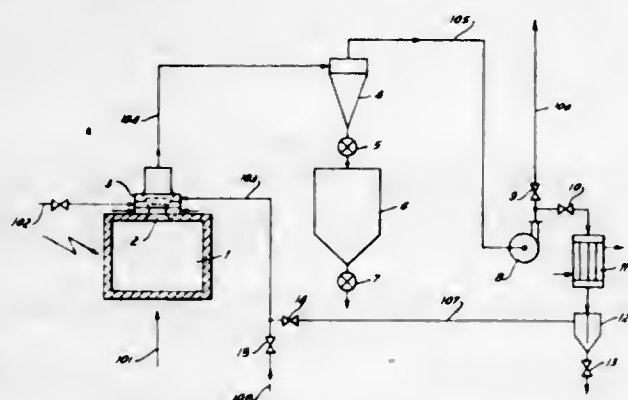
Claims priority, application Germany, July 1, 1969, P 19 33 292.4

The portion of the term of the patent subsequent to July 4, 1989, has been disclaimed

Int. Cl. C01b 33/12, 33/18

U.S. Cl. 423—336

6 Claims



A finely divided silicic acid having reducing properties is made by reacting gaseous silicon monoxide at temperatures above 1500° C. with water vapor and subjecting the formed reaction product to sudden chilling immediately after its formation.

3,826,815

**RECOVERY OF RESIDUAL AMMONIA FROM WEAK AQUEOUS SOLUTIONS THEREOF**

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10016

Continuation-in-part of abandoned application Ser. No. 264,885, June 21, 1972. This application Oct. 15, 1973, Ser. No. 406,499

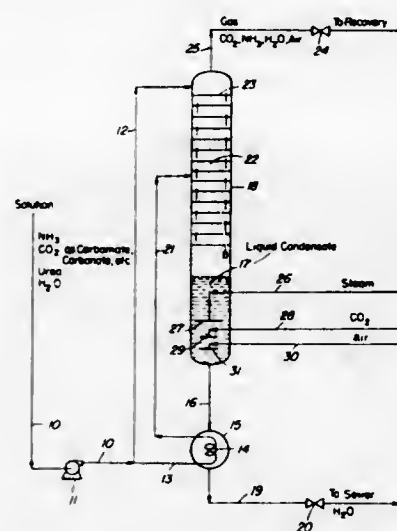
Int. Cl. C01c 1/02

U.S. Cl. 423—356

11 Claims

Ammonia is recovered from a waste, liquid effluent comprising a weak ammoniacal aqueous solution containing ammonia and/or ammonium carbamate or ammonium carbonate by stripping the solution with steam and an inert gas in a fractionator at specified conditions. Sub-

stantially all of the ammonia is recovered in an overhead gaseous product and a bottoms liquid product which is



essentially condensate substantially free of ammonia is also recovered.

3,826,816

**METHOD FOR SCRUBBING HCl FROM WASTE GASES**

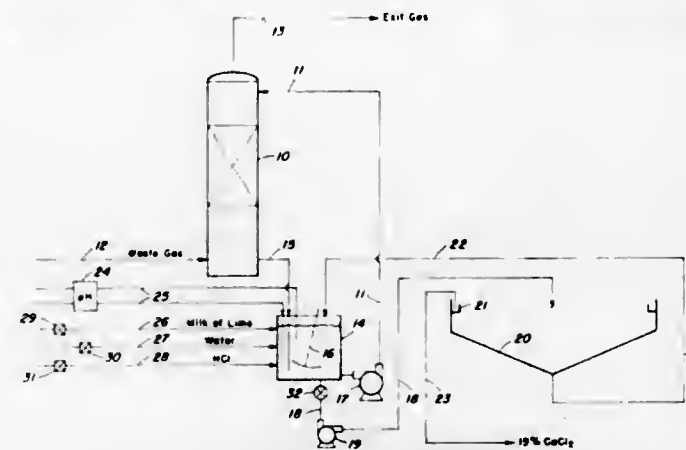
Walter R. McCormick, Salt Lake City, Utah, assignor to N L Industries, Inc., New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,487

Int. Cl. C01b 7/08; C01f 11/24

U.S. Cl. 423—497

10 Claims



A system is provided whereby hot waste gases containing small amounts of hydrogen chloride plus additional combustion products including carbon dioxide, and water vapor are scrubbed substantially free of the hydrogen chloride by contacting the hot gases with a fluid scrubbing medium comprising an aqueous suspension of calcium hydroxide (milk of lime) and calcium chloride brine whereby the hydrogen chloride in the gases is converted to additional calcium chloride brine which is separated and recovered from the fluid scrubbing medium as a calcium chloride concentrate.

3,826,817

**METAL HALIDES WITH LOW HYDROXYL ION CONTAMINATION**

Ricardo C. Pastor, Manhattan Beach, and Antonio C. Pastor, Santa Monica, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed July 26, 1972, Ser. No. 275,130

Int. Cl. C01d 3/00

U.S. Cl. 423—499

11 Claims

The present invention is directed to the synthesis of metal halides which have extremely low hydroxyl ion contamination levels; e.g.,  $10^{-8}$ ,  $10^{-6}$ , or less. Such materials may be used to grow single crystals from which

laser windows of excellent mechanical, thermal, and optical properties may be produced.

3,826,818

**METHOD FOR MAKING ANHYDROUS ALKALI METAL HYDROSULFITES**

Joseph Beckwith Heikman, Tacoma, Wash., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,706

Int. Cl. C01b 17/66

U.S. Cl. 423—515

4 Claims

In a method for making anhydrous alkali metal hydrosulfites by reacting sulfur dioxide and an alkali metal formate with alkali metal bisulfites, metabisulfites and hydroxides wherein an improved yield is effected by employing as the reaction medium alkyl substituted aliphatic amide solvents, such as dimethyl formamide or dimethyl acetamide.

3,826,819

**SULFURIC ACID PURIFICATION PROCESS**

Bruno Orlandini and Taesung Um, Kellogg, and Andrew H. Larson, Pinehurst, Idaho, assignors to The Bunker Hill Company, Kellogg, Idaho

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,224

Int. Cl. C01b 17/90

U.S. Cl. 423—531

3 Claims

A sulfuric acid purification process is described for removing or reducing the dissolved mercury concentration in concentrated sulfuric acid (87–96%) to a value less than three (3) parts per million and preferably less than one (1) part per million. Unpurified or raw concentrated sulfuric acid from an acid forming plant is first cooled to a temperature below 20° C. and preferably below 10° C. and is then treated with hydrogen sulfide gas in amounts equal to or greater than the stoichiometric equivalent to the dissolved mercury content. The acid is then aged for a period greater than 16 hours to allow the dissolved or dispersed hydrogen sulfide to fully react with the dissolved mercury to form a mercury sulfide precipitate. The precipitate is then removed from the acid by filtration. The dissolved  $\text{SO}_2$  impurity is then stripped from the acid.

3,826,820

**PREPARATION OF NON-SOLVATED CRYSTALLINE ALPHA-ALUMINUM HYDRIDE**

Charles B. Roberts and Frank M. Brower, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 18, 1965, Ser. No. 500,489

Int. Cl. C01b 6/00

U.S. Cl. 423—645

3 Claims

This invention is to a process of preparing non-solvated crystalline alpha-aluminum hydride by refluxing aluminum hydride-trimethyl amine, precipitating and separating the formed tri(aluminum hydride)-trimethylamine adduct and heating said adduct at a maximum temperature of about 85° C. to produce said aluminum hydride. Aluminum hydride is useful as a fuel component in solid and hybrid rocket propellant systems.

3,826,821

**REAGENTS FOR THE DIAGNOSIS OF INFECTIOUS MONONUCLEOSIS AND PREPARATION OF SAME**

Joseph Zichis, Chicago, Ill., assignor to Beckman Instruments, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 583,433, Sept. 30, 1966. This application Feb. 2, 1971, Ser. No. 112,062

Int. Cl. G01n 31/00, 31/02, 33/16

U.S. Cl. 424—12

4 Claims

Sheep or horse blood is specially treated to produce an antigen which is readily agglutinable by heterophil type antibodies present in the patient's serum. This antigen possesses properties of stability, sensitivity and agglutinability which are utilized in a serological diagnostic test for in-

fectious mononucleosis. Two other antigens, prepared from beef blood and from guinea pig tissues, are used in the test to differentiate the infectious mononucleosis type antibody from the Forssman type.

3,826,822

**LIQUID INSECTICIDAL COMPOSITIONS FOR IMPREGNATION OF SOLID SUPPORTS FOR PROLONGED DIFFUSION**

Louis Moulin, Tassin la Demi-Lune, Maurice Confino, Saint-Cyr au Mont d'Or, and Gerard Godard, Saint-Claire du Rhone, France, assignors to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,791

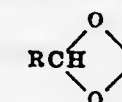
Claims priority, application France, Jan. 8, 1971, 7101208

Int. Cl. A01n 9/28, 9/36

U.S. Cl. 424—27

8 Claims

5 to 50% by weight of an acetal of formula



in which:

R is an alkyl radical containing 7 to 11 carbon atoms or a phenyl radical, possibly substituted by a lower alkyl. A is a linear or branched alkyl chain containing from 2 to 5 carbon atoms, possibly substituted by one or more hydroxyl groups;

are added to 2,2 dichlorovinyl dimethyl phosphate (DDVP) to provide an insecticidal composition in which the DDVP is more uniformly released over an extended period.

3,826,823

**STABILIZED PROSTAGLANDIN PREPARATIONS**

Anne Cecile O'Rourke, Redwood City, and John Scott Kent, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,616

Int. Cl. A61k 27/00

U.S. Cl. 424—80

16 Claims

A dry, stabilized pharmaceutical preparation comprising a minor amount of a prostaglandin, particularly PGE<sub>2</sub>, and a major amount of polyvinyl pyrrolidone which serves to stabilize, for extended periods of time, the chemical potency of the prostaglandin material.

3,826,824

**INHIBITION OF GASTROINTESTINAL ULCERS WITH CALCITONIN**

Wolfgang Doepfner, Basel, Switzerland, assignor to Sandoz Ltd., also known as Sandoz AG, Basel, Switzerland

No Drawing. Filed July 11, 1972, Ser. No. 270,811

Claims priority, application Switzerland, July 16, 1971, 10,484/71

Int. Cl. A61k 27/00

U.S. Cl. 424—112

6 Claims

This invention concerns a method of preventing ulcers in the gastrointestinal system of mammals, comprising administration of a peptide hormone selected from the group consisting of porcine calcitonin, human calcitonin M and salmon calcitonin.

3,826,825

**FUNGUS RESISTANT COMPOSITION**

James Patrick Dowd and James C. Hunter, Houston, Tex., assignors to Napco Corporation, Houston, Tex.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,396

Int. Cl. A01n 11/00

U.S. Cl. 424—145

1 Claim

An improved mildew inhibitor for paint capable of protecting either latex or solvent based paint from unsightly fungus growth. These compositions are prepared by mix-



ing finely divided zinc powder with pyrogenic aluminum oxide.

3,826,826

## GERMICIDAL DIPS

Abraham Cantor, Elkins Park, Pa., and Murray W. Winicov, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

No Drawing. Continuation of abandoned applications Ser. No. 771,283, Oct. 28, 1968, and Ser. No. 856,191, Sept. 8, 1969. This application Oct. 1, 1971, Ser. No. 185,801

Int. Cl. A61k 27/00

U.S. Cl. 424-149

11 Claims

In germicidal dips, and particularly in the hypochlorite treatment of the teats of lactating animals for the prevention and control of mastitis, the improvement that comprises providing a solid lithium hypochlorite concentrate containing about 10 to 50% by weight of available chlorine, and having a maximum free hydroxide equivalent to about 3% LiOH and preferably below 0.5% by weight, dissolving said concentrate in water just prior to use in proportions to provide about 1 to 5% and preferably about 4 to 5% by weight of available chloride in the resulting solution, and utilizing such solution as a germicidal dip.

As a special embodiment, particularly for preparing germicidal dips for other purposes, where available chlorine levels of about .01 to 1% are desired, the composition is supplied with buffering and reducing components to be combined with the lithium hypochlorite when preparing use dilutions thereof. The reducing component provides slow inactivation of said hypochlorite, and the amount of reducing component is such as to substantially inactivate the hypochlorite within a practical time interval which is suitably about 2 to 6 times the germicidal contact time intended for such use dilution or dip.

3,826,827

## FEED SUPPLEMENT FOR HOOFED ANIMALS

Joseph G. Forest, Waverly, and Edward J. Czarnetzky, Chazy, N.Y., assignors to International Stock Food Corporation, Waverly, N.Y.

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,563

Int. Cl. A61k 27/00

U.S. Cl. 424-164

4 Claims

The present invention relates to a feed supplement for horses and cattle, consisting essentially of an assimilable source of sulfur which may be sulfur itself, sodium, magnesium or potassium sulfate, methionine, cystine or cysteine. The treatment improves the hoofs of the animal.

3,826,828

## CONTRACEPTIVE AND DEVICE FOR ITS APPLICATION

Paul Henri Morel, 28 Rue de l'Université, Paris 7e, France

Filed July 7, 1971, Ser. No. 160,283

Claims priority, application France, July 9, 1970, 7025522

Int. Cl. A61k 27/00

U.S. Cl. 424-184

3 Claims

An intra-urethral contraceptive combination for use by males comprises a water-repellent liquid, e.g. a silicone liquid, and a paste, which may also be based on a silicone.

In use the combination is injected into the ureter, e.g. from a suitable injector or device, so that the paste is downstream of the liquid.

3,826,829

## SLUSH BEVERAGES CONTAINING FINE-GRAINED ICE CRYSTALS

Anthony J. Marulich, Pequannock, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,482

Int. Cl. A23l 1/04

U.S. Cl. 426-190

3 Claims

Liquid beverage formulations which may be consumed as either a conventional soft drink or as a soft frozen slush beverage containing fine-grained ice crystals are produced. These liquid formulations, which may if desired be carbonated, are formed with water, sugars, polyols, flavor and color agents, and an effective amount of a stabilizing agent which includes pectin in combination with other gums.

3,826,830

## CERTAIN PHOSPHORUS CONTAINING AMIDINE COMPOUNDS AS INSECTICIDES AND ACARICIDES

Ferenc M. Pallos, Pleasant Hill, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

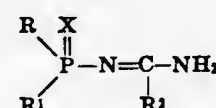
No Drawing. Application Jan. 11, 1971, Ser. No. 105,688, now Patent No. 3,758,685, which is a division of application Ser. No. 885,263, Dec. 15, 1969, now Patent No. 3,734,980. Divided and this application July 31, 1972, Ser. No. 276,863

Int. Cl. A01n 9/36

U.S. Cl. 424-211

1 Claim

Compounds of the formula:



in which R is lower alkyl or lower alkoxy; R<sup>1</sup> is lower alkoxy or lower alkylthio; R<sup>2</sup> is hydrogen, lower alkyl, phenyl; mono or di-substituted phenyl; and X is oxygen when R<sup>1</sup> is lower alkylthio and sulfur when R<sup>1</sup> is lower alkoxy as insecticides and acaricides, and a process for preparing the compounds above having X be oxygen.

3,826,831

## FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING OPTIONALLY HALOGENATED CYANOPHENYL O,S-DIALKYL PHOSPHOROTHIOLATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kuramashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Jan. 5, 1971, Ser. No. 104,177, now Patent No. 3,742,094, dated June 26, 1973. Divided and this application Feb. 6, 1973, Ser. No. 330,135

Claims priority, application Japan, Jan. 8, 1970, 45/2,286

Int. Cl. A01n 9/20, 9/36

U.S. Cl. 424-210

19 Claims

Optionally halogenated cyanophenyl O,S-dialkyl phosphorothiolates, i.e. cyanophenyl or halocyanophenyl O,S-dialkyl phosphorothiolates wherein one of the alkyl groups may be cycloalkyl, alkyl of 4-6 carbon atoms, a chlorine-substituted lower alkyl group or a phenyl group and the

other alkyl group is methyl or ethyl, which thiophosphates possess microbicidal, especially fungicidal properties.

3,826,832

## N-SUBSTITUTED AMINO - N - NITRO-AMINO-ACETONITRILES AS ANTI-ANGINAL AGENTS

Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 44,654, June 8, 1970, and a division of application Ser. No. 113,622, Feb. 8, 1971. This application June 1, 1972, Ser. No. 258,610

Int. Cl. A61k 27/00

U.S. Cl. 424-250

6 Claims

Certain known N-substituted amino-N-nitroso-amino-acetonitriles, e.g., N-(4-β-hydroxyethyl-piperazino)-N-nitroso-α-methyl-aminoacetonitrile, have been found to be useful as anti-anginal agents.

3,826,833

## CNS-DEPRESSANT COMPOSITIONS AND METHOD WITH [4-(10,11-DIHYDRODIBENZ[b,f]OXEPIN-10-YL) - 1 - PIPERAZINYL] - ALKYL - 3 - ALKYL - 2-IMIDAZOLIDINONES

Walter Schindler, Riehen, Basel-Stadt, Erich Schmid, Basel, and Armin Zuest, Birsfelden, Basel-Stadt, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 5, 1970, Ser. No. 61,509, now Patent No. 3,725,411. Divided and this application Apr. 2, 1973, Ser. No. 347,038

Claims priority, application Switzerland, Aug. 11, 1969, 12,124/69

Int. Cl. A61k 27/00

U.S. Cl. 424-250

3 Claims

Compounds of the class of 1-[2- or 3-[4-(10-11-dihydrodibenz[b,f]oxepin - 10 - yl) - 1 - piperazinyl]-alkyl]-3-alkyl-2-imidazolidinone, which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-blooded animals are provided.

An illustrative embodiment is 1-[3-[4-(8-chloro-10,11-dihydrodibenz[b,f]oxepin - 10 - yl) - 1 - piperazinyl]-propyl]-3-methyl-2-imidazolidinone.

3,826,834

USE OF VITAMIN B<sub>6</sub> FOR ENLARGING SUB-NORMAL HAIR BULBS AND ENHANCING HAIR GROWTH THEREFROM

Aaron J. Reiches, 11 Brazilian Court, Ladue, Mo. 63124

No Drawing. Continuation-in-part of abandoned applications Ser. No. 144,992, May 19, 1971, and Ser. No. 178,460, Sept. 7, 1971. This application Aug. 29, 1972, Ser. No. 284,675

Int. Cl. A61k 27/00

U.S. Cl. 424-263

5 Claims

Vitamin B<sub>6</sub>, applied topically to the scalp, is found to enlarge subnormal hair bulbs, thereby increasing hair diameter, strength and body. On application to women's scalps topically with estrogens, estrogenically revived hair bulbs are so enlarged and their growth so enhanced as to produce hairs of normal characteristics.

3,826,835

## 8-BENZOFURYL METHYL-1,3,8-TRIAZASPIRO(4,5)DECANES AS NEUROLEPTICS

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

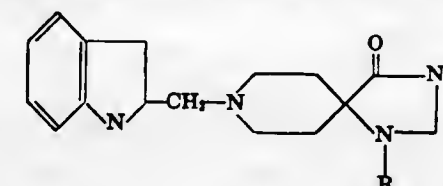
No Drawing. Continuation-in-part of abandoned application Ser. No. 105,126, Jan. 8, 1971. This application Sept. 24, 1971, Ser. No. 183,694

Int. Cl. A61k 27/00

U.S. Cl. 424-267

3 Claims

8-[1-(2,3-dihydro - 2 - benzofuryl)alkyl] - 1,3,8 - triazaspiro-(4,5)-decane e.g. those of the formula



R=H, aliphatic, araliphatic or aromatic radical, or functional derivatives thereof are neuroleptic agents.

3,826,836

## PHENYL-IMIDAZOLYL-FATTY ACID DERIVATIVES FOR TREATING MYCOTIC INFECTIONS

Karl Heinz Buchel, Werner Meiser, Manfred Piempel, and Carl Metzger, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

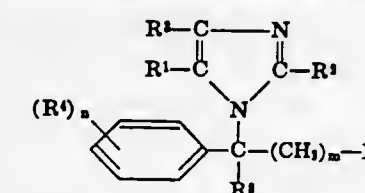
No Drawing. Original application May 18, 1970, Ser. No. 38,531, now Patent No. 3,732,242, dated May 8, 1973. Divided and this application May 18, 1972, Ser. No. 254,429

Int. Cl. A61k 27/00

U.S. Cl. 424-273

40 Claims

Phenyl-imidazolyl-fatty acid derivatives of the formula:



wherein

R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are the same or different, and are hydrogen or lower alkyl;

R<sup>4</sup> is hydrogen, alkyl, lower alkoxy, alkylmercapto, or an electro negative moiety;

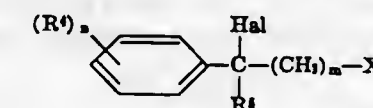
R<sup>5</sup> is benzene, benzene substituted by alkyl, lower alkoxy, alkylmercapto or an electro negative moiety, or R<sup>5</sup> is an aliphatic moiety;

X is a carboxyl moiety or a grouping of a functional carboxylic acid derivative;

m is 0, 1, 2, 3, 4, 5 or 6; and

n is 0, 1 or 2,

and pharmaceutically acceptable non-toxic salts thereof are produced by reacting a halogen derivative of the formula:



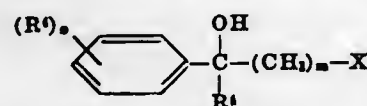
wherein

R<sup>4</sup>, R<sup>5</sup>, X, m and n are as above defined, and Hal is halogen,

with an optionally alkyl substituted imidazole in the presence of acid-binding base or an excess of imidazole, preferably in an inert polar solvent at a temperature of from



about 20° C. to about 180° C., or reacting the above halogen derivative with an alkali metal or silver salt of an optionally alkyl substituted imidazole in an inert solvent at a temperature of from about 20° C. to about 200° C., or reacting a hydroxy compound of the formula:



wherein  $R^4$ ,  $R^5$ ,  $X$ ,  $m$  and  $n$  are as above defined, with an optionally alkyl-substituted imidazole.

These phenyl-imidazolyl-fatty acid derivatives exhibit antimycotic activity.

3,826,837

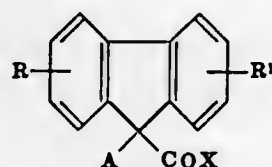
**9-AZOLYL-(1)-FLUORENE-9-CARBOXYLIC ACID DERIVATIVES AS AN ANTI-MYCOTIC AGENT**  
Helmuth Timmler, Karl-Helmut Buchel, and Manfred Pempel, Wuppertal-Elberfeld, Germany, assigns to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Feb. 1, 1971, Ser. No. 111,628, now abandoned. Divided and this application June 2, 1972, Ser. No. 259,276

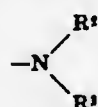
Claims priority, application Germany, Feb. 3, 1970, P 20 04 697.3

Int. Cl. A61k 27/00

U.S. Cl. 424-273 24 Claims  
9-Azoly-(1)-fluorene-9-carboxylic acid derivatives of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein  $R$  and  $R^1$  are the same or different and are hydrogen, lower alkyl, lower alkoxy or halogen,  $A$  is an azolyl moiety having 2 or 3 nitro heteroatoms and  $X$  is hydroxyl, alkoxy, aminoalkoxy or a moiety of the formula:



wherein  $R^2$  is hydrogen or alkyl and  $R^3$  is hydrogen, alkyl or unsubstituted or substituted phenyl, are useful for their antimycotic activity in the treatment of mycoses in humans and animals. Processes for the production of said compounds are described.

3,826,838

# **BASIC THIENYLALKANES FOR INCREASING BLOOD FLOW**

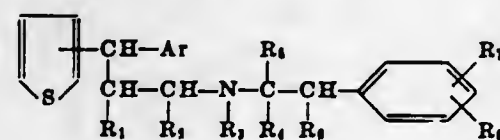
Klaus Fosselt, Bergen-Enkheim, and Heribert Offermanns, Grossauheim, Germany, assigns to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Original application Sept. 20, 1971, Ser. No. 182,192, now Patent No. 3,767,675. Divided and this application Mar. 30, 1973, Ser. No. 346,248

Claims priority, application Austria, Oct. 14, 1970, 9,277/70

Int. Cl. A61k 27/00

U.S. Cl. 424-275 15 Claims  
Compounds having the formula



where the thienyl group can be substituted by one or more lower alkyl groups,  $Ar$  is a thienyl or phenyl group which can be substituted by one or more lower alkyl or lower alkoxy groups,  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  are hydrogen or lower alkyl,  $R_6$  is hydrogen or hydroxyl and  $R_7$  and  $R_8$  are the same or different and are hydrogen, hydroxyl, halogen, lower alkyl, lower haloalkyl or lower alkoxy and their salts are useful in heart and circulatory illnesses.

3,826,839

# **ANTI-ARTHRITIC COMPOSITIONS COMPRISING ESTER DERIVATIVES OF PULVINIC ACID AND METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY**

Blaine M. Sutton, Hatboro, Donald T. Walz, Drexel Hill, and James W. Wilson, Wayne, Pa., assigns to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 94,974, Dec. 3, 1970. This application Oct. 20, 1971, Ser. No. 191,051

Int. Cl. A61k 27/00

U.S. Cl. 424-279 15 Claims

Pharmaceutical compositions having anti-arthritis activity comprising an ester derivative of pulvinic acid and methods of producing anti-arthritis activity by administering internally said compositions. Certain of the pulvinic acid derivatives are novel compounds per se.

3,826,840

# **3-(4-METHYL-3-CYCLOHEXYL)BUTYL ESTERS AND EPOXIDIZED DERIVATIVES THEREOF AS INSECT JUVENILE HORMONE MIMICKING COMPOUNDS AND INSECTICIDES**

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed June 14, 1971, Ser. No. 153,058

Int. Cl. A01n 9/24

U.S. Cl. 424-305 6 Claims

3-(4-Methyl-3-cyclohexenyl)butyl esters and epoxidized derivatives thereof are a class of compounds useful for insect control. In particular, such compounds are useful for contacting various metamorphological stages of insects, especially the larval and adult stages, resulting in insect mortality or in severe adult insect abnormalities, such as undeveloped wings and abdomens, and inhibited reproduction.

3,826,841

# **METHOD FOR EXTERMINATING RODENTS AND RODENTICIDE COMPOSITIONS**

Hiroshi Yamamoto, Tokyo, Kengo Kolke, Ageo, and Koji Ohgushi and Iwao Tokumitsu, Fukuoka, Japan, assigns to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,092

Claims priority, application Japan, Sept. 13, 1971, 46/70,388

Int. Cl. A01n 9/12, 9/20

U.S. Cl. 424-323 4 Claims

A rodenticide including as an effective component a compound of the formula (1):



wherein  $A$  represents



$R_1$  is hydrogen or alkyl of 1 to 9 carbons and  $R_2$  is hydrogen, cyano or lower alkyl has been found to have excellent exterminating effects on rodents.

3,826,842

# **INSECT REPELLENT COMPOSITIONS AND PROCESS HAVING AN N-SUBSTITUTED HYDROXY-ALKYL AMINE AS AN ACTIVE INGREDIENT**

Carl Bordenca, Pointe Vedra Beach, and Robert P. Johnson and Kenneth P. Dorschner, Jacksonville, Fla., assigns to SCM Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 189,464, Oct. 14, 1971. This application June 23, 1972, Ser. No. 265,724

Int. Cl. A01n 9/20

U.S. Cl. 424-325 5 Claims

Monoalkanolamines having a  $C_{3-8}$  alkanol residue with terminal hydroxylation and having at least one of the amino hydrogens replaced by a  $C_{8-10}$  n-alkyl radical are effective insect repellents and even can repel biting flies from the skin of animals.

3,826,843

# **1-SUBSTITUTED BIGUANIDES AS GASTRO-INTESTINAL SPASMOLYTIC AGENTS**

Julius Diamond, 120 Red Rambler Drive, Lafayette Hill, Pa. 19444; George H. Douglas, 21 Manor Road, Paoli, Pa. 19301; and Bernard J. Burns, 2171 Diaston St., Philadelphia, Pa. 19149

No Drawing. Continuation-in-part of abandoned application Ser. No. 89,005, Nov. 12, 1970. This application Oct. 14, 1971, Ser. No. 189,388

Int. Cl. A61k 27/00

U.S. Cl. 424-326 21 Claims

The 1-substituted phenyl biguanide compounds of this invention possess useful gastric anti-secretory and spasmolytic properties. Compounds of this type which also display anti-hypertensive and CNS depressant properties are also disclosed.

3,826,844

# **CERTAIN DITHIOKETALS OF GLYOXYLOYL HALIDE-1-PHENYLHYDRAZONE AS ANTI-ARTHROPODAL AGENTS**

Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,497

Int. Cl. A01n 9/12

U.S. Cl. 424-327 11 Claims

Some new cyclic and noncyclic dithioketals of glyoxyloyl halide 1-phenylhydrazones have been found to be effective anti-arthropodal agents. The cyclic dithioketals include 5-membered and 6-membered rings with or without alkyl substituents. The noncyclic dithioketals are limited to alkyl on the sulfur atoms. The phenyl group can have alkyl, alkoxy, haloalkyl, alkylmercapto, and halogen substituents. The "halide" can be chloride or bromide. Formulations for use against arthropod pests are described as well as methods for controlling such pests wherever they occur and become a problem.

3,826,845

# **ointment base**

Tsunetsuke Suyama, Masunori Saeki, and Ryuzo Okada, Tokyo, Japan, assigns to Sankyo Company Limited

No Drawing Filed Feb. 4, 1970, Ser. No. 8,711

Claims priority, application Japan, Feb. 8, 1969, 44/9,426; Dec. 27, 1969, 45/159

Int. Cl. A61k 9/06

U.S. Cl. 424-365 5 Claims

This invention relates to a novel ointment base whose consistency is proper for an ointment base and is scarcely varied depending upon a temperature. It is useful for a

preparation of ointments, cosmetics and the like, and comprises triglyceride being liquid at ordinary temperatures or a mixture of a dibasic aliphatic carboxylic acid ester and a salicylic acid ester; silicic acid anhydride; and a nonionic surfactant or an ionic surfactant selected from the group of a fatty acid polyoxyethylene-phosphate, a fatty alcohol-polyoxyethylene-phosphate, lecithin, and alkylsulfate, a fatty acid-polypeptide condensate or an ampholytic surfactant of carboxylic acid type.

3,826,846

# **ANTIFUNGAL COMPOSITION AND METHOD OF ALKYLENEBISDITHIOCARBAMATE COMPLEX COMPOUNDS**

Robert L. Noveroske, 1401 Snyder Lane, Walnut Creek, Calif. 94598

No Drawing. Continuation-in-part of application Ser. No. 755,435, Aug. 26, 1968, now Patent No. 3,536,742. This application Sept. 16, 1970, Ser. No. 72,791

Int. Cl. A01n 9/00, 9/12

U.S. Cl. 424-289 13 Claims

Novel complexes of alkanolamines with zinc-containing ethylenebisdithiocarbamates or 1,2-propylenebisdithiocarbamates such as complex compounds of from 1 to 4 moles zinc ethylenebisdithiocarbamate with one mole 2-(2-aminoethylamino)ethanol(aminoethylethanolamine) are prepared by mixing together a water-soluble ethylenebisdithiocarbamate, water-soluble salts of zinc and one or more additional metal such as manganese or iron and one or more alkanolamines. The complex compounds are stable and can be used to regulate the growth of plants. They are useful as antifungal agents for the control of such fungi as apple scab fungus, rice blast, grape downy mildew and late blight organisms. They also are useful for promoting the growth of higher plants such as grapes, potatoes and the like.

3,826,847

# **PROCESS FOR PREPARATION OF FLAVOR DURABLE CHEWING GUM**

Kolchi Ogawa and Masatoshi Terasawa, Tokyo, Japan, assigns to Lotte Co., Ltd., Tokyo, Japan

No Drawing. Filed June 25, 1971, Ser. No. 157,002

Claims priority, application Japan, Oct. 21, 1970, 45/92,147

Int. Cl. A23g 3/30

U.S. Cl. 426-3 6 Claims

A chewing gum product having a durable flavor and containing seasonings including spices which have been coated, encapsulated or combined with high molecular weight compounds such as polyvinyl esters.

3,826,848

# **PREPARATION OF FUNCTIONAL FISH PROTEIN CONCENTRATES AND ISOLATES**

John Spinelli and Barbara Jean Koury, Seattle, Wash., assigns to the United States of America as represented by the Secretary of Commerce

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,040

Int. Cl. A23j 1/04

U.S. Cl. 426-7 10 Claims

A slurry of comminuted fish is partially hydrolyzed with a proteolytic enzyme and the modified proteins are recovered as a protein-phosphate complex. The complex is extracted with a polar solvent to remove lipids and then with water to remove the solvent. The extracted complex is neutralized with an alkali and dried. A carbohydrate may be added to the product prior to the dry-



ing to improve its storage properties. An enzymically modified myofibrillar protein isolate may be prepared by preliminarily extracting the comminuted fish with a saline solution and then with water.

3,826,849

## PREPARATION OF WINE

Peter Jacobus Venter and Johannes Daniel Malan, Stellenbosch, Cape Province, Republic of South Africa, assignors to Tobacco Research and Development Institute Limited, Zug, Switzerland

Continuation-in-part of abandoned application Ser. No. 251,200, May 8, 1972. This application May 15, 1973, Ser. No. 360,609

Int. Cl. C12g 1/02

U.S. Cl. 426—15 3 Claims

In a wine making process the skins and pips are separated from the pulp after crushing of the grapes. The pips are removed and the skins are then finely ground in a colloid mill. The ground product is then added to a fermentation must for wine making. The must could be the original pulp or another must.

3,826,850

## PREPARATION OF BAKED GOODS HAVING SOURDOUGH FLAVOR WITHOUT A SOURDOUGH STARTER

David R. Shenkenberg, Alexandria, and Faye G. Barnes, Arlington, Va., and Byron H. Webb, Harpers Ferry, W. Va., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,321

Int. Cl. A21d 2/14, 2/34

U.S. Cl. 426—25 1 Claim

Sourdough flavored bread and other baked products are made without the use of the traditional sourdough starter sponge. The distinctive taste of sourdough baked products is obtained by substituting acid whey and vinegar or acetic acid for the starter sponge. Special yeast that will grow only at pH levels below 4.0 are not needed; good leavening is obtained at higher pH values with regular baker's yeast. Of significance to the baking industry is that the process provides for uniformity of product and can be done with standard baking equipment using standard baking procedures.

3,826,851

## PROCESS FOR ENHANCING FRESH TOMATO FLAVOR IN TOMATO PRODUCTS

Dante G. Guadagni, Moraga, and Ron G. Buttery, Richmond, Calif. (both % Western Regional Research Laboratory, Berkeley, Calif. 94710)

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,920

Int. Cl. A231 1/23

U.S. Cl. 426—65 1 Claim

The flavor of processed tomato and other food products is significantly improved by the addition of a mixture composed of cis-hex-3-enal, 2-methylhept-2-en-6-one, eugenol, and  $\beta$ -ionone.

3,826,852

## CASING-CARRIER ASSEMBLY AND METHOD

Robert M. Levaco, San Francisco, and Jordan A. Dolgoff, South San Francisco, Calif.; said Levaco assignor to Oppenheimer Casing Co.

Filed Oct. 28, 1971, Ser. No. 193,530

Int. Cl. A22c 13/00

U.S. Cl. 426—132 9 Claims



A natural casing is shirred onto a self-supporting tubular carrier member. The carrier member is formed of

an extruded plastic material, such as polyethylene, which has an inherent elastic memory, and which is severed along a portion of its length prior to the placement of the casing thereon. The line of severance terminates short of one end of the tubular member to provide a closed circumferentially continuous end portion. The elastic memory of the material causes the wall portion adjacent one side of the line of severance to curl beneath the wall portion at the other side of the line of severance, so that the carrier member assumes a generally frusto-conical configuration. The inner diameter of the casing is larger than the small diameter portion of the carrier member so that the casing can be readily shirred thereon, although the inner diameter of the casing is smaller than the larger diameter portion of the carrier member to prevent axial displacement therefrom. A holding member is provided at the small diameter end of the carrier member to positively retain the casing in place.

3,826,853

## CASING-CARRIER ASSEMBLY AND METHOD

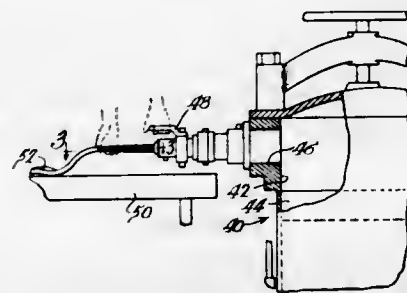
Robert M. Levaco, San Francisco, Calif., assignor to Oppenheimer Casing Co.

Original application Oct. 28, 1971, Ser. No. 193,530.

Divided and this application Feb. 16, 1972, Ser. No. 226,687

Int. Cl. A22c 13/00

U.S. Cl. 426—132 5 Claims



A natural casing is shirred onto a self-supporting tubular carrier member. The carrier member is formed of an extruded plastic material, such as polyethylene, which has an inherent elastic memory, and which is severed along its length prior to the placement of the casing thereon. The elastic memory of the material causes the wall portion adjacent one side of the line of severance to curl beneath the wall portion at the other side of the line of severance, so that the carrier member assumes a generally frusto-conical configuration. The inner diameter of the casing is larger than the small diameter portion of the carrier member so that the casing can be readily shirred thereon, although the inner diameter of the casing is smaller than the larger diameter portion of the carrier member to prevent axial displacement therefrom. A holding member is provided at the small diameter end of the carrier member to positively retain the casing in place.

3,826,854

## INSTANT MARSHMALLOW POWDER AND METHOD FOR ITS PRODUCTION

Charles A. Sanna, Madison, and Filip Leon Sanna, Mount Horeb, Wis., assignors to Beatrice Foods Co.

Filed Jan. 26, 1972, Ser. No. 220,883

Int. Cl. A23g 3/00

U.S. Cl. 426—163 8 Claims

A particulate marshmallow powder having a moisture content of less than 6%, and which can be reconstituted in water to form a marshmallow paste. The powder's low moisture content and long shelf life make it suitable for

incorporation in instant cocoa mix and other dried food products. A spray-drying process for production of the powder is also described.

3,826,855

## CITRUS FRUIT PEELS FOR ALCOHOLIC BEVERAGES

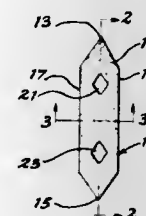
John J. Fiorella, 181 Richmond Ave., Buffalo, N.Y. 14222

Filed Mar. 27, 1972, Ser. No. 238,277

Int. Cl. A231 1/12

U.S. Cl. 426—175

5 Claims



Citrus fruit peels, such as lemon or lime peels, for use in flavoring alcoholic beverages, such as cocktails, are in strip form, with the face of the citrus peel being coated with a protective material to insure its freshness and with the peel being cut or slit on the sides, ends or in a middle portion to improve its flavoring ability when it is twisted and added to an alcoholic beverage. Also disclosed are methods of making such peels and of using them. Packages of the peels are also described wherein inert gases and a suitable low temperature are employed to preserve the citrus flavor which is released upon twisting the peels.

## ERRATUM

For Class 426—190 see:  
Patent No. 3,826,829

3,826,856

## DIHYDROCHALCONE XYLOSIDES AND THEIR USE AS SWEETENING AGENTS

Robert M. Horowitz, Pasadena, and Bruno Gentili, Glendale, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

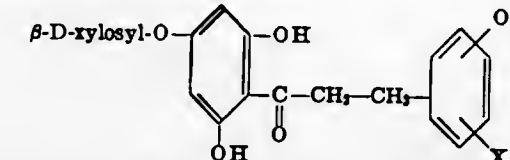
No Drawing. Filed May 23, 1972, Ser. No. 256,084

Int. Cl. A231 1/26

U.S. Cl. 426—213

Compounds of the structure—

6 Claims



wherein X is hydrogen, hydroxy, or lower alkoxy. These compounds are intensely sweet, and are useful for sweetening foods and other edible substances.

3,826,857

## HARD CANDY

Harold E. Horn, Oak Lawn, and Martin M. Godzicki, Chicago, Ill., assignors to CPC International Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 748,155, July 29, 1968. This application Apr. 30, 1971, Ser. No. 139,194

Int. Cl. A23g 3/00

U.S. Cl. 426—214

8 Claims

Hard candy containing a significant proportion of a low D.E. starch hydrolysate. The hard candy has improved hygroscopicity characteristics, contains more water than conventional hard candy, and yet is hard and clear.



# ELECTRICAL

## 3,826,858 CURRENT SUPPLY DEVICE FOR CERAMIC ELECTRODES

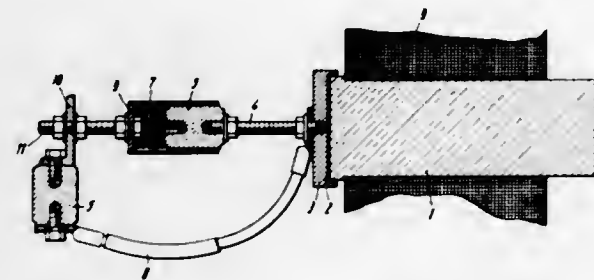
Helmut Pieper, Ketteler Str. 11, 877 Lohr, and Gunther Umlauf, Ringstr. 8, Steinbach am Wald, both of Germany  
Filed July 24, 1973, Ser. No. 382,150

Claims priority, application Germany, July 25, 1972, 2235703

Int. Cl. C03b 5/00

U.S. Cl. 13-6

6 Claims



An electrode assembly used with furnaces for the melting of conductive masses such as glass comprises a ceramic electrode which has an exterior end face abutted by a highly ductile mass which is placed under pressure thereagainst and heated to a temperature closely below its melting point. Because the mass is highly ductile at this temperature and is pressed thereagainst by a ram, the mass closely and intimately conforms to the end face of the ceramic electrode and facilitates the application of current to the electrode. Preferably the ram is spring-biased against the mass and is mounted for angular movement to maintain a centered relationship relative to the electrode.

## 3,826,859 ELECTRONIC MUSICAL INSTRUMENT WITH FREQUENCY-DEVIATED PEDAL TONE SIGNAL

Akihisa Suzuki, Kamimura, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

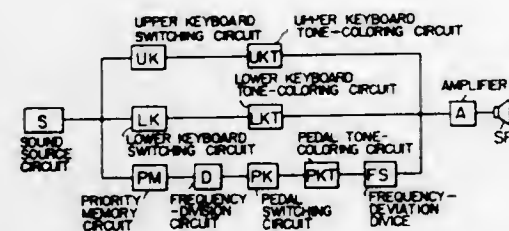
Continuation-in-part of Ser. No. 113,249, Feb. 8, 1971, abandoned. This application Oct. 17, 1972, Ser. No. 298,357

Claims priority, application Japan, Feb. 10, 1970, 45-12784; Feb. 26, 1970, 45-19153

Int. Cl. G10h 1/04

U.S. Cl. 84-1.17

4 Claims



In an electronic musical instrument, a tone signal for the pedal keyboard is obtained by frequency-dividing the manual tone signal. The pedal tone signal thus obtained is passed through a frequency shifter to become a slightly frequency-deviated signal whose frequency is not an exact integral sub-multiple of the frequency of the manual tone signal. In this instrument, concurrent sounding of the pedal tone and the manual tone brings out a beat as in an instrument having tone generators of an individual oscillating system.

## 3,826,860 HIGH VOLTAGE ELECTRICAL CONNECTOR

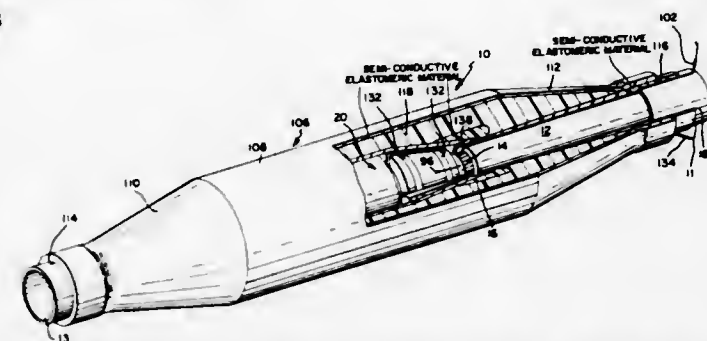
Frederick Carl De Slo, Hershey, and Walter Myers Werner, Downingtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 8, 1973, Ser. No. 339,465

Int. Cl. H02g 15/08

U.S. Cl. 174-73 S

6 Claims



This invention relates to an insulated high voltage electrical connector for splicing together cable carrying high currents at high voltages. More particularly, the invention includes a current-carrying connector housing which contains a power-driven piston assembly for driving wedge-shaped jaws onto the center conductor of the cable. An internal shield positioned at either end of the housing modulates voltage potential lines to prevent dangerous stress buildup. Between the housing and a molded external shield, a continuous body of insulation is provided. Vent tubes provide escape means for otherwise trapped air and gases which could contaminate the semi-conductive and non-conductive members. The integrity of the molded external shield is maintained by placing ignition wires through the ends of the connector to the power-driven piston assembly.

## 3,826,861 TERMINAL CONNECTORS FOR INSULATED CONDUCTORS

Walter Karl, Running Stream; Peter John Rooney, Concord, and Alexander Ulk, Kingsgrove, all of Australia, assignors to Utilux Pty., Limited

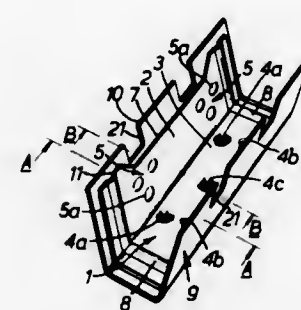
Continuation of Ser. No. 7,064, Jan. 30, 1970, abandoned. This application July 3, 1972, Ser. No. 268,807

Claims priority, application Australia, Feb. 5, 1969, 50006/69

Int. Cl. H02g 15/08

U.S. Cl. 174-84 C

3 Claims



An electrical terminal connector for crimping onto an insulated electrical conductor, comprising a trough-shaped ferrule, an insulation piercing element, such as a group of spikes, projecting from the side walls of the ferrule, and conductor engaging means, such as dimples, projecting into the space and located in co-operating juxtaposition with respect to the element, the side walls during crimping being rolled inwardly

JULY 30, 1974

# ELECTRICAL

1329

so that the conductor engaging means engages the conductor and the element pierces the insulation to make electrical contact with the conductive core of the conductor.

## 3,826,862 LAMINATE TAPE AND LAMINATE SHEATHED CABLE HAVING AN ETHYLENE/GLYCIDYL COPOLYMER ADHESIVE

Terumichi Ichiba; Hiroshi Shimba, and Hiroaki Mukunashi, all of Yokohama, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

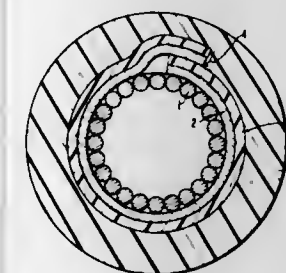
Filed May 14, 1973, Ser. No. 360,248

Claims priority, application Japan, May 13, 1972, 47-47333; May 13, 1972, 47-47335; May 27, 1972, 47-52601; May 27, 1972, 47-52602

Int. Cl. H01b 7/18

U.S. Cl. 174-102 R

10 Claims



A binary copolymer having a melt index of 16g/10 min or less measured at a temperature of 190°C under a load of 2,160 g consisting of (a) ethylene; and (b) a comonomer selected from glycidyl methacrylate, glycidyl acrylate and allyl-glycidyl ether; or a mixed composition comprising (a') as a first component, one or more of the above mentioned binary copolymers; and (b') as a second component, one or more other copolymers consisting of (a'') ethylene; and (b'') a comonomer selected from an alkyl acrylate, an alkyl methacrylate and vinyl acetate, is coated on one or both surfaces of a metal tape to make a laminate tape. The laminate tape is used for preparing a laminate sheathed cable. The laminating resin may contain an antioxidant.

## 3,826,863 SUBSCRIPTION TELEVISION SYSTEM USING AUDIO AND VIDEO CARRIER REVERSAL

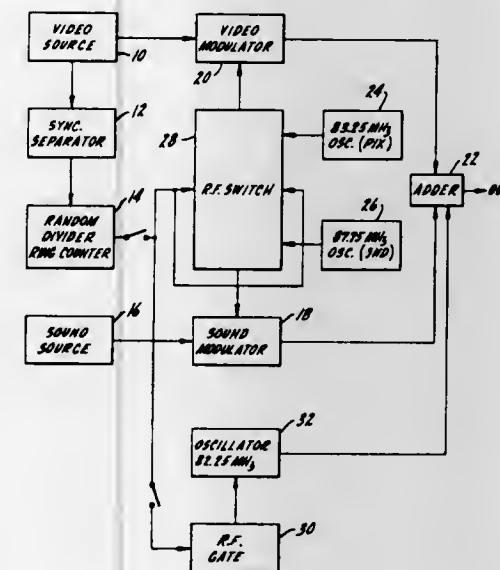
Arthur R. Johnson, Des Plaines, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Feb. 9, 1973, Ser. No. 331,092

Int. Cl. H04n 1/44

U.S. Cl. 178-5.1

5 Claims



A subscription television system reverses the audio and video carriers within a particular channel on a random basis.

A switching signal, nominally one Mhz beneath the video carrier, is transmitted to each of the receivers for use in effecting decoding at each receiver location.

## 3,826,864 SPECIAL EFFECT GENERATOR FOR A SIMULATOR VISUAL SYSTEM

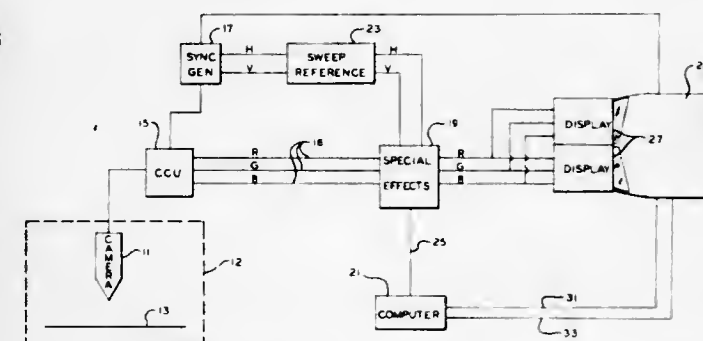
Eldred H. Pauve, Susquehanna, Pa., assignor to The Singer Company, Binghamton, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,086

Int. Cl. G09b 9/08; H04n 7/18

U.S. Cl. 178-6.8

11 Claims



A system for generating sky, horizon scenes and scenes simulating low visibility in a flight simulator visual system using a television display is shown. Aircraft attitude information is used in a horizon generator to locate the horizon on a line-to-line basis. The information from the horizon generator is modified by functions of visibility range, altitude, time of day and location above or below clouds to develop the proper scenes, such as white for sky below clouds, white for clouds, the blue for sky above clouds and to switch between these synthetically generated scenes and a terrain scene provided by a camera model system or other image generator.

## 3,826,865 METHOD AND SYSTEM FOR ACOUSTO-ELECTRIC SCANNING

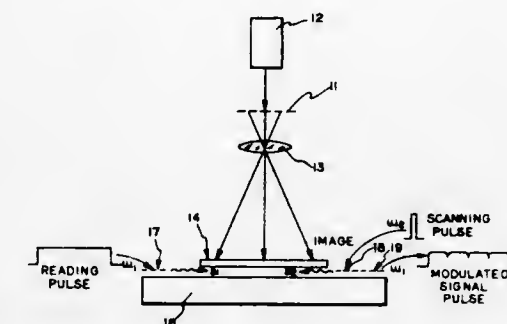
Calvin F. Quate, Los Altos Hills, and Oberdan W. Otto, Mountain View, both of Calif., assignors to Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 16, 1973, Ser. No. 351,272

Int. Cl. H04n 5/30

U.S. Cl. 178-7.1

20 Claims



A method and system for scanning conductivity perturbations in semiconductor films by using the piezoelectric fields of acoustic surface waves. In accordance with one embodiment, a piezoelectric substrate is situated adjacent to and spaced a small distance from a semiconductor film. A reading acoustic surface wave of relatively long pulse duration is propagated along the piezoelectric substrate in one direction and a relatively short scanning acoustic wave pulse is propagated in the opposite direction. The amplitude of the reading wave is modulated by the scanning pulse at the point



where the two pass each other. In accordance with one embodiment, an optical pattern image on the semiconductor film produces conductivity perturbations through carrier-pair generation. These conductivity perturbations appear as amplitude variations in the reading acoustic wave pulse after its interaction with the scanning acoustic wave pulse, so that the electrical output from the piezoelectric substrate contains the optical information in the pattern image on the semiconductor film. Two dimensional scanning may be accomplished by successively mechanically displacing the optical pattern being scanned with respect to the semiconductor film.

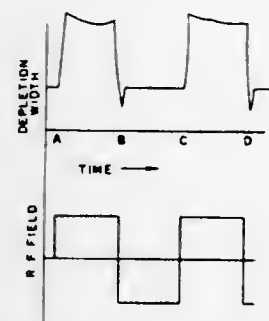
### 3,826,866 METHOD AND SYSTEM FOR ACOUSTO-ELECTRIC SCANNING

Calvin F. Quate, Los Altos Hills; Oberdan W. Otto, Mountain View, and Nicolas J. Moll, Palo Alto, all of Calif., assignors to Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 16, 1973, Ser. No. 351,237  
Int. Cl. H04n 5/30

U.S. Cl. 178-7.1

16 Claims



A method and system for scanning an energetic image to convert the information in the energetic image into an electrical signal. A semiconductor has an electrical field applied thereto to increase the average depletion layer width of the semiconductor by charging the semiconductor surface states. The energetic image is impinged upon the semiconductor and begins discharging the surface states in accordance with intensity variations in the image to produce depletion layer with variations. A piezoelectric substrate is situated adjacent to the semiconductor. A reading acoustic surface wave is propagated along the piezoelectric substrate along one dimension of the semiconductor. The amplitude of the reading wave is modulated by the depletion layer width perturbations of the semiconductor so that an output acoustic wave is formed. The output acoustic wave is converted to an electrical signal having amplitude variations corresponding to the depletion layer width perturbations of the semiconductor. In accordance with one embodiment of the invention two dimensional scanning of the semiconductor is achieved through propagating a plurality of reading acoustic surface waves differing in frequency from each other and spaced from each other along a second dimension of the semiconductor film.

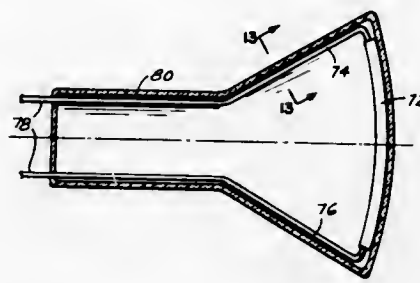
3,826,867  
HIGH-SENSITIVITY BEAM-INDEX AND HEATERLESS CATHODE RAY TUBES  
David M. Goodman, 3843 Debra Ct., Seaford, N.Y. 11783  
Continuation-in-part of Ser. No. 212,612, July 26, 1962. This application Feb. 17, 1964, Ser. No. 345,197  
Int. Cl. H04n 9/24

U.S. Cl. 178-5.4 F

43 Claims

Improvements are set forth for generating and detecting index signals which indicate the position of a scanning beam on a target screen. Light pipe-scintillator combinations are disposed about the target screen, the funnel section and the electron gun section of beam-index and multicolor cathode ray tubes. Multiple configurations of optical fibers, hollow

cylinders and funnels collect, transform, and concentrate electromagnetic radiation, index signals, and derivatives thereof. Light pipe-scintillator configurations used with the target

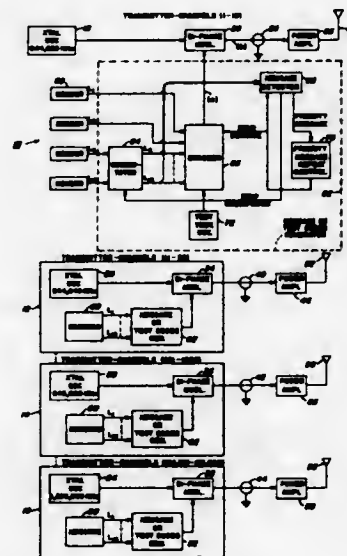


screen transmit optical signals from different regions of the target screen to its periphery. Scanning of the target screen by light beams is also described.

3,826,868  
TELEMETERING SYSTEM  
John A. Nugent, Brighton, N.Y. 11235  
Division of Ser. No. 216,975, Jan. 11, 1972. This application Sept. 26, 1973, Ser. No. 400,947  
Int. Cl. H04I 27/24

U.S. Cl. 178-67

14 Claims

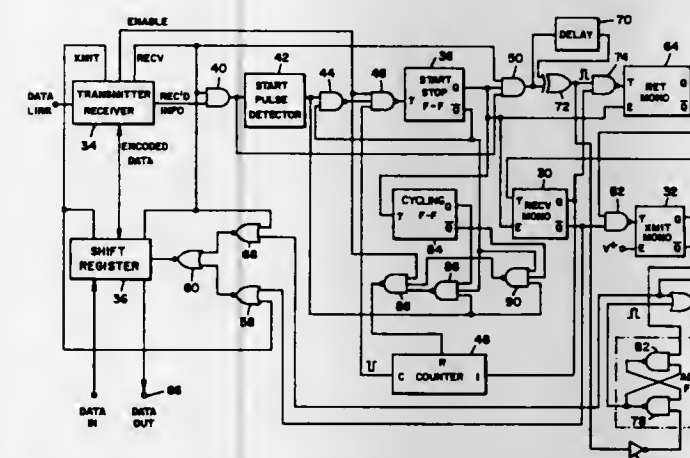


A multi-channel telemetering system is described which is capable of transmitting many channels of information over very narrow bandwidths; the herein described system being adapted to telemeter over 100,000 channels of information utilizing a 2 KHz band between each of the adjacent broadcast station frequencies over the AM broadcast band. A plurality of channels is included to provide digital signals which phase modulate one of many carrier frequencies which are separated by small frequency increments over the band. When information is not transmitted, a test code generator phase modulates the carrier so that the carrier is continuously phase modulated. Modulation is accomplished at very low data rates by shifting phase of the carrier 90° in one direction to represent a "1" and 90° in the opposite direction to represent a "0." Numerous channels can be received and monitored at a remote monitoring station. The receiver at the monitoring station includes frequency translation circuits for translating each band to a common band then separating each carrier of the many carriers which lie in each band by means of a narrow band pass filter. The filtered signals are phase demodulated and decoded to derive the several channels of information transmitted by each carrier signal. The demodulated carriers are monitored for the continuous phase modulation in accordance with the test code signal such that any failure in the system is readily detected. The system also provides for priori-

ty channels which operate the encoder to transmit priority information when present ahead of information which may be present in other channels. The encoder and phase modulator are also adapted to operate such that complete messages and test code signals are transmitted at rates compatible with the narrow band operation of the system.

3,826,869  
CLOCK SYNCHRONIZATION CIRCUIT  
Naftali Vax, and Wook Rang Shim, both of San Francisco, Calif., assignors to Lynch Communication Systems, Inc., San Francisco, Calif.  
Filed Sept. 18, 1972, Ser. No. 290,226  
Int. Cl. H04I 7/00  
U.S. Cl. 178-69.5 R

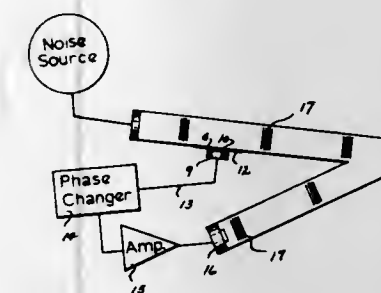
9 Claims



The receiver clock of an asynchronous half-duplex data link in a call concentrator is initiated and synchronized by a synchronization circuit which responds to level transitions in a received pulse train and overrides the internal operation of the receiver clock to pull it into synchronism with the transmitter clock each time a level transitions in the receiver clock is out of phase with the corresponding level transitions of the transmitter clock as embodied in the pulse train. The two clocks of the data link are identical and can function either as master or as slave, depending on the direction of transmission.

3,826,870  
NOISE CANCELLATION  
Robert J. Wurm, Greendale, and Arnold A. Bergson, Milwaukee, both of Wis., assignors to Quest Electronics Corporation, Milwaukee, Wis.  
Filed Mar. 20, 1970, Ser. No. 21,554  
Int. Cl. H04r 1/28  
U.S. Cl. 179-1 P

5 Claims

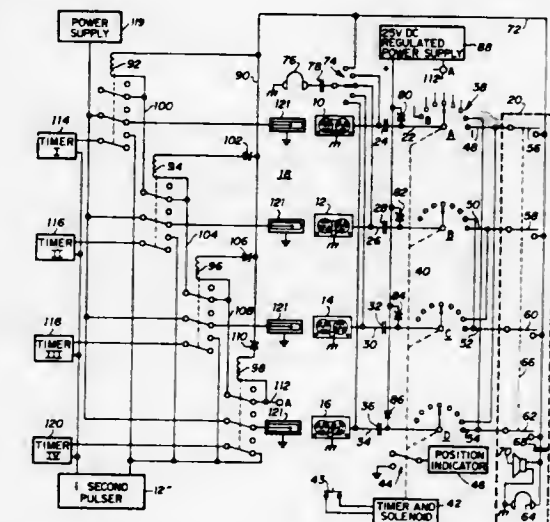


A pipe for an engine exhaust is joined with a cancellation tube in a V-joint and beyond this joint a single pipe portion extends to an exhaust opening. The cancellation tube provides a shunt path for sound waves produced by a sound transducer disposed at the outside end of the cancellation tube. The sound transducer is driven by an amplifier and phase inverting network which in turn responds to a sensor transducer in the

first pipe. This transducer establishes a signal in accordance with the noise in the first pipe and the sound transducer thus produces sound waves corresponding to and about 180° out of phase with the engine noise. At the V-joint, the noise of the engine exhaust is largely cancelled by the waves in the cancellation tube.

3,826,871  
APPARATUS FOR PREFERENCE TESTING  
Delmar R. Kraemer, 827 Greenwood, Denton, Tex. 76201  
Filed Feb. 5, 1973, Ser. No. 329,423  
Int. Cl. G09b 5/02  
U.S. Cl. 179-1 B

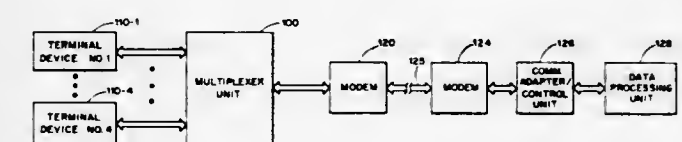
15 Claims



Apparatus for investigating and recording a testee's interest in one of a plurality of audio and/or visual presentations wherein each presentation is generated by a separate source connected to one of a plurality of communication lines that also connects to one output of a multiple output power source. Each output of the power source is at a different voltage level such that each communication line has a distinct voltage applied thereto from the power source. A scrambling switch randomly interconnects the communication lines with a like number of output lines such that the presentations appear on each of the output lines in a random pattern. A testee selects a particular preference by actuating a push-button that couples his selection to an audio and/or visual display. A plurality of time recorders, one for each output line and individually responsive to one voltage level from the power source, records the amount of time a particular presentation is coupled to the display.

3,826,872  
TRANSPARENT MULTIPLEXER COMMUNICATION TRANSMISSION SYSTEM  
William W. MacGregor, Wellesley Hills, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.  
Filed Jan. 2, 1973, Ser. No. 320,040  
Int. Cl. H04j 3/04  
U.S. Cl. 179-15 A

27 Claims



A communication multiplexing apparatus including scanning circuits and control circuits operatively couples an input/output data processing device to a plurality of input/output data units through a plurality of common interface lines for transmission and reception of data. The multiplexing ap-



paratus is completely transparent to data processing device and input/output units as it recognizes no special characters within the data being transmitted. An input/output unit initiates a transmit operation by forcing a first control line to a predetermined state which causes scanning apparatus to stop when it encounters the line of the active unit. In accordance with the state of the scanning circuits, control circuits enable the control lines of the selected active input/output unit for a data transfer operation and disable the control lines of all remaining units. The multiplexing apparatus permits the data processing unit to initiate a transaction with an input/output unit by transferring all of the message signals transmitted by the data processing unit to each of the input/output units simultaneously. When the input/output recognizes its address within the message signals, it initiates a transmit operation by forcing the first control line to the predetermined state.

3,826,873

### SWITCHING CIRCUIT EMPLOYING LATCHING TYPE SEMICONDUCTOR DEVICES AND ASSOCIATED CONTROL TRANSISTORS

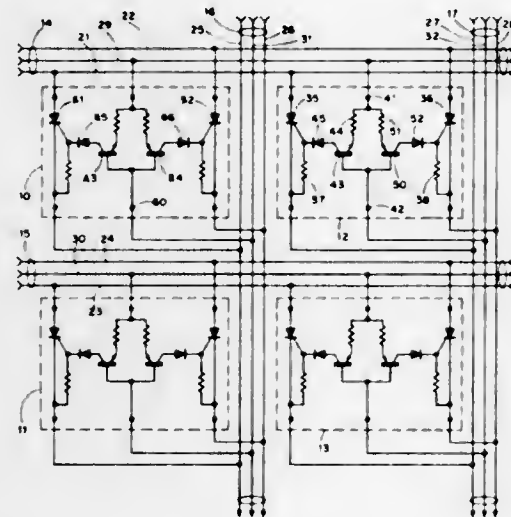
A. Frederick Susi, Dedham, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 12, 1971, Ser. No. 188,166

Int. Cl. H04g 3/50

U.S. Cl. 179-18 GF

4 Claims



Crosspoint switching array, each crosspoint switching circuit including silicon controlled switches for connecting signal lines of one group of transmission lines to signal lines of another group. For each silicon controlled switch a transistor having its collector connected through a blocking diode to the gate electrode is connected between control lines of the two groups of lines. Coincident pulses on the control lines cause current to flow in the transistors thereby switching the silicon controlled switches to conduction and providing signal paths between the two groups of lines.

3,826,874

### METHOD AND APPARATUS FOR EFFECTING JUMP HUNTING IN STEP-BY-STEP TELEPHONE SWITCHING SYSTEMS

James Evans Fleming, Fairfax, Va., assignor to Air Land Systems, Fairfax, Va.

Filed Apr. 19, 1973, Ser. No. 352,751

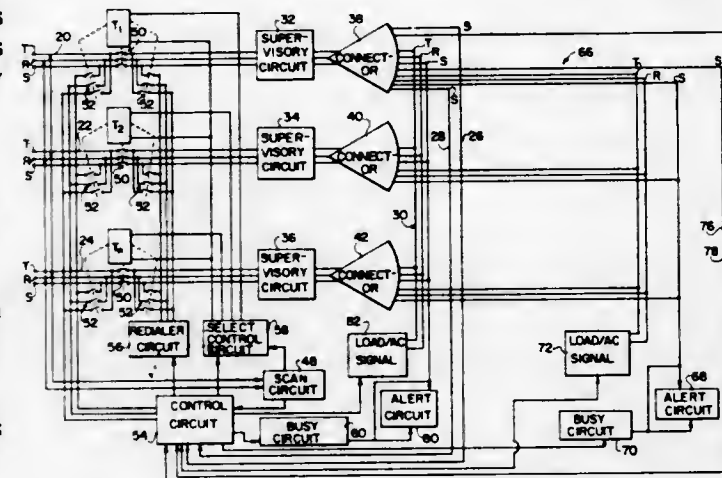
Int. Cl. H04g 3/62

U.S. Cl. 179-18 HA

13 Claims

A novel apparatus is disclosed by which the hunting capabilities of a connector in a step-by-step telephone switching system is greatly expanded, the step-by-step telephone switching system being of the type wherein a call is progressively routed by dial pulses from an electro-mechanical line finder or an incoming trunk through selector stepping ap-

paratus of an exchange into a group of electro-mechanical stepping switches constituting the connector to which is coupled a group of subscriber lines, the position of the connector switch brush on the terminals being determined by the dial pulses to effect a connection between a line of the calling and a line of the called subscriber. The apparatus of the instant invention comprises intercept means which serves to intercept the call at the connector switch terminal and release the switch, re-dialer means for automatically generating dial pulses representative of a different subscriber line terminal on the



connector switch, and means for effecting reconnection of the calling line to the brush, thus connecting the call to a different subscriber line through the connector switch. By means of the apparatus disclosed herein, an individual business or residence telephone line can become the directory number of a small hunting group in a step-by-step switching system, even though the telephone numbers consecutive to the individual line directory number are not available for use in the hunting group. Also, a sub-group of numbers may be added to a hunting group without requiring the added numbers to be consecutive to the numbers of the lines in the original hunting group.

3,826,875

### AUTOMATIC SECURITY COMMUNICATIONS SYSTEM

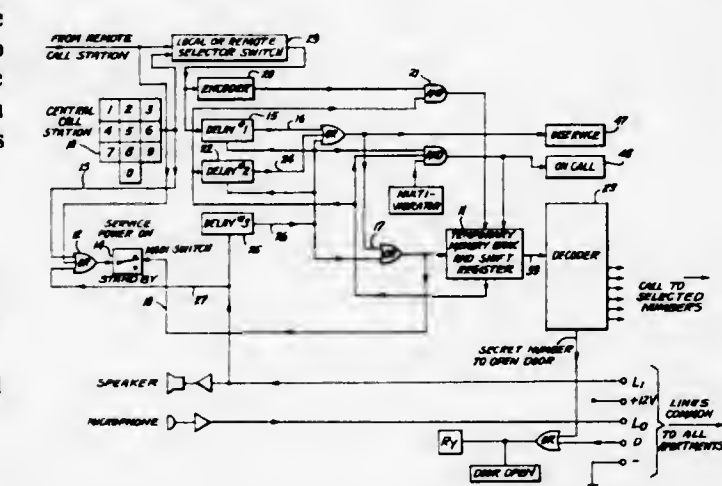
Antonio A. Pulg, 7737 Riverdale Rd., No. 204, New Carrollton, Md. 20784

Filed June 14, 1973, Ser. No. 370,029

Int. Cl. H04m 11/02

U.S. Cl. 179-37

3 Claims



An automatic communication system adapted to provide security communications within an apartment building is provided to include a plurality of time delay circuits to automatically discontinue the ringing of an unanswered phone and to terminate the call when the receiver is not hung up.

3,826,876

### MESSAGE WAITING AND DO-NOT-DISTURB

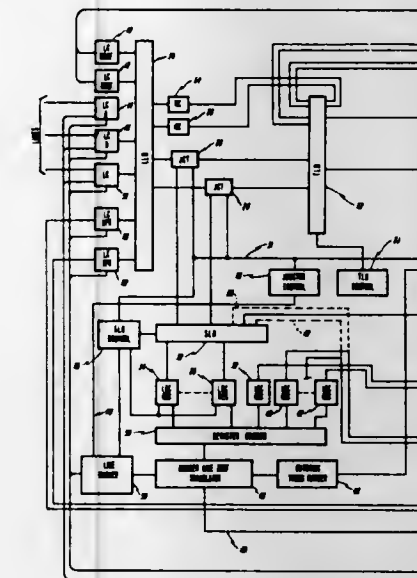
Klaus Gueldenpfeiffer, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 17, 1973, Ser. No. 351,885

Int. Cl. H04m 3/42

U.S. Cl. 179-84 C

14 Claims



A message waiting and do-not-disturb circuit for a PBX in which the line circuit designation automatically forwarded to the number display for each operator position when the operator connects to that line circuit is used to automatically access the one of a plurality of line unit stores associated with the line circuit to monitor the message waiting and do-not-disturb status of the line circuit and permit a changing of this status without need for special dialing.

3,826,877

### INFORMATION PLAYBACK SYSTEM STYLUS

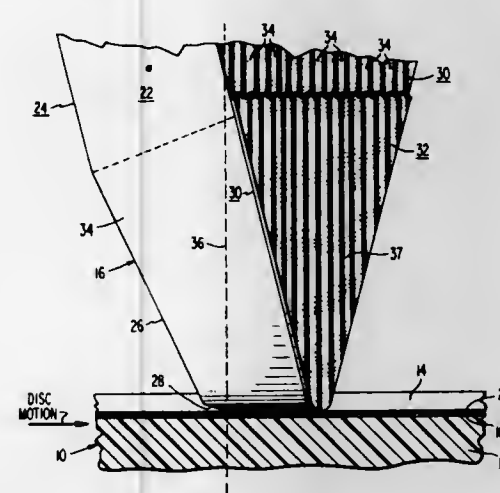
Marvin A. Leedom, Princeton, N.J., and Michael Evans Miller, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,657

Int. Cl. G11b 11/06

U.S. Cl. 179-100.1 B

6 Claims



A video disc playback system includes a pickup stylus which is adapted to track in a groove in a disc record. The record comprises a molded thermoplastic substrate supporting a conductive surface with a dielectric coating disposed over the conductive surface. When relative motion is established between the disc record and the pickup, the pickup stylus

cooperates with the disc record to establish capacitance variations between the stylus and the record due to geometrical variations in the bottom of the groove. The stylus includes a support element having an irregular surface with a conductive element disposed on the irregular surface. The support element is shaped in a manner such that when it engages the record medium groove, an edge of the conductive element is adjacent the dielectric coating.

3,826,878

### ECHO SUPPRESSOR FOR A SPEECH CIRCUIT IN A FOUR-WIRE TRANSMISSION SYSTEM

Hermann Bendel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

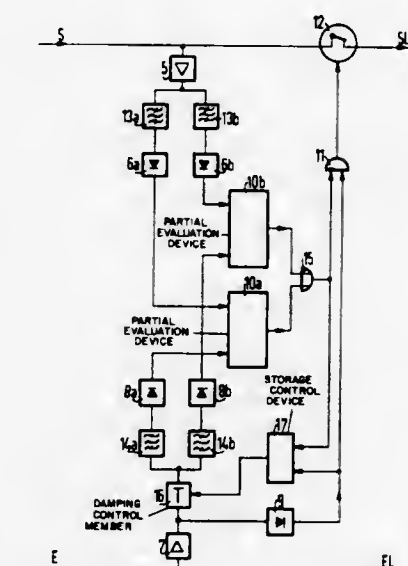
Filed Oct. 20, 1971, Ser. No. 191,011

Claims priority, application Germany, Nov. 3, 1970, 2054073

Int. Cl. H04b 3/20

U.S. Cl. 179-170.6

4 Claims



An echo suppressor for a speech circuit in a four-wire transmission system is inserted into the two transmission directions which are regarded as a transmission path and a receiving path, respectively, with respect to a hybrid connecting the four-wire system to a two-wire system. The echo suppressor has a suppression member connected in the transmission path and controlled with the help of transmission side and receiving side speech detectors. Each of the speech detectors includes filtering means defining at least two speech frequency ranges, and means are provided for controlling the operation of the suppression member in response to speech signal detection wherein detection of speech signal conditions does not necessarily effect or eliminate suppression in the transmitting path.

3,826,879

### RETRACTABLE ELECTRIC CORD REEL

William H. Penn, and Gerald J. Elcher, both of Bloomington, Ill., assignors to National Union Electric Corporation, Greenwich, Conn.

Filed Dec. 20, 1972, Ser. No. 316,683

Int. Cl. H02g 11/02

U.S. Cl. 191-12.4

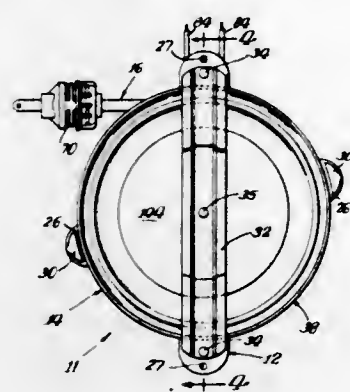
17 Claims

A retractable cord reel assembly comprises a stationary bracket and a cord reel having a pair of metal flanges which sandwich a non-conductive hub. Each of the flanges has a dish portion, one of the dish portions containing spring motor means for rewinding an electric cord on the reel and the other dish portion containing contact means for making



electrical contact between a rotating end of the cord and stationary wires on the cord reel assembly. The cord reel as-

sembly is compact and is constructed to minimize possibility of transferring an electrical shock to its user.



sembly is compact and is constructed to minimize possibility of transferring an electrical shock to its user.

3,826,880

**ELECTRIC POWER TRANSMISSION SYSTEM**

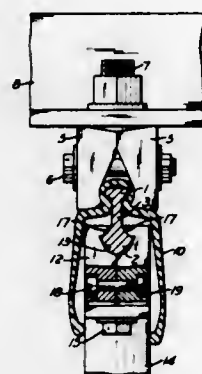
Donald R. Ross, Sr., Pittsburgh, Pa., assignor to U-S Safety Trolley Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,016

Int. Cl. B60m 1/04

U.S. Cl. 191-25

1 Claim



An overhead metal trolley rail has a head for supporting it, separated by a vertical web from a foot that projects from opposite sides of the web and has a transversely curved lower contact surface. Slidable along the rail is a trolley shoe formed from a block of electrical conducting material, the upper portion of which has a longitudinal trough in it receiving the foot of the rail. The lower portion of the trough is curved transversely to engage the rail, and the opposite sides of the upper portion of the trough project toward each other above the foot of the rail to prevent separation of the shoe from the rail.

3,826,881

**ADJUSTABLE RAIL SUPPORT**

Arthur James Spiringer, Lynchburg, Va., assignor to H. K. Porter Company, Lynchburg, Va.

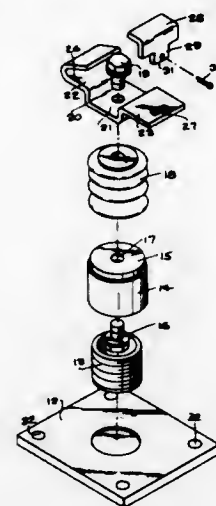
Filed Jan. 5, 1973, Ser. No. 321,138

Int. Cl. B60m 1/30

U.S. Cl. 191-32

5 Claims

A vertically adjustable insulating support for the third rail of an electrified transit system which includes an assembly of an insulator body with means at its top end for supporting a current conductor rail and at its bottom end for axially adjusting the overall height of the support to thereby vary the elevation of the rail as necessary. The rail supports of the invention eliminate the necessity for shimming and are adjustable to conform with deviations in elevation of the rail supporting ties



latter may be adjusted to conform with tie elevation changes after the system has been in operation.

3,826,882

**ELECTRIC KEYBOARDS FOR OFFICE MACHINES**

Nicolo Giolitti, Ivrea; Michele Bovlo, Banchette, and Claudio Dalmasso, Ivrea, all of Italy, assignors to Ing. Co. Olivetti & Co., S.p.A., Ivrea (Torino), Italy

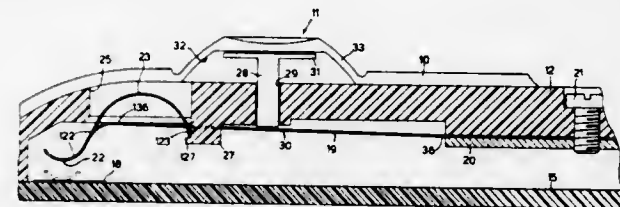
Filed Sept. 5, 1972, Ser. No. 285,970

Claims priority, application Italy, Sept. 6, 1971, 69944/71; Dec. 2, 1971, 70957/71

Int. Cl. H01h 9/00, 21/04

U.S. Cl. 200-5 A

11 Claims



An electric keyboard includes a plurality of depressible keys each key having at least one movable contact for bearing on a fixed contact. The movable contact of each key is acted by the pressure exerted on a corresponding key-shank. A layer of deformable material is shaped as to form a projection over each shank so as to seal hermetically the key and to define a cavity between the projection and a stationary guide plate in which the shank moves.

Each movable electric contact comprises a thin flexible blade fixed at one end and having the opposite end bent to provide an arcuate contact surface. A tongue of the blade bears on a fixed stop located above the line joining the attached end of the blade and the fixed contact to snap between a closed and an open position.

3,826,883

**LOCK-OUT BALL BUMPER SWITCH**

Colin E. Foster, Bensonville, and Joseph E. Lally, McHenry, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Sept. 5, 1972, Ser. No. 286,003

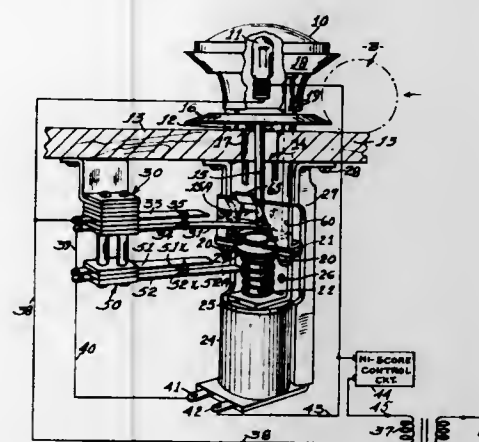
Int. Cl. H01h 3/16

U.S. Cl. 200-61.11

14 Claims

A ball bumper and switch means for pinball games and the like, wherein a blade switch is actuated by a pendantly rocked stem attached to a ball-rocked wafer or other target element.

The improvements reside in a simple lock-out action between the plane of the central portion. The contact element is the stem and switch element which causes the switch to remain in operated condition until a resetting action is effected. Optionally, the lock-out action may be made



directionally selective so that the switch means can be actuated by ball impact from any direction but the lock-out action will be effected only by impacts occurring in predetermined directions. A variety of game circuits and scoring arrangements can be controlled by the novel bumper switch means.

3,826,884

**KEYBOARD SWITCH**

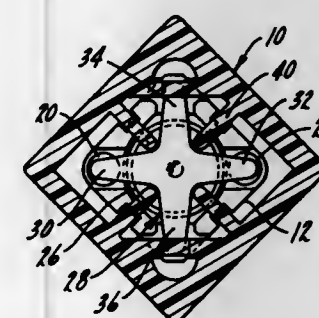
Raymond F. Lewandowski, Mt. Prospect, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed June 25, 1973, Ser. No. 373,505

Int. Cl. H01h 13/52

U.S. Cl. 200-159 B

18 Claims



A low profile pushbutton switch has a button telescopically mounted on the base. A contact having a plurality of arms is positioned between the button and the base, with one group of arms being disposed to make contact with terminals within the base and another group of arms being positioned to receive the actuating force from the button.

3,826,885

**PUSHBUTTON SWITCH HAVING SPIDER-SHAPED CONTACT CONTACT CARRIER**

William J. Allen, Stratford, Conn., and Walter M. Tomasulo, Jr., Wayne, N.J., assignors to Wild Rover Corp., Norwood, N.J.

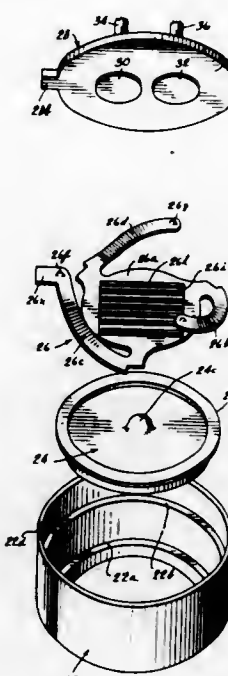
Filed June 23, 1972, Ser. No. 265,452

Int. Cl. H01h 13/52, 1/06

U.S. Cl. 200-159 B

17 Claims

An electrical switch utilizing a diaphragmtype contact element. The contact element includes a central contact-making portion and leg portions flexibly attached thereto that extend partially circumferentially about the central portion and out of



threshold force must be exceeded before any movement of the contact-making portion takes place.

3,826,886

**CONTACT MATERIAL**

Toshito Hara, Kawasaki; Hiroaki Tanaka, Yokohama, and Shoichi Shimosato, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed Apr. 5, 1972, Ser. No. 241,326

Claims priority, application Japan, Apr. 15, 1971, 46-23468; Aug. 30, 1971, 46-66425

Int. Cl. H01h 1/02; C22c 5/00

U.S. Cl. 200-266

3 Claims

A contact material having a high durability is prepared from an alloy consisting of 45 to 85 percent by atom of palladium and 55 to 15 percent by atom of aluminium.

3,826,887

**SIMPLIFIED PROCEDURE FOR TUNING PID CONTROLLERS**

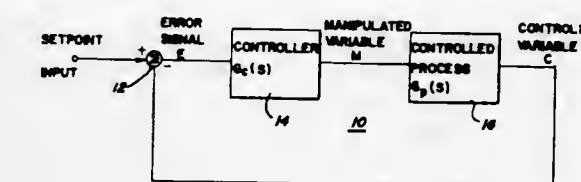
Troy J. Pemberton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 29, 1971, Ser. No. 213,699

Int. Cl. H05b 1/02

U.S. Cl. 219-497

15 Claims



Simplified procedures for tuning a PID controller are disclosed wherein variable circuit elements in the reset and rate networks are mechanically ganged together to permit simultaneous and proportionate control of the circuit parameters in those two networks.



3,826,888

**DEEP NARROW GAP WELDING TORCH**

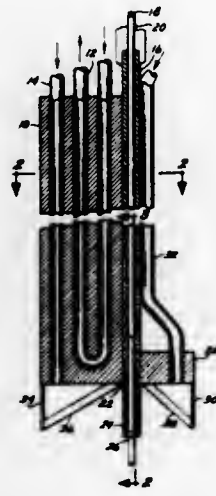
Gerald Garfield, and Cecil H. Rout, both of Seal Beach, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 5, 1973, Ser. No. 338,104

Int. Cl. B23k 9/16

U.S. Cl. 219-74

5 Claims



A welding torch adapted for welding deep narrow gaps wherein shielding gas diffusers fit inside the welding groove, a plastic liner is placed deep inside the torch so electric contact between the filler wire and contact tube is close to the exit, and a zirconia oxide insulation prevents torch contact with the gap walls.

3,826,889

**SYSTEM FOR AUTOMATIC CONTROL OF ELECTRON BEAM HEATING DEVICE**

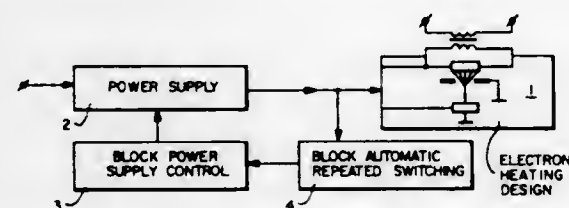
Igor Pavlovich Brukovsky, I Mosfilmovskiy pereulok, 5, korpus 2-B, kv. 16; Pavel Borisovich Yakovlev, ulitsa Tolvukhina, 9, korpus 1, kv. 15, and Kirill Davidovich Gutterman, Tverskaya-Yamskaya ulitsa, 29, kv. 8, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 80,235, Oct. 12, 1970, abandoned, which is a continuation of Ser. No. 836,449, June 25, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,915

Int. Cl. B23f 15/00

U.S. Cl. 219-121 EB

3 Claims



A system is disclosed for automatic control of an electron beam heating device of the type in which a current-stabilized power-supply source is coupled to the electron gun and is electrically connected with an automatic reset unit serving to cut off voltage to the electron gun upon an electric breakdown between the electrodes of the gun. The automatic reset system does not operate immediately following the breakdown between the electrodes of the gun, but only after a predetermined time interval to allow the voltage across the electron gun to return spontaneously to the original value when the discharge between the electrodes of the electron gun is unsteady in character. After voltage cut off, if the electrical breakdown still has not been corrected, the automatic reset system successively operates at different time intervals to cut

off electron gun voltage. Specifically, and in the preferred embodiment, the instant inventive system is so designed that the time interval between the occurrence of voltage cut off as a result of electric breakdown and the occurrence of the subsequent automatic reset of the apparatus becomes increasingly larger during successive operation of the system.

3,826,890

**WELDING SYSTEM CONTROLLER**

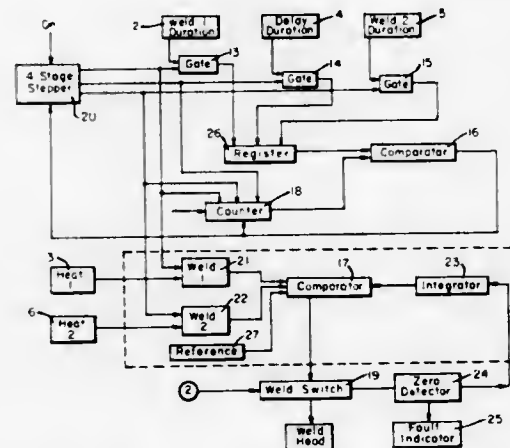
Peter G. Bartlett, 2336 E. 11th St., Davenport, Iowa 52803

Filed Sept. 1, 1972, Ser. No. 285,797

Int. Cl. B23k 9/10

U.S. Cl. 219-131 R

12 Claims



A welding system controller for use with square hysteresis loop welding transformers. The controller allows for at least two time-spaced welding operations to be performed, each of the welding operations having its time duration and heat intensity independently selected. Although heat intensity is a non-linear function, a novel phase control circuit for the welding transformer switches enables a linear heat intensity control to be used for selecting the heat intensity. This is desirable for linear selectors are less expensive than non-linear selectors. The controller also provides the protective circuit necessary when welding transformers with a square loop hysteresis curve are used. Furthermore, the controller provides for a modified phase control for the initial cycle of welding as is also necessary when square loop hysteresis curve welding transformers are used. In addition after the last welding cycle a controlled return to quiescent conditions is made.

3,826,891

**SPACE HEATING SYSTEM AND STRUCTURE**

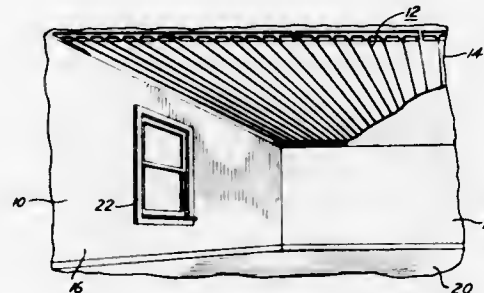
Richard P. Dugger, South Bend, Ind., assignor to Ristance Wire, Inc., Bremen, Ind.

Filed Feb. 7, 1973, Ser. No. 330,431

Int. Cl. H05b 1/00

U.S. Cl. 219-213

5 Claims



A space heating system for rooms and other building spaces having a ceiling or wall surface, in which a plurality of strands or sections of insulated resistance wire is strung along the ceiling or wall surface and secured thereto by fixtures at the ends

of the sections and by spaced tape or the like along the sections adhered to the surface. The resistance wire, including the insulation, is not more than 0.075 inches, and the fixtures which hold the wire at the ends are preferably secured to the surface by an adhesive material. A thin coating of plastic or synthetic plaster-like material, preferably sprayed on the surface, covers the wires and fixtures, and forms a smooth surface concealing said heating wire and fixtures.

The pulsating direct current is phase controlled to regulate the intensity of the main welding arc.

3,826,892

**FUSING APPARATUS**

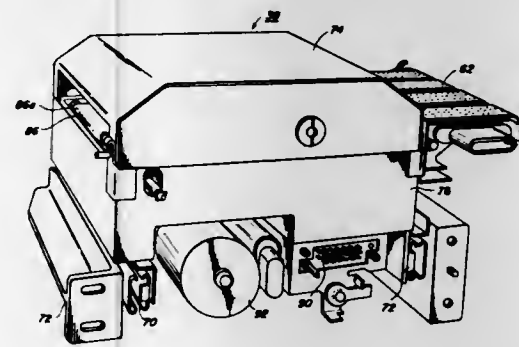
Valdevutis C. Draugelis; George N. Tsilibas, and John E. Vineski, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1972, Ser. No. 300,531

Int. Cl. H05b 1/00

U.S. Cl. 219-216

11 Claims



An apparatus in which a powder pattern deposited on a support material is permanently affixed thereto. The support material is heated during the movement thereof into thermal communication with a radiant energy output. In this manner, the powder pattern is coalesced and fixed permanently to the support material.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,826,893

**SINGLE PHASE T-R UNIT**

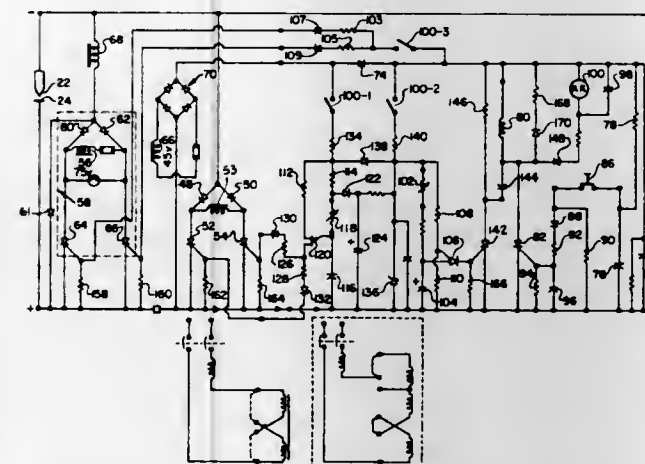
Paul A. Glorioso, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 12, 1971, Ser. No. 198,145

Int. Cl. B23k 9/00, 9/04

U.S. Cl. 219-98

5 Claims



A solid state control circuit and an alternating current power source for stud welding apparatus are provided. The controls utilize a sustaining arc to maintain electrical continuity, and apply pulsating DC as a source for the main welding arc and filtered DC for use in the initiation and timing circuit.

3,826,894

**SPOT WELDING APPARATUS FOR WELDING END CONDUCTORS IN CYLINDRICAL ELECTRICAL MACHINE ELEMENTS**

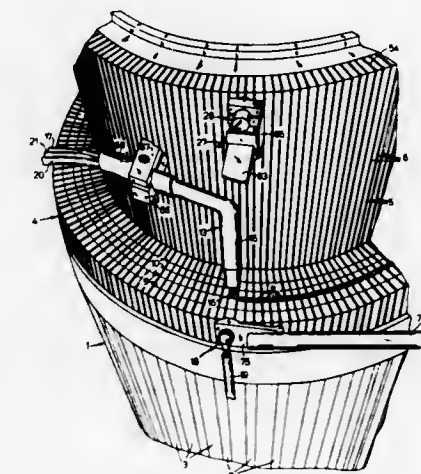
Raymond C. Melvin, Elm Grove, Wis., assignor to Har-nischfeger Corporation, W. Milwaukee, Wis.

Filed June 6, 1973, Ser. No. 367,552

Int. Cl. B23k 9/12

U.S. Cl. 219-124

25 Claims



A spot welding apparatus connects the coil end strips to commutating bars of an armature. A mixture has a rotating base supporting the armature at the end opposite the commutator. An adjustable top support locates a spot welding torch in proper alignment to the bar and with a spring loaded ground slidably engaging the same bar. The torch includes a two percent thoriated tungsten electrode having a tapered or pencil tip terminating in a blunt or flat end. A high frequency, constant potential D.C. power supply is connected to the torch and maintains power instantly available to the electrode and ground under the control of a timer. A helium shield arc is created. A position sensor carried by the top support has a pair of conductive plungers axially aligned with and slidably engaging with the commutator bars to produce an on-off control as the plungers pass over an insulator between the bars. The sensor is connected to actuate the timer which operates the power supply to strike an arc for a predetermined time. A plurality of radially distributed spot welds are provided on each bar by a series of traverses or passes about the commutator. The ends of the coils of a wound rotor may also be similarly joined by spot welds automatically created by the method and apparatus.

3,826,895

**ELECTRICAL FLUID HEATING DEVICE**

Hermann J. Schladitz, Munich, Germany, assignor to Schladitz-Whiskers A.G., Zug, Switzerland

Filed May 8, 1973, Ser. No. 358,344

Claims priority, application Germany, May 10, 1972, 222849

Int. Cl. H05b 3/10; F24h 1/10

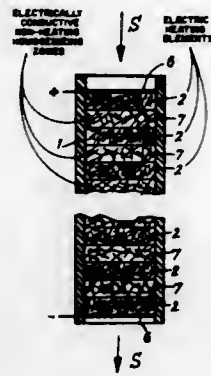
U.S. Cl. 219-382

3 Claims

An electric heating device for heating flowing fluid includes a tubular body of electrical insulation material adapted for



through flow of the media. A plurality of porous electric heating elements of disc-like form electrically connected in series span the tube at intervals and are arranged in series in the direction of flow. Each heating element is pervious to fluid flow and is comprised of electrically conductive fibers or whiskers felted together. The heating elements are interspersed with non-heating homogenizing zones located between adjacent heating zones. In one embodiment each



homogenizing zone merely comprises an empty space. In another embodiment the homogenizing zones comprises a porous mass of electrically conductive fiber skeletons. The pore volume and electrical conductivity of the homogenizing mass are very much greater than those of the porous heating elements and the homogenizing masses form the electrical connections whereby the heating elements are connected electrically in series.

3,826,896

# DRY FILM DEVELOPING APPARATUS

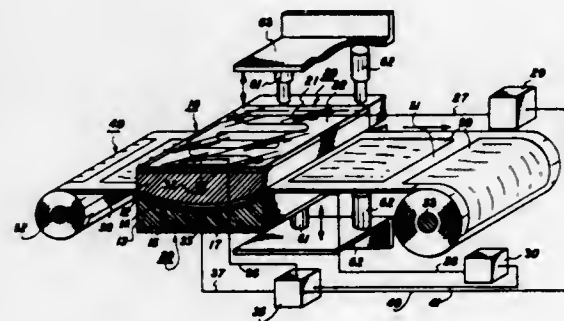
David M. Thompson, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 9, 1973, Ser. No. 377,888

Int. Cl. F27b 9/06

U.S. Cl. 219—388

10 Claims



A platen for developing a web of exposed dry film by bringing sequentially discrete areas upon the film into contact with a heated platen. The platen surface is specifically constructed to offset wrinkling produced in the film at the thermal boundaries to the development zone.

3,826,897

# SURFACE HEATING UNIT HAVING SELECTIVE CONCENTRIC ELECTRIC SHEATHED HEATING ELEMENTS

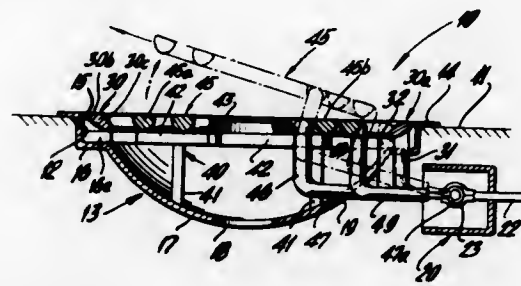
Robert D. Behr, and Seiko K. Behr, both of 110 Queen St., Chestertown, Md. 21620

Filed Mar. 23, 1973, Ser. No. 344,273

Int. Cl. H05b 3/68

U.S. Cl. 219—456

16 Claims



A surface heating unit having circular electric sheathed heating elements. The electric heating elements selectively supporting round-bottom, Chinese wok-type cooking vessels as well as conventional flat-bottom vessels on an electric range top or other such installation.

3,826,898

# BORDER TREATMENT OF COMPOSITE METAL PLATE SURFACE HEATING UNIT

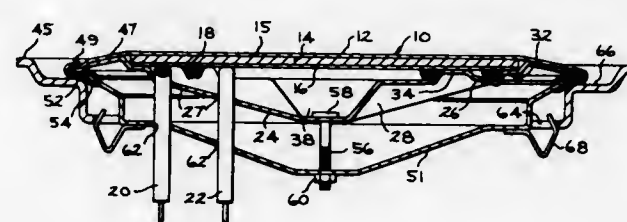
Bohdan Hurko, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 28, 1973, Ser. No. 419,593

Int. Cl. H05b 3/68

U.S. Cl. 219—462

9 Claims



A low thermal mass, solid plate surface heating unit having a top utensil-supporting surface of composite metal of high thermal conductivity and corrosion and oxidation resisting materials. A metal sheathed electrical resistance heating element is pressed against the underside of the composite plate by a back-up plate. There are two modifications of the manner of spacing the peripheral edge of the inner core of the composite metal plate back from the peripheral edge of the heating unit. In one modification, a margin of the inner core and the bottom skin are cut away so as to be set back from the peripheral edge of the top skin. In the second modification, the top and bottom skins of the composite plate are sealed over the edge of the inner core. Then the peripheral edge of the back-up plate is brought out beyond the peripheral edge of the composite plate and a trim strip is wrapped around the edge of the back-up plate and the edge of the top skin and sealed therebetween.

3,826,899

# BIOLOGICAL CELL ANALYZING SYSTEM

Melvin P. Ehrlich, Roslyn Estates, L. I., N.Y.; Milton Stoller, West Hartford, Conn.; Stanley Grand, Westbury, L. I., and Robert De Cote, Flushing, both of N.Y., assignors to Nuclear Research Associates, Inc., New Hyde Park, N.Y.

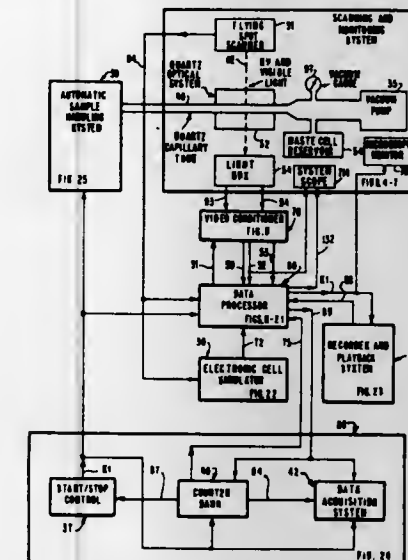
Division of Ser. No. 850,547, Aug. 15, 1969, Pat. No.

3,699,336. This application Aug. 23, 1972, Ser. No. 283,074

Int. Cl. G06m 11/02

U.S. Cl. 235—92 PC

53 Claims



A biological cell analyzing system which is capable of automatically categorizing unstained biological cells as normal or non-normal. The cells are made to flow through a transparent tube in single file and are scanned with a mixture of ultra-violet and visible light. The cytoplasm and nucleus of each cell absorb ultra-violet radiation to different degrees, and the emergent light signal, as modulated by the scanned cells, is detected, amplified, and extended to a data processor which logically analyzes the signal from each cell on a real-time basis. The visible light signal is subtracted from the ultra-violet light signal to improve the signal/noise ratio of the latter, and to automatically cancel out non-biological debris. A number of acceptance tests are electronically performed on each cell, and if any of the tests is failed the cell is categorized as non-normal. Ambiguous conditions, resulting for example from the clumping of cells, are identified and separately counted. The system can process up to several thousand cells from a single sample during a 1-minute run.

3,826,900

# CORDLESS SCANNING PROBE

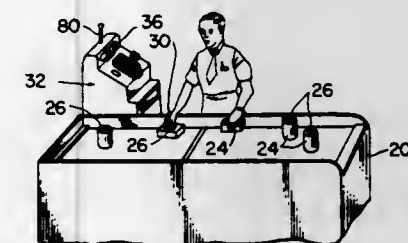
Edgar E. Moellering, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 13, 1972, Ser. No. 297,353

Int. Cl. G06k 7/14; G01n 21/30; G06k 9/14, 19/06

U.S. Cl. 235—61.11 E

2 Claims



In the present invention an optical decoding system employs a hand-held, optical probe scanner, for optically reading coded information from labels affixed to pieces of merchandise.

The optically read code is converted into electrical energy and transmitted by a radio transmitter located within the probe to a local receiver for processing. The processed signals are then used to control a registering business machine such as a sales register, accounting machine, or other such device.

3,826,901

# TIME MULTIPLEXED RATE MULTIPLIER

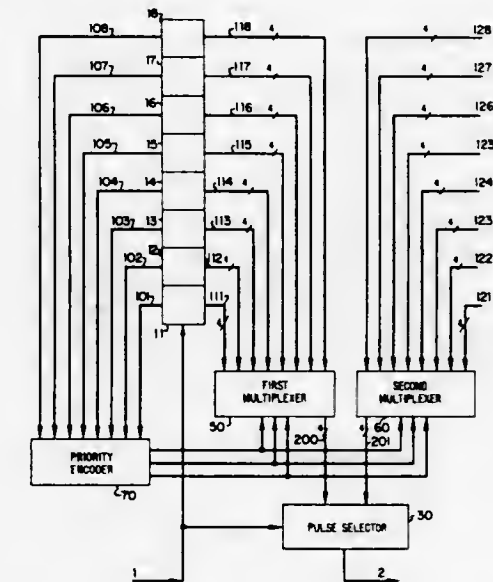
Ian T. Band, Los Altos, and Kenneth J. MacLeod, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 12, 1973, Ser. No. 405,947

Int. Cl. G06f 15/20

U.S. Cl. 235—150.3

17 Claims



Outputs from a plurality of pulse counters are time multiplexed in a sequence determined by detection of individual pulse counters being in a selected counting state. The time multiplexed counter outputs control a pulse selector which acts as a gate to rate multiply an applied input signal in response to the time multiplexed counter outputs and control word outputs from a control word source.

3,826,902

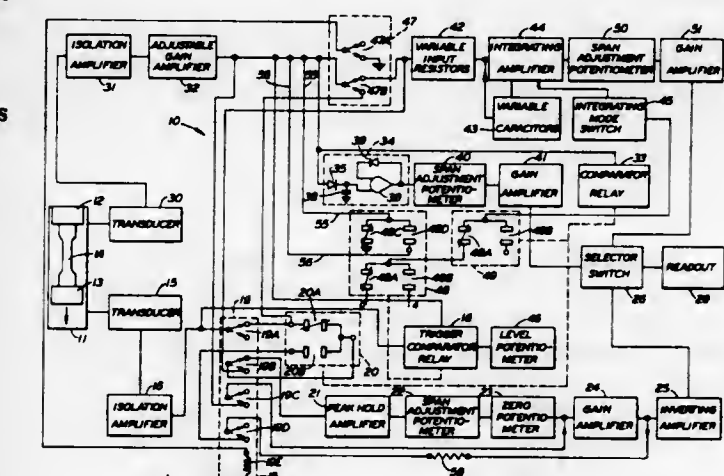
STRESS-STRAIN AND AREA READOUT INSTRUMENT  
William E. Claxton, Mogadore, and James E. Hollow, Cuyahoga Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1973, Ser. No. 351,397

Int. Cl. G06g 7/24

U.S. Cl. 235—151.3

13 Claims



Disclosed is an instrument for calculating and reading out various parameters of tensile testing results. The instrument



receives an input signal from the testing apparatus whose voltage is proportional to the elongation of the sample being tested and another input signal whose voltage is proportional to the force to which the sample is subjected. At the point of sample breakage the maximum elongation of the sample and maximum force applied to the sample is readily determined and signals proportional thereto are fed to a readout device. The instrument also includes means to calculate and display an indication of the work necessary to break the sample and in the event of cyclic testing, the area within the hysteresis loop resulting when the force is removed from the sample.

3,826,903

### METHOD AND APPARATUS FOR CONTROL OF CONDITIONS IN A PROCESS

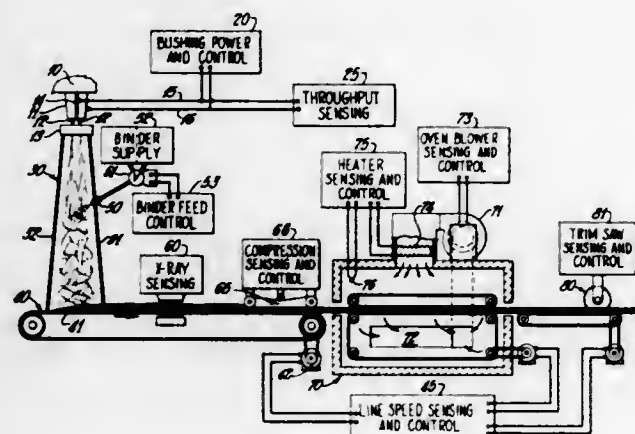
Eugene C. Varraso, Heath, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jan. 3, 1972, Ser. No. 215,047

Int. Cl. C03b 37/00; G06f 15/46

U.S. Cl. 235-151.1

28 Claims



The invention is disclosed herein in a method and apparatus for manufacturing a glass fiber mat. A fiber collecting surface is moved past a fiber deposition station. Glass fibers are provided, deposited, and processed in a mat-like mass on the collecting surface. Data is processed in a data processing means to obtain values representing the difference between the actual conditions and the desired conditions of the plurality of variables involved in the providing, depositing, and processing of the glass fibers to obtain a finished glass fiber mat with desired characteristics. The data processing means provides an operation change signal for at least one of the variables indicating the change necessary in a final control device for that one variable to eliminate a deviation between an actual and a desired condition for the variable. The operation change signal is stored in a supervisory control for the one variable, enabling more time for processing of data in the data processing means for the other variables being controlled. The operation of the final control device for the one variable is modified an amount dictated by the operation change signal stored in the supervisory control.

3,826,904

### METHOD AND APPARATUS FOR THE OPTIMUM BLENDING OF LUBRICATING BASE OILS AND AN ADDITIVE

John M. Leonard, Houston, Tex., and John S. Lewis, Jr., Huntsville, Ala., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 90,244, Nov. 17, 1970, abandoned.

This application Oct. 4, 1972, Ser. No. 295,060

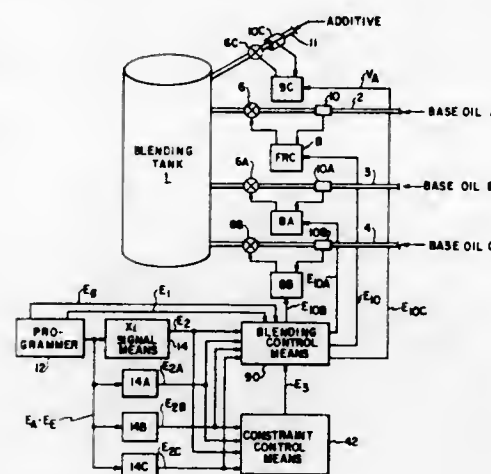
Int. Cl. G01n 25/46; F23m 5/00; G06p 15/46

U.S. Cl. 235-151.1

3 Claims

A method and apparatus for enabling the computation of a minimum cost blend of lubricating oil base stocks, wherein a viscosity index improver additive is included. System includes

measurement of viscosity and related data at two separate concentrations of the additive where such concentrations are in the range from about 1 percent to about 10 percent of the



3,826,905

### METHODS AND APPARATUS FOR PROVIDING AUTOMATIC CONTROL OF CHROMATOGRAPHIC FRACTIONATING PROCESSES

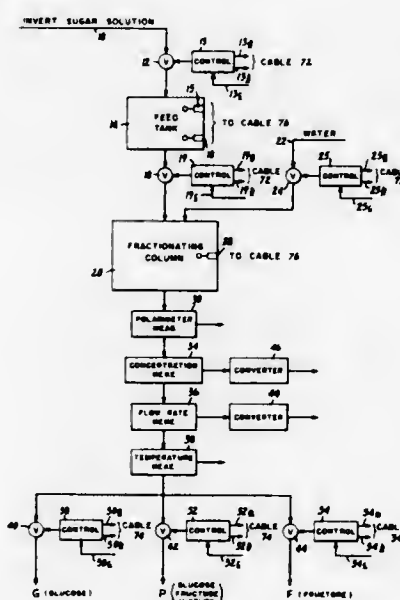
Aarne J. Valkama; Eero Sihvola, both of Helsinki; Risto V. Puttonen, Matinkyla; Rainer Nihila, Kantvik; Matti Turunen, Kantvik, and Lauri Hamalainen, Kantvik, all of Finland, assignors to Suomen Sokeri Osakeyhtio, Helsinki, Finland

Filed Oct. 27, 1971, Ser. No. 192,881

Int. Cl. C13d 3/14

U.S. Cl. 235-151.12

8 Claims



As disclosed herein, the angle of optical rotation, concentration, flow rate and temperature of the components such as, for example, glucose and fructose in an aqueous solution emerging from a fractionating process are continuously measured and signals corresponding to the measurements are fed to a computer. The computer calculates the instantaneous and/or average purity and/or the expected purity of the components and, when predetermined purity values are reached, the computer controls the distribution of the various fractions in accordance with a preset program.

3,826,906

### DESK CONSOLE POWER SYSTEMS SIMULATOR WITH HANDS-ON CONTROL

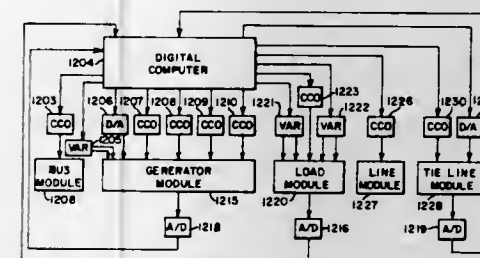
Norman R. Carlson, Export; Victor Burtnyk, Monroeville, and William E. Zitelli, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 254,957

Int. Cl. G06f 15/56; G06g 7/62

U.S. Cl. 235-151.21

32 Claims



A DC loadflow calculator having transient stability analysis capability includes modularized DC circuits, an operator console and a device for producing transient fault signals. The DC circuits are interconnected to represent an electric power system and include modularized circuits representative of power system buses, generators, loads, tie lines and lines. The DC circuits are associatively connected to the operator console for the attainment of a loadflow solution in accordance with network variable signals provided to the DC circuits through the operator console. The operator console also provides for the connection of the transient fault signalling device to the DC circuits for imposition of transient fault signals thereon. The operator console also includes display devices for display loadflow and transient responses from the DC circuits.

3,826,907

### ARRANGEMENT FOR MONITORING A PROGRAMMABLE CONTROLLER FOR A KNITTING MACHINE

Zdenek Milfajt, Brno, Czechoslovakia, assignor to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

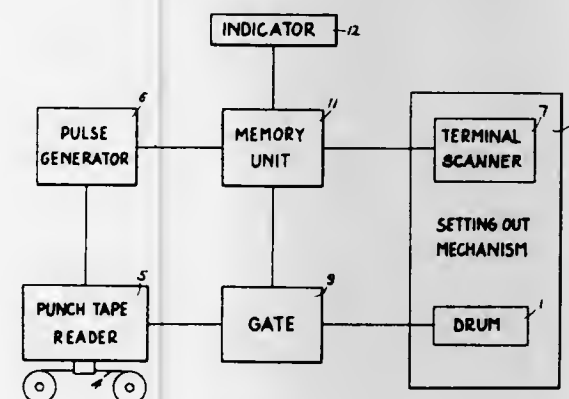
Filed Sept. 11, 1972, Ser. No. 287,814

Claims priority, application Czechoslovakia, Sept. 10, 1971, 6490-71

Int. Cl. G06f 11/00

U.S. Cl. 235-153 AC

6 Claims



An arrangement for instantaneously monitoring both the entry of information into and the outpulsing of control signals from a multi-track programmable controller for a knitting

machine is described. A first of three coded instructions on a tape represents the input information and is converted to a first pulse sequence, which is applied to a particular track of the controller and is simultaneously applied to a preset counter, wherein the erroneous entry into the counter of more pulses than the number corresponding to the first instruction is sensed as a first error indication in the form of an output pulse from the counter. If the input information is correctly entered, a second coded instruction on the tape is converted to a replica of the entered input information and is temporarily stored in a memory. A third coded instruction on the tape is then converted to scanning pulses for reading out the programmed bit states of the controller. The read-out sequence is compared with the stored replica of the input information, and any deviation therebetween is sensed as a second error indication. Both the first and the second error indications may be effective both to stop the then-current tape to pulse conversion and to activate an alarm indication.

3,826,908

### DATA TELECOMMUNICATIONS ANALYZER

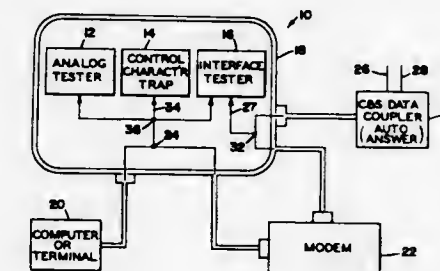
Luther V. Weathers; Karl I. Nordling, and Ronald C. Ruffner, all of Clearwater, Fla., assignors to Paradyne Corporation, Clearwater, Fla.

Filed Feb. 5, 1973, Ser. No. 329,899

Int. Cl. G06f 11/00

U.S. Cl. 235-153 R

21 Claims



A protocol analyzer for monitoring line control characters in a binary synchronous data telecommunications system comprising a control character trap means having a character decode means and character memory means to decode and buffer any of a plurality of predetermined line control characters and a visual display means to selectively observe the buffered control characters. The analyzer also includes an interface test means to monitor and display standard EIA RS-232 control lines and DAA control line signals from the business equipment means and data communications lines respectively and an analog test means including visual and audio display means for monitoring data communications line signals.

3,826,909

### DYNAMIC COMPARISON TESTER FOR GO-NO-GO TESTING OF DIGITAL CIRCUIT PACKAGES IN NORMAL ENVIRONMENT

Victor S. Ivashin, Reno, Nev., assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 29, 1973, Ser. No. 346,174

Int. Cl. G06f 11/00

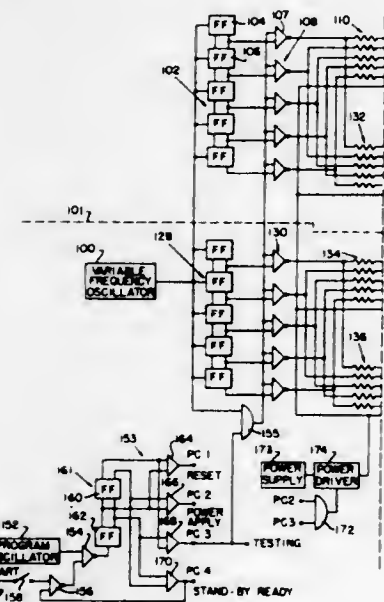
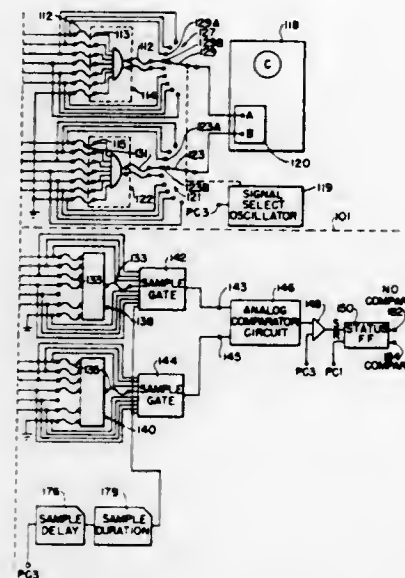
U.S. Cl. 235-153 AC

10 Claims

A testing apparatus employing a binary counter to supply identical signals to a tested and a standard reference circuit is



disclosed. The tested includes a program controller, a self-contained power supply, analog and digital comparison cir-



cuits, along with output indicators for displaying the difference, if any, between the tested and standard reference circuit.

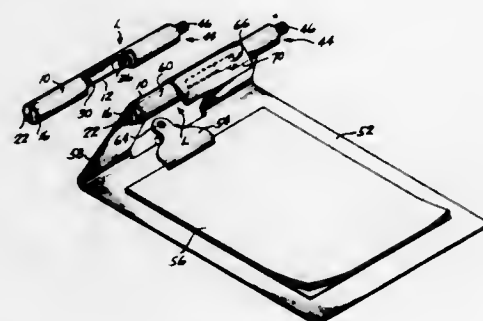
3,826,910

# PORTABLE ELECTRIC TUBE LIGHT

Robert H. Davis, 19033 22nd Ave. N.W., Seattle, Wash. 98177  
Filed June 7, 1971, Ser. No. 150,569  
Int. Cl. F21v 33/00

U.S. Cl. 240—6.4 B

7 Claims



Dry cell batteries or battery forming materials are contained within end portions of an elongated tubular housing. The

housing includes an elongated side window situated axially between the batteries. A reflector is provided along the inner wall of said tubing towards the window. A light bulb extending coaxially with the tube is positioned between the reflector and the window. The light may be secured to a support placing it generally above the writing portion of a clipboard or the like, and may be provided with a member extending from the support over the window region of the light, to serve as both a shield and a reflector for the light.

3,826,911

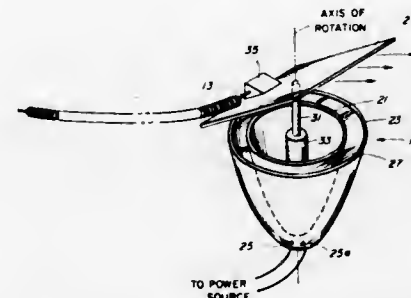
# CATOPTRIC LENS ARRANGEMENT

Phillip J. McFarland, Lynnfield, and Werner R. Rambausk, Carlisle, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 2, 1973, Ser. No. 376,052  
Int. Cl. F21v 7/00

U.S. Cl. 240—41.35 R

4 Claims



Improved catoptric lens arrangements are shown wherein a beam may be formed from light emitted by a plurality of sources of light, the intensity and direction of such beam being automatically controlled in response to the speed and direction of travel of a motor vehicle carrying such arrangements.

3,826,912

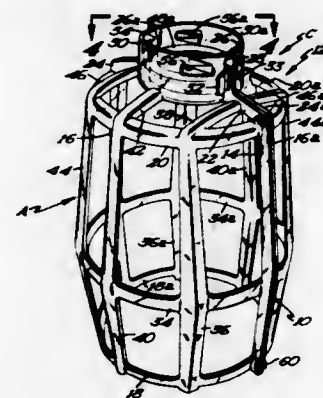
# LIGHT BULB GUARD

James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed May 4, 1973, Ser. No. 357,113  
Int. Cl. F21v 15/00

U.S. Cl. 240—102 R

9 Claims



A light bulb guard including first and second identical half cage portions each including a semi-circular band portion on the inner end of the cage portion, a serrated tongue on one end of the semi-circular band portion and a slot in the other end, the tongue of each semi-circular band portion adjustably engageable in the slot of each semi-circular band portion together with a plurality of flexible fingers formed on and extending internally of the semi-circular band portions, and a recess formed in each semi-circular band portion for the reception of the rib of a light socket together with hook and recess means formed on the outer ends of each of the cage portions each engageable with the other.

3,826,913

# DISTRIBUTIVELY BANDED REFLECTOR SURFACE FOR PRODUCING CONTOURED ILLUMINATION INTENSITY

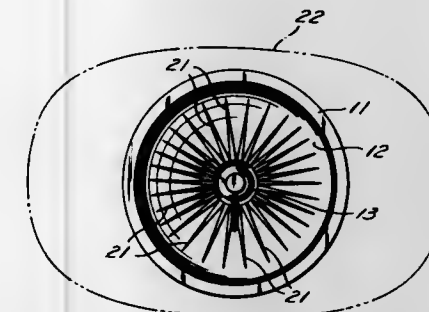
Robert D. Downing, Mentor, and Emmett H. Wiley, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,509

Int. Cl. F21v 7/09

U.S. Cl. 240—103 R

9 Claims



A concave light reflector is shaped to have flat-sectioned radial bands on its inner surface extending radially outwardly and forwardly from the apex of the reflector. The bands are distributed circumferentially in an asymmetrical manner to provide a desired cross-sectional contour of illumination intensity, such as approximately rectangular for photographic projection purposes.

3,826,914

# LENS FOR A SIGNAL LAMP

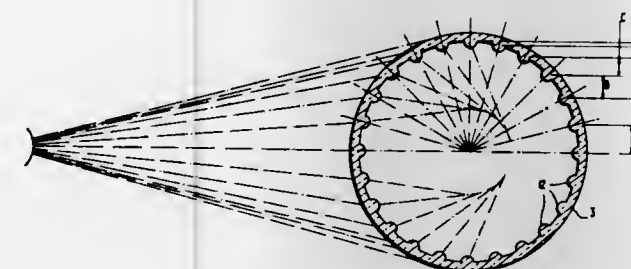
John J. Bailey, and William C. Keeran, both of 1701 N. Ashland Ave., Chicago, Ill. 160622

Filed Nov. 21, 1972, Ser. No. 308,436

Int. Cl. F21v 5/04

U.S. Cl. 240—106 R

10 Claims



A lens for a signal lamp, such as an emergency or warning lamp, that is intended to surround the source of light, which source is preferably elongated. The lens has a wall that is curved about the center of the light, with an outer surface relatively smooth and an inner surface which is also relatively smooth, but is provided with a plurality of lenticular light spreaders spaced along the surface thereof at appropriate intervals such that a substantial portion of all of the light passing through the surface of the lens that is visible to the viewer will be directed from the source, either through the plane surface of the lens or through the lenticular light spreaders substantially to a common point. Thus, a viewer will have a substantial portion of all of the light rays emanating from the light source through the visible surface of the lens, directed to his eye throughout the entire width of the lens.

3,826,915

# NON-IMPACT PRINTING DEVICE FOR ELECTRONIC CALCULATORS

Nicolo Giolitti, Ivrea, and Michele Bovio, Banchette, both of Italy, assignors to Ing. Co. Olivetti & Co., s.p.A., Ivrea (Torino), Italy

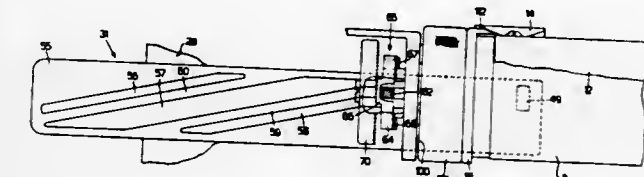
Filed Sept. 6, 1972, Ser. No. 286,801

Claims priority, application Italy, Sept. 6, 1971, 69943/71

Int. Cl. G01d 15/06

U.S. Cl. 346—74 E

17 Claims



A non-impact printing device for electronic calculators is designed to print characters on electrosensitive paper by means of electrodes mounted on a printing head which moves across the paper for printing each line of characters and then returns to the starting point. A toothed rack in the form of a loop cooperates with a gear associated with the printing head and a driving motor for effecting the transitory motion. A platen includes a portion for line spacing comprising inclined guide tracks which cooperate with guides for advancing the paper in conjunction with the movement of the head. A further portion of the platen includes a cleaning roller over which the electrodes are swept during each cycle of movement for automatic cleaning.

3,826,916

# MULTI-CHANNEL DEVICE FOR OPTICAL CONTROL OF CONVERTER BRIDGE RECTIFIERS IN D.C. TRANSMISSION LINES

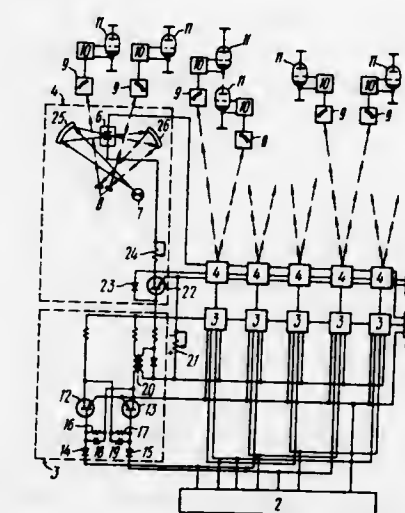
Georgy Georgievich Sinchuk, ulitsa Rentgena 7, kv. 28, and Gennady Vasilievich Smirnov, Prospekt Nauki 14, korpus 4, kv. 9, both of Leningrad, U.S.S.R.

Filed July 2, 1973, Ser. No. 375,861

Int. Cl. H01j 39/12; H02m 1/02; H03k 3/42

U.S. Cl. 250—208

5 Claims



A multi-channel device is proposed for optical control of converter rectifiers in D.C. transmission lines comprising  $n$  identical channels,  $n$  being equal to the number of arms in a converter bridge, each channel including a shaper of wide square pulses connected in series with a pulse-width modulation converter of the light flux, all these elements being at the earth potential; as well as a photoreceptor and a control pulse amplifier which are connected in series at the rectifier potential, while the shaper of wide square pulses is provided with a



master pulse trigger which has its input connected to a primary pulse transmitter, and the pulse-width modulation converter of the light flux includes a single stage transistor amplifier whose input is coupled to said master pulse trigger and whose output is coupled to a semiconductor optical modulator serving to receive optical signals from a light flux emission source and to transmit modulated signals to an optical splitter which, in turn, feeds split signals to said photoreceptor at the potential of the gate.

3,826,917

## REVERSE MAGNETIC INSPECTION METHOD

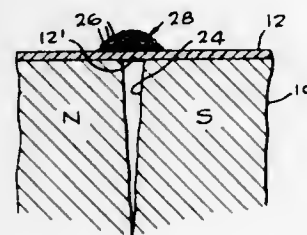
Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1973, Ser. No. 360,989

Int. Cl. G01n 21/16

U.S. Cl. 250—302

21 Claims



Method for nondestructive magnetic inspection of an object for detecting defects and discontinuities in the surface thereof, by applying a coating, preferably an organic coating, containing a fluorescent material, to the object, establishing magnetic flux lines at an angle, preferably substantially perpendicular, to the suspected defects and discontinuities in a surface of the object, applying non-fluorescent magnetic particles, preferably suspended in a liquid medium, over the coating on the surface of the object, and causing these particles to agglomerate and form indications on the coating adjacent to the surface defects and discontinuities in the object, and inspecting the body under fluorescent or ultraviolet light to reveal such defects and discontinuities indications as defined by the agglomerated magnetic particles, against a contrasting fluorescent background coating. Where a record of the indications of defects and discontinuities is desired, a strippable fluorescent coating is initially applied, and following magnetization to locate and reveal the surface defects and discontinuities, a clear strippable coating is applied over the fluorescent coating containing the magnetic indications of defects, and the resulting coating containing the indications formed by the agglomerated magnetic particles can be stripped from the surface of the object, and such coating employed as a record of such indications.

3,826,918

## RADIATION-MEASURING INSTRUMENT WITH SURFACES SHIELDED AGAINST CONTAMINATION

Gerbrand Van Der Koogh, and Antonius P. Bernards, both of Alkmaar, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Continuation-in-part of Ser. No. 179,351, Sept. 10, 1971, abandoned. This application Sept. 28, 1971, Ser. No. 184,409

Claims priority, application Netherlands, Sept. 10, 1970, 7013369

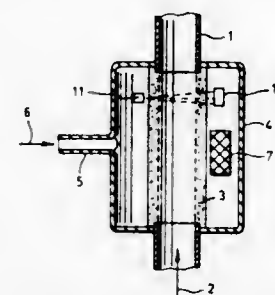
Int. Cl. G01n 23/02

U.S. Cl. 250—343

6 Claims

Instruments for measurement of electromagnetic and/or corpuscular radiation in fluid media are liable to be contaminated by deposition of material from the fluid. The con-

tamination of detectors, radiation sources or other vital surfaces in radiation measurement instruments is prevented by



placing a porous window before the surfaces threatened by contamination and flowing a purging fluid through the porous window.

3,826,919

## X-RAY TIRE INSPECTION APPARATUS

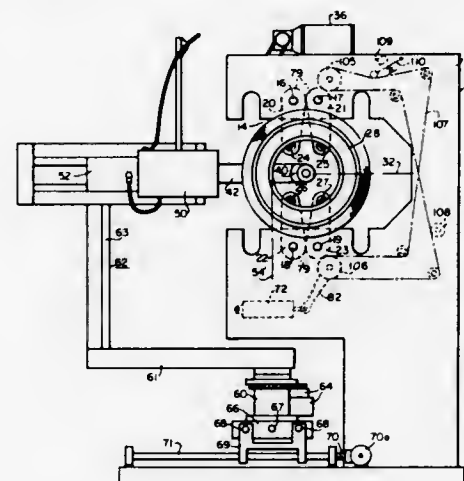
Nicholas Yaroshuk, McKeesport, and Robert D. Burack, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 8, 1972, Ser. No. 287,388

Int. Cl. G01n 23/00

U.S. Cl. 250—360

4 Claims



X-ray tire inspection apparatus, in which, during set-up and in an automatic mode of operation, inwardly-retracted spindles are actuated radially outward into rotating and spreading cooperation with the beads of a newly introduced tire for capture and inspection of such tire, which is thereby also simultaneously measured as to its diametral size. Conditioned by the tire-size information gained from such initial spindle operation, a control means is operable to effect automatic movement of an X-ray tube and an X-ray image pick-up means from retracted inactive positions to active tire-inspecting positions suited to the particular tire size involved.

3,826,920

## FLUORESCENT GAS ANALYZER WITH CALIBRATION SYSTEM

Jaime A. Woodroffe, Cambridge, and John P. Appleton, Andover, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 12, 1973, Ser. No. 350,431

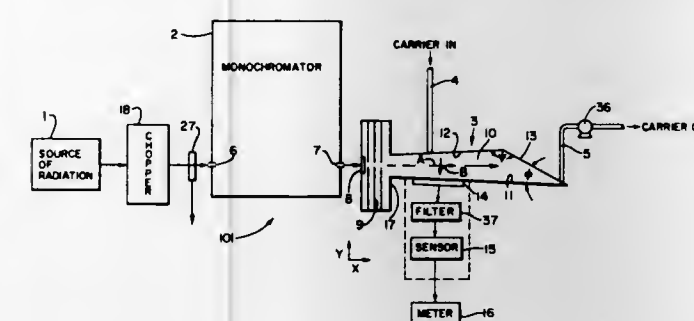
Int. Cl. G01t 1/00

U.S. Cl. 250—373

30 Claims

A fluorescence gas analyzer for the measurement of concentrations of NO, SO<sub>2</sub>, CO, CO<sub>2</sub>, and other gases that appear in relatively small concentrations in a carrier gas. The carrier gas is subjected to ultraviolet radiation at predetermined

wavelengths to effect fluorescence. The spectral wavelengths are chosen for the specific gas of interest. The intensity of the



fluorescent radiation from the gas of interest is a measure of the concentration of that gas (NO, SO<sub>2</sub>, etc.) in the carrier.

3,826,921

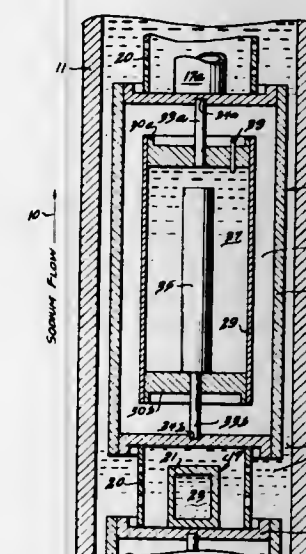
## MONITOR FOR RADIATION-INDUCED HEATING

Walter R. Wallin, Idaho Falls, Idaho; Virgil W. Lowery, Gaithersburg, Md., and Richard R. Smith, Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 26, 1973, Ser. No. 354,723

Int. Cl. G01t 1/12

U.S. Cl. 250—390



A susceptible material that is to be examined with respect to radiation-induced heating is sealed within a capsule composed of a material such as stainless steel. The remaining capsule volume is filled with a liquid metal that has a greater coefficient of thermal expansion than the capsule walls. The liquid expansion permanently deforms the capsule in an amount representative of its maximum temperature. The capsule is coaxially supported within an outer container, thus forming a gas-filled annulus having a known resistance to heat transfer. The heat generated by irradiation of the susceptible material is determined by the temperature difference required for its transfer across the annulus.

3,826,922

## X-RAY FILM CASSETTE HOLDER

William R. Ingles, Glendale, Calif., assignor to American Medical International, Inc., Los Angeles, Calif., a part interest

Filed Apr. 9, 1973, Ser. No. 349,240

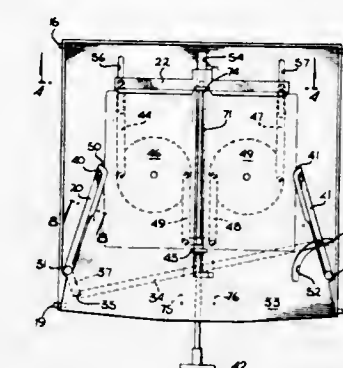
Int. Cl. G03b 41/16

U.S. Cl. 250—471

5 Claims

A holder for X-ray film cassettes which automatically centers the cassette under a predetermined area of an X-ray table

irrespective of the size of the cassette. Spring loaded pivoting arms coupled by a linkage accomplish the longitudinal centering and a pair of linearly moving members, also coupled by a linkage and spring loaded, centers the cassette transversely.



3,826,923

## SYSTEM FOR DETECTING OPENINGS IN OPAQUE OBJECTS

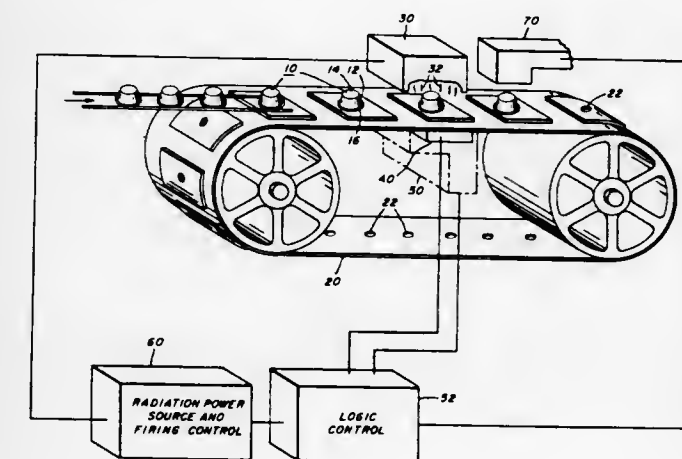
Robert M. Trimble, Pittsburgh, and Nicolaas L. Brouwer, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 6, 1973, Ser. No. 367,320

Int. Cl. G01n 21/32

U.S. Cl. 250—572

7 Claims



Minute openings in opaque objects are detected by intermittent discharges of stored energy in the form of high intensity radiation of preselected wavelength range determined by the type of material used to form the opaque object and the smallest opening size which must be detectable.

3,826,924

## TEMPERATURE COMPENSATED THERMAL RELAY DEVICE

Charles T. Plough, Beaconsfield; Jan Otto Tvedt, Pierrefonds; Marcus Arts, Longueuil; H. Keith Eastwood, Beaconsfield, and Frank Woo, Dollard Des Ormeaux, Quebec, all of Canada, assignors to Multi-State Devices Ltd., Dorval, Quebec, Canada

Filed May 21, 1973, Ser. No. 362,294

Int. Cl. H01h 37/00

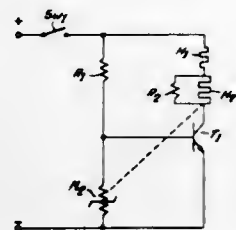
U.S. Cl. 307—117

17 Claims

A temperature compensated thermal relay device comprises a thermal switching element exhibiting a sudden change



in impedance at a predetermined transition temperature from a first impedance state to a second impedance state, a heater adapted to be connected to a power source for heating the thermal switching element, and circuit means for initially supplying a large amount of power to the heater so as to make the switching element exceed its transition temperature quickly and for subsequently reducing the power applied to the heater



to maintain the thermal switching element a few degrees above its transition temperature. The circuit means also controls the power applied to the heater to stabilize the operation of the thermal switching element under varying ambient or operating temperature. The above circuit means permit to reduce the turn-on and turn-off times of the thermal switching element.

3,826,925

### SWITCH ARRANGEMENT FOR AN OPTICALLY COUPLED ZERO VOLTAGE SWITCH

Horst Schweikart, Offenburg, Germany, assignor to Gehap Gesellschaft für Handel und Patentverwertung mbH & Co. KG, Sasbachwalden, Germany

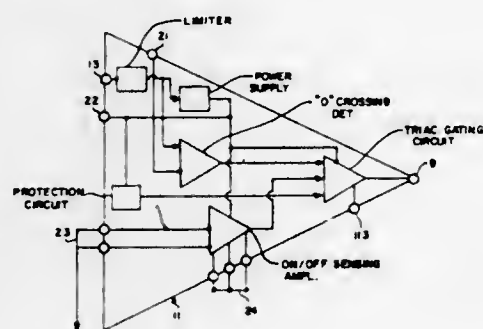
Filed Nov. 6, 1972, Ser. No. 304,184

Claims priority, application Germany, Nov. 5, 1971, 2154968

Int. Cl. H01h 7/16

U.S. Cl. 307-133

3 Claims



A zero voltage switching circuit having a gallium arsenide diode on its input terminals optically coupled to a phototransistor. The output of the phototransistor is coupled to the input of a zero voltage switch. The output of the zero voltage switch is coupled to the gate of a triac semiconductor switch so that an A-C power supply applied to the terminals of the triac can be switched at zero voltage.

3,826,926

### CHARGE COUPLED DEVICE AREA IMAGING ARRAY

Marvin H. White, Laurel, and Gene Strull, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 29, 1972, Ser. No. 310,514

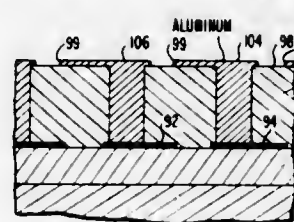
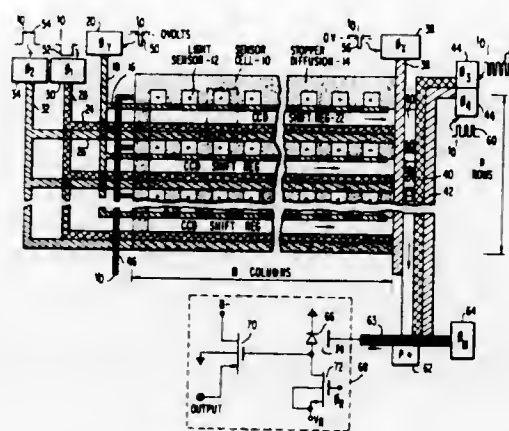
Int. Cl. H03k 21/00, 28/08

U.S. Cl. 307-221

8 Claims

A low light level self-scanned high resolution imaging array comprised of charge coupled devices. The charge coupled devices are used as either visible or IR sensors having a polycrystalline silicon transparent conductive gate electrode

as well as a two phase stepped oxide aluminum electrode shift register. A unique cell geometry is disclosed together with its method of fabrication which is particularly adapted for an



area array making possible low light level sensitivity with "blooming" suppression for use as a solid state TV camera. The entire signal processing and imaging is performed on a single semiconductor substrate preferably comprised of silicon.

3,826,927

### SMOOTH WAVE ELECTRICAL GENERATOR

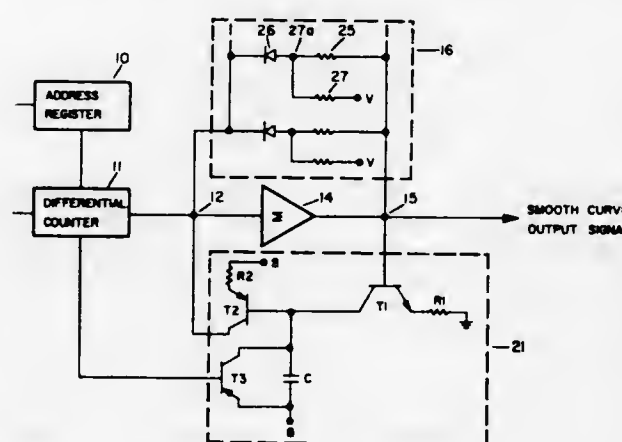
Martin O. Halfhill, San Jose, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed May 21, 1970, Ser. No. 39,385

Int. Cl. H03k 4/08

U.S. Cl. 307-263

5 Claims



A wave generator for use in such apparatus as a disc file equipment control to provide a smooth wave having a predetermined configuration. The wave is generated by the use of an amplifier having a first feedback circuit for providing a stepped incremental signal with the value of the increments being responsive to the input signal of the amplifier. A second feedback circuit is provided for supplying to the amplifier input a signal which is the integral of the amplifier output and with a polarity opposite to that of the first feedback signal. In this manner, the incremental signal is smoothed to provide an output signal tangential to the bottom of each step of the incremental signal.

3,826,928

### VARIABLE PULSE WIDTH GENERATOR EMPLOYING FLIP-FLOP IN COMBINATION WITH INTEGRATOR-DIFFERENTIATOR NETWORK

Jiri B. Bucek, and James R. Shultz, both of York, Pa., assignors to Fincor, Inc., York, Pa.

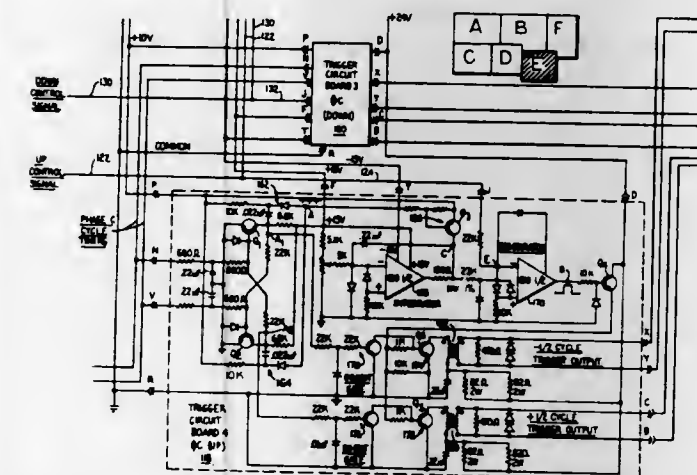
Division of Ser. No. 62,869, Aug. 11, 1970, Pat. No. 3,678,355.

This application Mar. 27, 1972, Ser. No. 238,141

Int. Cl. H03k 1/18

U.S. Cl. 307-265

1 Claim



A control for a three phase A.C. motor elevator drive in which direction and desired speed signals, as dictated by customer and user demand, are electronically processed to provide intermediate ramp control signals. A summing circuit which utilizes the intermediate ramp control signal and a signal from an elevator motor speed and direction sensing circuit has an output which determines and controls the voltage input, via electronic trigger controls to thyristor controlled power and reversing switching circuits in at least two channels of the three phase A.C. input to a three phase A.C. drive motor. The motor control circuit incorporates a high rate of off-on and phase reversing switching with phase angle control of voltage and current to provide interrelated variable A.C. power supply for both drive and braking of the elevator drive motor in both directions of movement of the elevator cab.

3,826,929

### GAIN STABILIZED SIGNAL PROCESSING CIRCUITRY FOR GROUND RESISTANCE SENSOR

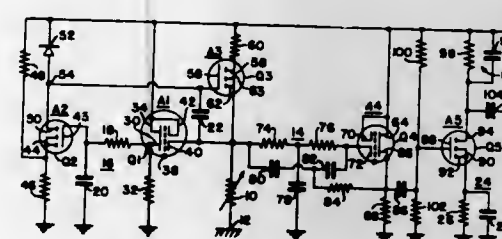
Charles E. Hill, Lynn, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed June 11, 1973, Ser. No. 368,795

Int. Cl. H03k 17/00

U.S. Cl. 307-308

12 Claims



To detect whether an area is being intruded, a bare wire resistance sensor is placed on the surface of the earth and the change in resistance between the bare wire and earth is used to detect an intrusion. Circuitry is provided for maintaining a constant voltage drop across the ground resistance in spite of slow variations in resistance, while at the same time permitting the sensing of rapid changes. Spurious signals, which may result in false alarms, are attenuated by low pass filters in a succeeding AC amplifier.

3,826,930

### FAIL-SAFE OPTICALLY COUPLED LOGIC NETWORKS

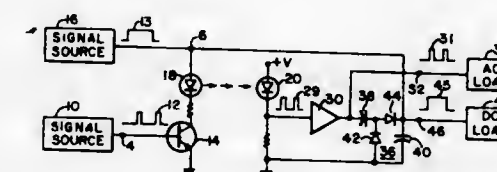
Robert H. Perry, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1973, Ser. No. 367,255

Int. Cl. H03k 3/42

U.S. Cl. 307-311

4 Claims



A plurality of fail-safe optically coupled logic networks are disclosed which perform the AND, OR, latching, and signal transfer function.

3,826,931

### DUAL CRYSTAL RESONATOR APPARATUS

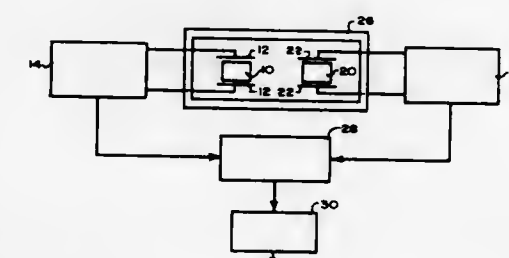
Donald L. Hammond, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 678,384, Oct. 26, 1967. This application Feb. 8, 1971, Ser. No. 113,668

Int. Cl. H01v 7/00

U.S. Cl. 310-8.1

6 Claims



Algebraic combination of the frequencies of two or more selected modes of piezoelectric crystal resonator vibrations yields a total frequency signal output which has a substantially zero temperature coefficient of frequency.

3,826,932

### AN ULTRASONIC CONVOLVER HAVING PIEZOELECTRIC AND SEMICONDUCTOR PROPERTIES

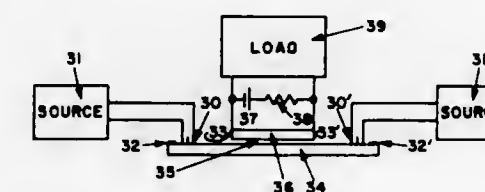
Wen-Chung Wang, 25 Trescott Path, Northport, N.Y. 11768

Filed Apr. 17, 1972, Ser. No. 244,429

Int. Cl. H01v 7/00; H04r 17/00

U.S. Cl. 310-8.1

3 Claims



A device for performing the function of convolution comprises either a properly oriented piezoelectric semiconductor or a properly oriented piezoelectric insulator with an adjacent semiconductor and means for launching ultrasonic waves into or on the piezoelectric crystal. When one launches ultrasonic waves from the opposite ends of a piezoelectric crystal so that the two waves travel toward each other, when the two waves meet, a rf signal of large amplitude, at the sum frequency of the ultrasonic waves, will be detected by the semiconductor and the envelope (time function) of the sum-frequency rf



signal represents the convolution integral between the two envelopes of the ultrasonic waves which were launched into the crystal is d-c biased to enhance the signal and in other configurations the semiconductor is not d-c biased.

3,826,933

# MOUNTING SYSTEM FOR REAR WHEEL ANGULAR SPEED DETECTORS FOR MOTOR VEHICLES

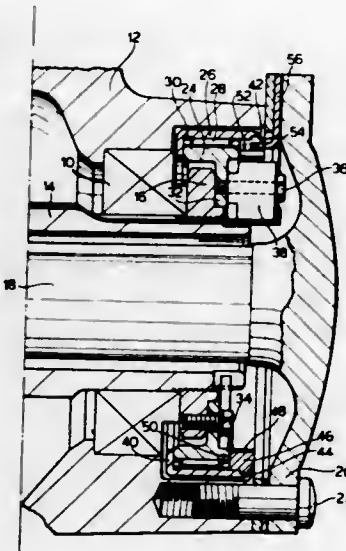
Giovanni Anselmino, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 13, 1972, Ser. No. 314,641

Claims priority, application Italy, Dec. 14, 1971, 71086/71  
Int. Cl. H02k 19/24

U.S. Cl. 310-168

2 Claims



A driven rear wheel of a vehicle is provided with an angular speed detector comprised of a magnetic pick-up and a phonic wheel rotatable relative thereto. The phonic wheel is secured to the outer ring of a roller bearing supported by an annular flange secured to a wheel bearing retaining ring which in turn is secured to the axle housing. The phonic wheel is provided with a plurality of radially inwardly directed teeth which cooperate with the magnetic pick-up which is secured against rotation radially inwardly of the phonic wheel.

3,826,934

# NONREVERSIBLE MOTOR

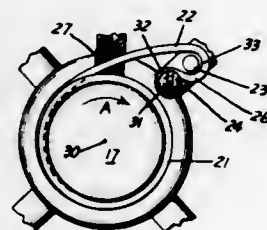
Robert D. Leach, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 25, 1972, Ser. No. 292,176

Int. Cl. H02k 7/10

U.S. Cl. 310-41

7 Claims



Anti-windmilling arrangement includes an anti-reverse rotation spring mounted on the motor shaft. Spring is helically wound and mounted on shaft within bearing system enclosure to protect it from corrosive agents and is supplied with lubricant. One end of spring is loosely restrained by a stationary structure and other end is in a convolution adjacent the shaft. Spring winds up or closes and grips the shaft if shaft moves in a first direction of rotation. Spring unwinds or uncoils and only

loosely contacts shaft during rotation of shaft in opposite direction. Spring contacts shaft while motor is idle but exerts negligible restraint against rotation of shaft in the desired direction. Contact between shaft and spring causes the spring to tighten substantially immediately as the shaft commences to rotate in undesired direction even when lubricant is present at the interface of the shaft and spring.

3,826,935

# MOTOR HOUSING CONSTRUCTION FOR A VACUUM CLEANER WITH STRAIN-RELIEF FOR MOTOR LEADS

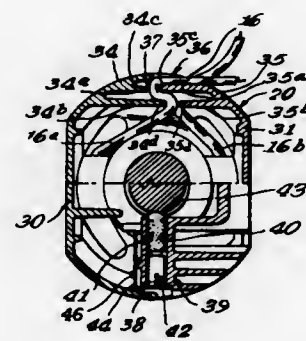
Keith J. Grierson, Roseville, and Bruce E. Samuelson, St. Paul, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 12, 1972, Ser. No. 288,378

Int. Cl. H02k 5/14, 5/22; H01b 17/26

U.S. Cl. 310-71

11 Claims



A motor construction for use such as in a vacuum cleaner or a vacuum cleaner attachment, wherein the motor housing is split to define a pair of housing halves which, when secured together, effect an enclosure for the motor, a strain relief for the motor leads, means for mounting the motor brushes, and means for supporting and positioning the armature and field assemblies.

3,826,936

# FLEXIBLE SUBMERSIBLE ELECTRIC MOTOR

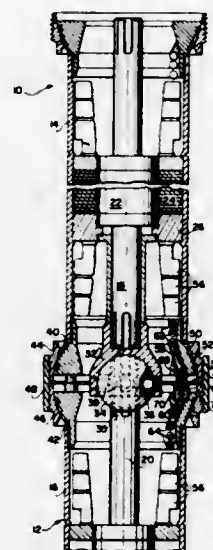
John C. O'Rourke, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed Dec. 6, 1973, Ser. No. 422,165

Int. Cl. H02k 5/12

U.S. Cl. 310-87

5 Claims



A flexible submersible electric motor is provided which may be used in deviated deep wells. The motor comprises successive rigid sections flexibly interconnected by coupling means which permit relative angular adjustment of the adjacent sections without relative axial rotation.

3,826,937

# EDDY CURRENT COUPLINGS

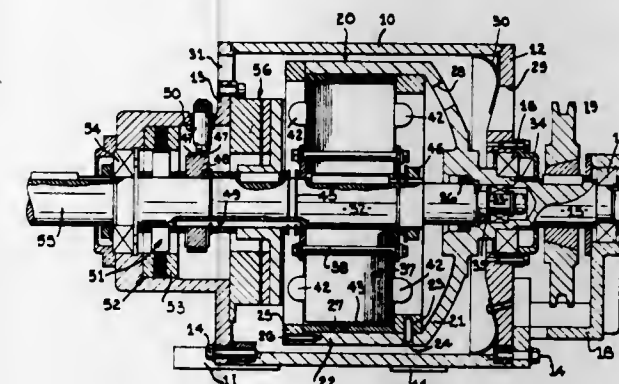
Evan John Davies, 2 Knighton Rd., Sutton Coldfield, England

Filed Aug. 14, 1972, Ser. No. 280,126

Int. Cl. H02k 49/04

U.S. Cl. 310-105

11 Claims



An eddy current coupling comprising coaxial input and output shafts, a pole member connected to one of the shafts and having a series of poles provided with one or more field windings, alternate poles exhibiting the same polarity on excitation of the field winding or windings, and a loss member which comprises a support connected to the other shaft, a loss ring of ferromagnetic material carried by the support so that there is only a small air gap between the poles of the pole member and the loss ring and end rings of non-magnetic material of lower electrical resistivity than that of the material of the loss ring, the end rings being located at the edges of the loss ring in good electrical contact therewith, whereby the loss member provides a path for magnetic flux between the poles of the pole member and also a conductor for the resulting induced voltages which cause eddy currents in the loss member, the reaction between the eddy currents and the flux serving to transmit torque between the members while there is slip between them.

3,826,938

# MAGNETIC COUPLING FOR MOTOR DRIVEN PUMPS AND THE LIKE

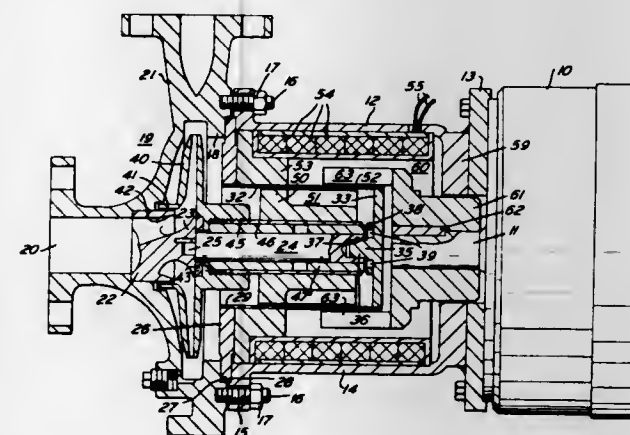
Burt K. Filer, Philadelphia, Pa., assignor to Process Industries, Incorporated, Huntingdon Valley, Pa.

Continuation-in-part of Ser. No. 262,739, June 14, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,721

Int. Cl. H02k 49/06

U.S. Cl. 310-104

8 Claims



A magnetic drive coupling is disclosed which can be employed in motor driven pumps and for other purposes, which includes coupling members forming part of the magnetic

circuit which can be isolated to prevent fluid communication therebetween and in which a plurality of stationary electrically activated flux sources are provided which also form part of the magnetic circuit and in which an improved flux path is provided.

3,826,939

# MINIATURE ELECTRIC SYNCHRONOUS MOTOR

Toyoshi Mori, Gifu, and Yoshitaka Iwase, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho, Nishikasugai-gun, Aichi Pref., Japan

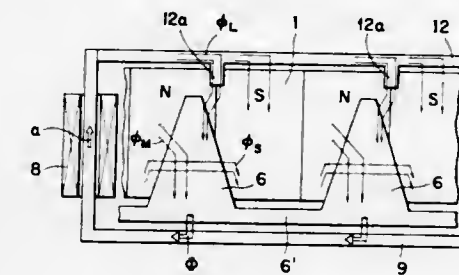
Filed July 10, 1973, Ser. No. 377,996

Claims priority, application Japan, July 13, 1972, 47-69539; May 8, 1973, 48-50251

Int. Cl. H02k 21/26

U.S. Cl. 310-154

8 Claims



A miniature electric synchronous motor with a rotor formed of pole teeth, characterized by one or more projections formed on a yoke at positions deviated from the center lines of poles of a stator to effectively utilize magnetic flux between said projections and pole teeth for rotation of said pole teeth, thereby to enable the rotor to start wherever the pole teeth rest.

3,826,940

# ROTOR CONSTRUCTION FOR SQUIRREL CAGE MOTOR

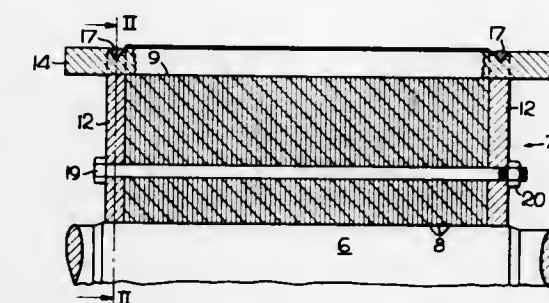
Joseph T. McKean, New Berlin, and Norman M. Steinhauer, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 22, 1973, Ser. No. 343,795

Int. Cl. H02k 3/06

U.S. Cl. 310-211

6 Claims



A squirrel cage rotor for an electric motor which includes slotted laminations and a pair of slotted end connectors at each end of the lamination stack. Conductor bars are contained in each of the slots and extend to the ends of the end connectors which also perform the function of end plates. A continuous annular groove is formed in the surface of the end connector and conductor bars and filled with a continuous weld providing a rigid rotor structure and good electrical contact between the conductor bars and the end connectors.

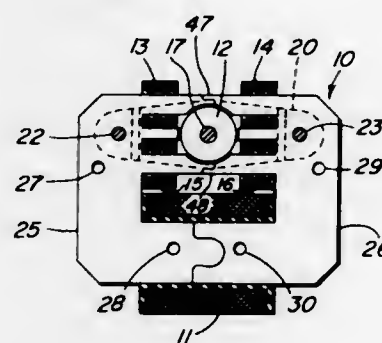


### 3,826,941 DOVETAILED STATOR STRUCTURE

Reginald J. Folmar, Owen Township, Winnebago County, Ill., assignor to Barber-Colman Company, Rockford, Ill.  
Filed Feb. 16, 1973, Ser. No. 332,888  
Int. Cl. H02k 1/06

U.S. Cl. 310-217

7 Claims



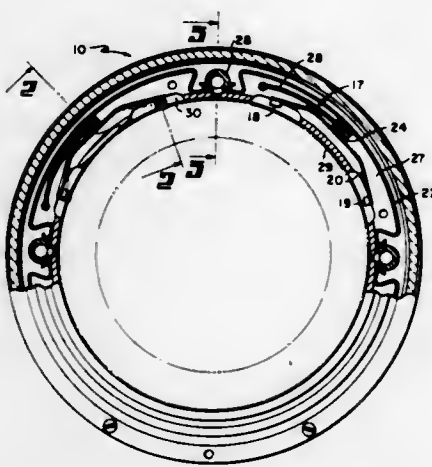
The stator of a shaded pole motor comprises complementary stacks of laminations dovetailed together at their interface to prevent noise producing vibrations.

### 3,826,942 BRUSH ASSEMBLY FOR A SLIP RING

John J. Twarog, Jr., Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.  
Filed Oct. 25, 1972, Ser. No. 300,445  
Int. Cl. H01r 39/08; H02k 13/00

U.S. Cl. 310-232

7 Claims



A slip ring, mounted on a rotating shaft, is contacted by four pairs of spring loaded, pressure activated, gas cooled brushes. The brush assembly is supported in one-half of a seal housing, the other half of which provides conventional shaft sealing. The housing for the brush assembly is an annulus having end walls and inner and outer peripheral walls, the inner peripheral wall surrounding the ring and having a plurality of circumferentially spaced openings. The brush assemblies are mounted within the housing and are driven through the apertures into contact with the ring. The brushes are supported from the ends of a leaf spring, the center of which is in turn supported by a support spring which is gas pressure actuated.

### 3,826,943 CAMERA TUBE OF VIDICON STYLE COMPRISING SINGLE HIGH MELTING-POINT METAL SEAL PROVIDED WITH SUPPORT FOR TARGET

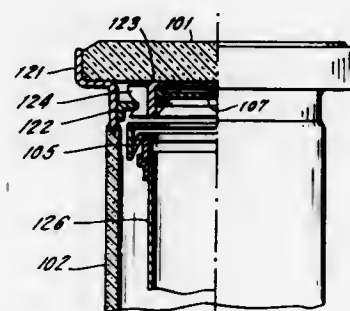
Takuro Kawamura, and Takashi Kawahara, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,335  
Claims priority, application Japan, Feb. 29, 1972, 47-20127; Feb. 29, 1972, 47-20128

Int. Cl. H01j 31/26, 29/02

U.S. Cl. 313-65 R

2 Claims



A camera tube of the type of a vidicon, a scan converter, or the like comprises a single seal member of high melting-point metal having a first portion sealed to the periphery of the face plate, a second portion sealed to the adjacent end of the tubular casing, and a third portion disposed between the face plate and the tubular casing. The third portion is provided with a radially inwardly projecting portion of high melting-point metal. The target electrode is encircled by a ring member provided with a plurality of springs of resilient metal for engaging with the projecting portion to support the target electrode.

### 3,826,944 CATHODE RAY TUBE WITH INORGANIC PHOSPHOR AND FIBER OPTIC FACE PLATE

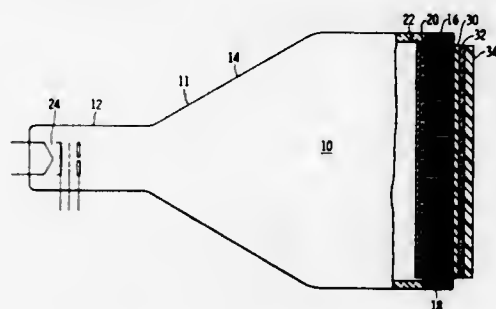
Kenneth Cooper, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 4, 1970, Ser. No. 43,531

Int. Cl. H01j 29/20, 29/12

U.S. Cl. 313-92 LF

3 Claims



A high contrast cathode ray tube which incorporates a phosphor material responsive to electronic bombardment and generates ultraviolet radiations in response thereto and in which the ultraviolet phosphor is provided on the inner surface of a fiber optic window. Positioned on the outer surface of the fiber optic faceplate is an ultraviolet transmitting, visible absorbing filter with an organic phosphor emitting visible light in response to ultraviolet excitation and a visible transmitting, ultraviolet absorbing filter provided on the outer surface of the organic phosphor.

### 3,826,945 ADJUSTABLE MAGNETICALLY FOCUSED TRIODE

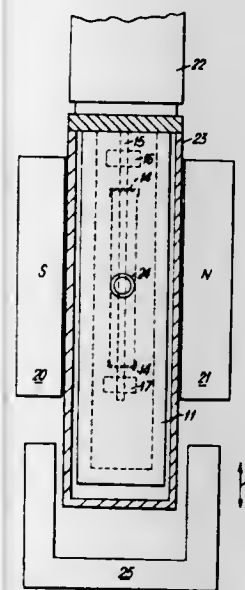
Joshua John Behenna, Galmpton, and Graham Harold George Phipps, Totnes, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,656  
Claims priority, application Great Britain, Mar. 2, 1972, 9729/72; 9730/72

U.S. Cl. 313-153

Int. Cl. H01j 3/32, 29/76

5 Claims



The output power of a magnetically focused thermionic electron tube is varied by altering the strength of the magnetic focusing field. In one embodiment, the output power of an oscillator using a magnetically focused triode may be reduced over a wide range by reducing the focusing field without any detrimental increase of intercepted beam current. The field is reduced by use of a magnetic shunt across the pole pieces of a permanent magnet used for focusing, the shunt being moved mechanically toward or away from the pole pieces. The device may also be used to control gate current in a gate controlled tube.

### 3,826,946 VAPOR DISCHARGE LAMP ELECTRODE HAVING CARBON-COATED AREAS

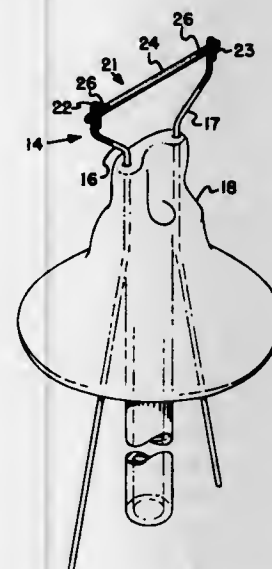
Edward E. Hammer, Mayfield Village, and John Paynter, Painesville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,571

Int. Cl. H01j 61/06

U.S. Cl. 313-218

7 Claims



A carbon coating is provided on the filament end regions, and also on the adjacent support wires and anodes, of an elec-

trode structure for a low pressure mercury vapor discharge lamp, such as a fluorescent lamp. This results in improved lamp efficiency and reduced oxide ring formation at the lamp ends.

### 3,826,947 CATHODE POSITIONING RETAINER

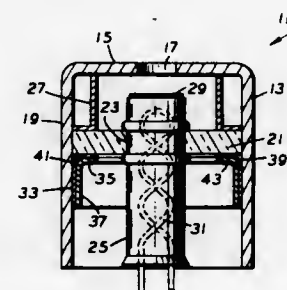
Robert J. Bowes, and John J. Miller, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 29, 1973, Ser. No. 375,181

Int. Cl. H01j 29/48, 1/94

U.S. Cl. 313-268

8 Claims



This relates to improved cathode retainer means for effecting positive positioning of a cathode within a companion electrode structure for use in a cathode ray tube electron gun. An end-emitting cathode is affixed within the aperture of a ceramic insulator disc and thence suitably positioned within a control grid electrode by an improved retainer means fabricated to exert sustained pressure against the supporting insulator. The improved retainer has a plurality of terminally oriented instanding projections of a bilaminate metallic material of predetermined flexure performance which are oriented to abut the insulator. Such bilaminate material comprises a first lamina of an active metallic alloy contiguously bonded along a common interface to a second lamina of a passive alloy material. The active alloy portion upon being subjected to a predetermined temperature during tube processing undergoes a metallurgical phase transformation effecting a volume change therein producing a definite modification of the shaping of the retainer projections thereby exerting positive and sustained pressure against the cathode positioning insulator.

### 3,826,948 COAXIAL POWER GRID TUBE HAVING IMPROVED INTERNAL LEAD STRUCTURES

James P. Polese, Menlo Park, and Sterling G. McNeas, Los Altos Hills, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed May 4, 1973, Ser. No. 357,303

Int. Cl. H01j 1/46, 21/10

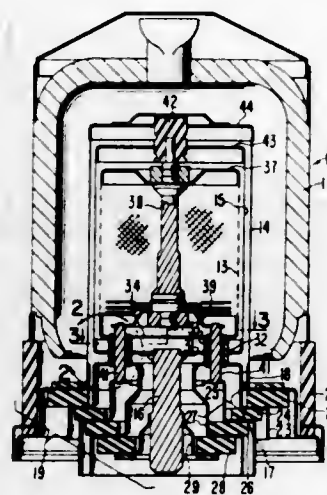
U.S. Cl. 313-293

10 Claims

In a coaxial power grid tube, the control grid lead passes into the envelope of the tube coaxially of and within the cathode lead structure. A cross-over structure is provided within the envelope for passing the control grid structure through the cathode lead structure in insulative relation thereto. The cathode lead structure includes a pair of concentric radially spaced cylinders (double wall) connected together for applying potential to one end of a directly heated thermionic cathode emitter, whereas the other lead for the



cathode emitter is disposed in insulative relation within the interior of the double wall cathode lead structure for completely the tuning of the cavity with the unexcited lamp through the most favorable condition for ignition. Upon release the tuning



shielding the internal cathode lead from RF energy present in either the grid drive or output RF circuits of the tube.

3,826,949

### DISPLAY DEVICE AND METHOD OF MAKING THE SAME

Toshifumi Nakamura; Akio Ohgoshi, and Shocho Muramoto, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

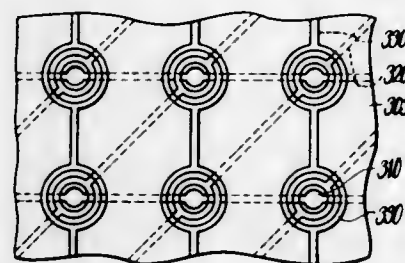
Filed June 27, 1972, Ser. No. 266,629

Claims priority, application Japan, July 1, 1971, 46-48220

Int. Cl. H01J 1/02; H05b 41/00

U.S. Cl. 315-169 R

3 Claims



A method of making a display device having steps of forming a first electrode array including a plurality of electrodes, forming an insulating layer on the first electrode array, forming a second electrode array including a plurality of electrodes so as to cross the first electrode array, and forming apertures corresponding to cross-points of the plurality of electrodes of the first and second electrode arrays to be filled with an ionizable gas therein. A display device having selecting electrode plates in addition to the first and second electrode arrays and apertures formed therethrough.

3,826,950

### ELECTRODELESS LAMP IGNITER SYSTEM

Robert M. Hruda, and Howard E. De Haven, both of Horseheads, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1973, Ser. No. 324,055

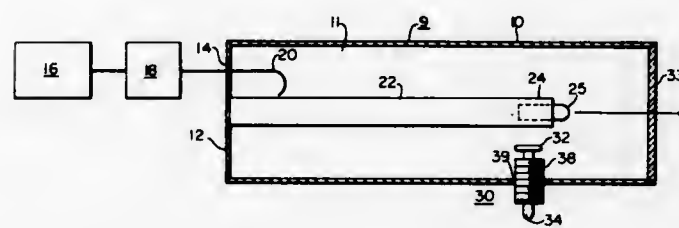
Int. Cl. H05h 41/24

U.S. Cl. 315-267

5 Claims

An electrodeless lamp resonant cavity apparatus for use as a spectral source in atomic absorption spectroscopy. The apparatus utilizes a cavity resonator to excite the lamp. A tuning means is utilized to ignite the lamp by momentarily sweeping

the tuning of the cavity with the unexcited lamp through the most favorable condition for ignition. Upon release the tuning



means returns the tuning of the cavity to that condition most favorable to maintaining the lamp discharge.

3,826,951

### CIRCUIT BREAKER WITH REPLACEABLE RATING ADJUSTER AND INTERLOCK MEANS

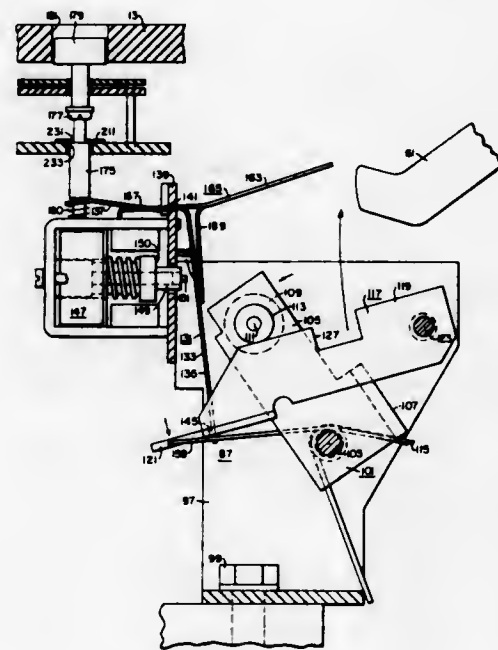
Alfred E. Mater, Beaver Falls, and Alan B. Shimp, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1973, Ser. No. 327,972

Int. Cl. H02h 3/08; H01h 73/00

U.S. Cl. 317-33 SC

8 Claims



An improved circuit breaker comprises an externally accessible plug-in type replaceable rating adjuster/removably supported on the housing of the circuit breaker. The rating adjuster comprises resistor means having a first resistance value. The plug-in rating adjuster can be removed and replaced by another plug-in rating adjuster comprising resistor means having a different resistance value to thereby enable a rating change of the circuit breaker in the field. Interlock means is provided to automatically trip the circuit breaker if the circuit breaker is closed when the rating adjuster is removed and to maintain the circuit breaker in a tripped condition so long as the rating adjuster is removed to thereby prevent operation of the circuit interrupter while the rating adjuster is removed. Keying means prevents the mounting of an improper rating adjuster on the breaker.

3,826,952

### HIGH VOLTAGE GENERATING DEVICE

Shingl Iwasaki, and Kiyoshi Obata, both of Tokyo, Japan, assignors to Rion Co., Ltd., Tokyo, Japan

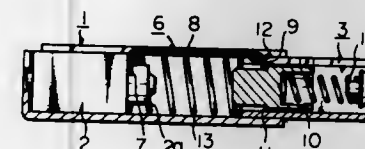
Filed Apr. 27, 1973, Ser. No. 355,156

Claims priority, application Japan, Sept. 14, 1972, 47-107259

Int. Cl. F23q 3/01

U.S. Cl. 317-81

10 Claims



A high voltage generating device formed of an elongated case, or housing, having a piezoelectric element seated at one end and having a hollow slide telescoped into the other end. A striker is telescoped into the slide and biased into an extended position by a power coil spring. A blocking member is secured to the housing formed of a latch and an adjacent cam surface. Thus when the slide is pressed inwardly the striker is blocked by the latch storing up energy in the power spring until a point is reached where the cam surface is triggered by the slide thereby to release the striker to strike the piezoelectric element. A return spring restores the slide to its initial position. In the preferred embodiment the blocking member is of L shape having a base which is sandwiched between the return spring and the piezoelectric element and having an arm which registers with a longitudinal slot formed in the housing. Assembly is facilitated by providing ears on the slide for holding the striker captive and ears on the housing for holding the slide captive therein.

3,826,953

### CASE FOR A PLURALITY OF SEMICONDUCTOR DEVICES

Maurice Le Gales, Paris, France, assignor to Thomson-CSF, Paris, France

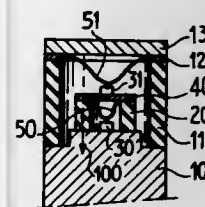
Filed Jan. 16, 1973, Ser. No. 324,144

Claims priority, application France, Jan. 21, 1972, 72.2049

Int. Cl. H05k 5/00

U.S. Cl. 317-100

4 Claims



A novel case is capable to receive a plurality of semiconductor devices.

A case comprises a metallic base and a metallic cover separated one from another by means of a hollow insulating body constituting a receptacle. Said enclosure further comprises an intermediary support located inside said receptacle and carrying itself a certain number of devices which are added to those which are normally soldered to the base of the case.

3,826,954

### GROUND AUTOMATIC DISCONNECT SYSTEM

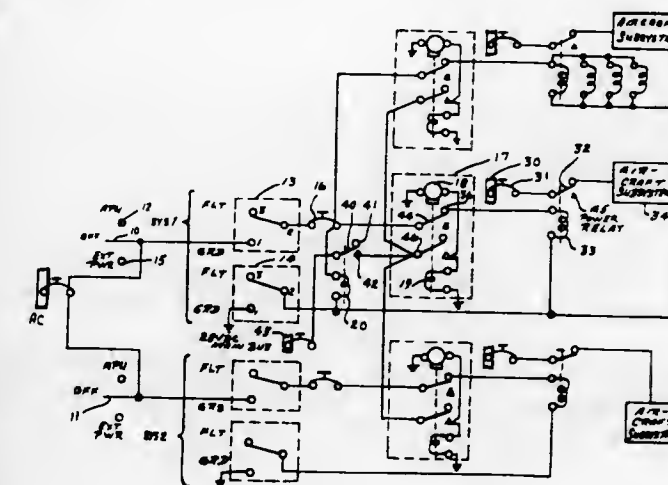
James A. Neher, 4640 151 Ct. S.E., Bellevue, Wash. 98006

Filed July 13, 1973, Ser. No. 379,025

Int. Cl. H01h 63/36

U.S. Cl. 317-135

2 Claims



An automatic power disconnect apparatus for denying ground auxiliary power electrical supplies from needlessly energizing power circuits of an aircraft during the period when an aircraft is on the ground.

3,826,955

### TIME DELAY RELAY

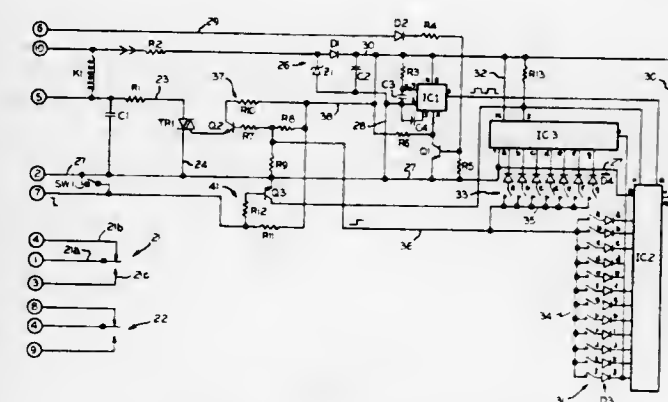
Otto Fest, 2007 Avon Ln., Arlington Heights, Ill. 60004

Filed Feb. 9, 1973, Ser. No. 331,241

Int. Cl. H01h 47/18

U.S. Cl. 317-141 S

11 Claims



A time delay relay that is digitably programmable for set periods of time with great accuracy. Further, interconnections of the leads extending from a time delay relay base causes the time delay relay to operate as a flip-flop device, or as a pulse source in addition to its time delay function.

3,826,956

### INTERCONNECTION FOR INTEGRATED UHF ARRANGEMENTS

Michel Croset, Paris, France, assignor to Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique, Paris, France

Filed May 31, 1972, Ser. No. 258,441

Claims priority, application France, June 9, 1971, 71.20940

Int. Cl. H01l 5/00

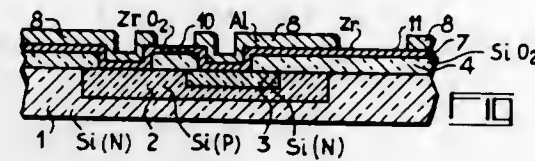
U.S. Cl. 317-234 R

5 Claims

An interconnection system circuit integrated on the same substrate comprises: ohmic contacts made by a layer of zir-



conium or tantalum which ensures resistive contact and overlaid with a layer of aluminum.



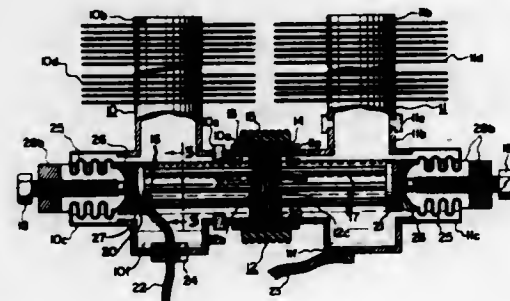
The interconnections are effected by two superimposed layers of zirconium or tantalum and of aluminium and the resistors are made by the exposed zirconium or tantalum.

### 3,826,957 DOUBLE-SIDED HEAT-PIPE COOLED POWER SEMICONDUCTOR DEVICE ASSEMBLY USING COMPRESSION RODS

Michael H. McLaughlin, Scotia; Gunnar E. Walmet, Schenectady, and James C. Corman, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.  
Filed July 2, 1973, Ser. No. 375,810  
Int. Cl. H01J 3/00, 5/00

U.S. Cl. 317-234 R

33 Claims



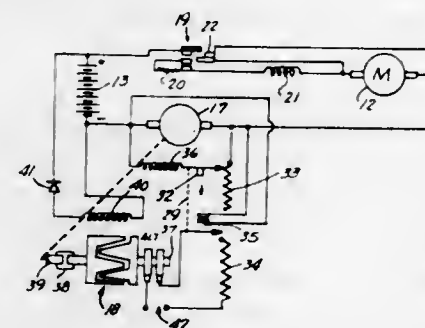
Two groups of rods disposed perpendicular to opposite ends of a replaceable power semiconductor device assembly have a compressive force applied thereto for causing uniform high pressure contact of two pressure plates against opposite ends of the semiconductor device assembly. The pressure plates are the evaporating surface ends of two heat pipes used for cooling the semiconductor device. The uniformly high pressure interfaces developed by the pressure plates within and against the semiconductor assembly results in a relatively low thermal resistance of the semiconductor device-to-heat pipe interfaces to produce improved vaporization cooling of the semiconductor device.

### 3,826,958 ELECTRIC VEHICLE CONTROL

John Cvetak, P.O. Box 34, Pewamo, Mich. 48873  
Filed Aug. 23, 1972, Ser. No. 282,947  
Int. Cl. H02p 5/06

U.S. Cl. 318-113

1 Claim



An electric vehicle control which utilizes the counter EMF DC motor with a spinning armature serving as a control of

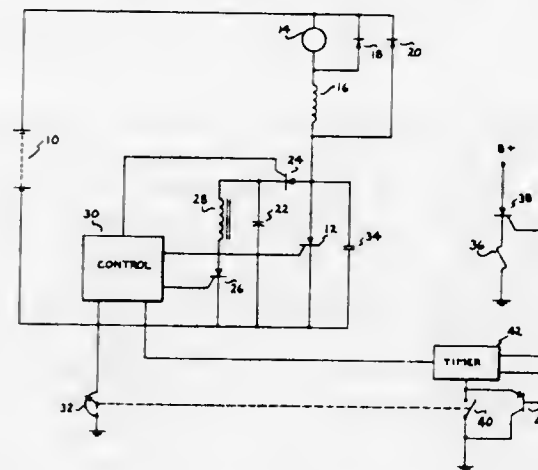
power between the DC source and the car motor. A smooth infinite variation from zero to full power is provided simply by varying the speed of the armature by any means such as a mechanical magnetic or hydraulic brake or an alternator which is useful in returning most of the power back to the battery.

### 3,826,959 BYPASS CONTACTOR CIRCUIT

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.  
Filed June 13, 1973, Ser. No. 369,510  
Int. Cl. H02p 1/00

U.S. Cl. 318-139

8 Claims



Means for preventing drive train slap in an electric vehicle during the closure of a thyristor bypass contactor. Upon closure of a manually-operated switch, a timer is energized. If the switch remains closed for a predetermined period means are energized to prevent commutation of a thyristor providing current to the vehicle motor, and current is supplied to a relay winding for closing the contacts bypassing the thyristor. Overriding means are provided to ensure energization of the relay coil in the event that the manually-operated switch is opened before the coil is fully energized.

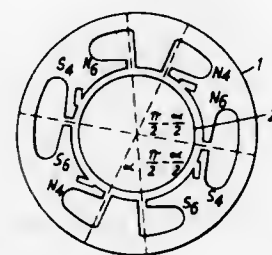
### 3,826,960 ELECTRIC MOTORS

Alexander Richard William Broadway; William Fong, both of Westbury-on-Trym, and Gordon Hindle Rawcliffe, Bristol, all of England, assignors to National Research Development Corporation, London, England  
Filed Feb. 22, 1972, Ser. No. 228,137  
Claims priority, application Great Britain, Mar. 26, 1971, 7920/71

U.S. Cl. 318-223

Int. Cl. H02k 17/10

6 Claims

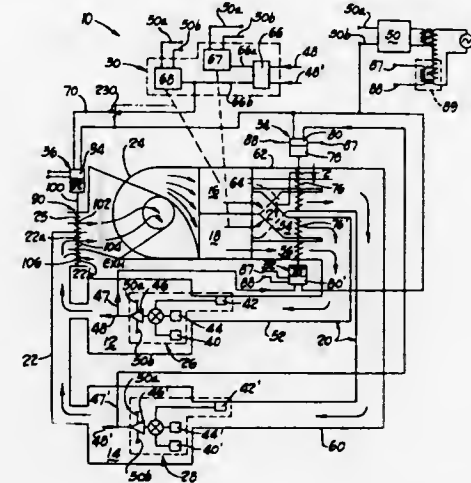


A single-phase alternating current, two-speed, shaded-pole induction motor having a squirrel cage rotor and having a stator winding switched to provide alternative pole-numbers by pole-amplitude modulation. The stator winding has a number of coils corresponding to the lower pole-number. The coil

### 3,826,963 DAMPER ACTUATOR CONTROLS FOR AIR CONDITIONING SYSTEMS

Jerome L. Lorenz, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio  
Filed May 30, 1972, Ser. No. 257,744  
Int. Cl. H02p 1/54

8 Claims

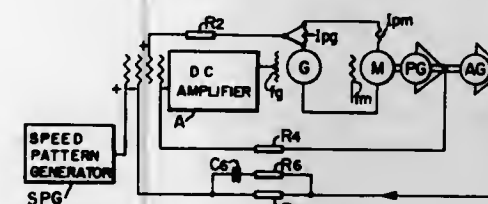


### 3,826,961 DEVICE FOR CONTROLLING SPEED OF DC MOTOR

Shunichiro Hayase; Selya Shima; Takeki Ando, all of Katsuta; Hiroaki Kuroha, Mito, and Toshiaki Kurosawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Sept. 28, 1972, Ser. No. 293,095  
Int. Cl. H02p 5/16

U.S. Cl. 318-308

6 Claims



In a speed control system comprising a combination of a dc generator and a dc motor in the Ward-Leonard connection, a tachogenerator connected with the dc motor, a speed pattern generator, and an amplifier for amplifying the deviation of the output of the tachogenerator from the output of the speed pattern generator, the output of the amplifier excites the field winding of the dc generator, the current of the dc motor is detected and positively fed back to the amplifier, and the differential values of the output of the tachogenerator and of the motor current are negatively fed back to the amplifier, respectively.

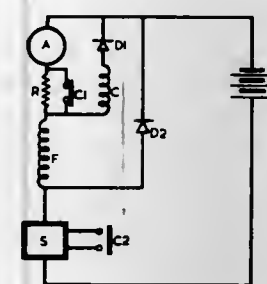
### 3,826,962 CONTROL OF ELECTRIC MOTORS FOR BATTERY-OPERATED VEHICLES

John Morton, Hazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Cheshire, England  
Filed May 30, 1973, Ser. No. 365,149  
Claims priority, application Great Britain, June 8, 1972, 26669/72

U.S. Cl. 318-376

Int. Cl. H02p 3/12

5 Claims



A control means for a series electric motor for, for example, battery operated vehicle usually includes a DC switch for connecting said motor across a battery, a flywheel diode for connecting across the motor and a reverse diode for conducting armature current resulting from regeneration. To avoid overheating when regeneration braking is used on long gradients a resistor is provided in the armature reverse-diode loop in combination with a contactor having a current coil sensitive only to reverse diode current and having normally closed contacts shorting the resistor.

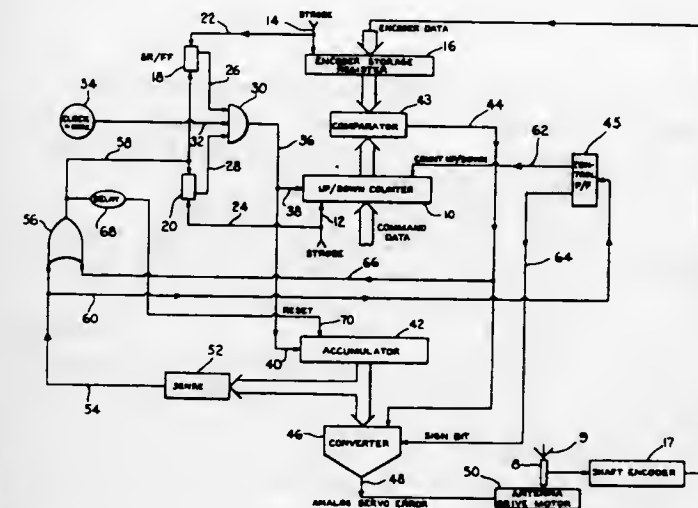
### 3,826,964 DIGITAL SERVO CONTROLLER

Frank Byrne, Cocoa Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,583  
Int. Cl. G05b 19/28

U.S. Cl. 318-602

5 Claims



A system for generating a signal for controlling the rotation of a shaft supporting an antenna so that the antenna is rotated the shortest angular distance from a present angular position to a new desired angular position. The system comprises a shaft encoder means which generates a digital encoder signal



indicating the present position of the shaft. A command signal is compared with the encoder signal to produce an analog signal for rotating the antenna. An error signal is produced for controlling the direction of rotation of the antenna.

3,826,965

### CONSTANT TANGENTIAL VELOCITY MOTOR CONTROL FOR A DISC RECORDING SYSTEM

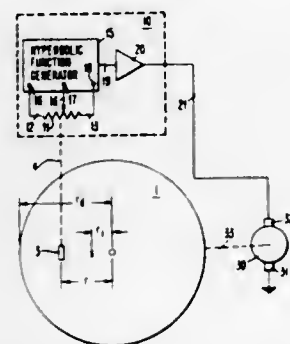
Charles Ronald Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,502

Int. Cl. H02p 7/68

U.S. Cl. 318—39

6 Claims



A disc recording system includes a motor control system for energizing a DC motor utilized as the prime mover of a recording disc. A transducer attached to a carrier, movable along a radius of the disc, is utilized for reading data from the disc or recording data onto the disc. A linear potentiometer is fixedly mounted along a radius of the disc and includes a movable wiper connected for movement with the transducer carrier. The potentiometer is connected in the feedback loop of a high gain amplifier function generator which produces an output voltage that is hyperbolic with respect to the position of the wiper along the length of the linear potentiometer. This hyperbolic output voltage is applied to a DC motor for providing substantially constant tangential velocity of the portion of the disc adjacent to the transducer. In applications wherein the transducer mechanically contacts the disc, increased torque opposes motor rotation as the transducer is moved farther away from the center of the disc. In these applications, a compensating motor driver is inserted between the hyperbolic function generator and the motor to provide an increase in electrical energy supplied to the motor in response to increased torque in opposition to motor rotation.

3,826,966

### DEVICE FOR DRIVING A STEPPING MOTOR

Nagahiko Nagasaka, and Katsuji Shinohara, both of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka-ken, Japan

Filed Aug. 6, 1973, Ser. No. 385,629

Claims priority, application Japan, Aug. 10, 1972, 47-80582; Mar. 16, 1972, 47-31120; Mar. 22, 1972, 47-33711

Int. Cl. H02k 29/04

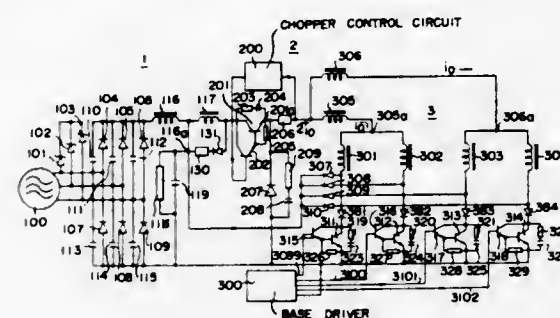
U.S. Cl. 318—696

14 Claims

A device for driving a stepping motor in which instead of provision of resistors in series to driving coils of the stepping motor, which is a conventional method of supplying electrical current to the driving coils, constant current choppers and reactors are provided, and reactive current is regenerated to a power source through diodes or circulated to the driving coils.

A device for driving a stepping motor comprising: a d.c. power source; constant current choppers for supplying constant current to the driving coils of the stepping motor, or a load, from the power source the driving coils being classified into three or four groups corresponding to three or four phases; reactors or, if necessary, the d.c. field coils of the

stepping motor; four transistor switches or a three-phase bridge inverter for regulating the flow of current to the driving coils; a flywheel diode or two diodes cross-connected for the circulation of energy residual in the load when the choppers are off; and a circuit for regenerating to the power source



energy residual in the driving coils when the switches or the inverter is off. In addition, the stator and rotor of the stepping motor are of the same type in construction as those of an inductor type synchronous rotor, and while driving coils corresponding to two phases being energized, all the driving coils are energized one phase by one phase.

3,826,967

### LOW LEAKAGE SECONDARY CIRCUIT FOR A POWER TRANSFORMER INCLUDING CONDUCTIVE STRIPS FORMING THE SECONDARY AND CONNECTIONS FOR RECTIFYING DIODES

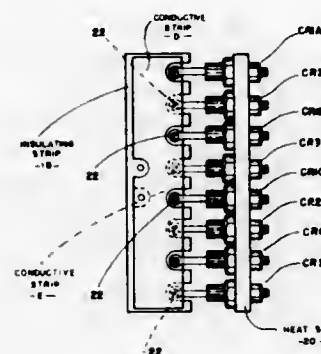
Bruce L. Wilkinson, Torrance, and Michael C. Stolz, Sherman Oaks, both of Calif., assignors to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed May 29, 1973, Ser. No. 364,831

Int. Cl. H02m 7/00

U.S. Cl. 321—8 R

5 Claims



A low leakage, secondary circuit, structure is provided for the power transformer in a high frequency power inverter system, or the like. The secondary circuit includes mutually insulated conductive strips which are placed in close proximity to one another, and which form the secondary winding of the power transformer, and which also form connections between the secondary winding and rectifying diodes included in the secondary circuit is minimized, thereby to minimize the leakage reactance in the circuit.

3,826,968

### ARRANGEMENT FOR SUPERVISING AN ELECTRIC CIRCUIT

Robertus Gerardus Visser, Amsterdam, Netherlands, assignor to Johan W. Visser, Amstelveen, Sprotlaan and Frans Verlinden, Breukeleveen, Herengweg, Netherlands

Filed Sept. 19, 1973, Ser. No. 398,799

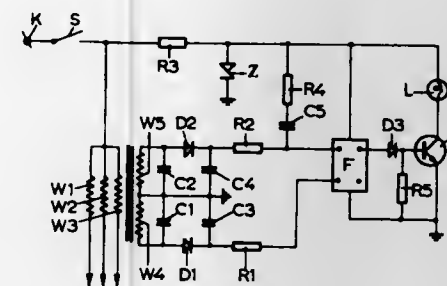
Int. Cl. G08b 21/00; H02h 3/18

U.S. Cl. 322—99

5 Claims

Arrangement for supervising an electric circuit in a vehicle wherein a primary winding inserted in the circuit to be super-

vised is coupled with a secondary winding having a grounded centre tap. The ends of the secondary winding are each connected through a diode with an associated smoothing condenser. The voltages occurring across the smoothing condensers are each supplied to one of the inputs of a bistable trigger. The trigger is set when the circuit is switched on. If the circuit



3,826,969

### HIGHLY STABLE PRECISION VOLTAGE SOURCE

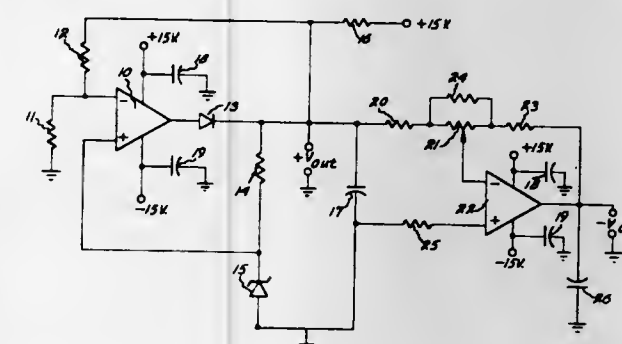
Charles W. Elchelberger, Schenectady, and Philip M. Garratt, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,239

Int. Cl. G05f 1/58

U.S. Cl. 323—19

16 Claims



A single polarity voltage source includes a single operational amplifier having its output connected through a serially connected first diode and resistor to the non-inverting input of the amplifier. The juncture of the resistor and amplifier input is connected through a zener diode to ground. The source output voltage of positive polarity is developed across the serially connected resistor and zener diode. This output voltage is highly stable and is used as the supply voltage for the zener diode to thereby provide an extremely stable current supply to the zener diode. A ratio of the resistances of high stability resistors in the inverting input and feedback circuits of the amplifier determines the amplifier gain and thus the magnitude of the output voltage relative to the zener diode voltage. A negative polarity output voltage is developed across the output of a second operational amplifier functioning as an inverter and having its inverting input connected through a potentiometer to the juncture of the serially connected first diode and resistor. The potentiometer is adjusted to match the value of the negative polarity output voltage to the positive polarity output.

3,826,970

### DEVICE FOR USE IN VARYING OUTPUT VOLTAGE

Shunzo Oka; Shunji Minami, and Takehide Takemura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

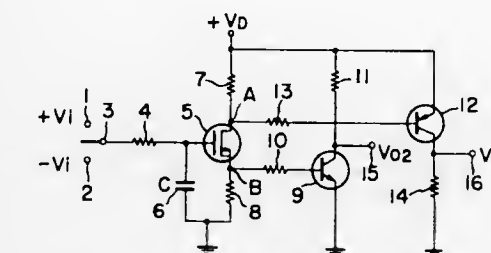
Filed Aug. 24, 1973, Ser. No. 391,068

Claims priority, application Japan, Aug. 29, 1972, 47-86823

Int. Cl. G05f 3/08

U.S. Cl. 323—19

2 Claims



A condenser is connected between the ground and the gate of a MOS type field effect transistor, while the base of an NPN transistor is connected to the source of the FET. The base of a PNP transistor is connected to the drain of the FET. When the condenser is charged and thus the gate potential of the FET is increased, then the potential at a first output terminal connected to the collector of the PNP transistor will be increased, while the potential at a second output terminal connected to the NPN transistor will be lowered. When the gate potential of the FET is lowered, then the potential at the first and second output terminals will be varied in the reverse fashion to that described earlier. Accordingly, the gradual variation in the charged level of the condenser may provide a gradual variation in the voltage across both of the output terminals.

3,826,971

### DETERMINATION OF SULFATE USING FERRIC ION-SELECTIVE ELECTRODE

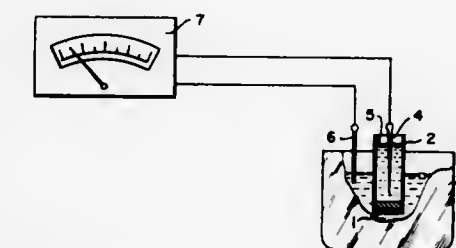
Raymond J. Jasinski, and Isaac Trachtenberg, both of Dallas, Tex., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 12, 1973, Ser. No. 350,444

Int. Cl. G01n 27/46

U.S. Cl. 204—1 T

5 Claims



Sulfate ion concentration in aqueous solution is determined by initially adding a known concentration of ferric ion to the solution, and adjusting the pH of the solution to a suitable value, whereby ferric ion is complexed by the sulfate ion. The activity of the remaining, uncomplexed ferric ion is then measured by means of a ferric ion-selective electrode comprising a glass of the formula  $Fe_xGe_ySb_zSe_n$ , where  $n$  is about 1.5 to 3.0,  $x$  is about 27 to 29,  $y$  is about 11 to 13 and  $z$  is about 59 to 61.



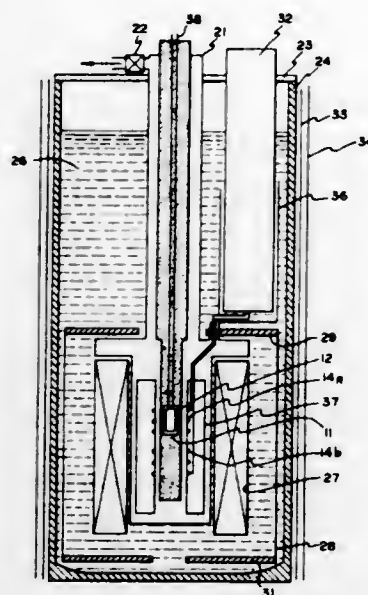
### 3,826,972 METHOD AND APPARATUS FOR DETECTING NUCLEAR MAGNETIC RESONANCE

Edmund P. Day, Palo Alto; William M. Fairbank, Menlo Park, and James E. Opter, Palo Alto, all of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 17, 1973, Ser. No. 389,320  
Int. Cl. G01n 27/78

U.S. Cl. 324—0.5 R

13 Claims



Apparatus for detecting nuclear magnetic resonance in which the sample is subjected to a high magnetic field in one direction to polarize the nuclear spins, then an alternating radio frequency magnetic field is applied to the sample and varied from a frequency below the resonant frequency of interest of the sample to a frequency above the resonant frequency, or vice versa, at a rate which provides adiabatic fast passage. A detector detects the change in the magnetization parallel to the direction of the magnetic field during said adiabatic fast passage. The method of detecting nuclear magnetic resonance which comprises polarizing the sample, changing the steady state value of the longitudinal magnetization and detecting the change in the steady state value of the longitudinal magnetization.

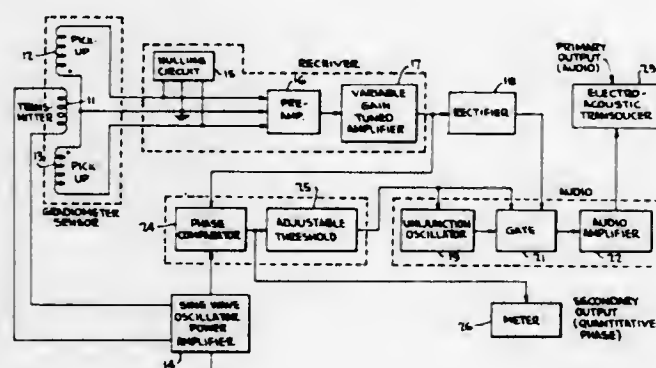
### 3,826,973 ELECTROMAGNETIC GRADIOMETER

Norman C. Pfau, Miami, Fla., assignor to Richard Benson, Miami, Fla., a part interest

Filed Jan. 10, 1973, Ser. No. 322,400  
Int. Cl. G01v 3/10; G01r 33/02

U.S. Cl. 324—3

15 Claims



An electromagnetic gradiometer includes a pair of coaxial pickup coils arranged on opposite sides of a transmitter coil for deriving a magnetic field in response to a fixed frequency

a.c. source. The pickup coils are connected to null circuitry which derives a substantially zero a.c. voltage in response to neither a ferrous nor a conductive body being in the field. In response to ferrous and conducting bodies being in the field, non-zero a.c. voltages having phases displaced relative to each other are produced. Detection circuitry responds to the amplitude and phase of the voltage derived from the pickup coils to generate aural outputs at two different frequencies which enable the ferrous and conductive bodies to be easily distinguished even though the device scans rapidly over an area. Quantitative phase information, derived by a phase comparator, is provided by a meter to provide a characteristic signature of the electrical and physical characteristics of a detected object, so the object can be identified. The nulling circuit includes a two-tap resistive voltage divider connected in shunt across output terminals of the two pickup coils. First and second of the taps are respectively connected via a resistor and a capacitor to a common terminal for the windings.

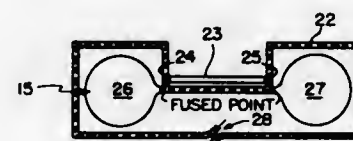
### 3,826,974 GAS TESTING APPARATUS OF THE MAGNETIC SUSCEPTIBILITY TYPE UTILIZING A GLASS COATED FILAMENT SUPPORT FUSED TO THE TEST BODY

Riad M. A. Kocache, Tunbridge Wells, and Danny F. Holman, Crowborough, both of England, assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,952  
Int. Cl. G01r 33/12

U.S. Cl. 324—36

6 Claims



Glass is used in the construction of gas testing apparatus of the magnetic susceptibility type for both protectively coating and mechanically connecting together parts of the apparatus exposed to the gas under test.

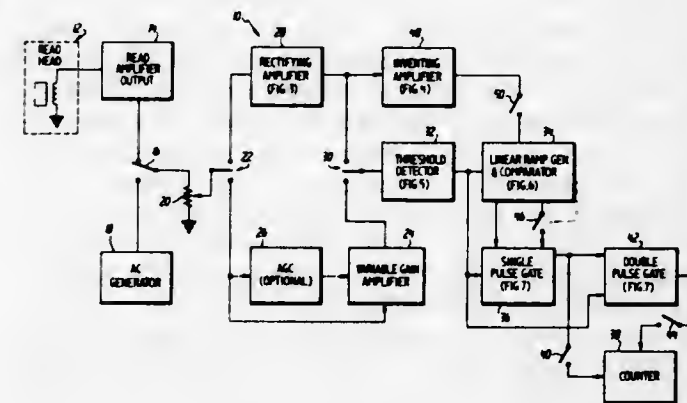
### 3,826,975 UNIVERSAL DROPOUT TESTER FOR MAGNETIC STORAGE MEDIA

Sidney B. Geller, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Commerce, Washington, D.C.

Filed Aug. 29, 1973, Ser. No. 392,608  
Int. Cl. G01r 33/00

U.S. Cl. 324—34 TA

16 Claims



A method and apparatus are disclosed for testing the dropout response of a magnetic recording medium by detecting and counting dropouts present on the recorded magnetic recording medium. A pulse (which may be on any one of a

number of fundamental frequencies) is recorded on the magnetic storage medium. When the level of the reproduced tone is below a given amplitude level, a timing apparatus consisting of a linear ramp generator and comparator is activated. The comparator produces an output pulse each time the level of the signal produced by the linear ramp generator falls below a given amplitude level. The production of each output pulse reflects that the dropout has persisted for a reference time unit. The number of pulses produced during any given dropout is a measure of the duration of the entire dropout in reference time units. The total number of pulses produced by the comparator is stored in a counter, the count reflecting the dropout performance of the magnetic storage media.

### 3,826,976 CALIBRATION APPARATUS AND METHOD FOR AN EDDY CURRENT PHASE SENSITIVE SELECTOR

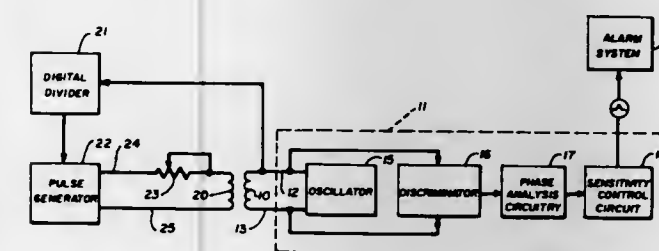
James F. Winston, Pittsburgh; William J. Greer, Glenshaw, and Malcolm S. Steele, Pittsburgh, all of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 110,459, Jan. 28, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,069

Int. Cl. G01r 33/12

U.S. Cl. 324—40

2 Claims



Electromagnetic inspection apparatus, such as a phase sensitive eddy current inspection device, is calibrated by providing voltage pulses of selected amplitude to a calibration coil or solenoid located in fixed proximity to the inspection apparatus test coil or solenoid, creating defect-simulating magnetic disturbances which are sensed by the test coil.

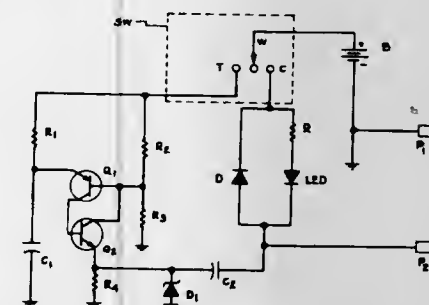
### 3,826,977 TEST SET FOR TRACING AND CHECKING THE CONTINUITY OF ELECTRICAL CIRCUITS

Chris C. Woodworth, 600 S. Dobson Rd., Suite 45, Mesa, Ariz. 85202

Filed May 24, 1973, Ser. No. 363,426  
Int. Cl. G01r 31/08

U.S. Cl. 324—51

5 Claims



Apparatus is disclosed for locating and tracing an electrical path through electrical conductors. A signal generator producing a multi-harmonic signal is connected to an electrical conductor under test. The signal includes amplitude modulated harmonics in the AM broadcast band whereby standard AM radio receivers can be used to detect the conductor transmitting the signal. Selectively energized additional circuitry provides a visual indication of a continuity check performed on the electrical conductor.

924 O.G.—51

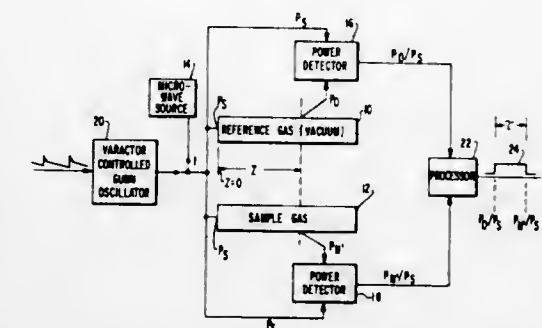
### 3,826,978 WAVEGUIDE REFRACTOMETER

Arnold J. Kelly, Princeton Junction, N.J., assignor to Dynalys of Princeton, Princeton, N.J.

Filed Apr. 3, 1973, Ser. No. 347,525  
Int. Cl. G01r 27/04

U.S. Cl. 324—58.5 A

15 Claims



A waveguide driven near its cut-off frequency is used to measure the refractivity of a gas flowing through the waveguide. The lateral dimensions of the waveguide are on the order of a wavelength of the driving signal. In one embodiment, an oscillator drives a reference waveguide containing a vacuum or gas of known refractivity while the same oscillator drives an identical parallel waveguide through which flows a gas of unknown refractivity. The normalized propagated power levels at the same point along the lengths of the two waveguides are measured in order to determine the unknown refractivity. In a preferred variation, the driving frequency is linearly swept from above the cut-off frequency of the evacuated waveguide, and the difference in the frequencies at which the propagated power levels at the measuring point reach a predetermined level in each of the waveguides is used as a measure of the unknown refractivity. The difference in times at which these power levels are reached can also be used as a measure of the unknown refractivity. In other embodiments, the same principle of operation of a waveguide near cut-off frequency is utilized in single and multiple waveguide assemblies to measure the unknown refractivity.

### 3,826,979 CAPACITIVE DETECTOR DEVICE

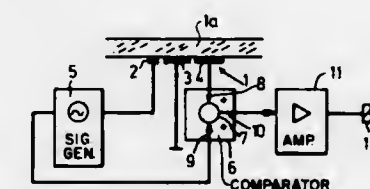
Helmut Steinmann, Baden-Baden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 18, 1973, Ser. No. 370,963  
Claims priority, application Germany, Aug. 10, 1972, 2239359

Int. Cl. G01r 27/26

U.S. Cl. 324—61 R

8 Claims



A stray field capacitor with three plates edge to edge in a row has its center plate grounded, and normally most of the stray field of a signal applied to one of the end plates is between that end plate and the center plate which shields the other end plate. A reverse phase signal of proper amplitude may be used to reduce to zero the quiescent output of a receiver attached to the other end plate of the capacitor. If the capacitor plates are mounted on the inside of the windshield of a motor vehicle, the receiver will switch on the windshield wipers when moisture collects on the windshield.



3,826,980

**ENAMELED ELECTRICAL SENSING PROBE**

Hermann Deichmann, and Herrmann Velt, both of Schwetzingen, Germany, assignors to Pfaudler-Werke AG, Schwetzingen, Germany

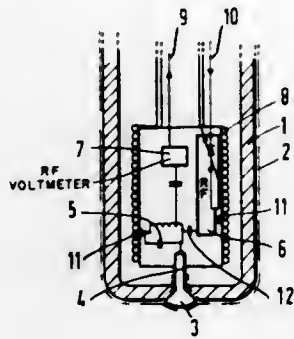
Continuation of Ser. No. 693,928, Dec. 27, 1967, abandoned.

This application Dec. 4, 1969, Ser. No. 882,292

Int. Cl. G01r 27/26

U.S. Cl. 324—61 P

6 Claims



A transducer assembly, to measure dielectric and similar electrical properties of materials is constructed in the form of a tubular electrode of enameled steel, closed off at the bottom with a second, button electrode set into the bottom closure, insulated from the tubular electrode by the enamel, and further covered by a unitary enamel layer to resist high temperature, corrosion and the like; and electronic measuring components including an RF generator circuit, tuned circuits and the like coupled to the electrodes and located within the tubular electrode.

3,826,981

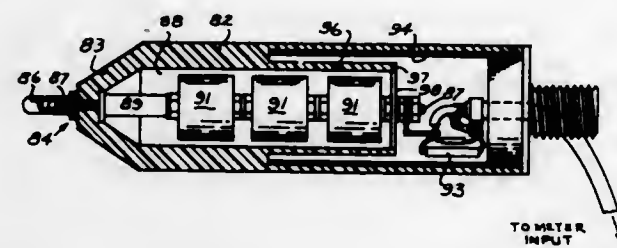
**SOLID-STATE HIGH IMPEDANCE METER SYSTEM**

Hugh C. Ross, 11915 Shadybrook Ct., Saratoga, Calif. 95070  
Division of Ser. No. 726,452, May 3, 1968. This application  
Nov. 13, 1972, Ser. No. 305,721

Int. Cl. G01r 31/02, 1/06

U.S. Cl. 324—72.5

4 Claims



Presented is a system, including apparatus and methods of operation thereof, for effecting isolated measurement and sensing of line to ground voltages, differential voltages, currents, insulation leakage and resistances, Corona levels, and other parameters in insulated conductors and related systems associated with low and high power, low and high voltage electrical and electronic systems. The system includes a high input impedance meter unit actuated by a solid-state amplifier circuit including a pair of feedback circuits that cooperate with transistor amplifiers to maintain substantially constant the ratio of input and output from the circuit over a wide range of AC and DC voltages and currents. In its different applications, the high input impedance meter including solid-state amplifier circuit is used in conjunction with a variety of probes, both low voltage and high voltage types, for measurements of various voltages, and may be utilized with a proximity probe for direct sensing of AC fields. The high input impedance of the meter movement and solid-state circuit also permits the use of Corona voltage level and detecting probes for both high voltage direct and low voltage indirect or proximity measurement of various levels of voltages. Inasmuch as it is important that

systems of this type be predictably accurate and operative, the system also includes a high voltage portable test unit to test the voltmeter and probes. To insure complete reliability of values being measured, the high voltage portable test source itself is subject to test to determine that it is operating properly before it is used to test the voltmeter and probes, and for this purpose a high voltage megohmmeter insulation leakage current-emission detector is provided to test the high voltage portable test voltage source, and to measure the high voltage insulation associated with the high voltage point or terminal being measured. Inasmuch as the high input impedance metering system is used in conjunction with high voltages, a collapsible and detachable insulating "hot stick" is provided to isolate the high voltage components from human contact while in use.

3,826,982

**INDICATOR CIRCUIT FOR MONITORING PULSES INITIATED IN A REMOTE METER READING SYSTEM**

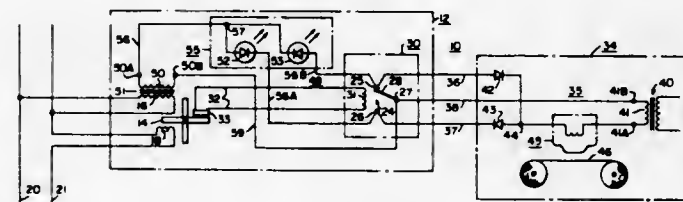
Theodore M. McClelland, Cary, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1973, Ser. No. 356,668

Int. Cl. G01r 13/04

U.S. Cl. 324—113

3 Claims



An indicator circuit for monitoring pulses initiated in a remote meter reading system includes a pair of light emitting diodes which are lit by the combined energization of the voltage section of an induction meter and the alternate positions of a pulse generating switch.

3,826,983

**DIGITALLY SCALED DIGITAL VOLTMETER**

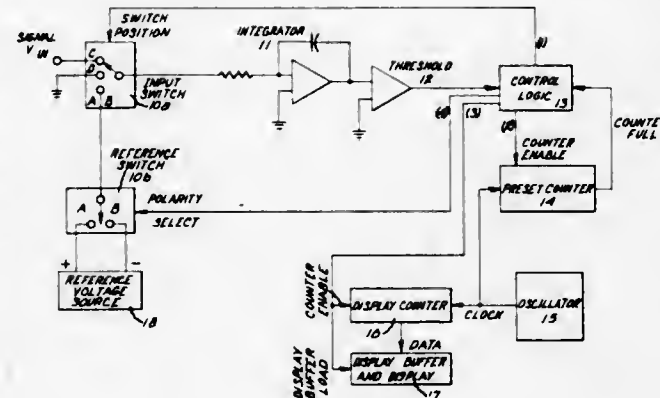
Philip M. Garratt, Amsterdam, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,137

Int. Cl. G01r 17/06; H03k 13/10

U.S. Cl. 324—99 D

30 Claims



An up-down integrator is connected by means of control logic to a preset counter in an up-integration period wherein the count set in the preset counter determines the full scale on the voltmeter. An input D.C. voltage signal having a magnitude proportional to an analog quantity measured by the voltmeter is supplied to the input of the integrator during the up-integration process. Upon the counter reaching the preset

count of clock pulses supplied thereto, the control logic removes the input signal from the integrator and switches a fixed D.C. reference voltage thereto during a down-integration period. During the down-integration process, a second counter counts the clock pulses and when the integrator output voltage reaches zero, a threshold circuit at the output of the integrator detects the zero crossover and the control logic removes the reference input from the integrator and connects it to ground as well as transferring the final count output of the second counter to a display which indicates this final count that represents the magnitude of the measured quantity.

3,826,984

**MEASURING DEVICE FOR THE DYNAMIC MEASUREMENT OF SEMICONDUCTOR PARAMETERS AND METHOD OF MAKING SUCH A DEVICE**

Richard Epple, Schwaigern, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation of Ser. No. 13,961, Feb. 25, 1970, abandoned.

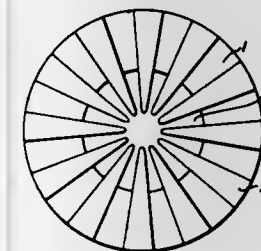
This application Jan. 24, 1972, Ser. No. 220,491

Claims priority, application Germany, Feb. 28, 1969, 1910314

Int. Cl. G01r 1/06, 31/02

U.S. Cl. 324—158 P

10 Claims



A measuring device for the dynamic measurement of semiconductor parameters comprises a plurality of flat metal contacts attached to a supporting member, the contacts having contact portions on one flat surface of each contact. Preferably the supporting member is recessed and the contacts extend into the recess. A method of making such a device is also disclosed.

3,826,985

**SELF-POWERED TACHOMETER CIRCUIT**

Daryl D. Wiley, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Pa.

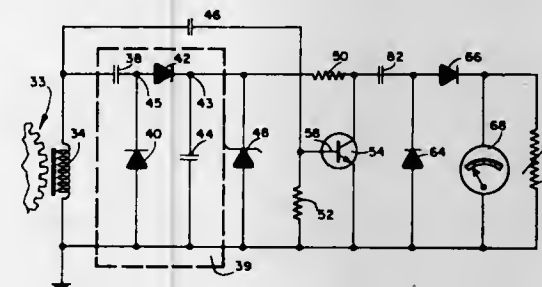
Continuation of Ser. No. 149,937, June 4, 1971, abandoned.

This application June 20, 1973, Ser. No. 371,841

Int. Cl. G01p 3/48

U.S. Cl. 324—173

5 Claims



A self-powered tachometer circuit utilizing variable reluctance pickup means applies the induced signal to a bridge network for full wave rectification after the maximum amplitude of the voltage has been limited and the signal differentiated to obtain pulses of uniform amplitude and uniform duration. The fully rectified signal is then applied to a meter for indicating repetition rate. Another embodiment using vari-

able reluctance pickup means applies the induced pulses to a voltage doubler circuit for fast voltage pickup and operates a transistor switching circuit to drive the meter. A capacitor discharges through the transistor with input pulses of one polarity while the capacitor is charged through the meter with pulses of the opposite polarity.

3,826,986

**REMOTE CONTROL ADAPTER**

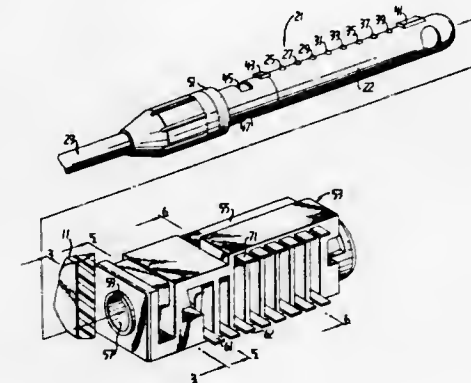
Gene T. Brown, Orlando, and John V. Whiting, Altamonte Springs, both of Fla., assignors to Scope Incorporated, Reston, Va.

Filed Aug. 17, 1972, Ser. No. 271,779

Int. Cl. H04b 1/38

U.S. Cl. 325—16

6 Claims



An adapter for use in a two-way radio wherein the antenna of the radio is removable from the housing of the radio. A well extends from the point of the antenna connection to within the housing and includes a plurality of normally closed switches relating to the radio circuitry. An elongated plug is rotatably insertable into the well and, upon insertion, the plug is of a dimension so as to bear against and open the normally closed switches within the well. A plurality of contacts mounted along the plug are located so as to mate with associated terminals of the now open switches when the plug is rotated within the housing. A cable is connected to the outer end of the plug and has a plurality of electrical leads connected to the various contacts on the plug. The cable extends outwardly from the radio housing and, therefore, provides a means for connecting the control of the radio to some remote control device.

3,826,987

**MINIATURE RADIO RECEIVER**

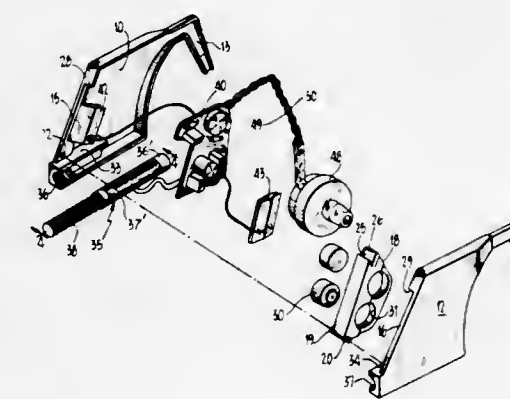
Jack D. Stevens, 125 Willow Dr., Danville, Calif. 94526

Filed May 30, 1973, Ser. No. 365,313

Int. Cl. H04b 1/08

U.S. Cl. 325—361

8 Claims



A miniature radio receiver adapted to be worn over the ear of the user. The electrical components of the radio receiver are housed in a casing comprising two complementary casing



portions. An antenna has an externally threaded adjustment element protruding rearwardly of the housing. Each casing portion is provided with a mating internally threaded half-nut which cooperates with the adjustment element external threads to enable manual station selection. The radio receiver is powered by a hearing aid battery mounted in a pivotable holder at the rear of the casing.

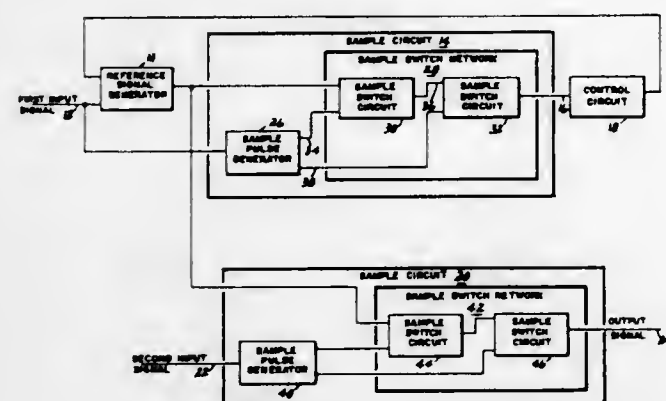
### 3,826,988 PHASE DETECTOR

Robert G. Wise, Loveland, and Harold Dean Wiebe, Sharonville, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sept. 13, 1973, Ser. No. 396,828  
Int. Cl. H03b 3/04

U.S. Cl. 328—133

13 Claims



An apparatus is disclosed for producing an output signal as a function of the phase difference between two input signals of the same frequency. A signal generator is responsive to one of the input signals to produce a ramp function signal having a zero magnitude located approximately in the center of said ramp function. A first sample circuit samples the ramp function in response to the first input signal to produce a control signal. A control circuit is responsive to the control signal and connected to the signal generator for synchronizing the zero magnitude of the ramp function with a predetermined point in each period of the first input signal. Consequently, there is a fixed relationship between the ramp function and the first input signal which is adaptively maintained by the control circuit. A second sample circuit samples the ramp function in response to the second input signal and produces an output signal representing the phase difference between the input signals.

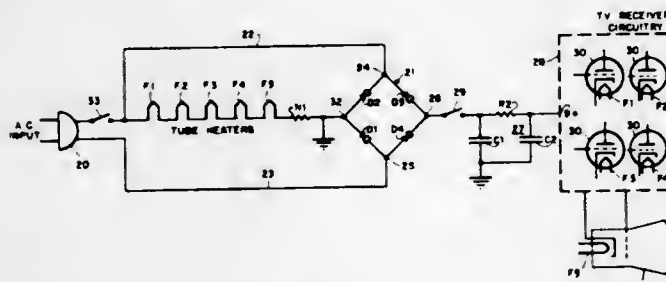
### 3,826,989 TUBE FILAMENT POWER SUPPLY

Emerald Eugene Keith, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 30, 1973, Ser. No. 346,543  
Int. Cl. H03k 19/82

U.S. Cl. 328—270

3 Claims



A power supply circuit for supplying power to a circuit having therein vacuum tubes which require a heater filament to

heat the cathode to emission temperature. The power supply circuit has a bridge rectifier having four arms; each arm containing a rectifying element. As in conventional bridge rectifier circuits, two opposite ports of the bridge are connected to the a.c. power source and the remaining two ports are connected respectively to the ground and to the vacuum tube circuitry to supply B+ voltage to the circuitry. This invention places the heater filament circuit between the grounded port of the bridge rectifier and one of the a.c. power leads to provide half wave rectified power to the tube filaments, using a rectifying element of the bridge circuit to obtain the half wave rectified tube filament power, from the a.c. power source independently of B+ voltage/circuit operation.

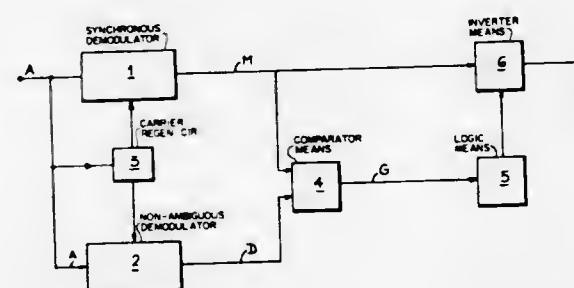
### 3,826,990 ANTI PHASE-AMBIGUITY FOR PHASE-SHIFT KEYING BINARY TRANSMISSION SYSTEMS

Luigi Pera, Oegstgeest, Netherlands, assignor to Organization Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France

Filed Jan. 26, 1973, Ser. No. 327,112  
Claims priority, application Belgium, Jan. 28, 1972, 113349  
Int. Cl. H03d 3/18

U.S. Cl. 329—50

5 Claims



A circuit arrangement to eliminate the phase ambiguity at a receive terminal in phase-shift keying binary transmission systems. The received PSK binary signal is simultaneously applied to a conventional synchronous demodulator and a so-called non-ambiguous demodulator which may be in analog or digital form. The outputs from both demodulators are compared to provide a signal having a first state when both demodulator outputs are in phase and having a second state when said demodulator outputs are in phase opposition. Logic means are provided to detect the state of the comparison signal in order to control inverter means adapted to reverse the demodulated original message from the synchronous demodulator when said comparison signal is in its second state.

### 3,826,991 PROCESS CONTROLLER HAVING ELECTRONIC MANUAL CONTROL

James A. Hogan, Hatfield, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

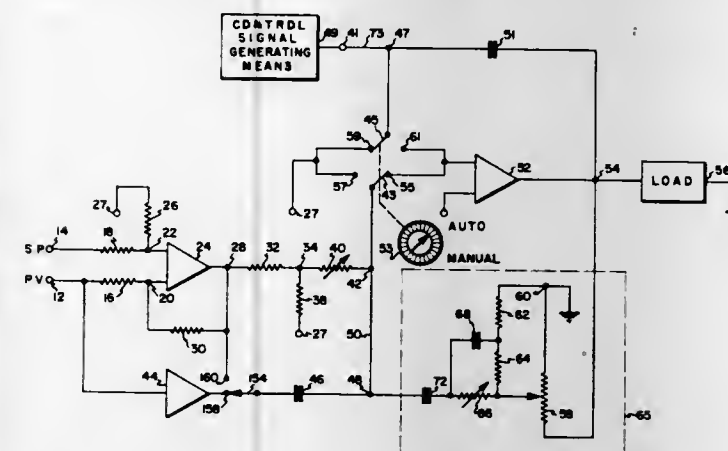
Filed Nov. 9, 1972, Ser. No. 305,068  
Int. Cl. H03f 1/36

U.S. Cl. 330—1 A

5 Claims

Circuitry operating from a uni-polar power supply having an error amplifier and a controller amplifier is arranged to modify a process variable signal and a set point signal and produce an output signal which is applied to a load element for controlling a process. The error amplifier applies the process vari-

able signal and the difference between the process variable signal and the set point signal to the controller amplifier. A



manually operated signal generator selectively provides a control signal for effecting a predetermined variation in the output signal.

### 3,826,992 DEVICE FOR AMPLIFICATION OF A COHERENT OPTICAL SIGNAL

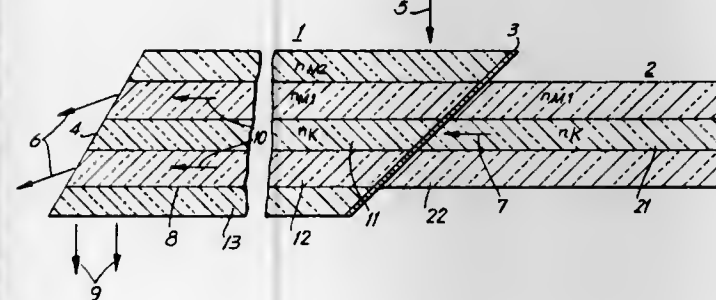
Wolfgang Friedl, Neckargemund, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany

Filed Mar. 23, 1973, Ser. No. 344,282  
Claims priority, application Germany, Apr. 7, 1972, 2216747

U.S. Cl. 330—4.3

Int. Cl. H01s 3/02

3 Claims



A device for the amplification of a coherent optical signal including a light amplifying conductive filament having an optically passive core encompassed by a sleeve including a selective fluorescent optically active material, which is in turn encompassed by an optically passive outer sleeve; a second light-conductive propagating filament being positioned in axial alignment therewith and formed of a core and encompassing sleeve of optically passive materials; and a spectroscopic divider being interposed between said amplifying and propagating light-conductive filaments.

### 3,826,993 METHOD FOR RAPIDLY EXCITING AND SUSTAINING OSCILLATIONS IN A RESONANT SYSTEM

Roby Byron White, Cumberland, R.I., assignor to Brafton Corporation, Medfield, Mass.

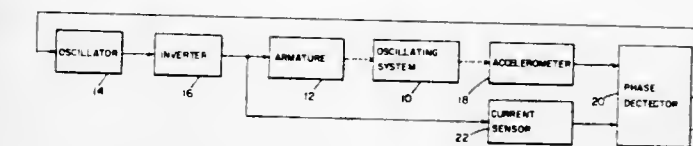
Filed Sept. 18, 1970, Ser. No. 73,461  
Int. Cl. B01d 51/08; H03b 3/04

U.S. Cl. 331—1

4 Claims

Method and apparatus for initiating and sustaining oscillations in a system having a free oscillatory period, comprising an oscillating means (preferably including a relaxation oscillator of the resistor-capacitor type) connected to apply a periodic driving force to the system, the oscillating means hav-

ing an intrinsic period approximately equal to the period of the system, a detector connected to sense operation of the oscillating means and the oscillations, if any, of the system and to detect a phase difference therebetween, and circuitry with



an input connected to the detector, the circuitry connected to the oscillating means to be effective to modify the oscillations of the oscillating means so as to maintain the phase difference within predetermined limits.

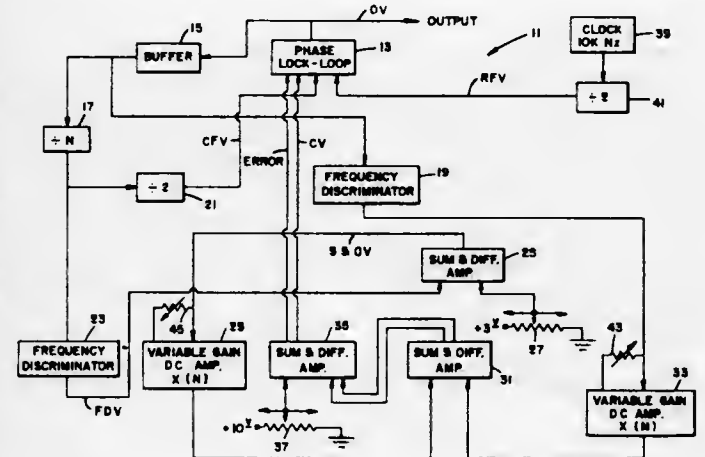
### 3,826,994 PHASE LOCK-LOOP FREQUENCY SYNTHESIZER

Harley J. Holliday, 83 Saratoga St., Quincy, Mass. 02171

Filed July 2, 1973, Ser. No. 375,414  
Int. Cl. H03b 3/04

U.S. Cl. 331—11

7 Claims



A phase lock-loop synthesizer having a coarse voltage adjustment loop, an error loop, and a phase comparison loop. The coarse voltage adjustment loop includes in series a phase lock-loop device, buffer, frequency discriminator, variable gain D.C. amplifier, sum and difference amplifiers. The error loop includes in series the phase lock-loop device, buffer, divide by N circuit, frequency discriminator, sum and difference amplifiers and variable gain D.C. amplifier. The phase comparison loop includes the phase lock-loop device, buffer, divide by N circuit, divide by 2 circuits and a clock. The phase lock-loop frequency synthesizer can select any one of many operating frequencies and automatically maintain the preselected frequency. The coarse adjustment loop functions to generate a control voltage to maintain the desired frequency from the synthesizer. The error voltage loop functions to detect and correct errors between the programmed frequency and the output frequency and to change the output frequency on demand. The phase comparison loop compares the output frequency with the standard frequency.

### 3,826,995 FREQUENCY GENERATORS

William Francis Miller, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Oct. 30, 1972, Ser. No. 301,976

Claims priority, application Great Britain, Oct. 28, 1971, 50107/71

Int. Cl. H03b 21/02

U.S. Cl. 331—38

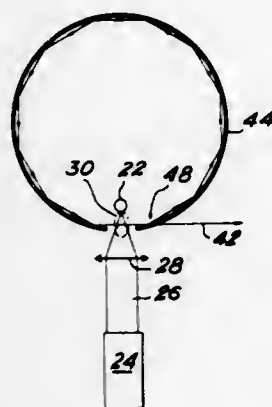
6 Claims

A frequency generator produces a comb-like spectrum of frequencies, each of the frequencies being derived from a sin-

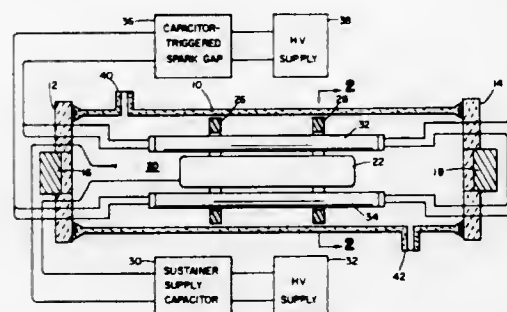


[illegible]

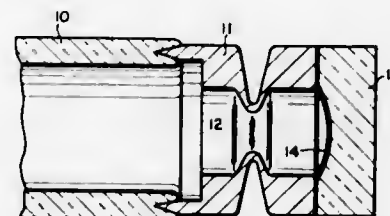
## 17 Claims



## 24 Claims

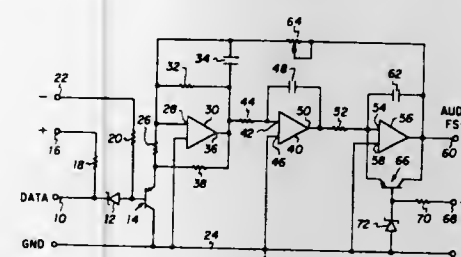


### 3 Claims



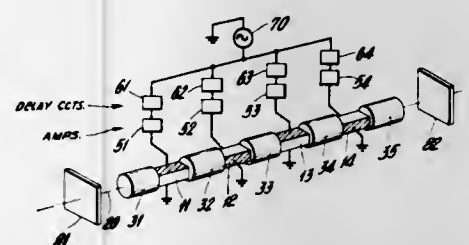
1365

### 3 Claims



## 10 Claims

## U.S. Cl. 332-7.51



## 11 Claims

U.S. Cl. 339-180

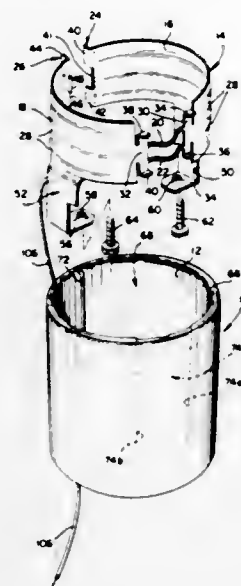
## 10 Claims

An Edison-type lamp socket comprises a cylindrical insulating housing receivably mounting a contact shell formed of a pair of matching half sections which are connected at one of their respective ends by a pair of parallel spaced spring straps

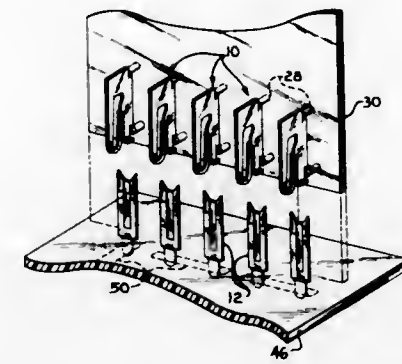


which allow the contact shell to expand from its unloaded generally-elliptical shape into circular conformity with the

point. The blade-like male terminal is inserted between the spring arm and the contact point and includes a groove for



receiving the end of the folded cantilever spring arm to hold it in proper position when the terminals are assembled.



lamp base when the latter is threaded into the socket to provide firm resilient circumferential contact with the lamp base.

### 3,827,004 CIRCUIT BOARD PIN

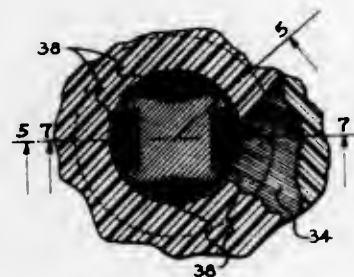
Millie Vanden Heuvel, and Will Thelissen, both of S-Hertogenbosch, Netherlands, assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Jan. 18, 1973, Ser. No. 324,755  
Claims priority, application Netherlands, May 10, 1972, 7206313

Int. Cl. H05k 1/04

U.S. Cl. 339—221 R

6 Claims



A pin for mounting in a hole in a circuit board without injuring plating in the hole or connections between such plating and multi-layer circuitry in the board. The pin includes pairs of collapsible fins which are bent toward each other when inserted into the hole.

### 3,827,005 ELECTRICAL CONNECTOR

Lindsay Carlton Friend, Camp Hill, Pa., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed May 9, 1973, Ser. No. 358,711

Int. Cl. H01r 13/12

U.S. Cl. 339—258 P

3 Claims

An electrical connector including a male and a female terminal both stamped-formed from uniform thickness metal stock. The flat female terminal includes a folded cantilever spring arm which holds the male terminal against a contact

### 3,827,007 HERMAPHRODITIC ELECTRICAL CONNECTOR WITH FRONT RELEASABLE AND REAR REMOVABLE ELECTRICAL CONTACTS

Leroy W. Fairbairn, and John W. Dyce, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

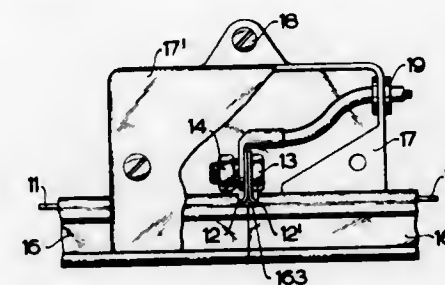
Filed Mar. 26, 1973, Ser. No. 344,692

Int. Cl. H01r 25/00

U.S. Cl. 339—49 R

2 Claims

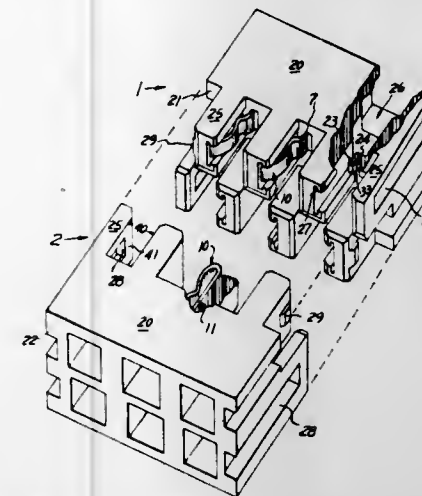
A one-piece molded hermaphroditic electrical connector for a multi-conductor cable. The connector includes a plurality of contacts, each of which are front releasable and rear removable. The contacts are self-retaining within the one-piece molded housing so that the contact does not unseat dur-



For connecting bus bar sections, which are formed of conducting strips arranged in a channel shaped insulating member, the successive strips are connected by bending the ends of the strips upwardly in a direction opposite the opening into the channel at right angles and connecting the angular parts by bolts. The connection may be enclosed in a casing, through which a lead-in may be connected to the bolt and thereby to the parts of the bus bar.

ing mating. The housing further includes a molded-in projection and slot that engage a corresponding slot and projection

movements towards and away from each other are controlled by a latching lever system, the operating motions for said



in another identical housing, when mated therewith, to retain the two housings together.

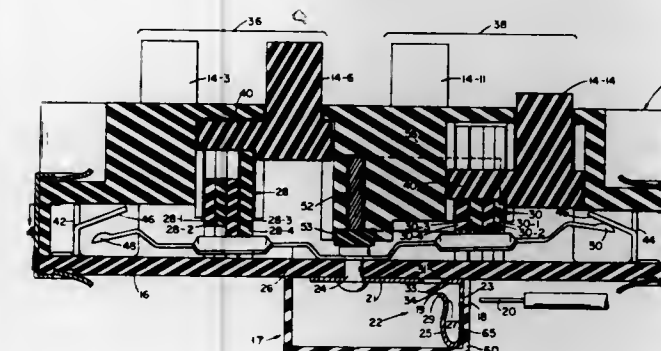
### 3,827,008 PUSHBUTTON SLIDE SWITCH

James A. Mallett, Dorchester, and Edward B. Mitchell, Belmont, both of Mass., assignors to Ark-Les Switch Corp., Watertown, Mass.

Division of Ser. No. 130,604, April 2, 1971, Pat. No. 3,719,786. This application Nov. 17, 1972, Ser. No. 307,483

U.S. Cl. 339—95 D

2 Claims



A pushbutton slide switch includes two sets of switches, two sets of slides in side by side relationship, each slide set including actuating slides movable for selectively actuating a switch within the corresponding switch set, and interlocking disengagement means comprising an interlock connector and an interlock slide in each slide set. The interlock slides are movable by the connector for simultaneous disengagement of at least one switch in a first switch set in response to closing a switch in the other switch set.

### 3,827,009 ELECTRIC SWITCHING DEVICES

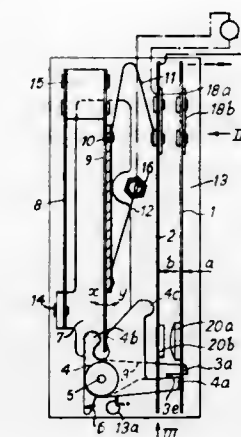
David Ellis Thomas, Enfield, England, assignor to Sangamo Weston Limited, Enfield, Middlesex, England

Filed Jan. 15, 1973, Ser. No. 323,428  
Claims priority, application Great Britain, Jan. 25, 1972, 3496/72

U.S. Cl. 337—77

13 Claims

An electric relay operative to effect switching operations at predetermined amplitude levels of a controlling current whose amplitude fluctuates relatively slowly with respect to time, such as the output of a light sensitive device subjected to daylight. The relay comprises a pair of switch contacts whose



latching lever system being provided by a bimetal element which is subjected to heat from an electric heater arranged for energisation by the fluctuating control current.

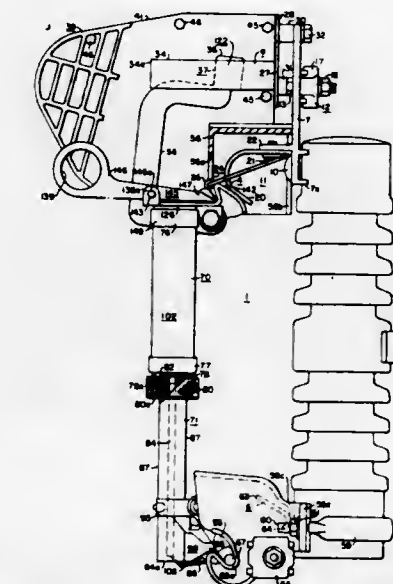
### 3,827,010 COMPOSITE SECTIONALIZED OPEN-TYPE DROP-OUT-TYPE FUSIBLE OUTPUT WITH SERIES ENCLOSED CURRENT LIMITING FUSE

Frank L. Cameron; John W. Carothers, both of Irwin, and Woodrow G. Shaw, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1972, Ser. No. 232,129  
Int. Cl. H01h 71/20

U.S. Cl. 337—168

26 Claims



A sectionalized open-type drop-out fusible cutout is provided having a high-current interrupting section, a mechanically-connected low-current interrupting section in electrical series therewith, the low-current section including a tensioned fuse and attached fuse-link cable, which, when fused, releasing the cable, effecting the breaking of the associated toggle linkage, and drop-out indicating action of the open-type fusible device.

A high-current section includes a current-limiting fuse section, which is operative only during the interruption of heavy fault currents, and not operable during the interruption of relatively low overload currents, which overload currents are interrupted solely by the low-current section. The low-current section is of the expulsion type, having a fuse-link cable extending out through the lower open end of the fuse tube thereof, and maintaining the toggle linkage in its underset condition. The fusing of the low-current interrupting section, ef-



fects fusing of the fuse link and releases the fuse-link cable, and consequent breaking of the toggle linkage to permit consequent drop-out action of the open-type fusible cutout device.

The aforesaid composite sectionalized open-type fusible device may be associated, with a load-break extension device, which will permit manual load breaking of load currents without either of the series fuse sections operating. Preferably, associated with the load-break device is an auxiliary arc-chute structure, serving to interrupt the load current within the arc-chute structure upon manual operation of the cutout device.

3,827,011

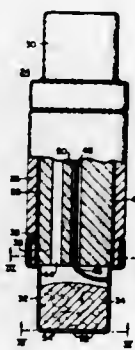
**FUSE ASSEMBLY FOR OIL-FILLED TRANSFORMERS**  
Harry R. Braunstein, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1973, Ser. No. 339,243

Int. Cl. H01h 85/18

U.S. Cl. 337—276

1 Claim



A fuse assembly including a body member with condenser caps attached to each end thereof. A fuse wire is connected to the condenser caps and extends through one opening in a block of arc-extinguishing material which is contained within the body member. Another opening in the block is positioned parallel to the opening containing the fuse wire. With moderate fault currents, arcing as the fuse wire melts is confined within the opening containing the fuse wire. With large fault currents, the arc-extinguishing material between the two openings ruptures, thus enlarging the arcing passageway to reduce the arc energy. Hot gases and vapors generated during arcing melt solder which seals openings in the condenser caps, thus the gases and vapors may pass through the unsealed openings to relieve pressure within the fuse assembly.

3,827,012

**FIRE DETECTOR**

Jack Duggan, Willowdale, Ontario, Canada, assignor to Fire Devices Manufacturing Limited, Willowdale, Ontario, Canada

Filed Apr. 10, 1973, Ser. No. 349,651

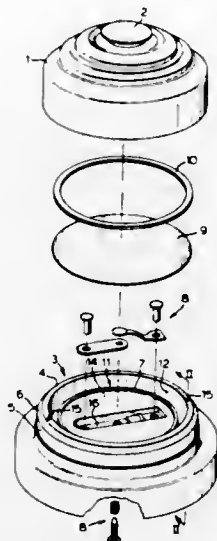
Int. Cl. H01h 37/40

U.S. Cl. 337—320

3 Claims

A fire detector has a diaphragm within a chamber and an air passage between the chamber and the ambient within which the fire detector is mounted so as to allow air flow at a predetermined rate. The fire detector has electrical contacts arranged beneath the diaphragm so that an increase of air pressure against the diaphragm causes the diaphragm to move against the contacts and to close the same. Thus, the fire detector is capable of responding either to a rate of rise of temperature faster than a predetermined rate, or to a temperature higher than a predetermined temperature. The diaphragm - which is a polyimide film material - overlies a ridge near its periphery and is secured thereto by a gasket overlying the periphery of the diaphragm and co-operating with the ridge so as to secure the diaphragm. A bushing screw having a bore ax-

ially formed therein is threaded into the air passage, and air flow from the air chamber is determined by the size of the



bore in the bushing screw. Re-calibration is accomplished simply by replacing the bushing screw with one having a different sized bore.

3,827,013

**THERMOSTAT WITH MOUNTING MEANS**

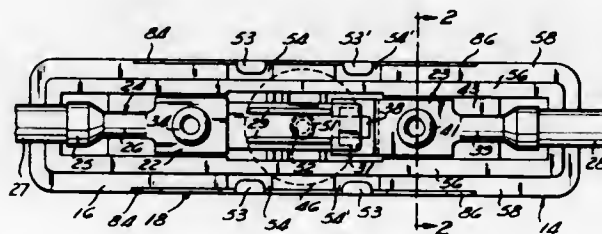
Walter C. Kowalski, and Edward G. Them, both of Mansfield, Ohio, assignors to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed July 11, 1973, Ser. No. 378,280

Int. Cl. H01h 37/52

U.S. Cl. 337—354

7 Claims



There is provided an improved snap disc-operated thermostat switch structure which is characterized by an improved disc retainer and slotted plate mounting structure. The improved disc retainer not only holds the body members together for enclosing the switch mechanism, terminals and leads, but includes slotted plate mounting means projecting outwardly therefrom for insertion into a slot in a plate, e.g., a sheet metal plate as a radiator housing, and snap locking engagement therewith. In more specific embodiments, resilient finger means are provided for coaction with the mounting means to hold the thermostat tightly against the slotted plate, for example, to prevent annoying rattling.

3,827,014

**THERMAL PROTECTOR**

Glenn E. Wehl, North Canton, Ohio, assignor to Portage Electric Products Inc., North Canton, Ohio

Filed Sept. 24, 1973, Ser. No. 399,819

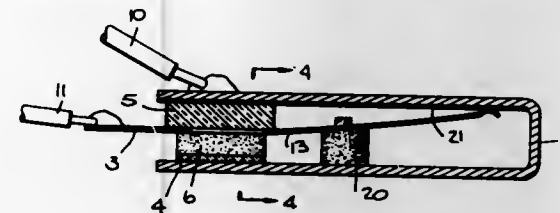
Int. Cl. H01h 37/76

U.S. Cl. 337—407

7 Claims

A thermally actuable switch is provided with two conductive members having a first portion of each selectively contacting and a second portion of each separated by an insulat-

ing material, at least one of the conductors being spring biased to one position and being held in a second position by a tem-



perature sensitive material which collapses when a predetermined temperature has been reached.

3,827,015

**MOUNTING MEANS FOR THERMAL SWITCHES**

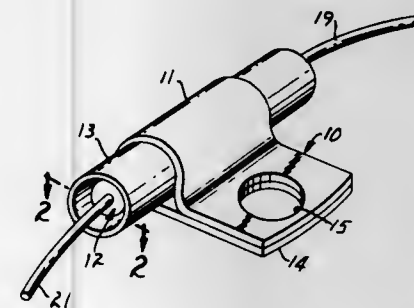
James H. Bail, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 13, 1973, Ser. No. 350,740

Int. Cl. H01h 37/04

U.S. Cl. 337—414

12 Claims



A mounting device for conveniently and inexpensively mounting thermal switches is provided, comprising (a) an annular support means of heat-conductive material adapted to be positioned coaxially around the switch, and (b) a fastening means of heat-conductive material extending integrally from the annular support means for attaching the annular support means to a heat-transmitting part of an electrical device whose temperature is to be sensed by the thermal switch.

3,827,016

**THERMOSTATIC MIXER FOR HYDRAULIC SYSTEMS**  
Alfons Knapp, Bleicherstrasse 3, Biberach/Riss (BRD), Germany

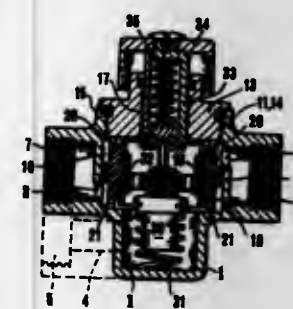
Filed Feb. 6, 1973, Ser. No. 330,032

Claims priority, application Italy, Feb. 29, 1972, 67629/72

Int. Cl. G05d 23/13

U.S. Cl. 236—12 R

6 Claims



A thermostatic mixer for hydraulic systems, wherein the passages for the hot and cold water within the body of the mixer are mutually spaced in axial direction and, in the mounted mixer, they are separated the one another by a tubular ring provided with a sealing gasket seated between said passages, the tubular ring is kept in position by a detachable

cover, and several radial passages serve for allowing the hot and cold water respectively to pass through the tubular ring, to a single inner cavity wherein a control valve is actuated by a thermometric bulb.

## ERRATA

For Classes 335—285, 335—285 and 335—285 see:  
Patents Nos. 3,827,019 thru 3,827,021

3,827,017

**ADJUSTABLE INDUCTION COIL FOR HEATING SEMICONDUCTOR RODS**

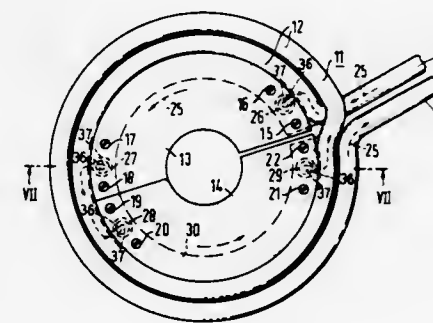
Wolfgang Keller, Munich, Germany, assignor to Siemens-Aktiengesellschaft, Berlin and Munich, Germany  
Filed Nov. 24, 1972, Ser. No. 309,420

Claims priority, application Germany, Dec. 7, 1971, 2160694

Int. Cl. H01f 27/28

U.S. Cl. 336—62

2 Claims



An adjustable induction coil is made up of several component parts, some of which may be disassembled from the remainder in order effectively to enlarge the inner diameter of the coil, or to remove the coil from association with a semiconductor rod passing through the coil, and which is heated by the coil. The coil is provided with conduits adapted to support a fluid flow for cooling the coil during operation.

3,827,018

**POWER TRANSFORMER HAVING FLUX SHIELDS SURROUNDING METALLIC STRUCTURAL MEMBERS**

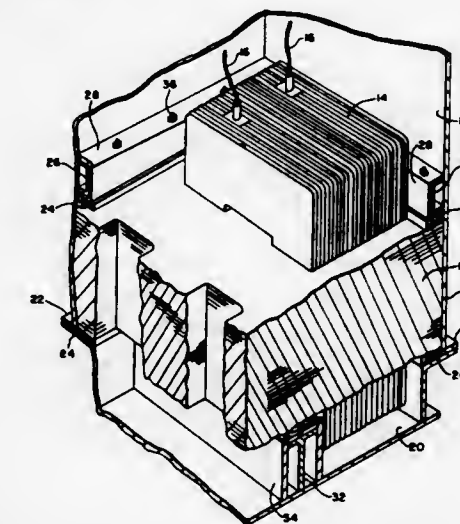
Michael W. Thomas, Muncie, and Virgil L. Boaz, Daleville, both of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 2, 1973, Ser. No. 412,514

Int. Cl. H01f 15/04

U.S. Cl. 336—84

6 Claims



Structural members projecting from the transformer tank are surrounded by flux shields to prevent leakage flux from en-



tering and heating the structural members. The flux shields are constructed of a non-magnetic material which has relatively good electrical conductivity. Current induced into the flux shield by the leakage flux produces flux which counteracts the leakage flux and reduces heating of the structural members.

### ERRATA

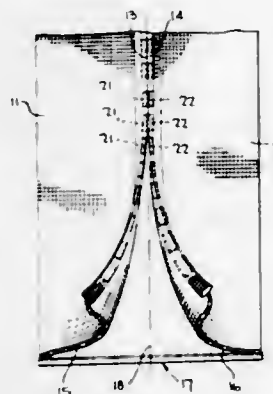
For Classes 337—77, 337—168, 337—276, 337—320, 337—354, 337—407 and 337—414 see: Patents Nos. 3,827,009 thru 3,827,015

### 3,827,019 MAGNETIC CLOSURE

Gideon P. Serbu, Box 280, Rt. 1, Accokeek, Md. 20607  
Filed Feb. 21, 1973, Ser. No. 334,234  
Int. Cl. H01f 7/20

U.S. Cl. 335—285

13 Claims



A closure device for an opening having a boundary defined by a border of a flexible panel and a border along another member, which may be a flexible panel, includes a plurality of spaced permanent magnets that run downwardly along one of the borders from an apex where the two borders join. Each of the permanent magnets includes strong magnetic pole faces on a surface abutting the boundary to establish a magnetic force across the boundary in a plane substantially parallel to a plane in which the flexible panel lies while the opening is closed. The permanent magnets have weak magnetic poles on the opposite surface thereof, remote from the boundary. On the other border, a plurality of spaced magnetic force attractive elements are provided in positions aligned with the permanent magnets. The elements may be either second permanent magnets or members of relatively high magnetic permeability. As the flexible panel moves about the apex by gravity from an open condition toward a closed position the magnetic forces bring and hold successive segments of the two borders in abutting relationship. The portions of the border that are closer to the apex generally come into abutting relationship with each other prior to the portions of the border that are farther from the apex.

### 3,827,020 UNIVERSAL HOLDING DEVICES

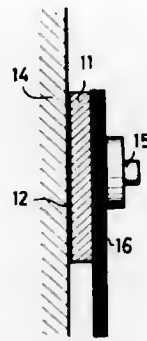
Takeshi Okamoto, 2-3-9, Shibuya, Shibuya-ku, Tokyo, Japan  
Filed Aug. 27, 1973, Ser. No. 391,653  
Int. Cl. H01f 7/20

U.S. Cl. 335—285

7 Claims

A universal holding device for securing a memo pad of paper sheets and the like on a supporting wall includes an outer mounting unit and an inner coupling unit that is attached to the wall by an adhesive coated member. Both the mounting and coupling units are provided with suitable mag-

netic means which are aligned to operatively hold the memo pad in a sandwich manner therebetween. The use of the adhe-

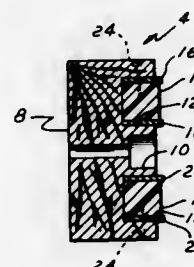


### 3,827,021 MAGNET GRIPPING FIXTURE

Russell E. Phelon, Rio Piedras, P.R., assignor to Phelon Magnet Co., Inc., East Longmeadow, Mass.  
Filed Aug. 13, 1973, Ser. No. 387,923  
Int. Cl. H01f 7/20

U.S. Cl. 335—285

3 Claims



A magnet gripping fixture which has at least two continuous, laterally spaced parallel permanent magnetic rods extending longitudinally from end-to-end of a supporting body of non-magnetic material. Each magnetic rod is a flexible permanent magnet extrusion of uniform flux distribution throughout its length and is sandwiched between a pair of ferromagnetic strips which provide flux concentrating pole pieces therefor.

### ERRATA

For Classes 339—180, 339—221, 339—258, 339—21, 339—49 and 339—95 see: Patents Nos. 3,827,003 thru 3,827,008

### 3,827,022 INDUCED DOPPLER SONAR

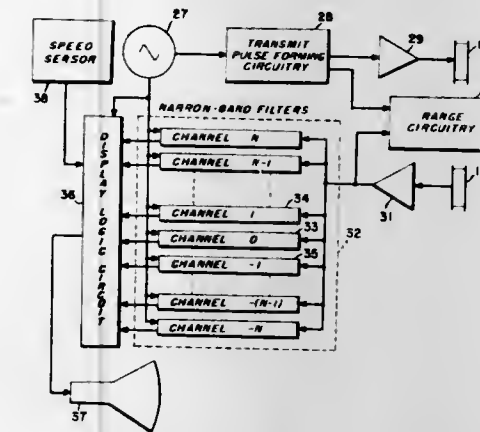
Newell O. Booth, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Apr. 23, 1973, Ser. No. 353,263  
Int. Cl. G01s 3/80, 7/52

U.S. Cl. 340—3 R

7 Claims

An object bearing detection system comprises a broad-band transmitting electroacoustic transducer and a similar broad-band receiving electroacoustic transducer. The two electroacoustic transducers are combined in an active ranging system such that the transducer is responsible to echo returns

from signals produced by the transmitting transducer. The electrical output from the receiving transducer is processed by



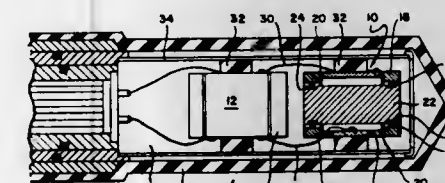
a plurality of narrow-band filters to obtain bearing information from the returned signals as a function of the Doppler shift of the signals.

### 3,827,023 PIEZOELECTRIC TRANSDUCER HAVING GOOD SENSITIVITY OVER A WIDE RANGE OF TEMPERATURE AND PRESSURE

Theodore A. Henriquez, and Allan C. Tims, both of Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed May 25, 1972, Ser. No. 256,864  
Int. Cl. H04b 13/00

U.S. Cl. 340—10

5 Claims



An electroacoustic transducer wherein the sensing elements comprise a radially polarized ceramic cylinder having annular rings attached to the ends of the ceramic cylinder and a cylindrical insert, centered in said cylinder, is sealed by O rings between the insert and the annular rings. A pair of the ceramic cylinders are connected electrically to form an assembly. The assembly is mounted by rubber mounts in a frame which is surrounded by an expanded metal electrostatic shield. The whole assembly is enclosed within a castor oil filled butyl boot. The assembly has good sensitivity over a wide frequency range.

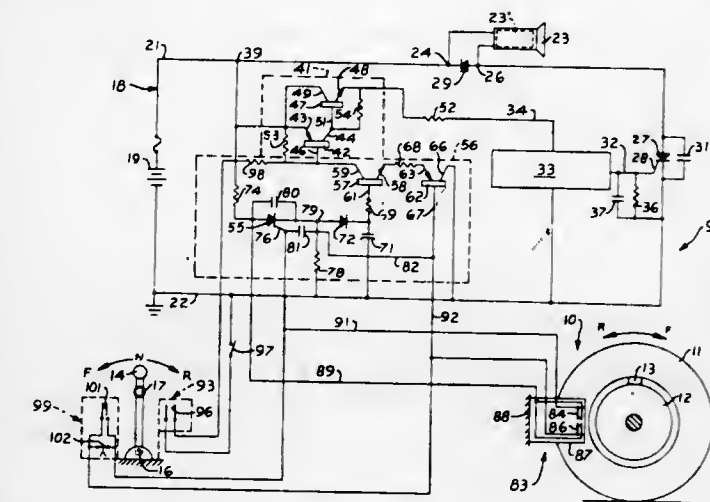
### 3,827,024 MOTION ALARM FOR VEHICLES

Arlynn W. Anderson, Peoria; Donald F. Coleman, Dunlap; Joe E. Fuzzell, Peoria; Jonny R. Greiner, Decatur, and Robert G. Miller, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed June 12, 1972, Ser. No. 261,605  
Int. Cl. B60q 5/00

U.S. Cl. 340—70

9 Claims

A motion alarm for vehicles employs sensors actuated by elements of the vehicle drive system and control system to sound an audible alarm when the vehicle is deliberately backed up and also if uncontrolled unexpected motion occurs in either direction including times when the vehicle has been

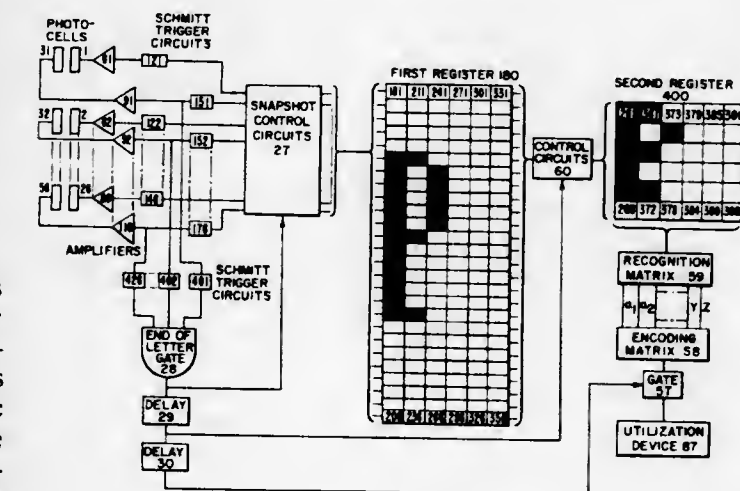


whereby reverse motion always results in sounding an alarm while deliberate controlled forward motion maintains the alarm quiescent.

### 3,827,025 READING MACHINE EMPLOYING A TWO-DIMENSIONAL MULTIPLE SNAPSHOT PROCESS

Hans A. Mauch, and Glendon Smith, both of Dayton, Ohio, assignors to The United States of America as represented by the Veterans Administration, Washington, D.C.  
Filed Aug. 10, 1971, Ser. No. 170,551  
Int. Cl. G06k 9/12

20 Claims



Apparatus for scanning and translating discrete objects and their images into identifying signals characterized by an image receiving surface including a plurality of photocells arranged in adjacent vertical columns. In use thereof the columns of sensing photocells are caused to scan the image in one direction. The photocells of the respective columns are so related that, at each of a series of locations spaced in said one direction, any one or more of the cells, as determined by the configuration of the image per se, may function as a "key" to trigger an electrical snapshot by a cell or cells then viewing a particular definitive portion of this image. Snapshots in one case are determined by the pertaining cells having been subjected to a certain number of "light to dark" or "dark to light" transitions in the scanning procedure and succeeding snapshots may be similarly determined. In another case the invention provides that the triggering of snapshots by key cells in one column may cause a conditioning of cells on the same level in another column to trigger following snapshots.



Means are included to provide that the snapshots taken of the image in the one direction are electrically stored and the stored representations thereof subjected to an electrical scanning in a different direction. This is done in a manner to reduce the stored representation of the image to the most definitive portions thereof, whereby to enable greater accuracy in the read-out of the image scanned through conventional signalling means.

3,827,026

# ENCODING TECHNIQUE FOR ENABLING A DEVICE TO PROCESS DIFFERENT TYPES OF DIGITAL INFORMATION TRANSMITTED ALONG A SINGLE INFORMATION CHANNEL

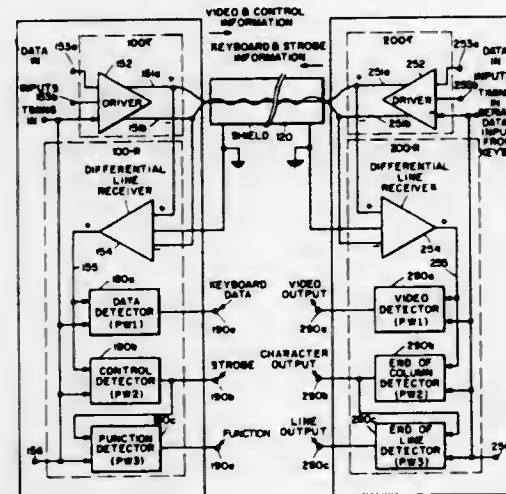
G. R. Viswanathan, Troy, N.Y., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 4, 1971, Ser. No. 103,409

Int. Cl. H04q 1/32

U.S. Cl. 340—167 A

16 Claims



A data processing system includes a first device which transmits different types of pulse coded digital information along a single channel to a second device for separation and distribution to a number of different outputs. The different types of digital information transmitted are encoded with different pulse widths. The pulse widths for the different types of information are selected to provide highly reliable data transmission. The second device includes a receive section which has a plurality of detectors. Each of these detectors operate to detect only the pulse coded digital information encoded with predetermined pulse widths and pass them to its output. The system accommodates bidirectional transmission and processing of the encoded digital information by including like transmit and receive sections within each device.

3,827,027

# METHOD AND APPARATUS FOR PRODUCING VARIABLE FORMATS FROM A DIGITAL MEMORY

Glendon D. Towson, and James H. Koberlein, both of Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 22, 1971, Ser. No. 182,674

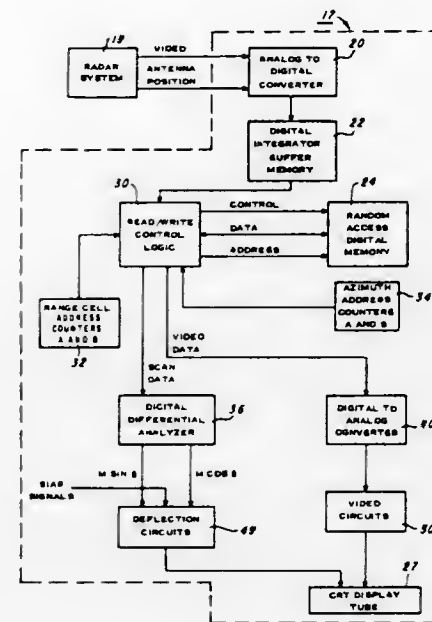
Int. Cl. G11c 7/00; G01s 9/00

U.S. Cl. 340—172.5

6 Claims

A method and system are disclosed in which radar data are collected, integrated to improve the signal quality and stored

in a random access digital memory. The addressing sequences for storing the data in the digital memory are selected such that the data can be read and used to update a display without requiring complicated transformations of the address



sequences used to store the data into the address sequences for reading the data. The digital memory also provides true freeze mode operation of the display. The system can also be used to display infrared scanner data.

3,827,028

# CONTROL MEANS FOR INFORMATION STORAGE IN A DYNAMIC SHIFT MEMORY

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

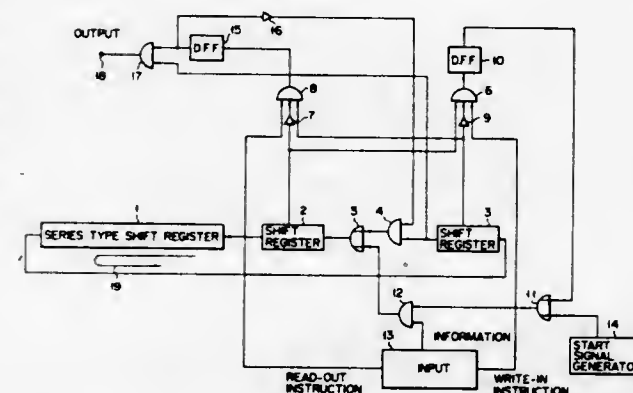
Filed June 1, 1972, Ser. No. 258,762

Claims priority, application Japan, July 26, 1971, 46-55264

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

16 Claims



A dynamic shift memory means includes a plurality of serially connected memory units, some of the serially connected memory units selectively storing one character of information. The arrangement includes various means for signifying whether character information is to be stored in the memory means or is to be read out of the memory means and for controlling the shifting process without requiring additional means for generating timing signals, thus simplifying the resultant arrangement.

3,827,029

# MEMORY AND PROGRAM PROTECTION SYSTEM FOR A DIGITAL COMPUTER SYSTEM

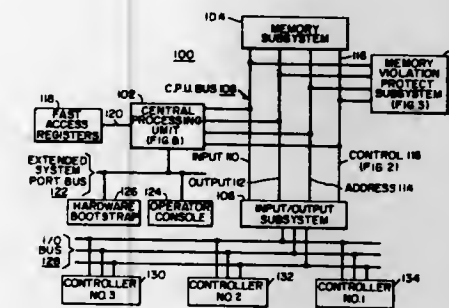
John C. Schlotterer, Casselberry, Fla., and Lionel S. Smith, Jr., San Jose, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 292,221

Int. Cl. G06f 11/00

U.S. Cl. 340—172.5

10 Claims U.S. Cl. 340—172.5



A small size digital computer system is designed so that a hardware memory violation protect subsystem may be added to the computer system as a hardware option. The memory protect subsystem includes hardware which may operate in parallel with the digital computer system memory subsystem and which monitors each attempt to alter data within the memory subsystem. Any attempt to alter data within a protected region may be defeated. Following such an attempt, program execution is interrupted and program control is transferred to the computer system executive software. The computer system is also designed so that it may either modify or prevent the execution of certain instructions at times when the memory protect subsystem is in operation so as to defeat all attempts on the part of any software entity to destroy the integrity of the operating system.

3,827,030

# PROGRAMMABLE CONTROLLER USING A RANDOM ACCESS MEMORY

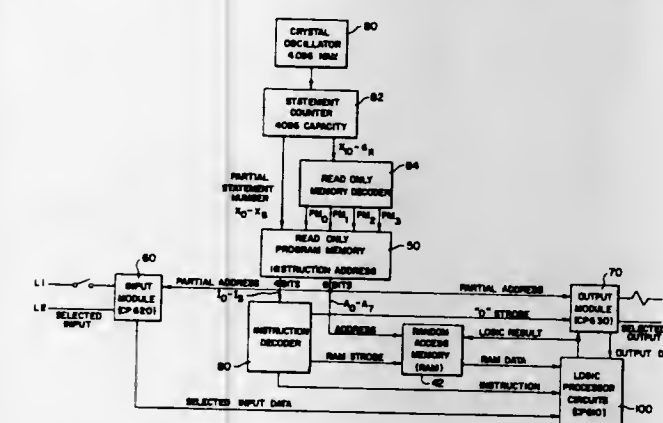
William H. Seipp, Bettendorf, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,872

Int. Cl. G05b 11/00; G06f 1/00

U.S. Cl. 340—172.5

67 Claims



A programmable controller of the type used to process logic from input and output circuits for controlling the operation of machines, manufacturing processes and similar mechanical systems. The controller is operated by a series of successive binary coded program statements which are separately processed to perform logic operations or functions in a single bit accumulator register and to store the logic from the accumulator register in selected output circuits or in selected locations of a random access memory forming part of the controller and separate from the input or output circuits.

3,827,031

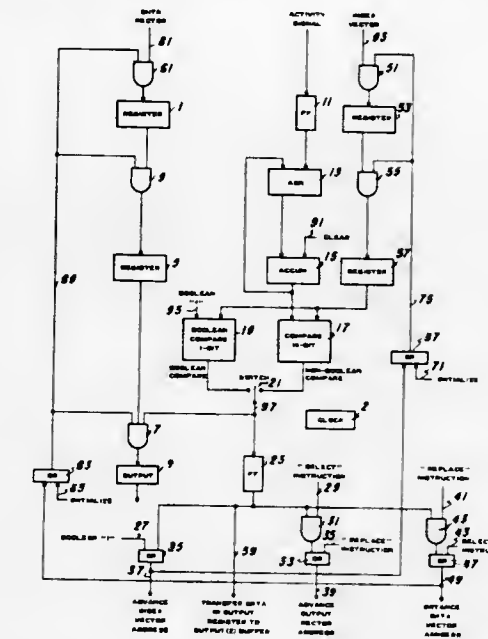
# ELEMENT SELECT/REPLACE APPARATUS FOR A VECTOR COMPUTING SYSTEM

William D. Kastner, Austin, Tex., and Gary W. Cobb, East Windsor, N.J., assignors to Instruments Incorporated, Dallas, Tex.

Filed Mar. 19, 1973, Ser. No. 342,666

Int. Cl. G06f 7/00, 7/10, 7/22

18 Claims



An apparatus is disclosed for processing vector data streams in such a way that, in a first mode, the data elements of a first vector stream are selected according to indices of those elements specified by a second vector stream. The selected elements are output in a single output vector stream. In a second mode the apparatus replaces elements in a third vector stream by elements in a first vector stream as specified by the indices in a second vector stream.

3,827,032

# DIFFERENTIALLY COUPLED MEMORY ARRAYS

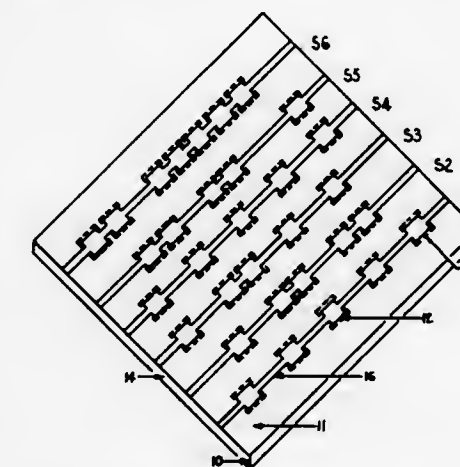
Warwick R. Abbott, Woburn, and Theodore C. Chen, Concord, both of Mass., assignors to Integrated Memories, Inc., Wilmington, Mass.

Filed June 19, 1972, Ser. No. 264,000

Int. Cl. G11c 11/24, 17/00

U.S. Cl. 340—173 SP

9 Claims



A read-only memory plane has a plurality of storage elements arranged in a matrix of columns and rows. Drive means are associated with the columns of elements for energizing the elements and a plurality of sense lines are associated with the row of elements for determining the information content of

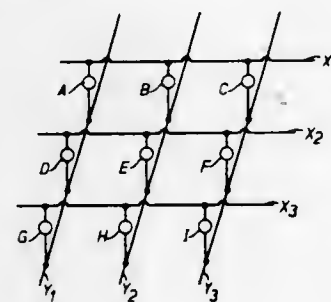


the storage elements. A second matrix of storage elements is within the memory plane in tandem with the first matrix of elements. A second set of drive means and sense lines are provided for the read-out of the second array of storage elements. The information read-out is manifest in the presence or absence of signals induced in the sense lines when the storage elements are energized. Pairs of sense lines one in each pair from the first array and the other from the second array, are coupled to respective differential amplifiers for amplifying the induced signals and for rejecting any stray signals including background noise which would be common to the two arrays.

**3,827,033**  
**SEMI-CONDUCTOR MEMORY DEVICE**  
**ARRANGEMENTS**

Robert Mark Quilliam, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England  
Filed Dec. 15, 1972, Ser. No. 315,588  
Claims priority, application Great Britain, Dec. 18, 1971, 58943/71

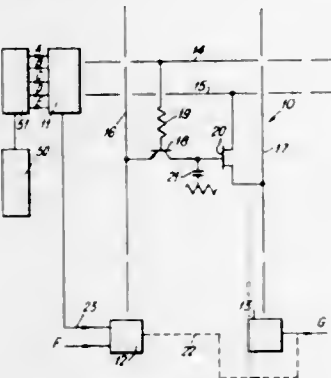
Int. Cl. G11c 11/36  
U.S. Cl. 340—173 R 18 Claims



A memory device array including two sets of conductors, a plurality of amorphous semi-conductor memory devices each associated with an individual pair of conductors chosen one from each set and having a first electrode connected to each of the associated pair of conductors through a respective resistor, and means for enabling connection of a second electrode of each of the devices to a source of potential.

**3,827,034**  
**SEMICONDUCTOR INFORMATION STORAGE DEVICES**  
Stephen Francis Colaco, Manchester, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England  
Filed Sept. 14, 1972, Ser. No. 288,910  
Int. Cl. G11c 11/24, 11/40

U.S. Cl. 340—173 CA 34 Claims

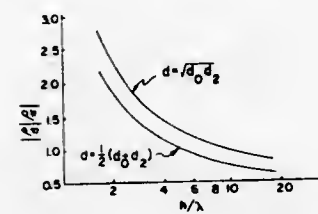


A cell of a monolithic semiconductor memory store comprises a bi-directional bipolar transistor, with a capacitance connected to the collector and, with the bipolar transistor capable of conducting in the reverse direction, the capacitance being charged or not charged to store an information bit in the cell, and switching means, such as a field-effect

transistor, which is either switched ON or OFF in accordance with the potential difference across the capacitance, there being associated with the cell reading means arranged to produce an output indicative of whether or not the switching means is conducting.

**3,827,035**  
**MAGNETIC DOMAIN PROPAGATION PLATE WITH MINIMIZED TEMPERATURE SENSITIVITY**  
Edward Della Torre, Toronto, Ontario, and Magid Dimyan, Hamilton, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ontario, Canada  
Filed Oct. 26, 1972, Ser. No. 300,885  
Int. Cl. G11c 11/14

U.S. Cl. 340—174 TF 2 Claims



A magnetic domain propagation plate having a preferred direction of magnetization normal to the plate and being made of a material and having a plate thickness such that the diameter of bubbles formed in the plate have a minimum sensitivity to temperature variations, these parameters being determined by minimizing the quality  $\rho_d$ :

$$\rho_d = \frac{\left(F + \frac{\lambda}{h}\right) M_s - \frac{\lambda}{h} \rho_\sigma}{S_0 + \frac{\lambda}{h}}$$

where

$$\rho_d = (1/d) dd/dT$$

$d$  = bubble diameter

$T$  = temperature

$F$  = magnetostatic force function

$\lambda$  = material length

$h$  = plate thickness

$S_0$  = radial stability function

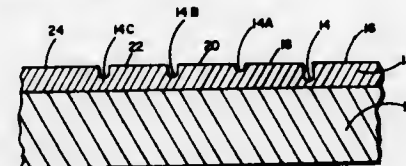
$$\rho = 1 / (d \sigma / dT) \sigma M_s = 1 / M_s (dM_s / dT)$$

$\sigma$  = wall energy density per unit area, and

$M_s$  = saturation magnetization.

**3,827,036**  
**MAGNETIC BUBBLE DOMAIN SYSTEM**  
Cedric F. O'Donnell, Fullerton, and George R. Pulliam, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.  
Continuation of Ser. No. 123,642, March 12, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,265  
Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 TF 6 Claims

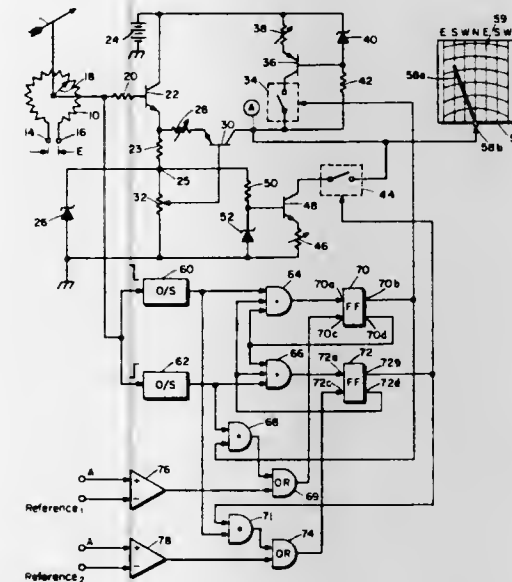


A magnetic bubble domain system comprising one or more channels or paths of magnetic bubble domain material on a supporting substrate is described. The channel of magnetic bubble domain material is defined by grooves extending par-

tially into a thin film of the magnetic bubble domain material. The grooves extend through the film to the extent of 1 to 99 percent of the thickness of the film. The movement of bubble domains along a channel is effected by the repulsive or interaction forces between bubble domains which are present in a channel when a bubble domain is formed or propagated near another bubble domain.

**3,827,037**  
**WIND DIRECTION MONITOR SCALE CONVERTER**  
Anthony Roy Willoughby, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.  
Filed Mar. 20, 1973, Ser. No. 343,060  
Int. Cl. G08c 19/04

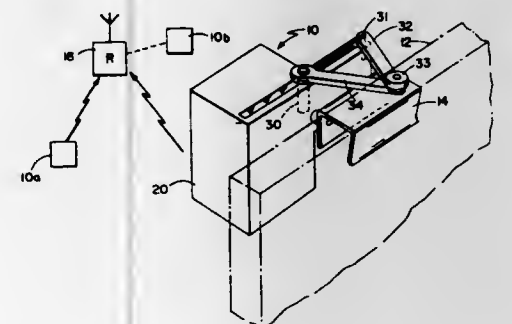
U.S. Cl. 340—177 R 11 Claims



A wind vane drives a movable contact of a voltage divider comprised of a 360° potentiometer. The movable contact is connected into an electrical summing point in an electrical circuit which responds to a discontinuity in the potentiometer output to add or subtract a sufficient electrical quantity at the summing point to compensate for the discontinuity. In addition, at the end of the electrical range of the circuit an electrical quantity equivalent to a predetermined amount of vane rotation is added or subtracted from the summing point as required to reposition the electrical sum to a valve intermediate of its range.

**3,827,038**  
**ALARM SYSTEM**  
John George Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Mass.  
Filed Oct. 26, 1972, Ser. No. 300,913  
Int. Cl. G08b 13/02

U.S. Cl. 340—224 4 Claims

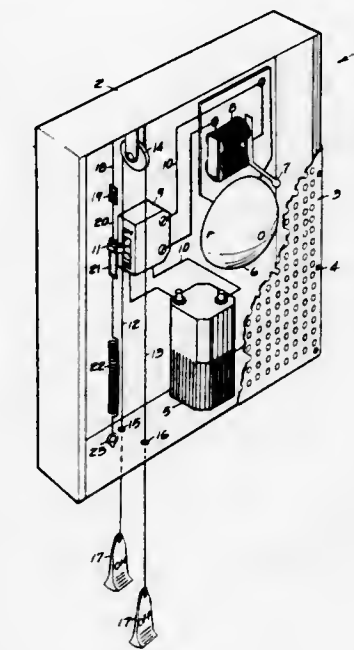


An alarm system having a central radio receiver and a plurality of independent alarm devices for mounting on a door or

the like movable to and from a closed position adjacent a stationary door frame element or the like toward an open position. Each device comprises an electro-mechanical generator, a radio transmitter energized by it and a load-and-fire mechanism having loading means movable into loaded position upon movement of the door into closed position and firing means triggered by release of the loading means upon movement of the door from its closed position to drive the generator and operate the radio transmitter for reception by the central radio receiver.

**3,827,039**  
**PORTABLE ALARM SYSTEM**  
Joseph M. Agnese, 2768 Greenwich, San Francisco, Calif. 94123  
Filed Jan. 31, 1973, Ser. No. 328,332  
Int. Cl. G08b 17/02

U.S. Cl. 340—227.1 12 Claims



A multi-purpose, portable alarm system comprising an electrically-powered bell selectively controllable either manually or automatically by means of a fusible element responsive to heat. The alarm bell circuit is provided with on-off switch which is controllable, in the manual mode, by means of two pull cords extending externally of the portable unit. In the automatic mode, the switch is controlled by a spring-loaded, lost-motion loop member, a portion of which is connected to a tensioned, fusible element which, when broken, allows the spring bias to force the switch to the "on" position. The system is conveniently housed in a cabinet which can be mounted upon a wall, or carried as a portable unit.

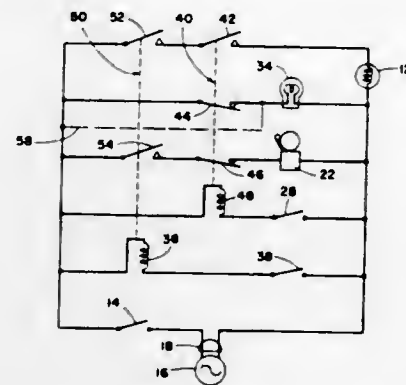
**3,827,040**  
**SAFETY REMINDER SYSTEM FOR POWER MACHINES**  
Charles Clair Simmons, Tulsa, Okla., assignor to Auto Crane Company, Tulsa, Okla.  
Filed Jan. 16, 1973, Ser. No. 324,208  
Int. Cl. G08b 21/00

U.S. Cl. 340—267 R 6 Claims

A safety equipment system for operators of power machines comprising an operator's safety equipment holder located adjacent to the power machine and a safety equipment switch carried by the equipment holder. The safety equipment holder includes a switch operator arm extending outwardly from the equipment holder for attaching the safety equipment thereto. When the safety equipment is supported on the operator arm, the operator arm will engage the safety equipment switch to hold the same in an open position; conversely removal of the safety equipment from the operator arm will cause the safety



equipment switch to close. A safety floor mat is located at the operator's position adjacent to the power machine, and a mat switch is carried by the floor mat and operable by the operator standing thereon. A machine power switch is carried by the machine and operably connected to the machine through the equipment switch and the mat switch whereby activation of the equipment switch and mat switch is necessary before power is applied to the machine. An equipment use reminder



lamp is disposed on the equipment holder and operably connected to the power switch through the equipment switch. An alarm is disposed adjacent to the power machine and operably connected to the power switch through the equipment switch and the mat switch whereby, upon closing the power switch, the equipment use reminder lamp is activated, and upon activating the mat switching means, the alarm is activated, if the safety equipment has not been removed from the operator arm.

### 3,827,041 DISPLAY APPARATUS WITH VISUAL SEGMENT INDICIA

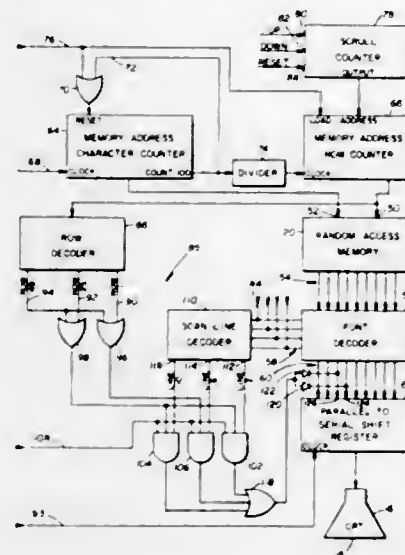
Harold D. Cook, Wheaton, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 14, 1973, Ser. No. 388,296

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD

15 Claims



An apparatus for providing a visual display of encoded information on a cathode-ray tube screen wherein the information is stored in a memory which has a storage capacity greater than the display capacity of the tube screen. The address to the memory is decoded and in response to the writing of a preselected character row from the memory, and a selected scan line and scan line position, an indicia or marker signal is generated. Generation of the indicia signal occurs at a scan position adjacent the normal display area of the display screen. The signal serves to control the beam intensity of the cathode-ray tube so as to create a visual marker on the screen indicating the segment of the memory being displayed.

3,827,042

### ILLUMINATED DISPLAY DEVICE PROVIDING CONTINUOUS LIGHT GRADATION

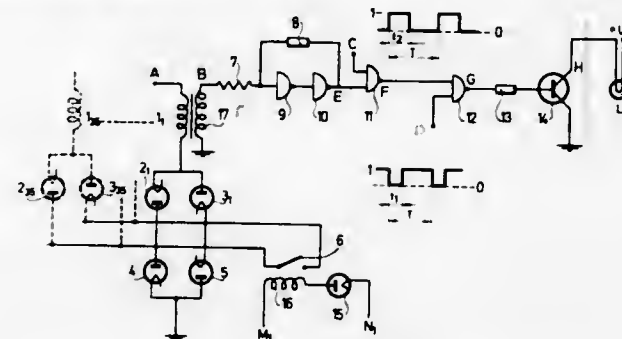
Jozsef Mandzsu; Laszlo Jagicza; Attila Peter; Laszlo Kellner, and Sandor Jodal, all of Budapest, Hungary, assignors to Fok-Gyem Finommechanikai es Elektronikus Muszergyarts Sz., Budapest, Hungary

Filed Feb. 5, 1973, Ser. No. 329,316

Claims priority, application Hungary, Feb. 4, 1972, FO 643 Int. Cl. G09f 9/34

U.S. Cl. 340—335

7 Claims



An illuminated information and advertising device provides continuous light gradation, in white or colored lights. The incandescent lamps are preheated in an electronically controllable manner independently of the information indication. During the course of the indication of information, the brightness of the incandescent lamp can be varied continuously with electronic means in accordance with a given program. The storage and switching elements of the illuminated board can also be controlled by means of bipolar signals and are also provided with separately controllable inputs for varying the light gradation and/or for the preheating. This controllability ensures the compatibility of the electronic control circuit of the illuminated board with the electronic control circuit of the color contrast devices, which are equipped with magnetic indicating elements; thus, it is possible to operate, in conjunction with an outdoor lighted board, easily readable color contrast devices disposed indoors, by means of which complete control can be exercised.

3,827,043

### DISPLAY DEVICE FOR NUMERIC CHARACTERS

Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

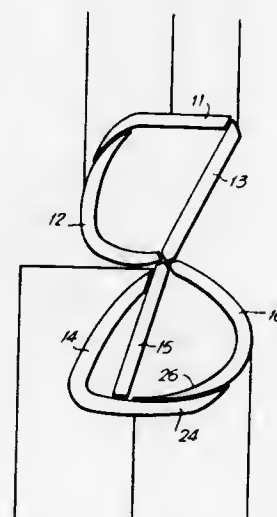
Filed Dec. 6, 1972, Ser. No. 312,462

Claims priority, application Japan, Dec. 8, 1971, 46-98632; Dec. 8, 1971, 46-98633

Int. Cl. G08b 5/36

U.S. Cl. 340—336

5 Claims



An arrangement of segments, both curved and straight, makes it possible to present in a digital display any digit from 0

to 9. The reduction from the usual 7-segment display to a 6-segment display reduces the number of leads and the circuitry required for a digital display device. The arrangement is particularly suitable for use with liquid crystal display devices, and light-emitting diode devices.

3,827,044

### ANALOG TO DIGITAL CONVERTER

Philip A. Toney, Maitland, Fla., and John O. Bowers, Jr., San Jose, Calif., assignors to General Dynamics Corporation, St. Louis, Mo.

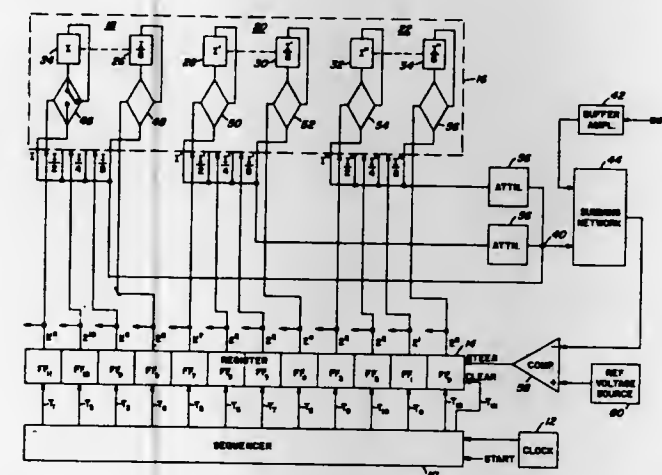
Continuation of Ser. No. 42,097, June 1, 1970, abandoned.

This application Sept. 8, 1972, Ser. No. 287,391

Int. Cl. H03k 13/04

U.S. Cl. 340—347 AD

1 Claim



A high speed analog to digital converter using separate weighted current sources for each digit and a null seeking comparator is disclosed. The input analog voltage is compared successively with different sums of currents developed by the current sources.

Other features include a fast-slewing input buffer amplifier with rapid response to transient loads, and extremely good regulation in the weighted current sources to keep the current constant notwithstanding temperature and load variations.

3,827,045

### ANGLE DIGITAL CONVERTER SYSTEM

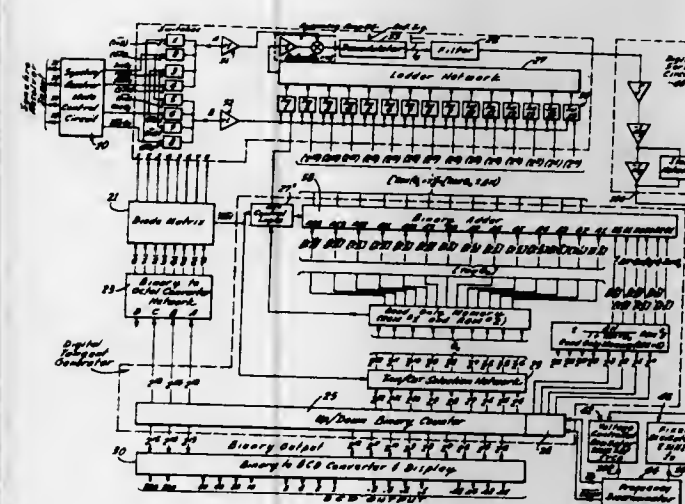
Dusan K. Markus, 11 E. Magna Vista St., Arcadia, Calif. 91006

Filed Dec. 18, 1972, Ser. No. 315,946

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

11 Claims



An improved system is provided for converting synchro or resolver shaft analog input data into corresponding digital outputs. The system effectuates the conversion by means of a null

3,827,046

### FILTERED DUTY CYCLE FEEDBACK ANALOG TO DIGITAL CONVERTER

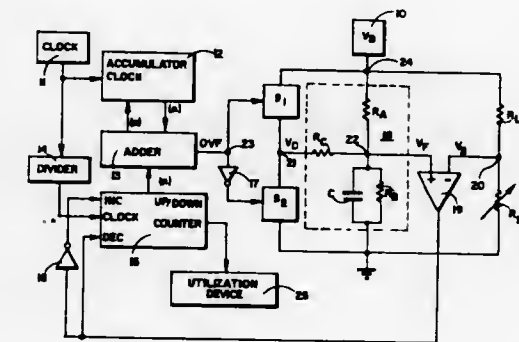
George A. Watson, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 25, 1973, Ser. No. 354,297

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

5 Claims



A filtered duty cycle analog to digital converter is provided which includes at least one electrical sensor for producing a signal which varies as an analog representative of a specific parameter. The analog signal is converted to a digital signal. The analog signal and a signal representative of the digital signal are compared whereby the digital signal may be corrected to reflect changes in the analog signal as caused by changes at the electrical sensor.

3,827,047

### SELF CALIBRATING DIGITAL TO A.C. CONVERTER FOR MULTIPLE CONVERSION

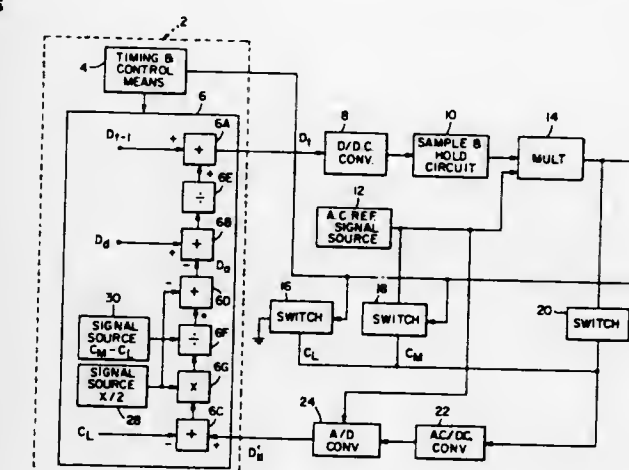
Henry R. Kasakowski, Denville, and Douglas J. Washburn, Morristown, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Oct. 3, 1973, Ser. No. 403,246

Int. Cl. H03k 13/02

U.S. Cl. 340—347 DA

8 Claims



Apparatus for performing multiple digital to a.c. conversions by using a self calibrating feedback loop. The conversions are performed accurately and without the need for a multiplicity of precision components.



3,827,048

**ALPHA-NUMERIC CHARACTER DISPLAY DEVICE AND METHOD, WHOSE CHARACTERS ARE FORMED OF LIGHT EMITTING DIODES**

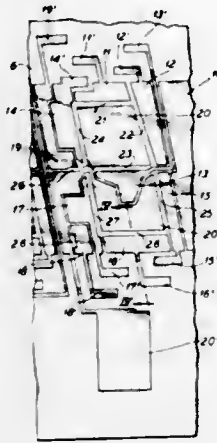
Setsuo Usui, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 320,720, Jan. 3, 1973. This application July 31, 1973, Ser. No. 384,232

Claims priority, application Japan, Aug. 10, 1972, 47-80110 Int. Cl. G08b 5/00

U.S. Cl. 340—366 R

12 Claims



An alpha-numeric character display device and method of making the same. The alpha-numeric characters are formed of a plurality of light emitting diodes mounted on a transparent base plate with their respective P-N junctions lying in planes perpendicular to the base plate and arranged in a pattern to exhibit selectively a plurality of individual display units. Energization selectively of different diodes is accomplished through a novel conductive lead pattern laid down in layers above and over the surface of the base plate, the conductive leads being separated from each other by a novel insulating arrangement which is produced in a novel manner.

3,827,049

**RADAR SYSTEM FOR TRACKING TARGETS FLYING AT LOW ALTITUDE**

Cornelis Augustinus van Staaden; Maximiliaan Hubert Bodmer; Herman Michel van Hijfte, and Bernard Gellekink, all of Hengelo, Netherlands, assignors to N. V. Hollandse Signaalapparaten, Hengelo, Netherlands

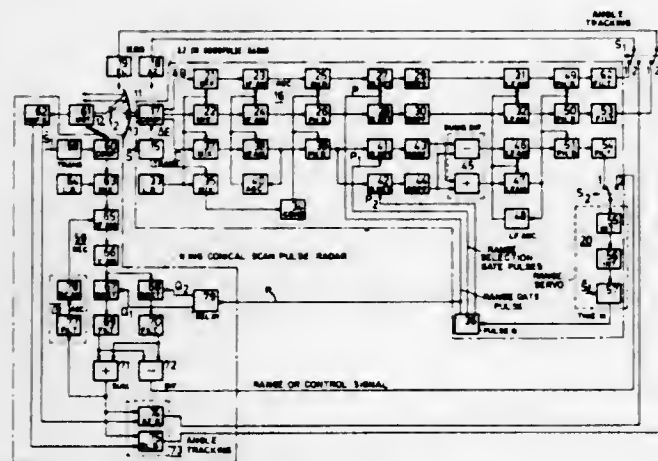
Filed Dec. 21, 1972, Ser. No. 317,217

Claims priority, application Switzerland, Dec. 23, 1971, 018862/71

Int. Cl. G01s 9/16, 9/22

U.S. Cl. 343—7.3

4 Claims



A radar system is provided with a first radar apparatus for the range and angle tracking of targets located at a relatively

long range and with a second radar apparatus for at least the angle tracking of targets at a relatively short range. The radar apparatus both operate at an own wavelength, but they employ one and the same tracking antenna. The wavelength of the second radar apparatus is so selected that, in case a target being tracked at a relatively low altitude is within the range of said second radar apparatus, the interference caused by the receipt of target echoes reflected by the earth surface does not influence the antenna tracking movement. When a target being tracked is outside the range of the second radar apparatus, it is tracked by the first radar apparatus in range and in angle coordinates. When said target arrives within the range of the second radar apparatus, it can be tracked in angle coordinates by the latter radar apparatus and in range by the former radar apparatus.

3,827,050

**METHOD AND MEANS FOR OBTAINING RADIO BEARINGS**

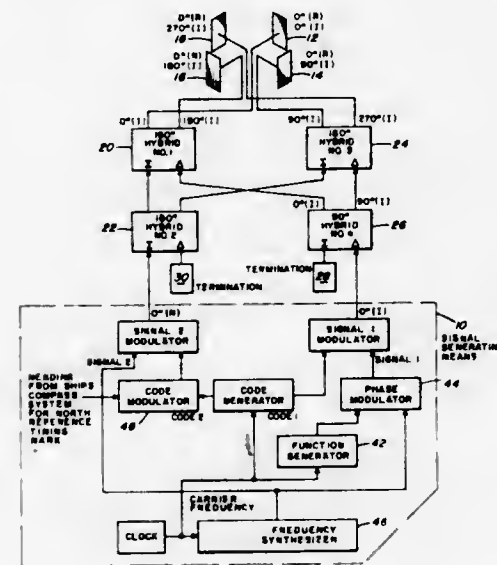
Burton G. Glazer, Palos Verdes, and Michael A. Bittner, Manhattan Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1973, Ser. No. 332,967

Int. Cl. G01s 1/08

U.S. Cl. 343—102

8 Claims



A method for generating D.F. signals having the characteristic that their phase difference is proportional to the azimuth with respect to the radiating source. An array of four, vertical, dipole elements equiangularly spaced with respect to the center of the array is fed with a sine wave which is in phase at all the elements and, simultaneously, with another sine wave which is progressively phase-shifted, in order, around the array. The sine wave carriers may be phase-modulated with orthogonally related, pseudonoise-coded signals.

3,827,051

**ADJUSTABLE POLARIZATION ANTENNA SYSTEM**

Peter Foldes, Montreal, Quebec, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,620

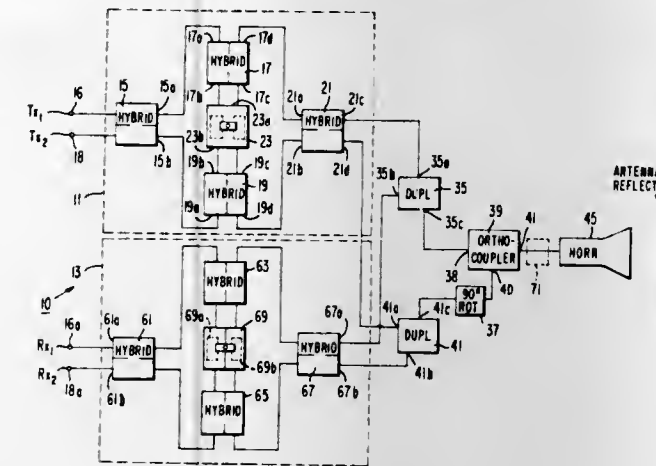
Int. Cl. H04l 5/00; H01q 3/26

U.S. Cl. 343—176

11 Claims

An adjustable polarization system is provided by the combination of an adjustable power divider and an orthogonal coupler. One terminal of the power divider is coupled to one terminal of the orthogonal coupler through a 90° polarization

rotator, the second terminal of the power divider being coupled to a second terminal of the orthogonal coupler. By an ad-



justment in the power divider, the percentage of power to the input terminals of the orthogonal coupler are altered and consequently the polarization is adjusted.

3,827,052

**SIMULTANEOUS RADIO COMMUNICATION SYSTEM BETWEEN TWO STATIONS**

Saburo Tanaka, Izumi, Japan, assignor to Sendai Television Broadcasting Corporation, Miyagi-ken, Japan

Filed Dec. 6, 1972, Ser. No. 312,778

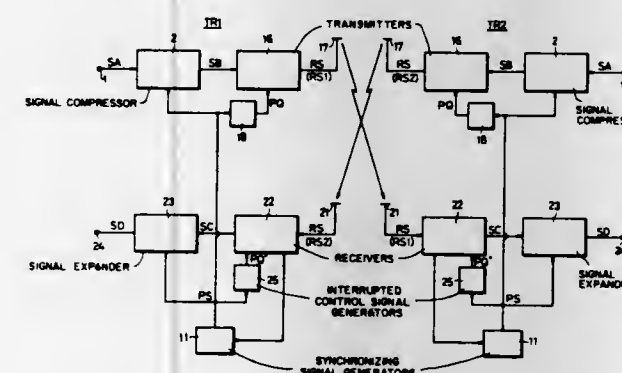
Claims priority, application Japan, Dec. 8, 1971, 46-99646; Apr. 8, 1972, 47-38982

Int. Cl. H04l 5/22

U.S. Cl. 343—178

1 Claim U.S. Cl. 343—708

3 Claims



A simultaneous radio communication system comprising first and second radio stations adapted to transmit first and second radio waves of the same radio channel and receive the transmitted second and first radio waves, in which the first and second radio waves are interrupted waves interrupted in opposite phases at the same period; the on-state periods of the transmitted first radio waves include time compressed third information of first information to be transmitted; the on-state periods of the transmitted second radio waves include time compressed fourth information of second information to be transmitted; and the first and second radio stations have means for time expansion of the time compressed fourth and third information from the second and first transmitted radio waves to obtain sixth and fifth information corresponding to the second and first information respectively.

3,827,053

**ANTENNA WITH LARGE CAPACITIVE TERMINATION AND LOW NOISE INPUT CIRCUIT**

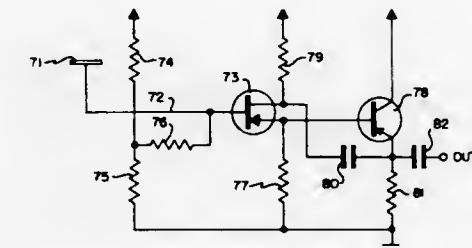
Edward N. Willie, 10 Fox Ln., Locus Valley, N.Y. 11560, and Walter K. Volkers, deceased, late of Carlton Bay Gardens, Carlton Ave., Port Washington, N.Y. (by Daphne J. Volkers, executor)

Continuation-in-part of Ser. No. 64,054, July 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 644,768, June 7, 1967, abandoned. This application Feb. 28, 1972, Ser. No. 229,992

Int. Cl. H01q 1/26; H04b 1/10

U.S. Cl. 343—701

4 Claims



An antenna having a short stem and a larger than normal capacitive termination to provide improved performance over antennas of the same effective electrical length, and an input circuit having a larger than normal total input resistance for obtaining improved signal-to-noise ratios by using the capacitive reactance of said antenna as a noise sink.

3,827,054

**REENTRY VEHICLE STRIPLINE SLOT ANTENNA**

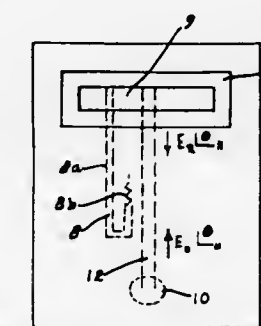
Richard E. Herskind, Burlington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 24, 1973, Ser. No. 382,252

Int. Cl. H01q 13/10

U.S. Cl. 343—708

3 Claims



A reentry vehicle antenna which is comprised of a stripline slot antenna with the antenna element including a stripline circuit board with a radiating aperture fed by a conventional strip transmission line. A feedback circuit is provided to control the input impedance of the antenna while operating into an RF transparent window as the window depth varies due to erosion upon reentry.

3,827,055

**LENS FED ANTENNA ARRAY SYSTEM**

Bruce Fredric Bogner, Mt. Holly, and David Francis Bowman, Moorestown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,423

Int. Cl. H01q 19/06

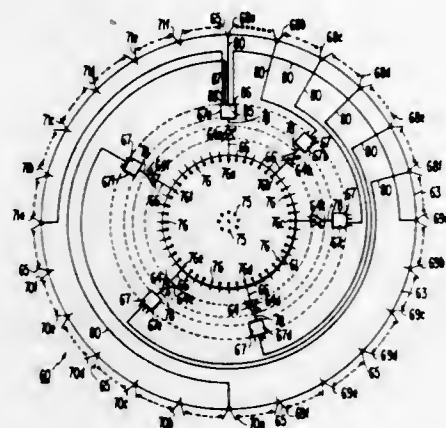
U.S. Cl. 343—754

10 Claims

A circular phased array system is described which utilizes a lens feed to simplify the problem of commutating the RF dis-



tribution system through 360° of steering of the antenna beam. The lens feed consists of a circular parallel-plate radial transmission line with a central set of probes and a ring of peripheral probes. The peripheral probes are coupled via switches to an array of radiating elements arranged in a circle. The central set of probes can be energized and phased to produce electromagnetic energy with an amplitude distribu-



tion within the parallel-plate line in any given direction. By selective settings of phase and amplitude of the energy coupled to the central set of probes to achieve the proper energy distribution to the peripheral probes and by operating the switches to determine which radiating elements are coupled to the peripheral probes, a desired directive antenna pattern with low side lobes is provided.

#### ERRATUM

For Class 346—74 see:  
Patent No. 3,826,915

3,827,056

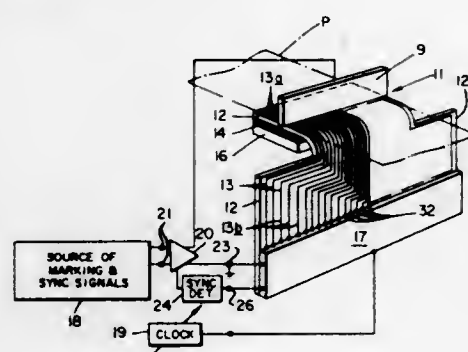
#### GRAPHIC ELECTRIC RECORDER SCANNING DEVICE WITH PRINTED RECORDING STRIPS

Gerald Lawrence Vano, Brockton, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Oct. 4, 1972, Ser. No. 294,814  
Int. Cl. G01d 15/06; H05k 3/20

U.S. Cl. 346—74 E

17 Claims

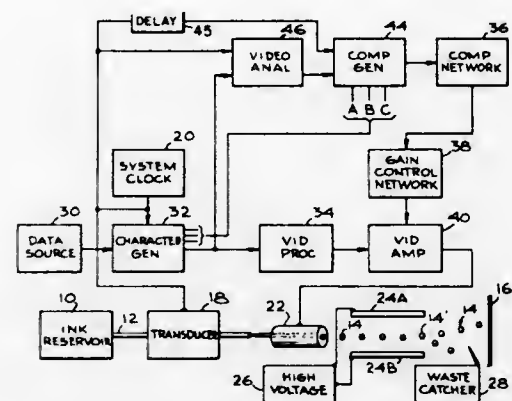


For use in a facsimile recorder with a linear marking electrode blade for marking on a recording web, an array of flexible parallel conductive strips is carried on a flexible insulating sheet backed by a foam rubber body which yieldingly presses the strips against the paper and the paper against the blade with uniform pressure. A solid state integrated circuit commutator, physically co-extensive with terminal portions of the conductive strips, distributes graphic signals to the strips.

3,827,057  
**SELECTIVE CHARGING MAGNITUDE COMPENSATION**  
Vincent E. Bischoff, River Grove, and Robert I. Keur, Niles, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.  
Filed Jan. 2, 1973, Ser. No. 320,325  
Int. Cl. G01d 18/00

U.S. Cl. 346—75

8 Claims

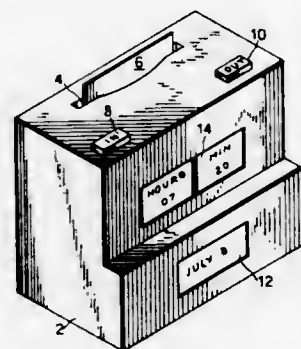


In an ink drop printer, the charge on a just formed drop is stored and used to provide a compensating charge for the next drop, to be formed in order to avoid the adverse effects of the charge on the just formed drop.

3,827,058  
**PUNCH-CARD TIME RECORDING DEVICE**  
Adrian Brener, 28/3, Tora Ve'Avoda St., Ramat-Eliah, Israel  
Filed July 5, 1972, Ser. No. 269,249  
Claims priority, application Israel, July 9, 1971, 37278  
Int. Cl. G01d 15/04

U.S. Cl. 346—86

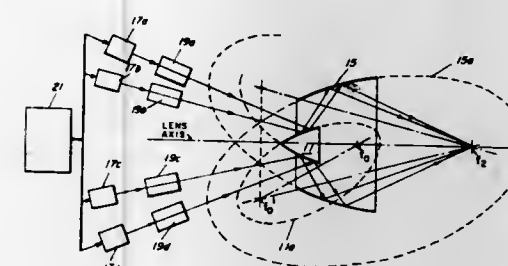
7 Claims



A punch-card time recording device comprises a housing having an opening for receiving an employee's time punch-card, a plurality of punches disposed within the housing controlled by a timing device for recording the time on the punch-card, and a stop within the housing determining the position of the punch-card with respect to the punches. The device further includes a first operating element actuated by the employee to record his "in" time and controlling the stop to position a first field of the punch-card with respect to said punches, and a second operating element actuated by the employee to record his "out" time and controlling the stop to position a second field of the punch-card with respect to the punches.

3,827,059  
**CATOPTRIC LENS ARRANGEMENT**  
Werner R. Rambausk, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.  
Filed July 3, 1972, Ser. No. 268,272  
Int. Cl. G02b 5/10

U.S. Cl. 350—294



Catoptric lens arrangements for combining energy from a number of sources, as light energy from a number of lasers, are shown. The disclosed arrangements include mirrors with reflecting surfaces having focal points spaced from a common axis of symmetry. With such reflecting surfaces (generated by nutating selected quadratic sections about the axis of symmetry), energy from a number of lasers may be focused at a focal point of the reflecting surface of an exit mirror.

3,827,060  
**AUTOMATIC CAMERA SHUTTER CONTROLS UTILIZING PHOTOELECTRICALLY CONVERTED PULSES**

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
Filed Feb. 8, 1973, Ser. No. 330,622

Claims priority, application Japan, Feb. 10, 1972, 47-013963

U.S. Cl. 354—51

Int. Cl. G03b 7/08

10 Claims



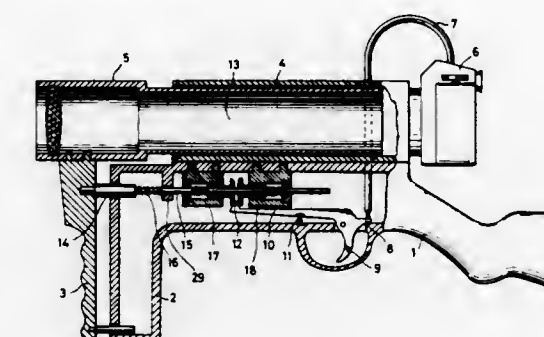
An electrical system for controlling a camera shutter. The electrical system includes a memory capacitor for storing a voltage and an oscillator connected to the capacitor for transmitting pulses thereto to form the voltage stored thereby. The oscillator is operated in accordance with factors such as brightness at the object to be photographed, film speed, and diaphragm setting, so that the voltage stored by the memory capacitor will correspond to these factors. A circuit which is electrically connected to a camera shutter to determine the duration during which it remains open is electrically connected with the memory capacitor to be controlled thereby.

3,827,061  
**FOCUSING LENS LOCK FOR PHOTOGRAPHIC CAMERAS**  
Ferdinand Kellner, 8941 Hart 14, near Memmingen, Germany  
Filed June 20, 1973, Ser. No. 371,690  
Claims priority, application Germany, July 25, 1972, 2236344

U.S. Cl. 354—195

Int. Cl. G03b 3/02

7 Claims



In a photographic apparatus with manually-operable means for rapid focusing of the objective lens, the invention has been devised to provide for automatic retention of the correctly-set objective in response to the operation of the shutter trip of the camera. In a preferred form, actuation of the shutter trip also operates locking means acting on an element movable with the objective.

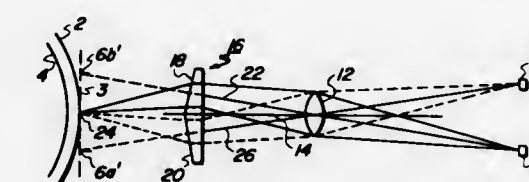
3,827,062  
**OPTICAL ARRANGEMENT FOR HIGH SPEED PRINTOUT SYSTEM**

Louis D. Malloux, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1972, Ser. No. 316,187  
Int. Cl. B41b 21/24

U.S. Cl. 95—4.5 R

4 Claims



A printing system including a photoconductive surface having a charge placed over an area of the surface. An optical means for selectively discharging portions of that area is employed to form a charge and discharge portion representative of an electrostatic latent image. The optical means includes an array of light emitting solid state devices with appropriate logic circuitry for selectively energizing certain elements of the array in order to form the electrostatic latent image.

In order to position the light images in a line and more closely together than their respective sources, the light emitting sources are placed in two parallel linear arrays. The images of each linear array are combined by projection through a bi-prism to effect a single linear array of closely packed light images.



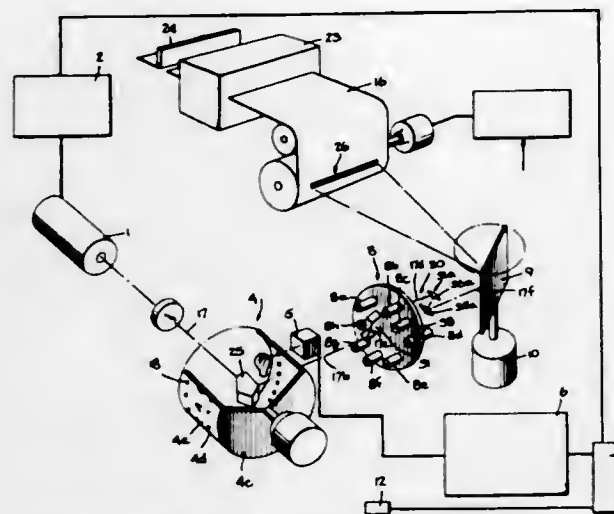
3,827,063

**MULTILENS PHOTOCOMPOSING MECHANISM**  
David J. Sinnott, Ringwood, and Donald E. Alecci, Pine Brook, both of N.J., assignors to Star-New Era, Inc., South Hackensack, N.J.

Filed July 5, 1972, Ser. No. 269,194  
Int. Cl. B41b 2/126

U.S. Cl. 95-4.5 R

42 Claims



The use of a plurality of lenses projecting a character to permit different magnifications thereof. The lenses are stationary and there is a movable reflector mechanism that directs the images of the character through any selected lens of the system.

3,827,064

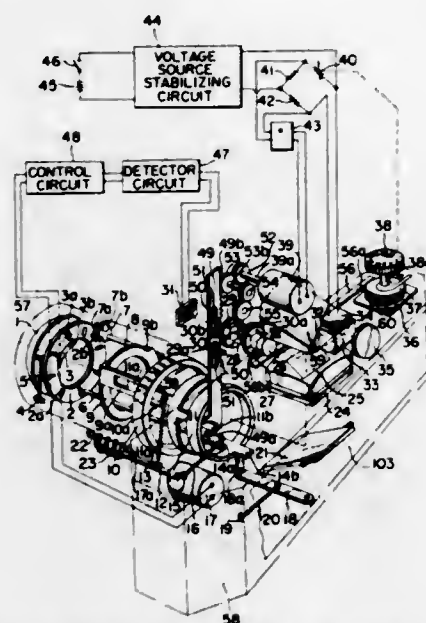
**FOCUS DETECTOR DEVICE**

Takehiko Kiyohara, Zama, and Noritaka Mochizuki, Kamakura, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1973, Ser. No. 325,813  
Claims priority, application Japan, Jan. 26, 1972, 47-9677  
Int. Cl. G03b 3/00

U.S. Cl. 354-25

3 Claims



This specification discloses a focus detector device which utilizes the fact that when a target image is formed in focus on the surface of a photoelectric element such as CdS cell or the like through an objective lens the resistance of the photoelectric element is maximum and when the formed image is out of focus the resistance of the photoelectric element is decreased. At least one focusing light-receiving element is disposed in the

optical path provided by the objective lens with a focusing lens interposed between the element and the objective lens. Means for limiting a light beam passed from the target or object of the photoelectric element is provided to control the amount of light so as to cause a predetermined brightness of the object light to be received by the photoelectric element. A second photoelectric element is provided to control the diaphragm of the objective lens and a second auxiliary diaphragm in front of the focusing photoelectric element. The photoelectric element may be located either substantially conjugately with or forwardly and rearwardly of a secondary real image plane provided by the objective lens with respect to the focusing lens.

3,827,065

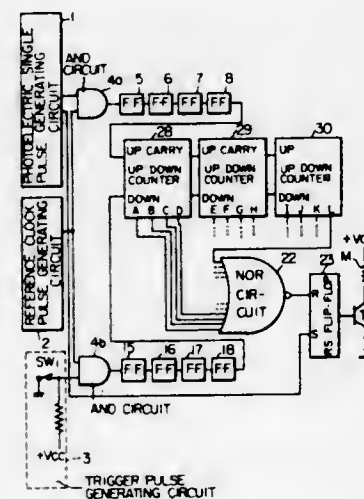
**WARNING CIRCUIT OF AN ELECTRIC SHUTTER**

Yasuhiro Wada, Fujimimachi, Japan, assignor to Kabushiki Kaisha COPAL, Tokyo, Japan

Filed Aug. 28, 1972, Ser. No. 284,151  
Claims priority, application Japan, Aug. 30, 1971, 46-66478; Aug. 30, 1971, 46-66479  
Int. Cl. G03b 7/08

U.S. Cl. 95-10 CT

12 Claims



Warning circuit of an electric shutter for indicating the conditions of over exposure, wavering of camera resulting from too long exposure time, proper exposure range and overflow of the counter. The electric shutter comprises a photoelectric single pulse generating circuit for generating a pulse indicative of exposure time, a reference clock pulse generating circuit and a logic circuit including a pair of binary counters or an up-down counter assembly having a plurality of stages of the counter units for counting the reference clock pulses during the photoelectric single pulse being generated so as to digitally control the exposure time. The warning circuit comprises a pilot lamp means including a flip-flop circuit and a transistor operated thereby for energizing or disenergizing the lamp. The set input of the flip-flop circuit is supplied from the output of a selected stage of the counter units for counting the pulses corresponding to the time of over exposure, proper exposure range, wavering of camera and overflow of the counter so that the flip-flop circuit is actuated by the selected stage to indicate the required condition.

3,827,066

**MEMORY TYPE EXPOSURE CONTROL SYSTEM**

Takeshi Yanagisawa, Kanagawa-ken; Kinzi Tanikoshi, and Yusuke Ono, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 44,670, June 9, 1970, Pat. No. 3,750,540.  
This application June 5, 1973, Ser. No. 367,219  
Claims priority, application Japan, June 13, 1969, 44-46555  
Int. Cl. G03b 7/08

U.S. Cl. 354-51

5 Claims

A memory type exposure control system for controlling the shutter speed of a camera wherein an electrical change of a

3,827,068

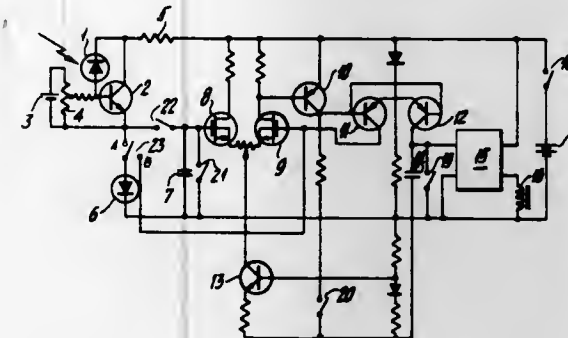
**APPARATUS FOR PHOTOGRAPHING PIPELINE INTERIORS**

Thomas Burton Hill, Jr., and Arthur Legrand Pendrey, both of Salem, Oreg., assignors to Salem Sand and Gravel Company, Salem, Oreg.

Filed Dec. 11, 1972, Ser. No. 313,802  
Int. Cl. G03b 17/08

U.S. Cl. 95-11 UW

17 Claims



combined with another condenser to constitute a shutter speed controlling-RC timing circuit whereby the delay time determines the duration of shutter control pulse, an improvement being effected in the sensor circuit so that the memory type exposure control system is made sufficiently responsive to a wider range of incident light intensity than was ever possible.

3,827,067

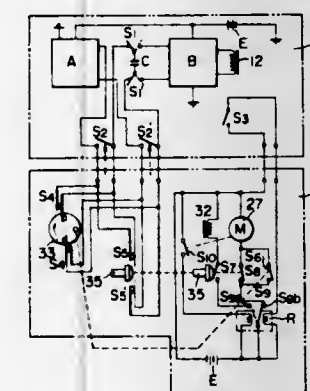
**AUTOMATIC WIND-UP DEVICE FOR A CAMERA HAVING A MEMORY TYPE EXPOSURE CONTROL DEVICE**

Masayoshi Yamamichi, Sagami-hara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

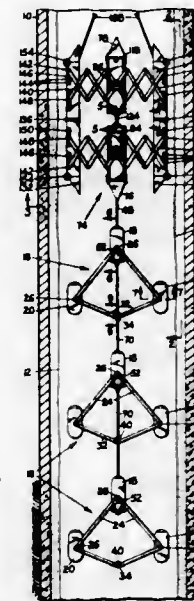
Filed July 5, 1973, Ser. No. 376,828  
Claims priority, application Japan, July 5, 1972, 47-67402  
Int. Cl. G03b 7/08

U.S. Cl. 354-51

4 Claims



An automatic wind-up device for a camera having a memory type exposure control device which allows change over between continuous photographing and single frame photographing, wherein when changed over to continuous photographing the photometrically sensed value of a first one frame is memorized and subsequent photographing is done based on said memorized value, thus a series of photographing is done while when changed over to single frame photographing, photometrically sensed value is memorized for each frame photographed for conducting photographing.



One or more laterally adjustable light support float units each is retractable for passage through a sewer manhole and is expandable to the interior transverse dimension of the pipeline, and supports a light for illuminating interior areas of the pipeline to be photographed. A camera and electrical power supply support float unit also is provided, and the support units are interconnected by flexible lines for passage of the assembled apparatus through curved areas of the pipeline and for spacing the lights relative to the camera. Laterally adjustable stabilizer means is provided for the camera and power supply support float unit. In one embodiment this stabilizer means comprises a pair of laterally and longitudinally collapsible outboard floats. In another embodiment the stabilizer means comprises a pair of laterally adjustable guide wheels extending from opposite sides of the float unit. Operation of the camera is radio controlled from a remote position outside the pipeline sequentially during progress of the apparatus through the pipeline.

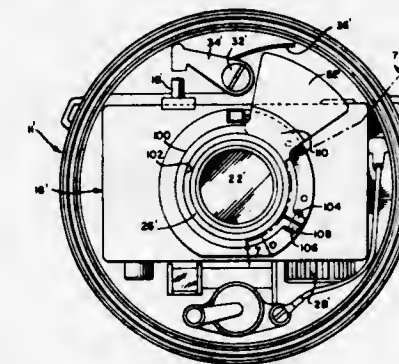
3,827,069

**FOCUSING MECHANISM FOR UNDERWATER CAMERA**  
Harold Lindsley Stowell, 666 Eleventh St. N.W., Washington, D.C. 20001

Filed Mar. 1, 1973, Ser. No. 337,166  
Int. Cl. G03b 17/08

U.S. Cl. 95-11 AW

6 Claims



Apparatus for varying the focus of a lens system of a camera mounted in a sealed underwater housing is provided requiring



no physical connection between the interior and the exterior of the sealed housing.

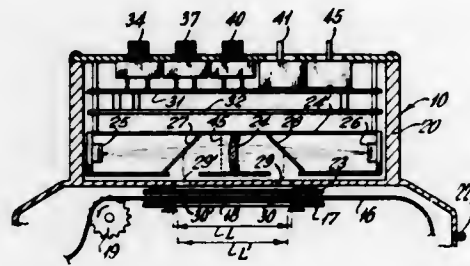
3,827,070

## DIGITAL DATA IMAGING SYSTEM

Peter G. Hoerenz, Hartsdale, and Helmut Ludt, Eastchester, both of N.Y., assignors to Carl Zeiss-Stiftung d.b.a. Carl Zeiss, Oberkochen/Wuerttemberg, Germany  
Filed Aug. 1, 1973, Ser. No. 384,760  
Int. Cl. G03b 17/24

U.S. Cl. 354-105

14 Claims



The invention contemplates a camera-back construction, particularly for a roll-film camera, whereby digital data applicable to each exposed frame is automatically entered via the back side of the film along opposite longitudinal end margins of each frame. Separate multiple-digit banks of light-emitting diodes jointly utilize a single optical system for projecting their respective displays at the end margins of each frame.

3,827,071  
CAMERAS

Gerald Leslie Turpin, Knoll Cottage, Fulmer Rd., Fulmer, England

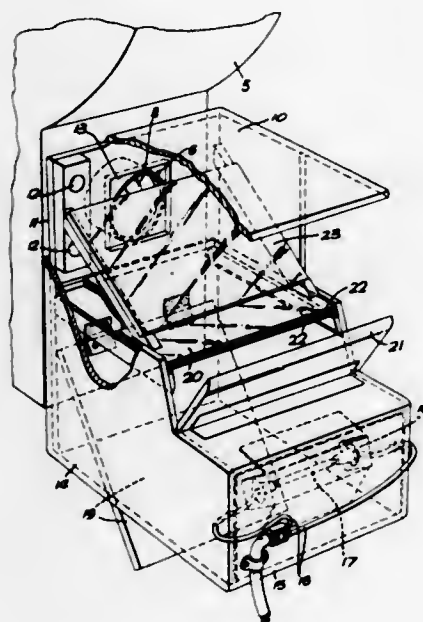
Filed June 20, 1972, Ser. No. 264,586

Claims priority, application Great Britain, June 24, 1971, 29677/71

Int. Cl. G03b 27/26

U.S. Cl. 95-1 R

10 Claims



The drawings show a camera having a device for directing additional light of a selected colour and intensity directly into the camera aperture to modify a scene recorded on film in the camera.

3,827,072  
CASSETTE

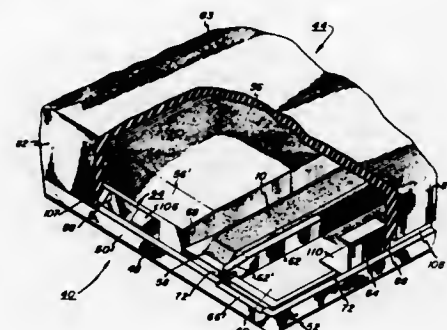
Paul A. Bevis, Pasadena; Hazen L. Hoyt, III, Glendora; Thomas E. Miner, Pasadena, all of Calif., and Norbert T. Kuypers, Lake Orion, Mich., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 874,747, Nov. 7, 1969. This application Dec. 16, 1971, Ser. No. 208,973

Int. Cl. G03b 17/26

U.S. Cl. 95-66

27 Claims



This application relates to a cassette adapted for use in an automated, flat plate xerographic processing system, especially of the type wherein X-ray images are recorded. The cassette includes means to rigidly support a xerographic plate therein and means adapted for cooperation with external plate advancing means for the insertion and withdrawal of a xerographic plate. Upon closing of the cassette by one of the associated processing units and upon the withdrawal of the plate-bearing cassette therefrom, the xerographic plate therein is maintained in a light-tight environment. After imaging exposure to X-rays which readily pass through the cassette walls, the cassette is inserted into another automated processing unit which automatically opens the cassette and removes the plate, supported by the cassette in proper alignment, therefrom.

3,827,073

## GATED BILATERAL SWITCHING SEMICONDUCTOR DEVICE

Jack P. Mize, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

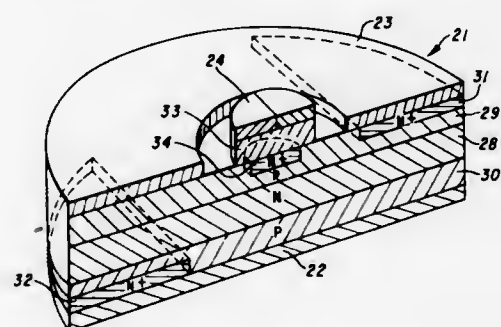
Continuation of Ser. No. 870,772, May 1, 1969, abandoned.

This application Sept. 7, 1971, Ser. No. 178,438

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 357-39

3 Claims



There is disclosed herein a self-triggering switching device which may be either symmetrical or non-symmetrical. The device comprises a plurality of interleaved layers of semiconductor materials of opposite conductivity types forming a plurality of p-n junctions. Two main current-carrying electrodes are affixed to the external layers and a trigger electrode including a layer of active glass is affixed to one of the intermediate layers providing controlled "turn-on" of the device.

3,827,074

## TRANSMISSION DEVICE FOR MULTIPLEX TRANSMISSION BETWEEN A TELEVISION CAMERA AND ITS CONTROL UNIT

Bernard De Thieulloy, and Claude Claverie, both of Paris, France, assignors to Thomson-CSF, Paris, France

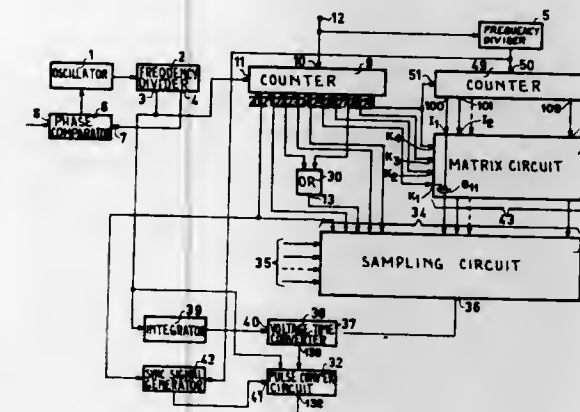
Filed Jan. 4, 1972, Ser. No. 215,348

Claims priority, application France, Nov. 8, 1971, 71.39926

Int. Cl. H04n 7/10, 7/12, 7/14

U.S. Cl. 358-15

5 Claims



In a two-way transmission device for multiplex transmission between a camera and its control unit, the control unit combines the narrow band control signals for the camera into a time-multiplex signal having a zero direct component and a frequency band comprised between 50 kc/s and 2 mc/s, different sampling frequencies being used for the narrow-band signals according to their bandwidths. In addition to this time-multiplex signal, which is transmitted as such, i.e., not being frequency-translated, or modulated on a carrier, the control unit transmits electrical power at zero frequency and a 58 mc/s carrier modulated by a video signal intended for the camera viewfinder. The camera transmits to the control unit the three video signals which it produces, on three carriers at 9, 22 and 36 mc/s. The service informations which the control unit has to receive from the camera are transmitted by means of pulses incorporated in the video signals during horizontal blanking intervals.

3,827,075

## SOLID STATE TELEVISION CAMERA

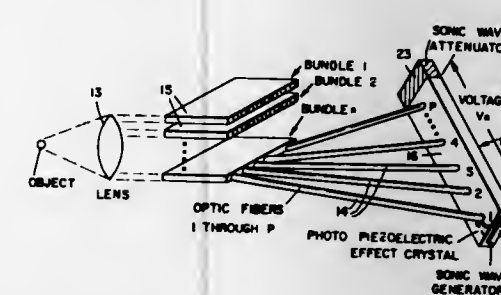
Orestes M. Baycura, 2238 Central Park Dr., Campbell, Calif. 95008

Filed July 9, 1973, Ser. No. 377,668

Int. Cl. H04n 9/04

U.S. Cl. 358-41

10 Claims



A solid state television camera wherein the light from an object is focused on a plurality of bundles of optical fibers. The optical fibers on each bundle are respectively connected to the light responsive face of a plurality of photo-piezoelectric effect transducer crystals. Each crystal is activated by sound source located at one end of the crystal. As the sound wave travels down the length of a crystal, a voltage occurs across the crystal that is proportional to the light from the particular

optical fiber when the travelling sound wave is coincident with that particular optical fiber. As the sound wave travels down the crystal a plurality of electrical pulses of varying amplitude in proportion to light intensity, sequentially appear across the crystal that represent one horizontal sweep of the object. A plurality of sweeps may be successively or simultaneously taken of the object by the remaining bundles and corresponding crystals that constitute an electrical representation of the object which may be then transmitted to a distant television receiver.

3,827,076

## COLOR TV APPARATUS AND METHOD

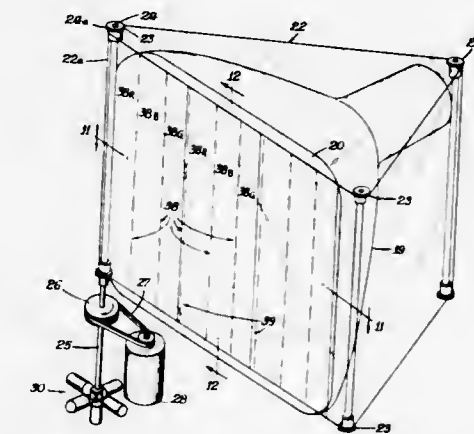
John L. McGregor, 827 S. Glenwood, Springfield, Ill. 62704  
Continuation of Ser. No. 687,274, Dec. 1, 1967, abandoned.

This application Apr. 24, 1971, Ser. No. 134,030

Int. Cl. H04n 9/22

U.S. Cl. 358/58

21 Claims



Producing a pattern of stripes of color weighted information on the TV picture screen, utilizing a color filter in front of picture screen having color bands in register with the stripes and moving the pattern of stripes and the color filter together across the picture screen to complete a sequence.

3,827,077

## TWO-STAGE CONTACT DUPLICATION OF MAGNETIC SIGNALS UTILIZING A METAL-BACKED INTERMEDIATE

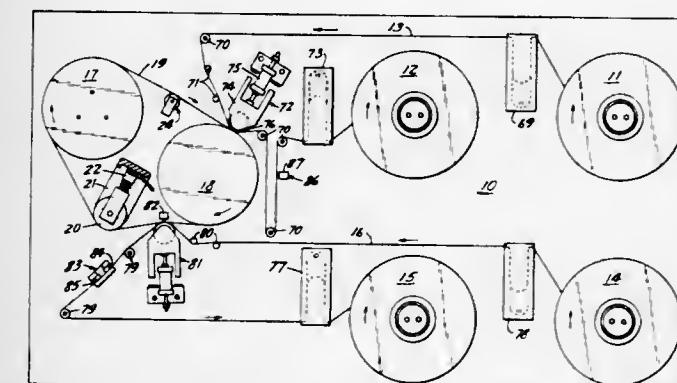
Gary W. Kobilka, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 20, 1973, Ser. No. 333,878

Int. Cl. G11b 5/86

U.S. Cl. 360-16

8 Claims



Magnetic signals from a master magnetic recording medium are copied onto a copy magnetic recording medium by means of an intermediate transfer medium having a thermally conductive metal backing and a coating of magnetizable material of low Curie temperature and normally high  $H_c$ . The signals are copied from the master onto the intermediate by ther-



moremanent contact duplication with the intermediate being cooled by the transfer of heat through the metal backing to a refrigerated surface. Subsequently, the signals are copied from the intermediate onto the copy medium by magnetically stimulated contact duplication.

**3,827,078**  
**DIGITAL DATA RETRIEVAL SYSTEM WITH DYNAMIC WINDOW SKEW**

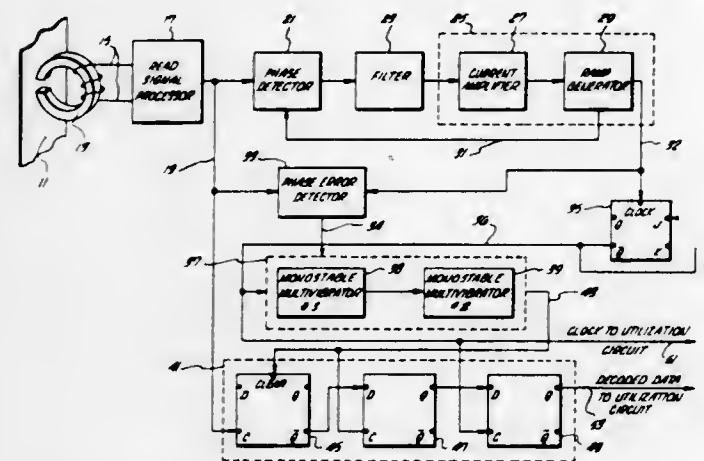
Joseph John Bauer, Agoura, Cal., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1972, Ser. No. 302,914

Int. Cl. G11b 5/44

U.S. Cl. 360—45

2 Claims



In a system for retrieving data from a record medium wherein the retrieved data is decoded by data window signals synchronized to data clock signals, the data window signals are skewed dynamically in response to existing phase error between the data clock signals and the retrieved data. A phase error detector, comprising two flip-flops and a differential amplifier, senses the phase displacement of the raw data with respect to the data clock signals, and produces a window skew signal which is supplied to the data window signal generating circuit.

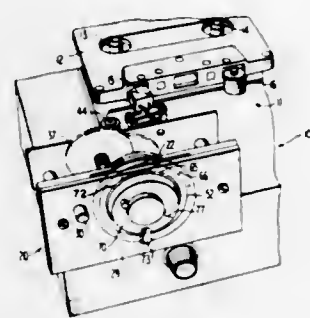
**3,827,079**  
**TRANSCRIBER DICTATION INDEXING APPARATUS**  
Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed Oct. 8, 1971, Ser. No. 187,640

Int. Cl. G11b 23/42, 31/00

U.S. Cl. 360—79

16 Claims



Apparatus providing indexing of transcribed information recorded on a recording medium. Information denoting end of dictated message, special instructions of the dictator, or other details, is recorded directly on the recording medium rather than being marked on a separate index member by the dictator. An index member not requiring predetermined beginning and end indications is traversed by transcription apparatus concurrently with a traverse of the tape or other recording

medium, and a visual indication is applied to the index member corresponding to each element of information previously recorded by the dictator. When this preparation of the index member by the transcriber has been completed, a reference mark is positioned adjacent the index member mark which indicates the beginning of dictation to be transcribed; the index member then moves relative to the indicating mark as transcription progresses to indicate the transcription relative to the previously-prepared index member.

**3,827,080**  
**METHOD AND DEVICE FOR RECORDED AUDIO-VISUAL PROGRAMMING**

Andre Jean-Claude Gendrot, 102, rue Anatole, 92700 Drancy, France

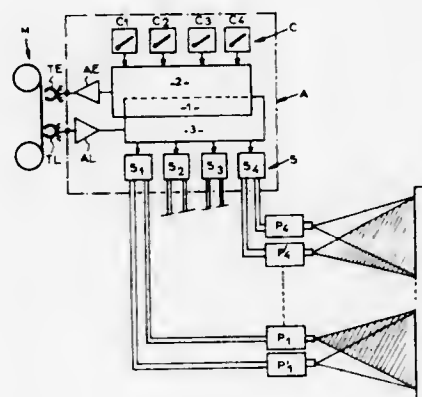
Filed Oct. 20, 1972, Ser. No. 299,588

Claims priority, application France, Oct. 20, 1971, 71.37738

Int. Cl. G11b 23/36; G03b 21/20

U.S. Cl. 360—80

9 Claims



The programming of the operation of several audio-visual apparatuses such as coupled slide projectors is recorded on the same carrier as and in synchronism with said recording. This program is then operated by the device of this invention utilizing programming and/or operating circuits sharing command logic circuits. The latter include essentially a shift register and an output flip-flop triggered by recurrent pulse trains. Each pulse is assigned according to its position to a particular command and is modulated in time duration in accordance with the variations of said command. By integrating the pulses of one and the same position in successive pulse trains, the variations of the respective command concerned can be reproduced.

**3,827,081**  
**DEVICE FOR THE DISPLACEMENT OF MAGNETIC READ/WRITE HEADS**

Lucien Robert Prieur, Ecouen, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed June 20, 1972, Ser. No. 264,640

Claims priority, application France, June 24, 1971, 71.23131

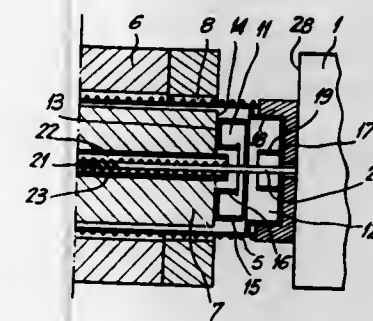
Int. Cl. G11b 5/54, 21/24

U.S. Cl. 360—105

13 Claims

A device is provided for the displacement of magnetic read and write heads in a disc drive unit, which device includes a sliding carriage on which the heads are mounted. The carriage is driven by an electric motor comprising a coil integral with

the carriage and located in the magnetic field of a permanent magnet consisting of a magnetic core around which the coil is



coaxially located. An air dash-pot is provided having one of its constituent elements attached to the carriage and the other to the core.

**3,827,082**  
**RECORD TRACK INDICATOR APPARATUS FOR A MULTITRACK TAPE PLAYER**

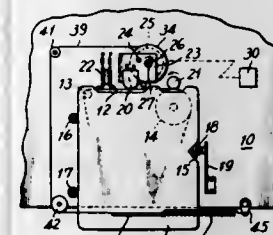
Itsuki Ban, 829, Higashi Oizumimachi, Nerima-ku, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,934

Int. Cl. G11b 21/08

U.S. Cl. 360—106

5 Claims



A record track indicator apparatus for a multitape magnetic tape player comprising a rotary cam for shifting a magnetic head in alignment with record tracks on the tape across the width of the tape, a rotary member rotatable in relation to rotation of the rotary cam, a flexible string member connected to the rotary member and adapted to be taken up by the rotary member when rotated, bias means for exerting tension on the

flexible string member in a direction reverse to that applied by the rotary member, and an indicator member movable by the flexible member upon rotation of the rotary member to identify the record track to be played due to its displacement. The rotary member is rotated a predetermined amount and freed from the cam and reversely rotated to its original position under the bias of the bias means simultaneously with movably returning the indicator member to its original position.

**3,827,083**  
**MAGNETIC HEAD WHEREIN AN ERASING HEAD IS PERPENDICULAR TO A RECORD-REPRODUCE GAP**  
Iwao Hosaka, and Yuji Yokota, both of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama-ken, both of Japan

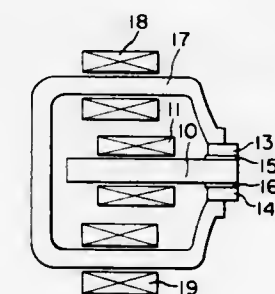
Filed Aug. 30, 1972, Ser. No. 284,912

Claims priority, application Japan, Sept. 10, 1971, 46-82378[U]

Int. Cl. G11b 5/28

U.S. Cl. 360—121

7 Claims



A magnetic head comprises a magnetic record or magnetic record-reproduce head core for forming a magnetized track, and an erase head core secured to the magnetic record-reproduce head core for forming erased tracks along the upper and lower marginal edges of the recorded track formed by the magnetic record or record-reproduce head core. The magnetic record or magnetic record-reproduce head core has at least one effective gap. The erase head core has its erase head gaps formed by the outer edges adjacent said effective gap portion of said magnetic record or magnetic record-reproduce head core and chip members of magnetic anisotropy oppositely disposed through said magnetic record or magnetic record-reproduce core.



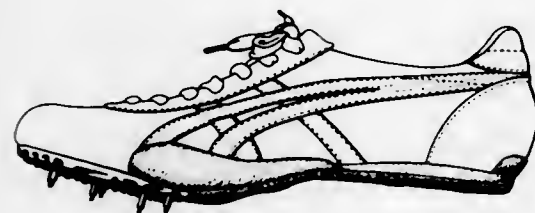
# DESIGNS

JULY 30, 1974

## 232,200 SPORT SHOE

Masanobu Inohara, Akashi, Hyogo Prefecture, Japan, assignor to Onitsuka Co., Ltd., Kobe, Japan  
Filed July 27, 1973, Ser. No. 383,344  
Claims priority, application Japan Mar. 6, 1973; Mar. 26, 1973; May 8, 1973  
Term of patent 14 years  
Int. Cl. D2-04

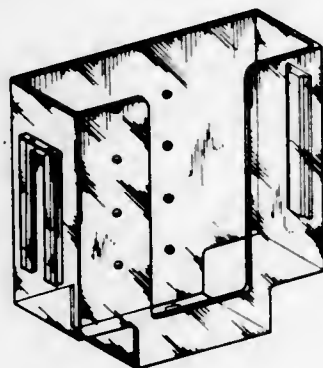
U.S. Cl. D2-311



## 232,201 MAGAZINE RACK

Morton Hoffman, West Hempstead, N.Y., assignor to Select Magazines, Inc., New York, N.Y.  
Filed Oct. 2, 1972, Ser. No. 294,234  
Term of patent 14 years  
Int. Cl. D6-04

U.S. Cl. D6-114

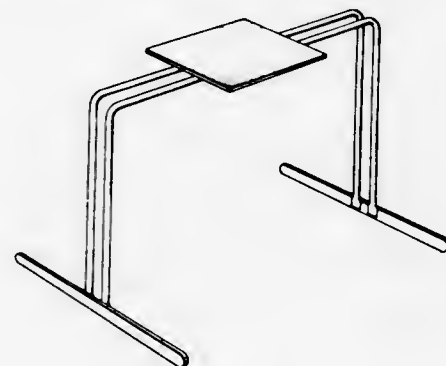


## 232,202 SEAT BASE OR SIMILAR ARTICLE

Hugh C. Acton, Ross Township, Kalamazoo County, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.  
Continuation-in-part of design application Ser. No. 23,048, May 18, 1970. This application Mar. 27, 1972, Ser. No. 238,721

Term of patent 14 years  
The portion of the term of the patent subsequent to Oct. 3, 1986, has been disclaimed  
Int. Cl. D6-06

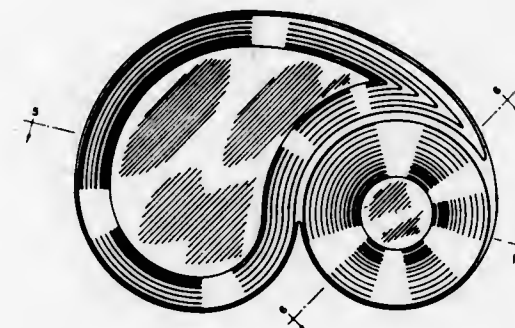
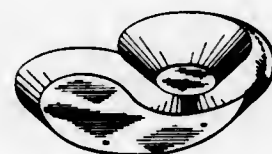
U.S. Cl. D6-196



## 232,203 SERVING DISH

Margaret W. Montgomery, 11046 Harney St., Omaha, Nebr. 68154  
Filed Dec. 20, 1972, Ser. No. 317,084  
Term of patent 14 years  
Int. Cl. D7-01

U.S. Cl. D7-1



JULY 30, 1974

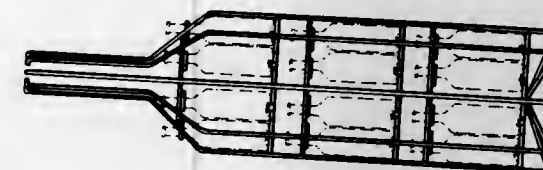
U. S. PATENT OFFICE

1389

## 232,204 BOTTLE RACK

Samuel S. Kaner, Tokyo, Japan, assignor to Premium Sales Kabushiki Kaisha, Tokyo, Japan  
Filed Sept. 13, 1971, Ser. No. 180,244  
Term of patent 14 years  
Int. Cl. D6-04

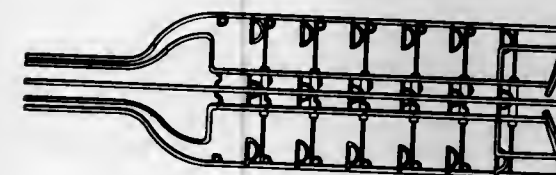
U.S. Cl. D6-153



## 232,205 BOTTLE RACK

Samuel S. Kaner, Tokyo, Japan, assignor to Premium Sales Kabushiki Kaisha, Tokyo, Japan  
Filed Sept. 13, 1971, Ser. No. 180,243  
Term of patent 14 years  
Int. Cl. D6-04

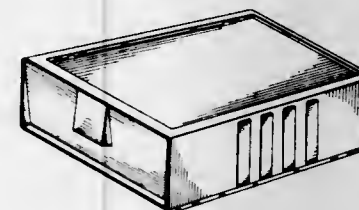
U.S. Cl. D6-153



## 232,206 MEDICATION CABINET

David B. Geddis, Somerville, N.J., assignor to Johnson & Johnson  
Filed Aug. 19, 1971, Ser. No. 173,343  
Term of patent 14 years  
Int. Cl. D6-04

U.S. Cl. D6-158



## 232,207 STRAND OF BEADS FOR A CURTAIN ELEMENT OR THE LIKE

Irving Levine, 23555 Park Belmonte, Calabasas Park, Calif. 91302  
Filed Nov. 10, 1972, Ser. No. 305,605  
Term of patent 14 years  
Int. Cl. D6-10

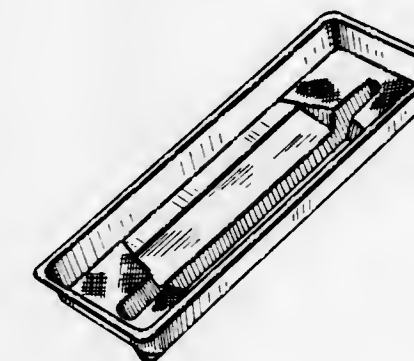
U.S. Cl. D6-205



## 232,208 PACKAGING TRAY

John T. Armbruster, Niagara Falls, and Russell J. Wolfe, Grand Island, N.Y., assignors to American Optical Corporation, Southbridge, Mass.  
Filed May 11, 1972, Ser. No. 252,534  
Term of patent 14 years  
Int. Cl. D9-03

U.S. Cl. D9-242

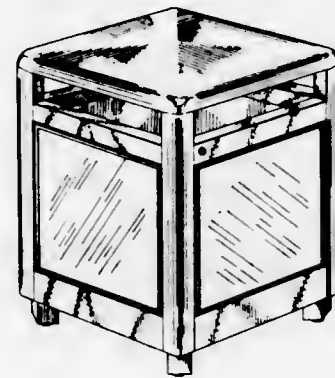




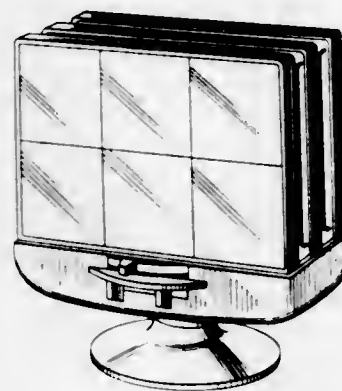
**232,209**  
**COMBINED HOLDER AND POURER FOR A WINE BOTTLE OR THE LIKE**  
 William A. Edwards, Los Angeles, Calif., assignor to Elmar Manufacturing Company, Chatsworth, Calif.  
 Filed June 8, 1973, Ser. No. 368,245  
 Term of patent 14 years  
 Int. Cl. D7—06  
 U.S. Cl. D7—70



**232,211**  
**COMBINATION LITTER CONTAINER AND ADVERTISING DISPLAY DEVICE**  
 Walter Kay, 815 S. 18th St., Arlington, Va. 22202, and Raymond M. Poelvoorde, Birmingham, Mich.; said Poelvoorde assignor to said Kay  
 Continuation-in-part of design application Ser. No. 226,383, Feb. 14, 1972, now Patent No. 229,279, dated Nov. 20, 1973. This application Dec. 8, 1972, Ser. No. 313,350  
 Term of patent 14 years  
 Int. Cl. D20—99  
 U.S. Cl. D7—191



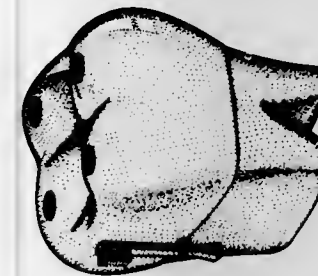
**232,210**  
**TOASTER**  
 Harry Hentschel, Munich, Germany, assignor to Siemens-Electrogerate GmbH, Berlin and Munich, Germany  
 Filed Apr. 28, 1972, Ser. No. 248,786  
 Claims priority, application Germany Oct. 29, 1971  
 Term of patent 14 years  
 Int. Cl. D7—02  
 U.S. Cl. D7—93



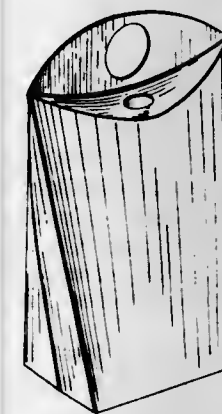
**232,212**  
**DISPLAY STAND FOR CIGARETTE PACKAGES**  
 William H. Glover, Locust, George E. Schmidt, Jr., Highlands, and Kenneth J. Donnelly, Long Branch, N.J., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.  
 Filed July 25, 1972, Ser. No. 274,947  
 Term of patent 14 years  
 Int. Cl. D6—04  
 U.S. Cl. D6—181



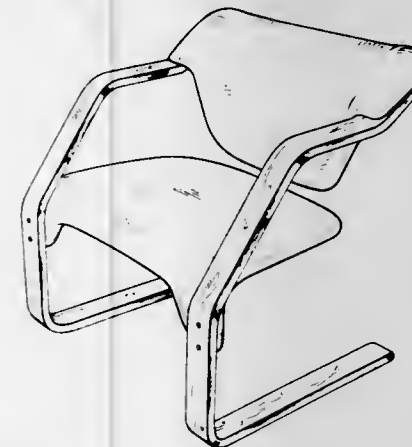
**232,213**  
**TOOTHBRUSH HOLDER, TIMER OR SIMILAR DEVICE**  
 Richard W. Dobyns, 1351 Graymill Drive, Scotch Plains, N.J. 07076  
 Filed July 9, 1973, Ser. No. 377,423  
 Term of patent 14 years  
 Int. Cl. D6—04  
 U.S. Cl. D6—94



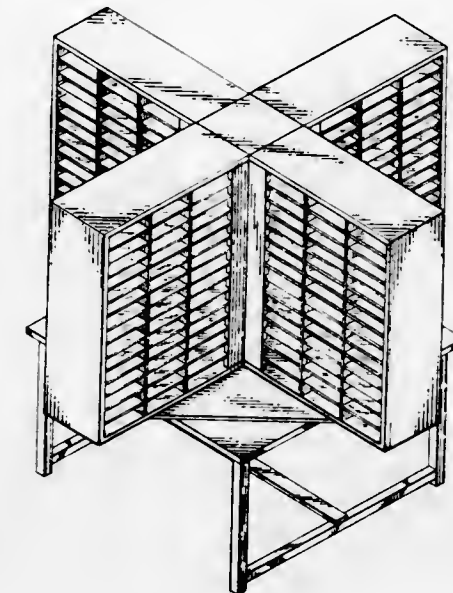
**232,214**  
**DISPOSABLE LITTER CONTAINER OR SIMILAR ARTICLE**  
 Sidney Blderman, 5524 E. Utah Place, Denver, Colo. 80222  
 Filed July 3, 1972, Ser. No. 268,700  
 Term of patent 14 years  
 Int. Cl. D7—07  
 U.S. Cl. D7—193



**232,215**  
**LOUNGE CHAIR**  
 Thomas Lamb, 349 Wellesley St. E., Toronto, Ontario, Canada  
 Filed Dec. 8, 1972, Ser. No. 313,587  
 Term of patent 14 years  
 Int. Cl. D6—01  
 U.S. Cl. D6—56



**232,216**  
**FILING CABINET**  
 Alan Dale Milner, 1150 S. Virain, Denver, Colo. 80219  
 Filed Apr. 13, 1970, Ser. No. 22,418  
 Term of patent 14 years  
 Int. Cl. D6—04  
 U.S. Cl. D6—190



**232,217**  
**TEMPERATURE REGULATOR**  
 Roger W. Dankert, Tustin, and William R. Dankert, Garden Grove, Calif., assignors to Rodan Industries, Inc., Anaheim, Calif.  
 Filed Dec. 13, 1971, Ser. No. 207,729  
 Term of patent 14 years  
 Int. Cl. D10—04  
 U.S. Cl. D10—50

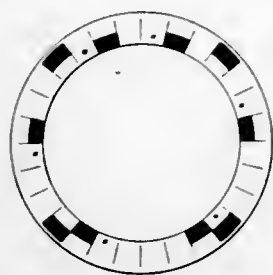




232,218

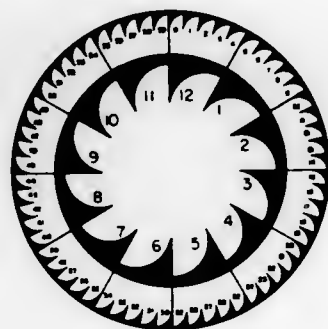
**CALENDAR RING FOR A WRISTWATCH**  
 Sadao Fujinami, Hatogaya, Japan, assignor to Orient  
 Tokai Kabushiki Kaisha (also trading as Orient Watch  
 Co., Ltd.), Tokyo, Japan  
 Filed Feb. 29, 1972, Ser. No. 230,550  
 Term of patent 14 years  
 Int. Cl. D10-07

U.S. Cl. D10-122

232,219  
CLOCK FACE

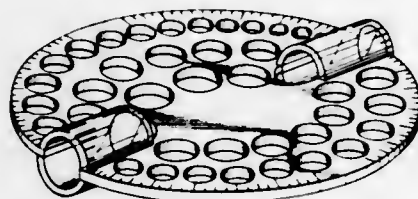
Richard A. Strong and Rosa M. Strong, both of 6816  
 Longford Drive, Dayton, Ohio 45424  
 Original design application Nov. 5, 1970, Ser. No. 25,841,  
 now Patent No. 224,033, dated June 27, 1972. Divided  
 and this application Feb. 22, 1972, Ser. No. 228,483  
 Term of patent 14 years  
 Int. Cl. D10-07

U.S. Cl. D10-126

232,220  
BOWLING BALL FINGER HOLE SIZING  
AND POSITIONING GUIDE

Wilson G. Taylor, 2901 West Valley,  
 Alhambra, Calif. 91803  
 Filed Oct. 3, 1972, Ser. No. 294,644  
 Term of patent 7 years  
 Int. Cl. D10-04

U.S. Cl. D10-70

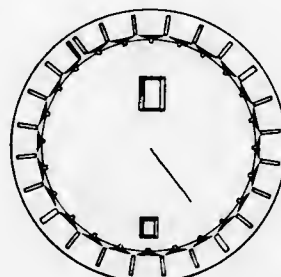


232,221

**COMBINED DIAL PLATE AND RING FOR A  
 TIMEPIECE FACE**

Sadao Fujinami, Hatogaya, Japan, assignor to Orient  
 Tokai Kabushiki Kaisha (also trading as Orient Watch  
 Co., Ltd.), Tokyo, Japan  
 Filed Feb. 29, 1972, Ser. No. 230,551  
 Term of patent 14 years  
 Int. Cl. D10-07

U.S. Cl. D10-123



232,222

**COMBINED PUBLIC TELEPHONE ENCLOSURE  
 AND SUPPORT**

Keith David Bartley and Fred Arlington Dewhirst, Indian-  
 apolis, Ind., Donald Michael Genaro, Haworth, N.J.,  
 and John Niel McGarvey, Drexel Hill, Pa., assignors  
 to Bell Telephone Laboratories, Incorporated, Murray  
 Hill, N.J.  
 Original design application June 5, 1972, Ser. No.  
 260,064. Divided and this application Aug. 20,  
 1973, Ser. No. 390,108  
 Term of patent 14 years  
 Int. Cl. D25-99

U.S. Cl. D13-1 L



232,223

**COMBINED PUBLIC TELEPHONE ENCLOSURE  
 AND SUPPORT**

Keith David Bartley and Fred Arlington Dewhirst, Indian-  
 apolis, Ind., Donald Michael Genaro, Haworth, N.J.,  
 and John Niel McGarvey, Drexel Hill, Pa., assignors  
 to Bell Telephone Laboratories, Incorporated, Murray  
 Hill, N.J.

Original design application June 5, 1972, Ser. No.  
 260,064. Divided and this application Aug. 20,  
 1973, Ser. No. 390,109

Term of patent 14 years  
 Int. Cl. D25-99

U.S. Cl. D13-1 L

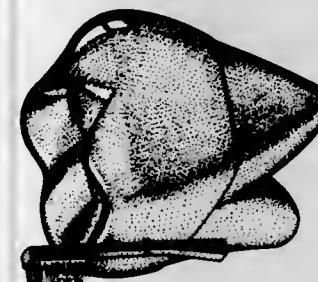


232,224

**TIMER OR SIMILAR DEVICE**

Richard W. Dobyns, 1351 Graymill Drive,  
 Scotch Plains, N.J. 07076  
 Filed July 9, 1973, Ser. No. 377,424  
 Term of patent 14 years  
 Int. Cl. D10-03

U.S. Cl. D10-40



232,225

BOAT

Nealy Adolph Sweat, 408 Old Trolley Road,  
 Summerville, S.C. 29483  
 Filed May 10, 1971, Ser. No. 142,114  
 Term of patent 14 years  
 Int. Cl. D12-06

U.S. Cl. D12-63



232,226

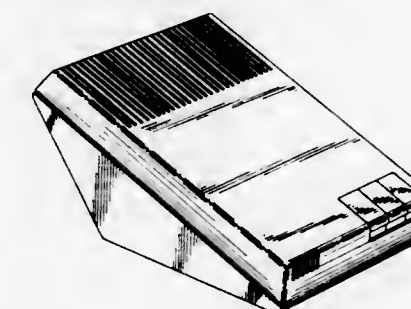
**TELEPHONE SUBSTATION APPARATUS**

James W. M. Bee and John F. Tyson, Ottawa, Ontario,  
 and John A. Mahan, Kanata, Ontario, Canada, as-  
 signors to Bell Canada-Northern Electric Research  
 Limited, Ottawa, Ontario, Canada

Filed Dec. 29, 1972, Ser. No. 319,886  
 Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D26-14 A



232,227

**BASE FOR A TELEPHONE SET**

James W. M. Bee and John F. Tyson, Ottawa, Ontario,  
 and John A. Mahan, Kanata, Ontario, Canada, as-  
 signors to Bell Canada-Northern Electric Research  
 Limited, Ottawa, Ontario, Canada

Filed Dec. 29, 1972, Ser. No. 319,885  
 Term of patent 14 years

Int. Cl. D14-03

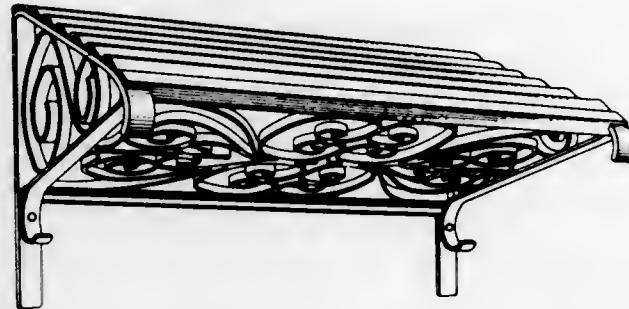
U.S. Cl. D26-14 A





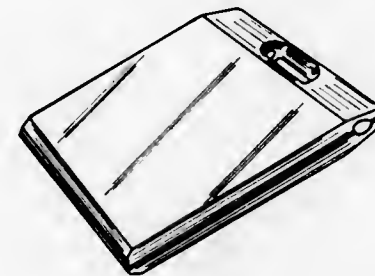
**232,228**  
**AWNING**  
 George W. Wells, 75 Locust Ave.,  
 Peekskill, N.Y. 10566  
 Filed July 14, 1972, Ser. No. 271,806  
 Term of patent 14 years  
 Int. Cl. D25—02

U.S. Cl. D21—6 B



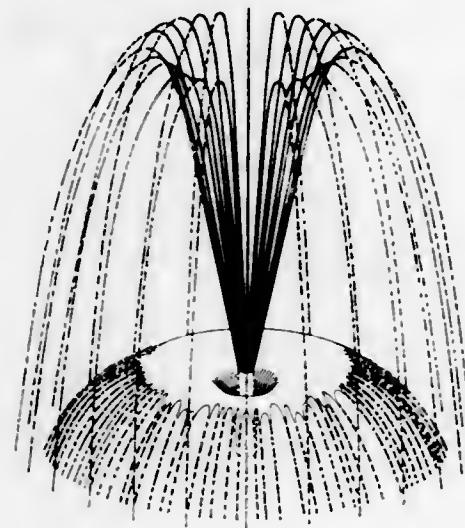
**232,231**  
**CARRYING CASE FOR COMBINED MAGNETIC,  
 PEG AND CHALK BOARDS**  
 Michael Langieri, Butler, N.J., assignor to Questor  
 Corporation, Toledo, Ohio  
 Filed Oct. 2, 1972, Ser. No. 294,445  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



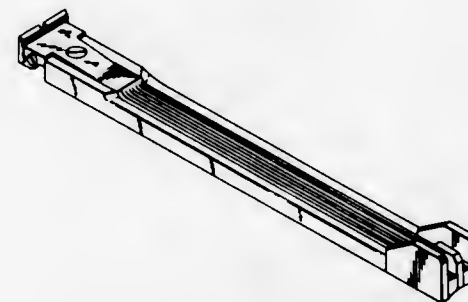
**232,229**  
**WATER FOUNTAIN**  
 John O. Hraby, Jr., Burbank, Calif., assignor to Rain  
 Jet Corporation, Burbank, Calif.  
 Filed June 1, 1970, Ser. No. 23,209  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—13



**232,232**  
**GUNSIGHT**  
 Robert Korzeniewski, 115 N. Live Oak St.,  
 Carthage, Tex. 75633  
 Filed Sept. 6, 1973, Ser. No. 394,912  
 Term of patent 14 years  
 Int. Cl. D16—06; D22—99

U.S. Cl. D22—8



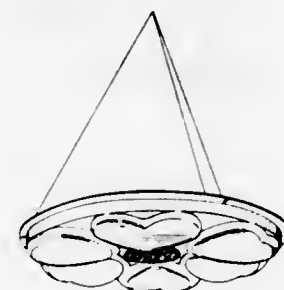
**232,230**  
**DESK TELEPHONE**  
 James J. Davis, New Cumberland, and William R. De  
 Lozier, Camp Hill, Pa., assignors to International Tele-  
 phone and Telegraph Corporation, Nutley, N.J.  
 Filed May 9, 1972, Ser. No. 251,849  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D26—14 A



**232,233**  
**FLY TRAP**  
 Gregory Daratsos, Flushing, N.Y., assignor to Dars Met-  
 All Industries, Inc., Long Island City, N.Y.  
 Filed June 13, 1973, Ser. No. 369,568  
 Term of patent 14 years  
 Int. Cl. D22—06

U.S. Cl. D22—19



**232,234**  
**FISHING POLE HOLDER**  
 John P. Freed, Rte. 4, Box 528,  
 Hot Springs, Ark. 71901  
 Filed Sept. 24, 1973, Ser. No. 400,150  
 Term of patent 14 years  
 Int. Cl. D22—05

U.S. Cl. D22—13



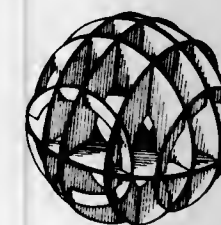
**232,235**  
**FISHING LURE**  
 Roger Cauquis, 25 Rue de la Prairie,  
 93 Aulnay, France  
 Filed June 15, 1973, Ser. No. 370,405  
 Term of patent 14 years  
 Int. Cl. D22—05

U.S. Cl. D22—27



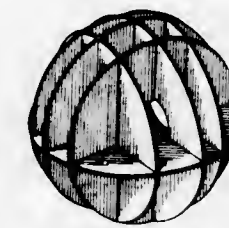
**232,236**  
**MODULE FOR A FILTER MEDIA OR  
 SIMILAR ARTICLE**  
 Joseph N. La Borde, Baton Rouge, La., assignor to  
 Ethyl Corporation, Richmond, Va.  
 Filed Oct. 5, 1972, Ser. No. 295,135  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—4



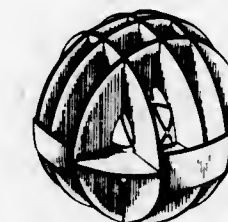
**232,237**  
**MODULE FOR A FILTER MEDIA OR  
 SIMILAR ARTICLE**  
 Joseph N. La Borde, Baton Rouge, La., assignor to  
 Ethyl Corporation, Richmond, Va.  
 Filed Oct. 5, 1972, Ser. No. 295,136  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—4



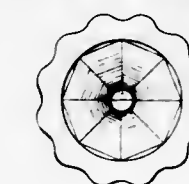
**232,238**  
**MODULE FOR A FILTER MEDIA OR  
 SIMILAR ARTICLE**  
 Joseph M. La Borde, Baton Rouge, La., assignor to  
 Ethyl Corporation, Richmond, Va.  
 Filed Oct. 5, 1972, Ser. No. 295,213  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—4



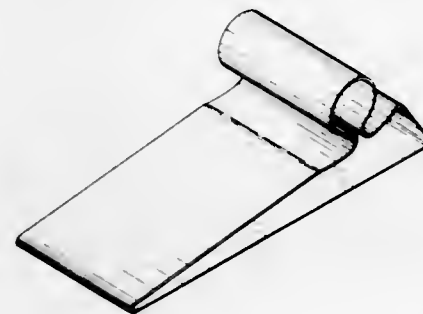
**232,239**  
**PYRAMIDAL HORN**  
 Alberto Birlain Schaffer, Ceylan 687, Col. Industrial  
 Vallejo, Mexico City, Mexico  
 Filed Aug. 23, 1972, Ser. No. 283,150  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 C

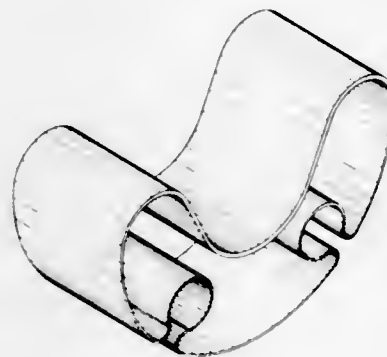




**232,240**  
**PLAYGROUND CLIMBER**  
 Nancy Reed Markusen, Grand Forks, N. Dak., assignor  
 to University of Idaho Research Foundation, Moscow,  
 Idaho  
 Filed May 30, 1972, Ser. No. 258,222  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-5 H



**232,241**  
**PLAYGROUND CLIMBER**  
 Nancy Reed Markusen, Grand Forks, N. Dak., assignor  
 to University of Idaho Research Foundation, Moscow,  
 Idaho  
 Filed May 30, 1972, Ser. No. 258,226  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-5 H



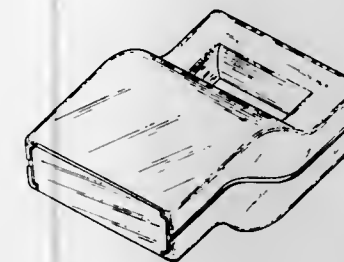
**232,242**  
**WALKING STILT**  
 George G. Young, 5906 N. Waterbury Road,  
 Des Moines, Iowa 50312  
 Filed Dec. 13, 1972, Ser. No. 314,701  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-14 E



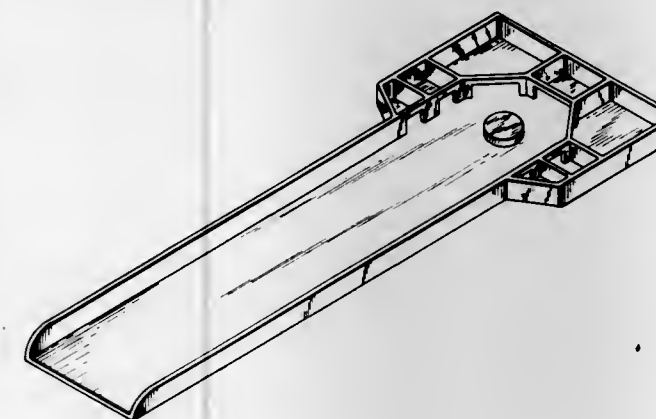
**232,243**  
**TOY MICROPHONE AND STAND**  
 William J. Thorp, deceased, late of Barrington, Ill., by  
 Mildred B. Thorp, executrix, 162 Hillcrest Drive,  
 Barrington, Ill. 60010  
 Filed May 30, 1972, Ser. No. 258,223  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-15 A



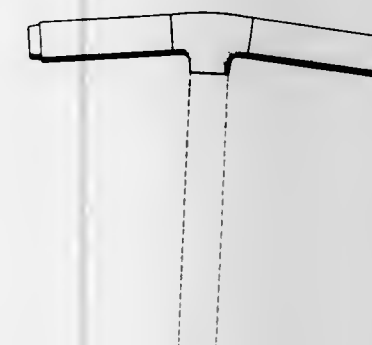
**232,244**  
**TOY TAPE MEASURE**  
 Michael Langieri, 8 Cedar St., Butler, N.J. 07405  
 Filed Oct. 2, 1972, Ser. No. 294,337  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-15 A



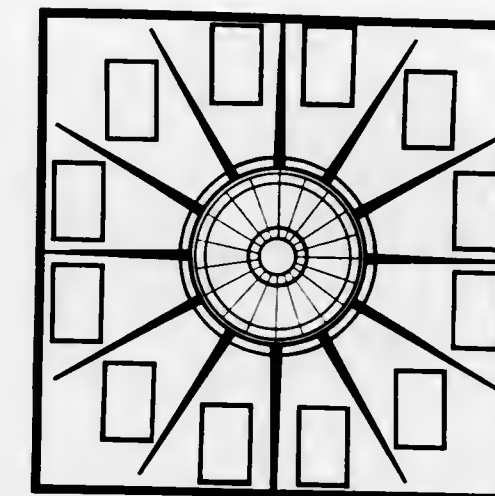
**232,245**  
**GAMEBOARD OR SIMILAR ARTICLE**  
 Donald H. Sirois, P.O. Box 94, R.F.D.,  
 Hudson, N.H. 03051  
 Filed Mar. 13, 1973, Ser. No. 340,878  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-5 BB



**232,246**  
**HANDLE FOR A FLOOR TREATING MACHINE**  
 Stephen G. Hauser, Tarzana, Calif., assignor to Ampro,  
 Ltd., Salt Lake City, Utah  
 Filed Jan. 31, 1972, Ser. No. 222,439  
 Term of patent 14 years  
 Int. Cl. D15-05  
 U.S. Cl. D37-3



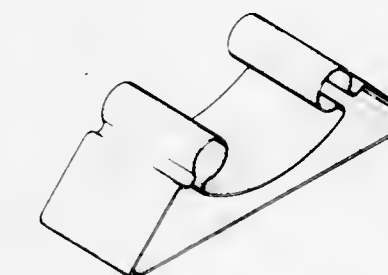
**232,247**  
**GAME BOARD**  
 Karin Koal, 5025 Cloudburst Hill,  
 Columbia, Md. 21043  
 Filed Oct. 4, 1972, Ser. No. 294,778  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-5 SS



**232,248**  
**CHILD'S WALKING AND ROCKING TOY**  
 Edward L. Cicero, 52-62 66th St.,  
 Maspeth, N.Y. 11378  
 Continuation-in-part of abandoned design application Ser.  
 No. 106,313, Jan. 13, 1971. This application May 8,  
 1972, Ser. No. 251,589  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-14 E



**232,249**  
**PLAYGROUND CLIMBER**  
 Nancy Reed Markusen, Grand Forks, N. Dak., assignor  
 to University of Idaho Research Foundation, Moscow,  
 Idaho  
 Filed May 30, 1972, Ser. No. 258,220  
 Term of patent 14 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-5 H

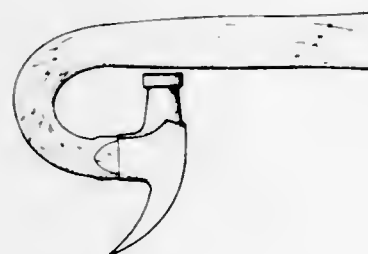




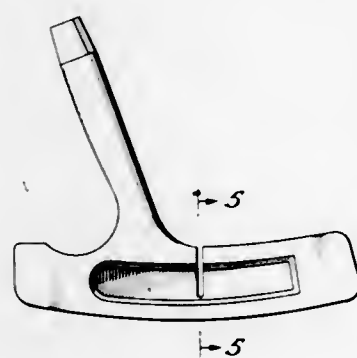
**232,250**  
**OCCUPANT PROPELLED AMUSEMENT BALL**  
 Bradley J. Caylor, 1340 Kilrush Court,  
 Pinole, Calif. 94564  
 Filed Sept. 18, 1972, Ser. No. 290,225  
 Term of patent 7 years  
 Int. Cl. D21-01  
 U.S. Cl. D34-15 AJ



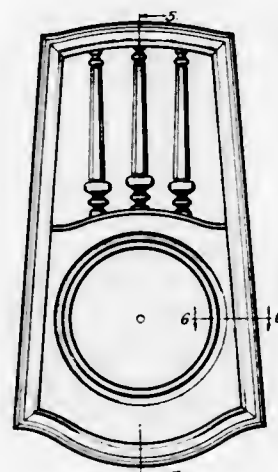
**232,251**  
**NOVELTY HAMMER**  
 Leo M. Spelght, 47 Pleasant St.,  
 East Longmeadow, Mass. 01028  
 Filed Dec. 11, 1972, Ser. No. 314,245  
 Term of patent 14 years  
 Int. Cl. D21-03  
 U.S. Cl. D34-15 A



**232,252**  
**GOLF PUTTER HEAD**  
 Raymon W. Cook, 406 Top Hill,  
 San Antonio, Tex. 78209  
 Filed Mar. 21, 1973, Ser. No. 343,517  
 Term of patent 14 years  
 Int. Cl. D21-02  
 U.S. Cl. D34-5 GH



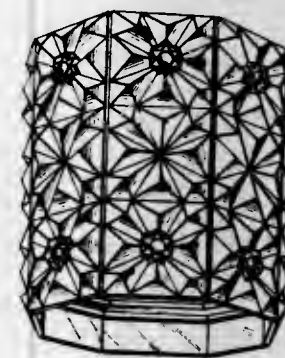
**232,253**  
**CLOCK HOUSING**  
 Robert I. Kallman, Elburn, and Dominic J. De Fano,  
 Palatine, Ill., assignors to Sunbeam Corporation, Chi-  
 cago, Ill.  
 Filed June 30, 1972, Ser. No. 267,788  
 Term of patent 14 years  
 Int. Cl. D10-01  
 U.S. Cl. D42-7 R



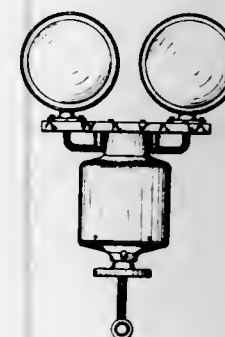
**232,254**  
**LAMP SHADE**  
 Kenneth Yuhung Tongson, San Po Kong, Hong Kong,  
 assignor to Star Industrial Company Limited, Kowloon,  
 Hong Kong  
 Filed Sept. 24, 1973, Ser. No. 400,116  
 Claims priority, application Great Britain Apr. 12, 1973  
 Term of patent 14 years  
 Int. Cl. D26-05  
 U.S. Cl. D48-16 D



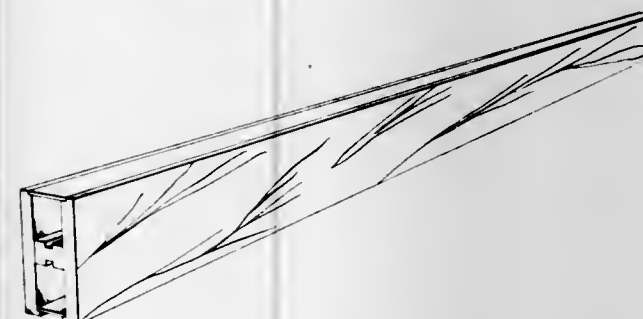
**232,255**  
**LAMP SHADE**  
 Kenneth Yuhung Tongson, San Po Kong, Hong Kong,  
 assignor to Star Industrial Company Limited, Kowloon,  
 Hong Kong  
 Filed Sept. 24, 1973, Ser. No. 400,117  
 Claims priority, application Great Britain Apr. 12, 1973  
 Term of patent 14 years  
 Int. Cl. D26-05  
 U.S. Cl. D48-16 D



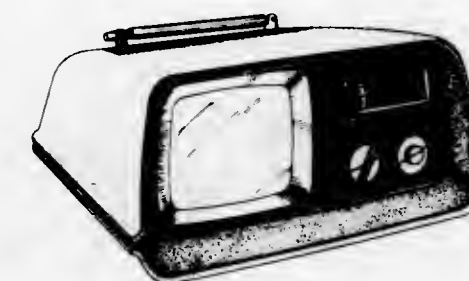
**232,256**  
**REMOTE CONTROL SEARCH LIGHT**  
 Taiji Satoh, Koshigaya, Japan, assignor to Sanshin Dengu  
 Manufacturing Co., Ltd., Tokyo, Japan  
 Filed Nov. 1, 1972, Ser. No. 302,797  
 Term of patent 14 years  
 Int. Cl. D26-03  
 U.S. Cl. D48-20 K



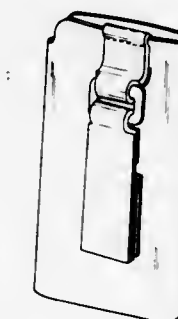
**232,257**  
**DUAL LIGHTING FIXTURE**  
 Ralph E. Paulson, 14802 Grevillea Ave.,  
 Lawndale, Calif. 90260  
 Filed Apr. 9, 1973, Ser. No. 349,012  
 Term of patent 14 years  
 Int. Cl. D26-05; D25-01  
 U.S. Cl. D48-23 R



**232,258**  
**COMBINED TELEVISION AND DIGITAL CLOCK**  
**OR SIMILAR ARTICLE**  
 John B. MacDonald, Chesapeake, Va., assignor to  
 General Electric Company  
 Filed July 12, 1972, Ser. No. 270,968  
 Term of patent 14 years  
 Int. Cl. D14-03  
 U.S. Cl. D56-4 D



**232,259**  
**EYEGLASS CASE OR SIMILAR ARTICLE**  
 Robert G. Brown, deceased, late of East Alton, Ill., by  
 Gertrude T. Brown and Robert C. Brown, Ridgewood,  
 N.J., and Gene Louise Grant, Cheyenne, Wyo., heirs,  
 assignors to Magni-Case, Inc.  
 Filed Oct. 8, 1970, Ser. No. 25,400  
 Term of patent 14 years  
 Int. Cl. D16-08  
 U.S. Cl. D57-1



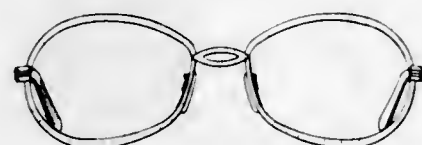
**232,260**  
**SPRING TEMPLE FOR AN EYEGLASS FRAME**  
 Irving Gardner, P.O. Box 294,  
 Hunter, N.Y. 12442  
 Filed May 1, 1973, Ser. No. 356,160  
 Term of patent 14 years  
 Int. Cl. D16-06  
 U.S. Cl. D57-1 A





**232,261**  
**EYEGLASS FRAME**  
 Yumatsu Mural, Fukui, Japan, assignor to  
 Weiling International Corp.  
 Filed July 9, 1973, Ser. No. 377,704  
 Term of patent 3½ years  
 Int. Cl. D16—06

U.S. Cl. D57—1 F



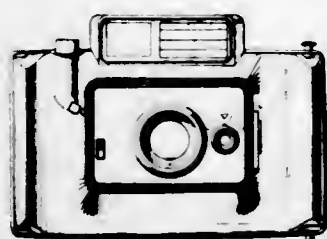
**232,262**  
**SPECTACLE FRONT**  
 Jack Bloch, Leominster, Mass., assignor to Foster Grant  
 Co., Inc., Leominster, Mass.  
 Filed Sept. 14, 1973, Ser. No. 397,560  
 Term of patent 14 years  
 Int. Cl. D16—06

U.S. Cl. D57—1 F



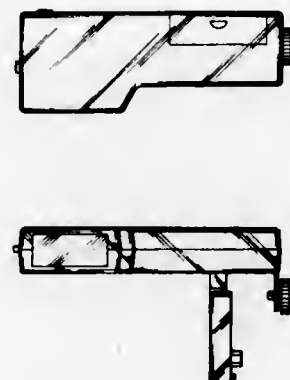
**232,263**  
**PHOTOGRAPHIC CAMERA**  
 Ronald Emmerling, New City, N.Y., assignor to Berkey  
 Photo, Inc., Paramus, N.J.  
 Filed Oct. 11, 1972, Ser. No. 296,629  
 Term of patent 14 years  
 Int. Cl. D16—01

U.S. Cl. D61—1 B



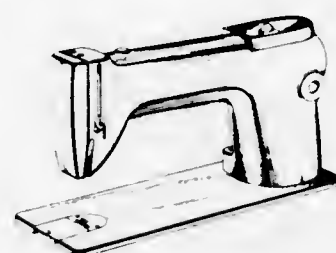
**232,264**  
**ELECTRONIC FLASH UNIT FOR CAMERAS**  
 Keisuke Kitagawa, Tokyo, Japan, assignor to Kalimar,  
 Inc., St. Louis, Mo.  
 Filed Mar. 1, 1973, Ser. No. 336,986  
 Term of patent 14 years  
 Int. Cl. D16—05

U.S. Cl. D61—1 F



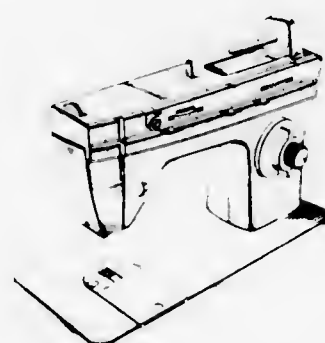
**232,265**  
**SEWING MACHINE FRAME OR SIMILAR ARTICLE**  
 Manfred R. Laidig, Whippany, N.J., assignor to The  
 Singer Company, New York, N.Y.  
 Filed Dec. 15, 1972, Ser. No. 315,778  
 Term of patent 14 years  
 Int. Cl. D15—09

U.S. Cl. D70—1



**232,266**  
**SEWING MACHINE FRAME OR SIMILAR ARTICLE**  
 Wayne A. Current, Cranford, N.J., assignor to The  
 Singer Company, New York, N.Y.  
 Filed Feb. 22, 1973, Ser. No. 334,819  
 Term of patent 14 years  
 Int. Cl. D15—09

U.S. Cl. D70—1



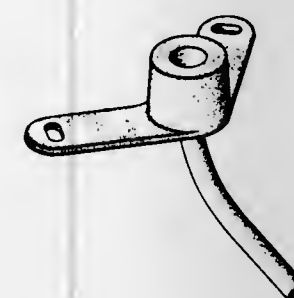
**232,267**  
**WRITING INSTRUMENT**  
 Nathan A. Zepell, 1359 Santa Teresita Drive,  
 Santa Barbara, Calif. 93105  
 Filed Aug. 18, 1972, Ser. No. 281,920  
 Term of patent 14 years  
 Int. Cl. D19—06

U.S. Cl. D74—17 B



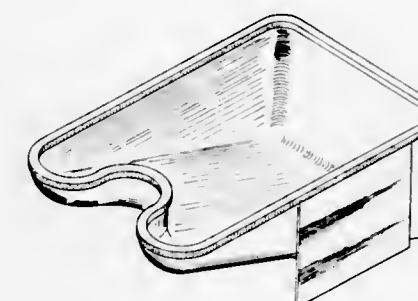
**232,268**  
**PEDIATRIC TRACHEOSTOMY TUBE**  
 Bruce E. Fettel, Diamond Bar, and George M. Johnson,  
 La Palma, Calif., assignors to Shiley Laboratories, Inc.,  
 Santa Ana, Calif.  
 Filed Mar. 30, 1973, Ser. No. 346,634  
 Term of patent 14 years  
 Int. Cl. D24—03

U.S. Cl. D83—1 K



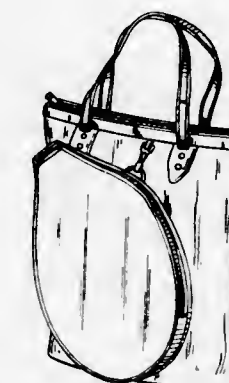
**232,269**  
**PORTABLE SHAMPOO TRAY**  
 Gaye G. Cates, 1708 S. Monroe,  
 San Angelo, Tex. 76901  
 Filed June 11, 1971, Ser. No. 152,484  
 Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D86—10 F



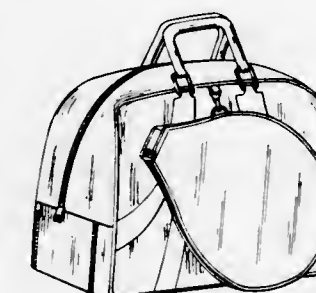
**232,270**  
**COMBINED CARRYING CASE AND  
 TENNIS RACKET HOLDER**  
 Samuel N. Glantz and Milton Glantz, both of 1127 W.  
 Division, Chicago, Ill. 60622  
 Filed Sept. 18, 1972, Ser. No. 290,238  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D87—1 R



**232,271**  
**COMBINED CARRYING CASE AND  
 TENNIS RACKET HOLDER**  
 Samuel N. Glantz and Milton Glantz, both of 1127 W.  
 Division, Chicago, Ill. 60622  
 Filed Sept. 18, 1972, Ser. No. 291,069  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D87—1 R



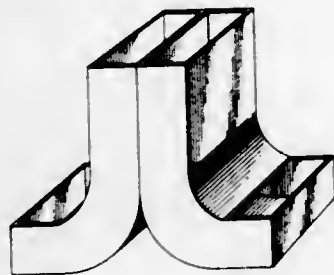


232,272

**TREE SEEDLING CARRIER**

Philip F. Hahn, Eugene, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.  
Filed Feb. 12, 1973, Ser. No. 331,580  
Term of patent 14 years  
Int. Cl. D3—99

U.S. Cl. D87—1 R



232,273

**CARRYING BAG**

Josef A. Ross, Bergenfield, N.J., assignor to Universal Trav-Ler Inc., Bronx, N.Y.  
Filed Apr. 17, 1972, Ser. No. 245,050  
Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—5 G



232,274

**TIRE FOR A VEHICLE WHEEL**

Brian Howard Holmes, Karl Gebert, and Hannelore Weinhold, deceased, by Gertrud Weinhold and Margarethe Sammam, legal representatives, all % Fort Dunlop, Erdington, Birmingham 24, England  
Filed Mar. 17, 1972, Ser. No. 235,878  
Claims priority, application Great Britain Sept. 25, 1971  
Term of patent 14 years  
Int. Cl. D12—15

U.S. Cl. D90—20 R



232,275

**DRY SHAVER**

Hiromichi Yamada, Isao Ayukawa, and Shuji Iwamoto, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan  
Filed Oct. 25, 1972, Ser. No. 300,516  
Claims priority, application Japan June 16, 1972  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D95—3 A

**LIST OF PATENTEES**

TO WHOM

**PATENTS WERE ISSUED ON THE 30TH DAY OF JULY, 1974**

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A/S Kongsberg Vapenfabrik Kirkegardsveien: See—  
Rognmo, Tore; and Sjøtun, Kvrre, 3,826,193.  
AB Centralsug: See—  
Anton, Per; and Hyden Hans Olof, 3,826,366.  
Abbema, Pieter. Multi-faced display sign. 3,826,027, Cl. 40-32.000.  
Abbott Laboratories: See—  
Bratu, Nicholas George, Jr.; and Jeffries, James Frederick, Jr., 3,826,619.  
Flouret, George Rogelio, 3,826,794.  
Abbott, Warwick R.; and Chen, Theodore C., to Integrated Memories, Inc. Differentially coupled memory arrays. 3,827,032, Cl. 340-173.0sp.  
Abderhalden, Johann Heinrich, to Swiss Aluminium Ltd. Flexible connection for conveying pipes. 3,826,524, Cl. 285-61.000.  
Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Sheet conveyor mechanism for printing machines. 3,826,486, Cl. 271-204.000.  
Abildgaard, William H.; and Groswith, Charles T., III, to Velo-Bind, Inc. Method and apparatus for casing books and product thereof. 3,825,963, Cl. 111-1.00r.  
Abraham, Samuel V. Gradual release medicine carrier. 3,826,258, Cl. 128-260.000.  
Accaries, Maurice Emile, to Compagnie des Compteurs. Electrolytic acidic solution for cadmiating of various parts. 3,826,722, Cl. 204-50.00r.  
Acme General Corporation: See—  
Ramsey, Joe B., 3,826,527.  
Adams, Hunter D., to Zany Productions, Inc. Apparatus. 3,826,250, Cl. 128-24.200.  
Adamson, James L. Aquarium cleaning device. 3,826,371, Cl. 210-169.000.  
Addinall, Ramon Leonard; Lewis, William Trevor; and Mudroch, Otokar, to Steel Company of Canada Limited, The. Coated steel product. 3,826,628, Cl. 29-195.000.  
Addressograph-Multigraph Corporation: See—  
Kolibas, James Andrew, 3,826,570.  
Zofchak, James T., 3,826,190.  
Afekestam, Bo Thuresson: See—  
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekestam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.  
Agence National de Valorisation de la Recherche ANVAR: See—  
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.  
Agnese, Joseph M. Portable alarm system. 3,827,039, Cl. 340-227.100.  
Ahrenberg, Kurt, to Maschinenfabrik Gustav Eirich. Apparatus for moistening mixable materials. 3,826,476, Cl. 259-154.000.  
Air Land Systems Company: See—  
Fleming, James Evans, 3,826,874.  
Airco, Inc.: See—  
Kirk, Bradley S.; and Chappel, Raymond M., 3,826,742.  
Akabane, Katsumi; and Otsuka, Shogo, to Kabushiki Kaisha Saneh. Sprayer for spraying a great volume of liquid through a wide angle with a low pressure. 3,826,430, Cl. 239-523.000.  
Aktiebolaget Bofors: See—  
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekestam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.  
Aktiebolaget Svenska Elektromagneter: See—  
Carlsson, Hans Thorsten Henrik, 3,826,236.  
Alden Research Foundation: See—  
Vano, Gerald Lawrence, 3,827,056.  
Alderfer, Sterling W., to Steelastic Company, The. Radial tire carcass. 3,826,297, Cl. 152-354.000.  
Alecci, Donald E.: See—  
Sinnott, David J.; and Alecci, Donald E., 3,827,063.  
Alexeev, Antonia: See—  
Alexeev, Kirill M.; and Alexeev, Antonia, 3,826,152.  
Alexeev, Kirill M.; and Alexeev, Antonia. Variable-ratio gear transmission. 3,826,152, Cl. 74-424.500.  
All American Industries, Inc.: See—  
Crimmins, Arthur G.; and Nissley, William G., Jr., 3,826,329.  
Allemnd, Pierre: See—  
Hovasse, Christian; and Allemnd, Pierre, 3,826,665.  
Allen, Earnest R.: See—  
Allen, Eulalie H.; Allen, Earnest R.; and Dickerson, Linwood, 3,826,160.  
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 Boraas, Stan L. C.; and Nystuen, Marcus I., to Economics Laboratory, Inc. Additive control and injection system useful in laundry machine operations. 3,826,113, Cl. 68-12.000.  
 Bordenca, Carl; Johnson, Robert P.; and Dorschner, Kenneth P., to SCM Corporation. Insect repellent compositions and process having an N-substituted hydroxyalkyl amine as an ingredient. 3,826,842, Cl. 424-325.000.  
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 Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, to Cooper Range Company. Mining and tunneling process involving alternated application of thermal and mechanical energy. 3,826,536, Cl. 299-14.000.  
 Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, to Cooper Range Company. Mining and tunneling process involving alternated application of thermal and mechanical energy. 3,826,537, Cl. 299-14.000.  
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 Brandon, Harold J.; and Spicer, Wilson C., to General Motors Corporation. Recirculating combustion apparatus jet pump. 3,826,083, Cl. 60-39.650.  
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 Bratu, Nicholas George, Jr.; and Jeffries, James Frederick, Jr., to Abbott Laboratories. Test apparatus for direct radio immunoassay for antigens and their antibodies. 3,826,619, Cl. 23-253.000.  
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 Brokaw, Hal R. Vibration damper for elongate members. 3,826,339, Cl. 188-1.00b.  
 Brokaw, Hal R. Vibration damper for slender vertical structures. 3,826,340, Cl. 188-1.00b.  
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- Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corporation. Flame retardant polyesters based on cyclohexene dimethanol. 3,826,805, Cl. 260-869.000.
- Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corporation. Flame retardant polyesters from brominated diols. 3,826,806, Cl. 260-869.000.
- Conair, Inc.: See—  
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- Conrad, Joseph D., Jr.; Gangloff, Wilmer C., Jr.; and Luongo, Michael C., to Westinghouse Electric Corporation. System and method for operating a steam turbine with independent overspeed protection especially adapted for a nuclear reactor powered steam turbine. 3,826,094, Cl. 60-686.000.
- Conrad, Joseph D., Jr.; and Gangloff, Wilmer C., Jr., to Westinghouse Electric Corporation. General system and method for operating a steam turbine with independent overspeed protection especially adapted for a nuclear reactor powered stem turbine. 3,826,05, Cl. 60-686.000.
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- Cook, Henry A.; and Radway, Jerrold E., to Basic Incorporated. Treatment of flue gases and the like. 3,826,812, Cl. 423-242.000.
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- De Longchamp, Jacques-Albert Huot, to Sable Freres International. Suspension device for a vehicle seat. 3,826,457, Cl. 248-399.000.
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Eschbaugh, John T., to Parker-Hannifin Corporation. Quick connect  
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Essex International, Inc.: See—  
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Essiet, Okon A. Process for extracting a proteinaceous sweetening agent  
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homogenization and U.V. irradiation. 3,826,795, Cl. 260-112.00r.  
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Hermaphroditic electrical connector with front releasable and rear  
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Faust, Henry H.; and Faust, Peter J. Dentures and teeth for dentures  
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Faust, Peter J.: See—  
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Fergusson, Ian Douglas, to BP Chemicals International Limited. Spray-  
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Fest, Otto. Time delay relay. 3,826,955, Cl. 317-141.00s.  
Festner, Theodor. Electrostatic agglomeration apparatus. 3,826,063,  
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Fetner, Martin J.; and Hunsicker, Glenn L., to Bethlehem Steel Cor-  
poration. Device for producing a visual display of the transverse ten-  
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F'Gepert, Erwin, to United States of America, Army. Power train.  
3,826,151, Cl. 74-400.000.  
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Forster, Karl-Heinz; Vetter, Lothar; and Stange, Helmut, to VEB Poly-  
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 Giolitti, Nicolo; and Bovio, Michele, to Olivetti, Ing., C., & C., S.p.A. Non-import printing device for electronic calculators, 3,826,915, Cl. 346-74.00e.  
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 Groszwith, Charles T., III; and Buan, Danilo P., to Velo-Bind, Inc. Device and method for casing books, 3,825,964, Cl. 11-3.000.  
 Groszwith, Charles T., III; and Buan, Danilo P., to Velo-Bind, Inc. Power-operated, multi-die punch, 3,826,168, Cl. 83-203.000.  
 Grounds, Harry C.; and Otto, Eugene W. Convertible chair for fisherman and campers, 3,825,962, Cl. 9-7.000.  
 Grover, Philip D. Appliance defrosting system and switch means, 3,826,103, Cl. 62-140.000.  
 Grunewald, Ernst, to Hobart Manufacturing Company, The. Trash compactor and bag system, 3,826,189, Cl. 100-229.00a.  
 Grylicki, Mirosław; Nadachowski, Franciszek; and Pawlowski, Stanislaw, to Instytut Materialow Ogniowalych. Method of manufacturing high fireproof aluminous cement, 3,826,664, Cl. 106-104.000.  
 Grzech, Joseph Leonard. Ski boot cleaning device, 3,826,022, Cl. 36-2.5al.  
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 Hall, Edwin A., Jr., 40% interest to Hermanns, William H. and 20% interest to Hermanns, Mildred. Mobile ring toy with relatively moveable seat elements positioned therein, 3,826,488, Cl. 272-57.00t.  
 Hall, Everett J. Venturi windshield wiper blade, 3,825,966, Cl. 15-250.040.  
 Hall, Robert N., to General Electric Company. Method of forming lithium-doped germanium bodies by electrodeposition in a fused lithium electrolyte, 3,826,721, Cl. 204-39.000.  
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 Hardwick, Bruce Alfred; and Patterson, John Howard, to Oil Shale Corporation (Australia), The. Leaching of metal values from various ores, 3,826,809, Cl. 423-61.000.  
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- Hoerenz, Peter G.; and Ludl, Helmut, to Carl Zeiss-Stiftung and d/b/a Zeiss, Carl. Digital data imaging system. 3,827,070, Cl. 354-105,000.
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- Horn, Harold E.; and Godzicki, Martin M., to CPC International Inc. Hard Candy. 3,826,857, Cl. 426-214,000.
- Hornschuch, Hanns; and Krouse, Leroy M., to Ingersoll-Rand Company. Gas compressor. 3,826,594, Cl. 417-245,000.
- Hornschuch, Hanns, to Ingersoll-Rand Company. Centrifugal gas compressor unit. 3,826,587, Cl. 415-60,000.
- Horowitz, Robert M.; and Gentili, Bruno, to United States of America, Agriculture. Dihydrochalcone xyloides and their use as sweetening agents. 3,826,856, Cl. 426-213,000.
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- Horvay, Julius B.; and Schumacher, Frank A., to General Electric Company. Refrigerator including automatic ice maker and water reservoir. 3,826,102, Cl. 62-137,000.
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- Hougen, Gary A.; and Kloc, Henry F., to Continental Can Company, Inc. Safety overcap for easy opening container. 3,826,400, Cl. 220-29,000.
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- Inamorato, Jack T.; and Dickson, Robert E., to Colgate-Palmolive Company. Low-foaming detergent compositions. 3,826,759, Cl. 252-525,000.
- Industrie-Automation GmbH & Co.; See—  
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- Information Storage Systems, Inc.; See—  
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- Ingersoll-Rand Company; See—  
Hornschuch, Hanns; and Krouse, Leroy M., 3,826,594.
- Hornschuch, Hanns, 3,826,587.
- Ingles, William R., 1/2 to American Medical International, Inc. X-ray film cassette holder. 3,826,922, Cl. 250-471,000.
- Inman, Harold W.; Surlatta, Zygmunt M.; and Klicki, Chester E., to Siegler, Lear, Inc. box spring. 3,825,960, Cl. 5-247,000.
- Instytut Materialow Ogniotrwalych; See—  
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- Integrated Memories, Inc.; See—  
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- Interbath, Inc.; See—  
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- International Biophysics Corporation; See—  
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- International Business Machines Corporation; See—  
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- Bringol, Charles Ronald, 3,826,965.
- Gardner, Richard A.; and Wilcox, David L., 3,826,813.
- International Harvester Company; See—  
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- International Nickel Company, Inc.; The; See—  
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- International Telephone and Telegraph Corporation; See—  
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- Ipcos Hospital Supply Corporation, mesne; See—  
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- Irwin, Charles P., to Commercial Electronics, Inc. Gas analyzing apparatus. 3,826,577, Cl. 356-201,000.
- Ishii, Harukichi; See—  
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- Ito, Kenji; See—  
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.
- ITT Industries, Inc.; See—



- Thiel, Rudolf; and Lauterwasser, Armin, 3,826,175.  
Ivashin, Victor S., to National Cash Register Company, The. Kinematic comparison tester for go-no-go testing of digital circuit packages in normal environment. 3,826,909, Cl. 235-153.0ac.  
Iwasaki, Shingi; and Obata, Kiyoshi, to Rio Co., Ltd. High voltage generating device. 3,826,952, Cl. 317-81.000.  
Iwase, Yoshitaka: See—  
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Jackson, Carl D., to Jackson, C. D., Manufacturing, Inc. Landscaping apparatus with seed dispenser. 3,826,209, Cl. 111-8.000.  
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Jacobsen Manufacturing Company: See—  
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Jacobson, Clayton J. Self-righting power-driven aquatic vehicle. 3,826,220, Cl. 115-70.000.  
Jacquot, Alain: See—  
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.  
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, to Agence National de Valorisation de la Recherche ANVAR. Method of obtaining a medium having a negative absorption coefficient in the X-ray and ultraviolet spectral range and a laser for the practical application of said method. 3,826,996, Cl. 331-94.500.  
Jagicza, Laszlo: See—  
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Jaiser: See—  
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Janssen, Robert I. Paint roller frame with spray shield and clean-up means. 3,825,970, Cl. 15-230.110.  
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Jarema, Chester P.; and Niebyski, Leonard M., to Ethyl Corporation. Apparatus for casting molten metal/foaming agent composition. 3,826,303, Cl. 164-335.000.  
Jasinski, Raymond J.; and Trachtenberg, Isaac, to United States of America, Interior, mesne. Determination of sulfate using ferric ion-selective electrode. 3,826,971, Cl. 204-1.00t.  
Javan, Ali; and Levine, Jeffrey Steven, to Massachusetts Institute of Technology. Laser pumped by photoionization generated, electrically heated plasma. 3,826,997, Cl. 331-94.560.  
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Jensen, Frederick K., to Elektro-Ion, Inc. Powder hopper for electrostatic powder spraying apparatus. 3,826,540, Cl. 302-57.000.  
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Johnson, Arthur R., to Oak Industries Inc. Subscription television system using audio and video carrier reversal. 3,826,863, Cl. 178-5.100.  
Johnson, Earl C.; and Hisler, Stanley Robert, to Deere & Company. Felling head structure. 3,826,295, Cl. 144-34.00e.  
Johnson, Edgar G., Jr.; and Cornelison, James J., to Micromedex Systems, Inc. Apparatus for transferring a liquid from one container to another. 3,826,621, Cl. 23-259.000.  
Johnson, Richard W.; and Goodrich, Robert S. Multi-functional frictional-resistance apparatus. 3,826,480, Cl. 267-9.00b.  
Johnson, Robert P.: See—  
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Johnson, Robert William: See—  
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Jones, Hale M., to Ampex Corporation. Pneumatic tape rewind system. 3,826,446, Cl. 242-185.000.  
Jones, Henry B.; and Bunn, Dorrance P., Jr., to Texaco Inc. Fluid catalytic cracking. 3,826,624, Cl. 23-288.00s.  
Jones, Robert S., Jr.: See—  
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Jones, Robert S., Jr.; and Smathers, Harry W., ssid Smathers assor. to said Jones, Robert S., Jr. and Jones, Wesley E. Flooring system for sties and other animal shelters. 3,826,230, Cl. 119-28.000.  
Jones, Wesley E.: See—  
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Karl, Walter; Rooney, Peter John; and Ulk, Alexander, to Utilux Pty., Limited. Terminal connectors for insulated conductors. 3,826,861, Cl. 174-84.00c.  
Karlsson, Gosta; Samuelsson, Per; and Hammarlund, Per Erik. Method for treating melts and means for carrying out this treatment. 3,826,646, Cl. 75-13.000.  
Karnes, George Thomas, to Shell Oil Company. Plug-displaced sand-packing process. 3,826,310, Cl. 166-276.000.  
Kasakowski, Henry R.; and Washburn, Douglas J., to Bendix Corporation, The. Self calibrating digital to A.C. converter for multiple conversion. 3,827,047, Cl. 340-347.0da.  
Kashio, Toshio, to Casio Computer Co., Ltd. Control means for information storage in a dynamic shift memory. 3,827,028, Cl. 340-172.500.  
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Kaster, Robert L. Pivoting disc heart valve with rod guide. 3,825,957, Cl. 3-1.000.  
Kastner, William D.; and Cobb, Gary W., to Texas Instruments Incorporated. Element select/replace apparatus for a vector computing system. 3,827,031, Cl. 340-172.500.  
Kattner, Erich; and Bork, Klaus, to Siemens Aktiengesellschaft. Waste ink disposal means for spray printing devices. 3,826,192, Cl. 101-335.000.  
Kaufmann, Albert R., to Nuclear Metals, Inc., mesne. Rotating gas jet apparatus for atomization of metal stream. 3,826,598, Cl. 425-7.000.  
Kawaguchi, Hiroshi; Fujisawa, Kei-Ichi; Tsukiura, Hiroshi; and Konishi, Masataka, to Bristol-Myers Company. 4'-Deoxyanibutyrosin A&B. 3,826,802, Cl. 260-210.0ab.  
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Kawamura, Takuro; and Kawahara, Takashi, to Nippon Electric Company, Limited. Camera tube of vidicon style comprising single high melting-point metal seal provided with support for target. 3,826,943, Cl. 313-383.000.  
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- Keating, James L., to Paris American Corporation. End wrap dispenser. 3,826,407, Cl. 221-63.000.  
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King, Gordon J.; and Gugliotta, George, to Laser Sciences, Inc. Scanning inspection system and method. 3,826,578, Cl. 356-237.000.  
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King, Robert J.: See—  
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Kunz, Robert Irwin; Oram, John Gibb; and Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Method and apparatus for directional switching of pneumatic material transport piping. 3,826,539, Cl. 302-27.000.

Kurahashi, Yoshio. See—  
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Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., to General Electric Company. Dielectric strip isolation for JFET or MESFET depletion-mode bucket-bridge circuit. 3,825,995, Cl. 29-571.000.

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Lee, Conrad E., to Pako Corporation. Light seal for hand openings in photographic processing equipment. 3,826,300, Cl. 160-179.000.

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Lenkoff, Leon G. Invisible ink markings in defined areas of a game device responsive to color changing chemical marker. 3,826,499, Cl. 273-130.00b.

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Lewis, George E.; Brown, Albert W.; and Osborne, Harris Dean, to Bear Brand Hosiery Co. Pneumatic package loader. 3,826,062, Cl. 53-255.000.

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Liptak, Neil R.; and Echerd, Beno E., to Caterpillar Tractor Co. Retractable ladder. 3,826,337, Cl. 182-91.000.

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MacGregor, William W., to Honeywell Information Systems Inc. Transparent multiplexer communication transmission system. 3,826,872, Cl. 179-15.00a.

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Maestri, Giordano Bruno. Device for sequentially driving large headed gimp nails. 3,826,419, Cl. 227-136.000.

Maczawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Display device for numeric characters. 3,827,043, Cl. 340-336.000.

Magill, George Maurice Martin, to Rotax Limited. Constant speed output toric transmission with hydraulic controls consisting of a rotatable spider, an actuating valve and governor means. 3,826,148, Cl. 74-200.000.

Magnavox Company, The. See—  
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Maier, Alfred E.; and Shimp, Alan B., to Westinghouse Electric Corporation. Circuit breaker with replaceable rating adjuster and interlock means. 3,826,951, Cl. 317.033.0sc.

Maier, Elmar, to Hilti Aktiengesellschaft. Device for fastening identification members. 3,825,989, Cl. 29-211.00d.

Mailoux, Louis D., to Xerox Corporation. Optical arrangement for high speed printout system. 3,827,062, Cl. 354-5.00r.

Mair, Anton Josef, to Ott, A. Device for feeding a lubricating oil or the like to the periphery of a rotating element. 3,826,338, Cl. 184-11.00a.

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Marotto, Alan P., to Automec, Inc. Numerical control system for press brakes and the like. 3,826,119, Cl. 72-36.000.

Marsh, Charles Richard, to Auto-Masters Limited. Apparatus having one or more rotatably driven components. 3,826,306, Cl. 165-47.000.

Marsik, Stanley J.: See—  
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Marsteller, Kenneth E., to International Telephone and Telegraph Corporation. Condensate entrainment device. 3,826,107, Cl. 62-279.000.

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Matsushita Electric Industrial Company, Limited. See—  
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Mavrovic, Ivo. Recovery of residual ammonia from weak aqueous solutions thereof. 3,826,815, Cl. 423-356.000.

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Mc Vey, James R.; and Meyer, Thomas O., to United States of America, Interior. Surface deformation indicating apparatus. 3,826,128, Cl. 73-88.00e.



- McClelland, Theodore M., III, to Westinghouse Electric Corporation. Indicator circuit for monitoring pulses initiated in a remote meter reading system. 3,826,982, Cl. 324-113.000.
- McCloskey, Albert R., to North American Rockwell Corporation. Method for manufacturing spherical bearing assemblies. 3,825,983, Cl. 29-149.50b.
- McClung, Robert A. Rail seat and support structure. 3,826,423, Cl. 238-264.000.
- McClung, Robert A.; and Plimi, Frank V., Jr., said Plimi assor. to said Illinois Tool works, Inc. Rail seat and support structure. 3,826,424, Cl. 238-264.000.
- McCormick, Walter R., to N L Industries, Inc. Method for scrubbing HCl from waste gases. 3,826,816, Cl. 423-497.000.
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- Mellor, Eli K., to Verco Industries. Needle or catheter retaining. 3,826,254, Cl. 128-133.000.
- Melloy, George F.; Bramfitt, Bruce L.; and Marder, Arnold R., to Bethlehem Steel Corporation. Rolled ferrite-pearlite alloy plate and method of processing same. 3,826,691, Cl. 148-12.000.
- Melvin, Raymond C., to Harnischfeger Corporation. Spot welding apparatus for welding end conductors in cylindrical electrical machine elements. 3,826,894, Cl. 219-124.000.
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- Mengeringhausen, Max, to Mero AG. Process and apparatus for the production of connectors for space frameworks or the like. 3,826,584, Cl. 408-35.000.
- Mennesson, Andre Louis, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Injection devices for internal combustion engines. 3,826,233, Cl. 123-119.00r.
- Mercade, Venancio V., to Engelhard Minerals & Chemicals Corporation. Beneficiating clay by selective flocculation and magnetic separation of impurities. 3,826,365, Cl. 209-5.000.
- Merkin, Bill C.; Tobias, Michael J.; Ray, Richard C.; and LaBarge, Robert L., to Aluminum Company of America. Combined gutter, fascia, soffit arrangement. 3,826,048, Cl. 52-11.000.
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- Michels, Alfred; and Fleischer, Kurt, to Chemische Werke Huls Aktiengesellschaft. Poly-1-butene coated release paper. 3,826,677, Cl. 117-76.00p.
- Micromedic Systems, Inc.: See—
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- Midolo, Lawrence L.; and Armstrong, Lee R. Brake and stabilizer for air cushion vehicles. 3,826,330, Cl. 180-116.000.
- Migowski, Gunther. Flying toy and catapult for vertical launching thereof. 3,826,037, Cl. 46-84.000.
- Miles, Gilbert De Wayne, to Colgate-Palmolive Company. Laminated web package. 3,826,441, Cl. 242-55.530.
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- Butler, Arthur Devon; Debroka, Robert Lee; Moyer, Horace Bradley; and Yinger, Robald Lee, 3,826,358.
- Milfai, Zdenek, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Arrangement for monitoring a programmable controller for a knitting machine. 3,826,907, Cl. 235-153.0ac.
- Miliaras, Emmanuel Stephen. Reheat vapor generator. 3,826,093, Cl. 60-665.000.
- Milavljovic, Milorad. Heat engine. 3,826,085, Cl. 60-39.620.
- Milavljovic, Milorad. Heat engine. 3,826,086, Cl. 60-39.620.
- Miller, Charles H.; and Mayrl, Jose A. Wall structure. 3,826,051, Cl. 52-227.000.
- Miller, Donald, to United States of America, Army, The. Controllable heat sealing process for optimum seal strength. 3,826,701, Cl. 156-64.000.
- Miller, Ellsworth S.: See—
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- Miller, Herman, Inc.: See—
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- Miller, John J.: See—
- Bowes, Robert J.; and Miller, John J., 3,826,947.
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- Minicozzi, Alexander S.; and Minicozzi, Alexander S., Jr. Plaster additive and plaster compositions. 3,826,663, Cl. 106-90.000.
- Minicozzi, Alexander S., Jr.: See—
- Minicozzi, Alexander S.; and Minicozzi, Alexander S., Jr., 3,826,663.
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- Moen, Alfred M. Adjustable shower head. 3,826,429, Cl. 239-460.000.
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- Molina, Orlando G., to Rockwell International Corporation. Reverse magnetic inspection method. 3,826,917, Cl. 250-302.000.
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- Porter, Clark A., 3,826,641.
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- O'Rourke, Anne Cecile; and Kent, John Scott, to Syntex (R.S.A.) Inc. Stabilized prostaglandin preparations. 3,826,823, Cl. 424-80.000.
- O'Rourke, John C., to TRW, Inc. Flexible submergible electric motor. 3,826,936, Cl. 310-87.000.
- Orton, Hal L.; Vanasudal, George Duane; and Rowley, Robert A. Device for pulling arrowheads from implanatation in solid objects. 3,826,471, Cl. 254-131.000.
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- Paniagua, Juan Garcia. Method of exterminating insect and animal agricultural pests from infected objects such as plants. 3,826,035, Cl. 43-98.000.
- Paolini, Gregory F., to Bethlehem Steel Corporation. Refractory mix for patching the refractory lining in a blast furnace casting floor network. 3,826,662, Cl. 106-56.000.
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- Pegels, Abraham A.; and Wijffels, Joannes B., to Shell Oil Company. Process for the catalytic treatment of hydrocarbon oils. 3,826,737, Cl. 208-143.000.
- Pelet, Pierre A.; Bouysounouse, Bernard; and Hass, Fritz, to PST Company. Sign forming apparatus, method and die for use therein. 3,826,167, Cl. 83-171.000.
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- Petrucchio, Richard J.; and Schick, John W., to Mobil Oil Corporation. Method for controlling water transpiration in plants. 3,826,671, Cl. 117-3.000.
- Pevararo, Cesare, to Societa' per La Strada Guidata S.r.l. Tracked vehicle system. 3,826,197, Cl. 104-130.000.
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- Quate, Calvin F.; Otto, Oberdan W.; and Moll, Nicolas J., to Leland Stanford Junior University, Board of Trustees of. Method and system for acousto-electric scanning. 3,826,866, Cl. 178-7.100.
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- Quigg, Harold T.; and Schirmer, Robert M., to Phillips Petroleum Company. Combustion method with selective cooling and controlled fuel mixing. 3,826,079, Cl. 60-39.060.
- Quilliam, Robert Mark, to Marconi Company Limited, The. Semi-conductor memory device arrangements. 3,827,033, Cl. 340-173.00r.
- Rabinowitz, Azriel J.; and Cama, John J., to United States of America, Navy. Safety mechanism for military fuzes. 3,826,194, Cl. 102-79.000.
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- Rigney, Edward T.; Benson, Richard A.; and Edgerton, Bradford W., to Trans-Sonics, Inc. Load weighing system for crans with rotatable booms. 3,826,321, Cl. 177-210.000.
- Rikagaku Kenkyusho: See—  
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- Rio, Arturo; Cerrone, Marcello; and Saini, Alberto, to Societa' Italiana per Azioni per la Produzione di Calce Cementi di Segni. Method for preparing polymer impregnated cement articles. 3,826,680, Cl. 117-119.600.
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- Ristance Wire, Inc.: See—  
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- Rittenhouse, Howard E., to Crane Co. Thrust bearing. 3,826,138, Cl. 73-258.000.
- Rivers, William C., Jr. Transport container. 3,826,398, Cl. 220-1.500.
- Roberts, Charles B.; and Brower, Frank M., to Dow Chemical Company, The. Preparation of non-solvated crystalline alpha-aluminum hydride. 3,826,820, Cl. 423-645.000.
- Roberts, Joseph Normand; and Lovell, Walter. Plant stem protector. 3,826,040, Cl. 46-30.000.
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- Rockwell International Corporation: See—  
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- Watson, George A., 3,827,046.
- Rody, Jean; and Lind, Hanns, to Ciba-Geigy Corporation. Protective agents against light rays. 3,826,752, Cl. 252-300.000.
- Rognmo, Tore; and Sjøtun, Kvrre, to A/S Kongsberg Vapenfabrik Kirkegardsveien. Method for supporting a rotating body in generators for missiles and a supporting arrangement for supporting such bodies. 3,826,193, Cl. 102-70.20g.
- Rohe Scientific Corporation: See—  
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- Rooney, Peter John: See—  
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- Root, Glenn M.; Root, Ronald G.; Parenti, Alvin L.; and Sullivan, Arthur J., to Esso Research and Engineering Company. Apparatus for cleaning tire inner-liners. 3,825,965, Cl. 15-121.00d.
- Root, Ronald G.: See—  
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- Ross, Charles. Locking knee joint for orthopedic leg brace. 3,826,251, Cl. 128-80.00f.
- Ross, Charles Forbes, to Evans Medical Limited. Closures for containers. 3,826,221, Cl. 116-114.00v.
- Ross, Donald R., Sr., to U-S Safety Trolley Corporation. Electric power transmission system. 3,826,880, Cl. 191-25.000.
- Ross, Gerald D.; and Cromwell, Douglas E., to United States of America, Air Force. Mechanical door interlock system. 3,826,520, Cl. 292-30.000.
- Ross, Hugh C. Solid-state high impedance meter system. 3,826,981, Cl. 324-72.500.
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- Rue, Howard M., to Sun Oil Company of Pennsylvania. Electrolytic copper release agent. 3,826,668, Cl. 106-285.000.
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- Russell, William Thornton. Method of producing fibrous silicate products. 3,826,703, Cl. 156-189.000.
- Russell-French, Harry M., to Budd Company, The. Pneumatically sprung railway car truck. 3,826,202, Cl. 105-182.00r.
- Rutherford, Harry Wayne. 360 Spray apparatus with means for changing spray pattern. 3,826,427, Cl. 239-186.000.
- Ryer, Jack; and Renard, Remi H., to Esso Research and Engineering Company. Compositions containing metal dialkyl dithiophosphates are inhibited against haze and precipitates by amine salts of mixed acid phosphates. 3,826,745, Cl. 252-32.0fe.
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- Schindler, Walter; Schmid, Erich; and Zuest, Armin, to Ciba-Geigy Corporation. CNS-depressant compositions and method with [4-10, 11-dihydrodibenz] [b,f] oxepin-10-yl-1-piperazinyl alkyl-3-alkyl-2-imidazolidinones. 3,826,833, Cl. 426-65.000.
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- Sheppard, Richard H. Ball-screw mechanism. 3,826,153, Cl. 74-759.000.
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- Simpson, Charles A.; Davis, Robert H.; and Sedlak, Michael, to Mobil Oil Corporation. Nitrite concentration control device for water base metalworking fluids. 3,826,620, Cl. 23-253.0tp.
- Sinchuk, Georgy Georgievich; and Smirnov, Gennady Vasilievich. Multi-channel device for optical control of converter bridge rectifiers in D.C. transmission lines. 3,826,916, Cl. 250-208.000.
- Singer, Company, The: See—  
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- Sinkovitz, Gloria Dimarco: See—  
Hoover, Merwin Frederick; Sinkovitz, Gloria Dimarco; and Schaper, Raymond Joseph, 3,826,767.
- Sinnott, David J.; and Alecci, Donald E., to Star-New Era, Inc. Multitens photocomposing mechanism. 3,827,063, Cl. 354-15.000.
- Sjotun, Kvrre: See—  
Rognmo, Tore; and Sjtun, Kvrre, 3,826,193.
- SKF Compagnie d'Applications Mecaniques: See—  
De Lavelette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.
- Slater, Shelby D.: See—  
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- Slayton, Darrell E. Hay baler trailer. 3,826,515, Cl. 280-106.00t.
- Smathers, Harry W.: See—  
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- Smirnov, Gennady Vasilievich: See—  
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- Smith, Clive W.: See—  
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- Smith, Donald Tolman; and Spenninger, William Robert, said Smith assor. to Bell Telephone Laboratories, Incorporated and said Spenninger assor. to Western Electric Company, Incorporated. Wire connector presser tool. 3,825,987, Cl. 29-203.00h.
- Smith, Glendon: See—  
Mauch, Hans A.; and Smith, Glendon, 3,827,025.
- Smith, Gordon E., to Medidyne Corporation. Catheter delivery device. 3,826,256, Cl. 128-214.000.
- Smith, Harold D.; and Chambers, Richard E., to United States of America, Air Force. Module construction system. 3,826,056, Cl. 52-284.000.
- Smith International, Inc.: See—  
Pereau, Robert L., 3,826,317.
- Smith, John R.; and Bray, James A., to National Steel Corporation. Lubricated metallic container stocks and method of preparing the same and applying an organic coating thereto. 3,826,675, Cl. 117-75.000.
- Smith, Lionel S., Jr.: See—  
Schlotterer, John C.; and Smith, Lionel S., Jr., 3,827,029.
- Smith, Percy L.: See—  
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Comstock, Lowell R.; and Smith, Percy L., 3,826,806.
- Smith, Richard R.: See—  
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- Smith, F. L., Machine Company, Inc.: See—  
Bethke, Erwin, 3,826,442.
- Smithline Corporation: See—  
Sutton, Blaine M.; Walz, Donald T.; and Wilson, James W., 3,826,839.
- Smolka, Kurt. Garbage press. 3,826,187, Cl. 100-53.000.
- Smolka, Thomas Gordon, to Gertsch AG, mesne. Safety ski binding. 3,826,509, Cl. 280-11.35m.
- Smuland, Robert J.; and Ward, Richard K., to General Electric Company. Combustion liner cooling slot stabilizing dimple. 3,826,082, Cl. 60-39.650.
- Smythe, William J.; Bellinger, S. Lawrence; Diebler, Herman G.; and Dannewitz, Robert, to Technicon Instruments Corporation. Fluid system for inclusion in a total automated fluid system of a sample analyzer. 3,826,615, Cl. 23-230.00r.
- Sobolev, Igor; and Woycheshin, Elias A., to Kaiser Aluminum & Chemical Corporation. 3,826,775, Cl. 260-42.450.
- Societa' Italiana per Azioni per la Produzione di Calci e Cementi di Segni: See—  
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- Societa' per La Strada Guidata S.r.l.: See—  
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- Societe Anonyme: See—  
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- Societe Anonyme dite: Aquitaine Total Organico: See—  
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- Societe des Mines Montagne et Fonderies de Zinc de la Viella: See—  
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- Societe Industrielle de Brevets et d'Etudes S.I.B.E.: See—  
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- Societe Industrielle Honeywell Bull (Societe Anonyme): See—  
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- Societe Wendel-Sidelor: See—  
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- Soderberg, Rolf Harald; and Helmer, Clas Erik, to Sandvik Aktiebolag. Nickel-chromium iron alloy. 3,826,649, Cl. 75-124.000.
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- Sonoco Products Company: See—  
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- Sony Corporation: See—  
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- Usui, Setsuo, 3,827,048.
- Wakamiya, Kinji, 3,825,997.
- Sorge, Arthur L. Golfing accessory. 3,826,502, Cl. 273-183.00b.
- Spahrkas, Heinrich: See—  
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- Spaller, Albert E., Jr.; and Stockbridge, Bruce W., to Eastman Kodak Company. Method for applying pressure in cutting elongated flexible material into predetermined shorter lengths and apparatus for practicing the improved method. 3,826,163, Cl. 83-18.000.
- Spear, Richard S., to B-A-L Products Corporation; a division of Nova Products of California. Trailer jack. 3,826,470, Cl. 254-86.00r.
- Speed Systems, Inc.: See—  
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- Spenninger, William Robert: See—  
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- Spicer, Wilson C.: See—  
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- Spillman, Robert L. Mobile aerial platform. 3,826,334, Cl. 182-2.000.
- Spinelli, John; and Koury, Barbara Jean, to United States of America, by the Secretary of Commerce. Preparation of functional fish protein concentrates and isolates. 3,826,848, Cl. 426-7.000.
- Spinello, Ronald P. Dental mirror apparatus for holding expendable demisting sleeves. 3,826,005, Cl. 32-69.000.
- Springer, Arthur James, to Porter, H.K., Company, Inc. Adjustable rail support. 3,826,881, Cl. 191-32.000.
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- Stacheli, Paul, to Rieter Machine Works Ltd. Apparatus for forming a silver from a fiber web produced in a card. 3,825,975, Cl. 19-150.000.
- Stahl, William F., to Westinghouse Electric Corporation. Process for converting heat produced by a nuclear reactor to electrical energy. 3,826,091, Cl. 60-644.000.
- Stambaugh, Frederic P.: See—  
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- Standard Oil Company: See—  
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- Stange, Helmut: See—  
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- Stanley, Robert K., to Textured Yarn Co., Inc. Strand treatment. 3,826,438, Cl. 242-45.000.
- Star-New Era, Inc.: See—  
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- Steelcase Company, The: See—  
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- Steelcase Inc.: See—  
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- Steinhauer, Norman M.: See—  
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- Steinmann, Helmut, to Bosch, Robert, G.m.b.H. Capacitive detector device. 3,826,979, Cl. 324-61.00r.
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- Stevens, Jack D. Miniature radio receiver. 3,826,987, Cl. 325-361.000.
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- Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,198, Cl. 105-90.00a.
- Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,199, Cl. 105-90.00a.
- Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,200, Cl. 105-90.00a.
- Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,201, Cl. 105-90.00a.
- Stewart, Thomas D.: See—  
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- Stover, David Emmert, to Deere & Company. Vehicle bottom guard structure. 3,826,327, Cl. 180-69.100.
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- Stratta, James L. Board for prearranged domino hands. 3,826,500, Cl. 273-151.000.
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- Strong, Jerry G., to Mobil Oil Corporation. 3-(4-Methyl-3-cyclohexenyl-butyl esters and epoxidized derivatives thereof as insect juvenile hormone mimicking compounds and insecticides. 3,826,840, Cl. 424-305.000.
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- Stull, Morton. Safety cap. 3,826,394, Cl. 215-9.000.
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- Susi, A. Frederick, to GTE Sylvania Incorporated. Switching circuit employing latching type semiconductor devices and associated control transistors. 3,826,873, Cl. 179-18.0gf.
- Sutherland, William B., to Pickering Industries, Inc. Collapsible, adjustable shelving. 3,826,207, Cl. 108-108.000.
- Sutton, Blaine M.; Walz, Donald T.; and Wilson, James W., to Smithkline Corporation. Anti-arthritis compositions comprising ester derivatives of pulvinic acid and methods of producing anti-arthritis activity. 3,826,839, Cl. 424-279.000.
- Suyama, Tsunesuke; Saeki, Masunori; and Okada, Ryuzo, to Sankyo Company Limited. Ointment base. 3,826,845, Cl. 424-365.000.
- Suzuki, Akihisa, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with frequency-deviated pedal tone signal. 3,826,859, Cl. 84-1.170.
- Suzuki, Isamu; Nakahara, Yasuji; Ichikawa, Kiyoshi; and Osonoi, Kaoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing polyurethane compositions. 3,826,768, Cl. 260-29.2tn.
- Svensen, Lars-Gundro: See—  
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- Takamatsu, Ikuno, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener having a filling core. 3,825,977, Cl. 24-205.100.
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- Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Brush control device for vehicle cleaning apparatus. 3,825,967, Cl. 15-21.00d.
- Takeuchi Tekko Kabushiki Kaisha: See—  
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- Tanaka, Saburo, to Sendai Television Broadcasting Corporation. Simultaneous radio communication system between two stations. 3,827,052, Cl. 343-178.000.
- Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio. Polyvinyl alcohol cord tires. 3,826,298, Cl. 152-359.000.
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- Tauer, Kenneth A. Compact lift for van. 3,826,386, Cl. 214-77.00r.
- Tausch, Gilbert H., to Camco, Incorporated. Well safety valve. 3,826,309, Cl. 166-224.00s.
- Taylor, Frank H., to Otis Engineering Corporation. Large bore rotary safety valves for wells. 3,826,462, Cl. 251-58.000.
- Taylor, Larry K., to Owens-Illinois, Inc. Removal of warp from corrugated paperboard. 3,826,178, Cl. 93-1.00r.
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- Thomas, David Ellis, to Sagamo Weston Limited. Electric switching devices, 3,827,009, Cl. 337-77.000.
- Thomas, James Larue; and Beacham, Harry Hoyt, to FMC Corporation. Flame retardant diallylic phthalate molding compounds, 3,826,777, Cl. 260-42.180.
- Thomas, Michael W.; and Boaz, Virgil L., to Westinghouse Electric Corporation. Power transformer having flux shields surrounding metallic structural members, 3,827,018, Cl. 336-84.000.
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- Timberlake, Robert K., to United States of America, Navy. Torpedo antiself homing (ASH) system, 3,826,210, Cl. 114-24.000.
- Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. 9-Azoly-(1)-fluorene-9-carboxylic acid derivatives as an anti-mycotic agent, 3,826,837, Cl. 424-273.000.
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- Weiss, Maurice A., to Follansbee Steel Corporation. Metal pallet. 3,826,205, Cl. 108-51.000.  
 Welter, Jeff R., to Hanna, Daniel C. Friction washes. 3,825,969, Cl. 15-97.00r.  
 Wenzel, Ronald Arthur, to Hilsinger Corporation, The. Spectacle front hinge pinning system. 3,826,565, Cl. 351-121.000.  
 Wepsala, George B., Jr. Latch bolt protector. 3,826,526, Cl. 292-346.000.  
 Werling, Francis D., Sr. Eye glass frame for replaceable lenses. 3,826,564, Cl. 351-45.000.  
 Werner, Walter Myers: See—  
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 Wessels, Glenn R., to Dow Chemical Company, The. Apparatus for sample liquids. 3,826,144, Cl. 73-425.40.  
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 Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Gal-loway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.  
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 Scholfield, Richard P., 3,826,549.  
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 Grierson, Keith J.; and Samuelson, Bruce E., 3,826,935.  
 Whitaker, Donald R.: See—  
 Rasberry, Phillip P.; and Whitaker, Donald R., 3,826,558.  
 White, Marvin H.; and Strull, Gene, to Westinghouse Electric Corporation. Charge coupled device area imaging array. 3,826,926, Cl. 307-221.000.  
 White, Roby Byron, to Braxton Corporation. Method for rapidly exciting and sustaining oscillations in a resonant system. 3,826,993, Cl. 331-1.000.  
 Whiting, John V.: See—  
 Brown, Gene T.; and Whiting, John V., 3,826,986.  
 Whitman, Franklin A. Organic fertilizers and their production. 3,826,638, Cl. 71-21.000.  
 Whittaker, Stanley James; Astill, Cyril J.; and Janzen, Peter, to Atomic Energy of Canada Limited. Valve assembly. 3,826,465, Cl. 251-335.00b.  
 Wiebe, Harold Dean: See—  
 Wise, Robert G.; and Wiebe, Harold Dean, 3,826,988.  
 Wienszkowski, Thomas H.: See—  
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 Wiersdorff, Walter Wielant: See—  
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 Wiley, Robert F. Extrusion die. 3,826,603, Cl. 425-461.000.  
 Wilhelmson, Paul C. Glued replacement unit for repairing ruptured pipe. 3,826,521, Cl. 286-15.000.  
 Wilkinson, Bruce L.; and Stolowitz, Michael C., to Pioneer Magnetics, Inc. Low leakage secondary circuit for a power transformer including conductive struts forming the secondary and connections for rectifying diodes. 3,826,967, Cl. 321-8.00r.  
 Will, Hannelore: See—  
 Pommer, Ernst-Heinrich; and Will, Hannelore, 3,826,639.  
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 Williams, Robert M., 3,826,208.  
 Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Apparatus and system for disposing of combustible and waste material. 3,826,208, Cl. 110-15.000.  
 Williams, Samuel D. Accessory wheel and drive device for a motor vehicle. 3,826,322, Cl. 180-1.0aw.  
 Willie, Edward N.; and Volkers, Walter K., deceased (by Volkers, Daphne J.). Antenna with large capacitive termination and low input circuit. 3,827,053, Cl. 343-701.000.  
 Willford, Jerry G., to Collins Radio Company. FSK oscillator. 3,826,999, Cl. 331-108.00r.  
 Willis, John George, to Solid State Technology, Inc. Alarm system. 3,827,038, Cl. 340-224.000.  
 Willoughby, Anthony Roy, to Bendix Corporation, The. Wind direction monitor scale converter. 3,827,037, Cl. 340-177.00r.  
 Wilson, Ernest V. Centrifugal marine propeller. 3,826,591, Cl. 416-177.000.  
 Wilson, Harold W., to Golden Cycle Corporation. Noble metals solvation agents-hydroxyketones and iodine and iodide. 3,826,750, Cl. 252-187.00r.  
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 Wise, Robert G.; and Wiebe, Harold Dean, to Cincinnati Milacron Inc. Phase detector. 3,826,988, Cl. 328-133.000.  
 Wiakott, Erik, to Therachemie Chemisch Therapeutische GmbH. Process and composition for dyeing of human hair. 3,826,608, Cl. 8-10.100.  
 Wisniewski, Judith L.: See—  
 Broker, David C.; and Wisniewski, Judith L., 3,826,284.  
 Wiss, John W. Automotive vehicular dynamometer. 3,826,129, Cl. 73-117.000.  
 Withers, James G., Jr.; Dean, Harvey R.; and Ross, Stuart T., to Universal Oil Products Company. Advantageous configuration of tubing for internal boiling. 3,826,304, Cl. 165-1.000.  
 Wiz Corporation: See—  
 Ike, Ernest C., 3,826,176.  
 Wolf, Leopold. Tripod carrier. 3,826,513, Cl. 280-79.100.  
 Wolvering-Pentronix, Inc.: See—  
 De Santis, Raymond P.; and De Troyer, George D., 3,826,599.  
 Wong, Shi-Yin, to Hughes Aircraft Company. Room temperature nematic liquid crystals. 3,826,757, Cl. 252-408.000.  
 Woo, Frank: See—  
 Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, 3,826,924.  
 Wood, Charles E.: See—  
 Boyd, David M.; and Wood, Charles E., 3,826,719.  
 Wood, Robert J. Truck body with suspension rack. 3,826,529, Cl. 296-37.00r.  
 Wood, William Robert, to Deere & Company. Press operating mechanism for stack-forming machine. 3,826,070, Cl. 56-344.000.  
 Woodilla, John E., Jr.; Hunt, Gordon W.; and Green, Willard B., Jr., to Torrington Company, The. Thermal treatment of steel. 3,826,694, Cl. 148-15.000.  
 Woodroffe, Jaime A.; and Appleton, John P., to Massachusetts Institute of Technology. Fluorescent gas analyzer with calibration system. 3,826,920, Cl. 250-373.000.  
 Woods, Jack L.; and Pittman, Tobe A., to Elmet, Inc. Process for recovering gold and silver. 3,826,723, Cl. 204-110.000.  
 Woodworth, Chris C. Test set for tracing and checking the continuity of electrical circuits. 3,826,977, Cl. 324-61.000.  
 Woolslayer, Homer J.; and Jenkins, Cecil, to Moore, Lee C., Corporation. Oil well derrick with guide track for travelling block dolly. 3,826,472, Cl. 254-139.00.  
 Woycheshin, Elias A.: See—  
 Sobolev, Igor; and Woycheshin, Elias A., 3,826,775.  
 Wright, Carl Leonard; and Beacham, Harry Hoyt, to FMC Corporation. Polymerization controlled diallylic phthalate polymer compositions. 3,826,786, Cl. 260-78.4ua.  
 Wright, Roy F., to Phillips Petroleum Company. Block copolymers and oxidized carbon black compositions. 3,826,776, Cl. 260-41.50r.  
 Wright, Wayne E. Method and means for reducing the effect of electrostatic charges on paper in a copying system. 3,826,379, Cl. 271-208.000.  
 Wunder, William G., to Prince Corporation. Die casting apparatus. 3,826,302, Cl. 164-312.000.  
 Wurm, Robert J.; and Bergson, Arnold A., to Quest Electronics Corporation. Noise cancellation. 3,826,870, Cl. 179-1.00p.  
 Wylot, James Matthew: See—  
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 Wylot, James Matthew; and Greco, Edgar Joseph, to Eastman Kodak Company. High index optical glass. 3,826,660, Cl. 106-53.000.



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Yabu, Toshiomi; Sakumoto, Hideki; and Namoto, Yoshiteru, to Matsushita Electric Industrial Company, Limited. Automatic tape threading mechanism. 3,826,447, Cl. 242-188.000.  
Yakovlev, Pavel Borisovich: See—  
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Yamada, Yasuo: See—  
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Yamakami, Hiroshi: See—  
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Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Automatic wind-up device for a camera having a memory type exposure control device. 3,827,067, Cl. 354-51.000.  
Yamamoto, Hiroshi; Koike, Kengo; Ohgushi, Koji; and Tokumitsu, Iwao, to Nippon Kayaku Kabushiki Kaisha. Method for exterminating rodents and rodenticide compositions. 3,826,841, Cl. 424-323.000.  
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Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, to Canon Kabushiki Kaisha. Memory type exposure control system. 3,827,066, Cl. 354-51.000.  
Yao, Cheng, to Factory Mutual Research Corporation. Method of fire protection using recirculation of combustion products to discharge a foam extinguishant. 3,826,313, Cl. 169-44.000.  
Yaroshuk, Nicholas; and Burack, Robert D., to Westinghouse Electric Corporation. X-ray tire inspection apparatus. 3,826,919, Cl. 250-360.000.  
Yashiro, Kazuyoshi. Method and apparatus for cold bending H-shaped steel. 3,826,121, Cl. 72-170.000.  
Yasuhiro, Tomita, to Yamamura Glass Kabushiki Kaisha. Apparatus for testing pressure resistance of containers. 3,826,126, Cl. 73-37.000.  
Yasui Sangyo Company Limited: See—  
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Yasui, Toshiyuki: See—  
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Yokokawa, Chikao, to Fujikura Cable Works, Ltd., The. Process for producing hydrocarbon composition. 3,826,789, Cl. 260-92.80a.  
Yokota, Yuji: See—  
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Yoshida Kogyo Kabushiki Kaisha: See—  
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Youmans, Bill: See—  
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Yuasa Battery Company Limited: See—  
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Yuasa Kiko Company Limited: See—  
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Zany Productions, Inc.: See—  
Adams, Hunter D., 3,826,250.  
Zappia, Anthony T. Case packer. 3,826,382, Cl. 214-1.0bb.  
Zehren, James N., to TRW, Inc. Well pump torque absorber assembly. 3,826,525, Cl. 285-223.000.  
Zenz, Frederick A. Folded transfer line reactor. 3,826,738, Cl. 208-153.000.  
Zichis, Joseph, to Beckman Instruments, Inc. Reagents for the diagnosis of infections. 3,826,821, Cl. 424-12.000.  
Ziegler, Claus D., to Interbath, Inc. Adjustable mounting arrangement for hand-held shower head. 3,826,454, Cl. 248-75.000.  
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Zinnes, Harold; and Lindo, Neil A., to Warner-Lambert Company. Heterocyclic amides of 4-hydroxy-2H-1-benzothienopyran-3-carboxylic acid 1, 1-dioxide and process for their production. 3,826,791, Cl. 260-294.80c.  
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Zofchak, James T., to Addressograph-Multigraph Corporation. Print wheel setting and key lever reset means in printing machines. 3,826,190, Cl. 101-45.000.  
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Zutz, Joseph. Device for teaching sculpturing. 3,826,020, Cl. 364203: See—  
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## LIST OF REISSUE PATENTEEES

TO WHOM  
PATENTS WERE ISSUED ON THE 30TH DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Anderson, Leroy E., G. J. Munn, to Manufacturers Systems, Inc. Method of forming a rectangular heat duct. Re. 28,088, 7-30-74, Cl. 113-54.  
Balassa, Leslie L., to Lescarden Ltd. Wound-healing cartilage powder. Re. 28,993, 7-30-74, Cl. 424-95.  
Barker, Layle B., to Reynolds Metals Company. Apparatus for making a thermally insulating joint construction and an adjustable guide assembly for use therewith. Re. 28,084, 7-30-74, Cl. 28-200.  
Barker, Layle B.: See—  
Holliday, William H., and Barker. Re. 28,086.  
Borg-Warner Corp.: See—  
Boyd, Clinton A. Re. 28,094.  
Boyd, Clinton A., to Borg-Warner Corp. Bearing arrangement for electric motors. Re. 28,094, 7-30-74, Cl. 310-90.  
Chapin, Richard D. Water distributing hose. Re. 28,093, 7-30-74, Cl. 61-12.  
Costello, Leonard C., to Hull Corp. Container stoppering apparatus. Re. 28,085, 7-30-74, Cl. 164-78.  
Devol, George C. Controlled toggle mechanisms. Re. 28,089, 7-30-74, Cl. 74-52.  
Frederiksen, Christopher W.: See—  
Heusdens, Wilhelmus, and Frederiksen. Re. 28,091.  
General Electric Co.: See—  
Gluntz, Douglas M. Re. 28,090.  
Gluntz, Douglas M. General Electric Co. Diffuser. Re. 28,090, 7-30-74, Cl. 417-198.  
Heusdens, Wilhelmus, Frederiksen, C. W. to Ralston Purina Co. Protein fiber forming. Re. 28,091, 7-30-74, Cl. 426-148.  
Hill, Donald E. S. D. Payne, and R. G. Walker, to Industria Products Inc. Apparatus for winding and placing coils in the slots of a stator. Re. 28,087, 7-30-74, Cl. 20-205.  
Holliday, William H., and L. B. Barker. Reynolds Metals Co. Apparatus for making a thermally insulating joint construction. Re. 28,086, 7-30-74, Cl. 28-200.  
Hull Corp.: See—  
Costello, Leonard C. Re. 28,085.  
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Lescarden Ltd.: See—  
Balassa, Leslie L. Re. 28,993.  
Manufacturers Systems, Inc.: See—  
Anderson, Leroy E., and Munn. Re. 28,088.  
Munn, Gerald J.: See—  
Anderson, Leroy E., and Munn. Re. 28,088.  
Payne, Stanley D.: See—  
Hill, Donald E., Payne, and Walker. Re. 28,087.  
Ralston Purina Co.: See—  
Heusdens, Wilhelmus, and Frederiksen. Re. 28,091.  
Reynolds Metals Co.: See—  
Barker, Layle B. Re. 28,084.  
Holliday, William H., and Barker. Re. 28,086.  
Ri-El Ricerche Elettroniche S.R.L.: See—  
Righi, Nardino. Re. 28,092.  
Righi, Nardino. Ri-El Ricerche Elettroniche S.R.L. Cassette tape read out devices. Re. 28,092, 7-30-74, Cl. 274-4.  
Walker, Robert G.: See—  
Hill, Donald E., Payne and Walker. Re. 28,087.

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- Acton, Hugh C. The Vecta Group, Inc. Seat base or similar article. 232,202, 7-30-74, Cl. D6-196.  
American Optical Corp.: See—  
Armbruster, John T., and Wolfe. 232,208.  
Ampro, Ltd.: See—  
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Armbruster, John T. and R. J. Wolfe. American Optical Corp. Packaging tray. 232,208, 7-30-74, Cl. D9-242.  
Ayukawa, Isao: See—  
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Bartley, Keith David, Dewhirst, F. A., Genaro, D. M., and McGarvey, J. N., to Bell Telephone Laboratories, Inc. Combined public telephone enclosure and support. 232,223, 7-30-74, Cl. D13-1.  
Bee, James W. M., J. F. Tyson, and J. A. Mahan, to Bell Canada-Northern Electric Research Ltd. Telephone substation apparatus. 232,226, 7-30-74, Cl. D26-14.  
Bee, James W. M., J. F. Tyson, and J. A. Mahan, to Bell Canada-Northern Electric Research Ltd. Base for a telephone set. 232,227, 7-30-74, Cl. D26-14.  
Bell Canada-Northern Electric Research Ltd.: See—  
Bee, James W. M., Tyson, and Mahan. 232,226.  
Bee, James W. M., Tyson, and Mahan. 232,227.  
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Bartley, Keith D., Dewhirst, Genaro, and McGarvey. 232,222.  
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Berkey Photo, Inc.: See—  
Emmerling, Ronald. 232,263.  
Bilderman, Sidney. Disposable litter container or similar article. 232,214, 7-30-74, Cl. D7-193.  
Bloch, Jack. Foster Grant Co., Inc. Spectacle front. 232,262, 7-30-74, Cl. D57-1.  
Brown, Gertrude, T.: See—  
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Brown, Robert C., deceased, by G. T. Brown, R. C. Brown, and J. L. Grant, to Magni-Case, Inc. Eyeglass case or similar article. 232,259, 7-30-74, Cl. D57-1.  
Cates, Gaye G. Portable shampoo tray. 232,269, 7-30-74, Cl. D86-10.  
Cauquis, Roger. Fishing lure. 232,235, 7-30-74, Cl. D22-27.  
Caylor, Bradley J. Moon ball. 232,250, 7-30-74, Cl. D34-15.  
Cicero, Edward L. Child's walking and rocking toy. 232,248, 7-30-74, Cl. D34-14.  
Cook, Raymon W. Golf putter head. 232,252, 7-30-74, Cl. D34-5.  
Current, Wayne A., to The Singer Company. Sewing machine frame. 232,266, 7-30-74, Cl. D70-1.  
Dankert, Roger W., and W. R., to Rodan Industries, Inc. Temperature regulator. 232,217, 7-30-74, Cl. D10-50.  
Dankert, William R.: See—  
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Daratsos, Gregory, to Dars Met-All Industries, Inc. Fly trap. 232,233, 7-30-74, Cl. D22-19.  
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Daratsos, Gregory. 232,233.  
Davis, James J., and W. E. De Lozier, to International Telephone and Telegraph Corp. Desk telephone. 232,230, 7-30-74, Cl. D26-1.  
De Fano, Dominic J.: See—  
Kallman, Robert I. 232,253.  
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Dohyns, Richard W. Timer or similar device. 232,224, 7-30-74, Cl. D10-40.  
Donnelly, Kenneth J.: See—  
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Edwards, William A., to Elmar Manufacturing Co. Combined holder and pourer for a wine bottle or the like. 232,209, 7-30-74, Cl. D7-70.  
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Freed, John P. Fishing pole holder. 232,234, 7-30-74, Cl. D22-13.  
Fujinami, Sadao, Orient Tokai Kakushiki Kaisha, a/t/a Orient Watch Co., Ltd. Calendar ring for a wristwatch. 232,218, 7-30-74, Cl. D10-122.  
Fujinami, Sadao, Orient Tokai Kakushiki Kaisha, a/t/a Orient Watch Co., Ltd. Combined dial plate and ring for a time-piece face. 232,221, 7-30-74, Cl. D10-123.  
Gardner, Irving. Spring temple for eyeglasses. 232,260, 7-30-74, Cl. D57-1.  
Gebert, Karl: See—  
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115	3,825,953	578	3,825,996	27	3,826,659	98	3,826,644	17.5	3,826,67
150	3,825,954	600	3,825,997	48	3,826,660			62.2	3,826,67
	3,825,955	626	3,825,998	182	3,826,661				3,826,67
1	CLASS 3	630R	3,825,999	255	3,826,662	36	3,826,119		3,826,67
	3,825,956					46	3,826,120		3,826,67
	3,825,957					170	3,826,121		3,826,67
240	CLASS 4	90.1	3,826,001	128	CLASS 55	260	3,826,122		3,826,67
	3,825,958			204	3,826,063	174	3,826,123		3,826,67
8	CLASS 5	2	3,826,002	309	3,826,064	349	3,826,123		3,826,67
247	3,825,959	8	3,826,003	379	3,826,065	367	3,826,124		3,826,67
	3,825,960	58	3,826,004	524	3,826,066				3,826,67
1H	CLASS 7	69	3,826,005	12.7	CLASS 56	37	3,826,125		3,826,67
	3,825,961			328R	3,826,068	67.5R	3,826,127		3,826,67
10.1	CLASS 8	76R	3,826,006	344	3,826,070	88E	3,826,128		3,826,67
21R	3,826,608	77	3,826,007			117	3,826,129		3,826,67
94.26	3,826,609	147F	3,826,008	56	CLASS 57	141A	3,826,130		3,826,67
115.5	3,826,610	169R	3,826,009	58.57	3,826,072		3,826,131		3,826,67
	3,826,611		3,826,010	77.33	3,826,073	143	3,826,132		3,826,67
7	CLASS 9	185R	3,826,011	140G	3,826,074	152	3,826,133		3,826,67
	3,825,962	246	3,826,012	157TS	3,826,075	155	3,826,134		3,826,67
1R	CLASS 11	390	3,826,013			171	3,826,135		3,826,67
3	3,825,963			116R	CLASS 58	189	3,826,136		3,826,67
6	CLASS 13	1	3,826,014		3,826,076	194R	3,826,137		3,826,67
	3,826,858	57R	3,826,015	39.02	CLASS 60	258	3,826,138		3,826,67
21D	CLASS 15	152	3,826,016	39.06	3,826,077	311	3,826,139		3,826,67
	3,825,965	225	3,826,017	39.55	3,826,078	343.5	3,826,140		3,826,67
87	3,825,967	229	3,826,018	39.62	3,826,079	356	3,826,141		3,826,67
97R	3,825,968			39.63	3,826,080	398C	3,826,142		3,826,67
230.11	3,825,969	17	3,826,019	39.65	3,826,081	425.4R	3,826,143		3,826,67
250.04	3,825,970	26	3,826,020		3,826,082	432R	3,826,144		3,826,67
250.27	3,825,966	34	3,826,021	39.66	3,826,083	462	3,826,145		3,826,67
373	3,825,972			39.75	3,826,084		3,826,146		3,826,67
				200	3,826,085	198	3,826,157		3,826,67
189	CLASS 16	58	3,826,023	261	3,826,087	200	3,826,158		3,826,67
	3,825,973	142A	3,826,024	290	3,826,088	242.8	3,826,147		3,826,67
66R	CLASS 19	142R	3,826,025	445	3,826,089	250R	3,826,148		3,826,67
150	3,825,974			644	3,826,090		3,826,149		3,826,67
	3,825,975			647	3,826,091	400	3,826,150		3,826,67
94	CLASS 21	10B	3,826,026	665	3,826,092	424.5	3,826,151		3,826,67
	3,826,612	32	3,826,027	686	3,826,093	459	3,826,152		3,826,67
230B	CLASS 23	70	3,826,028		3,826,094	505	3,826,153		3,826,67
	3,826,613	107	3,826,029	709	3,826,095	519	3,826,154		3,826,67
230M	3,826,614	301	3,826,030	719	3,826,096	520	3,826,155		3,826,67
230R	3,826,615				3,826,097	527	Re.28.089		3,826,67
232R	3,826,616			12	CLASS 61	866	3,826,156		3,826,67
232TP	3,826,617			46	Re.28.095		3,826,157		3,826,67
235R	3,826,618			46.5	3,826,098	5.1R	3,826,645		3,826,67
259	3,826,619				3,826,099	13	3,826,646		3,826,67
	3,826,620			63	CLASS 62	60	3,826,647		3,826,67
	3,826,621			82	3,826,100	109	3,826,648		3,826,67
281	3,826,622			137	3,826,101	124	3,826,649		3,826,67
288S	3,826,623			140	3,826,102				3,826,67
301SP	3,826,624			149	3,826,103	82	3,826,159		3,826,67
	3,826,625			262	3,826,104				3,826,67
				275	3,826,105	5.1R	3,826,160		3,826,67
				279	3,826,106	2B	3,826,161		3,826,67
					3,826,107	3	3,826,162		3,826,67
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1 : 3,826,415	3,826,340	3,826,853	10 : 3,826,097	3,826,259	3,826,497
3,826,621	3,826,343	3,826,856	3,826,329	3,826,267	3,826,516
3,826,632	3,826,349	3,826,865	3,826,705	3,826,283	3,826,532
4 : 3,826,234	3,826,364	3,826,866	3,826,069	3,826,325	3,826,703
3,826,386	3,826,371	3,826,869	3,826,337	3,826,337	3,826,891
3,826,460	3,826,406	3,826,888	3,826,055	3,826,350	3,826,929
3,826,977	3,826,421	3,826,901	3,826,084	3,826,388	3,826,934
5 : 3,826,062	3,826,427	3,826,917	3,826,393	3,826,393	3,826,989
3,826,138	3,826,446	3,826,922	3,826,215	3,826,400	3,826,018
6 : Re. 28,090	3,826,452	3,826,927	3,826,217	3,826,401	3,826,049
3,825,963	3,826,454	3,826,931	3,826,232	3,826,402	3,826,070
3,825,964	3,826,467	3,826,948	3,826,262	3,826,458	3,826,090
3,825,968	3,826,468	3,826,967	3,826,262	3,826,498	3,826,295
3,825,979	3,826,469	3,826,972	3,826,266	3,826,506	3,826,327
3,825,980	3,826,475	3,826,981	3,826,266	3,826,508	3,826,327
3,826,001	3,826,480	3,826,987	3,826,271	3,826,510	3,826,517
3,826,012	3,826,491	3,826,999	3,826,287	3,826,520	3,826,607
3,826,020	3,826,500	3,827,022	3,826,543	3,826,543	3,826,690
3,826,024	3,826,503	3,827,036	3,826,619	3,826,619	3,827,030
3,826,027	3,826,513	3,827,039	3,826,622	3,826,622	20 : 3,826,315
3,826,034	3,826,514	3,827,045	3,826,670	3,826,670	3,826,336
3,826,041	3,826,521	3,827,046	3,826,686	3,826,686	3,826,431
3,826,051	3,826,522	3,827,050	3,826,693	3,826,693	21 : 3,826,016
3,826,059	3,826,527	3,827,072	3,826,711	3,826,711	3,826,019
3,826,127	3,826,534	3,827,075	3,826,794	3,826,794	3,826,052
3,826,134	3,826,538	3,827,078	3,826,798	3,826,798	3,826,102
3,826,140	3,826,561	8 : 3,825,961	3,826,821	3,826,821	3,826,436
3,826,145	3,826,563	9 : Re. 28,089	3,826,857	3,826,857	3,826,499
3,826,150	3,826,572	3,825,957	3,826,863	3,826,863	3,826,553
3,826,156	3,826,577	3,825,983	3,826,879	3,826,879	3,826,898
3,826,167	3,826,585	3,826,011	3,826,883	3,826,883	22 : 3,826,341
3,826,168	3,826,623	3,826,118	3,826,884	3,826,884	3,826,420
3,826,171	3,826,633	3,826,139	3,826,914	3,826,914	23 : 3,826,638
3,826,176	3,826,644	3,826,291	3,826,921	3,826,921	24 : 3,826,101
3,826,185	3,826,653	3,826,344	3,826,955	3,826,955	3,826,210
3,826,213	3,826,708	3,826,355	3,826,985	3,826,985	3,826,244
3,826,220	3,826,730	3,826,511	3,827,024	3,827,024	3,826,251
3,826,237	3,826,736	3,826,545	3,827,041	3,827,041	3,826,281
3,826,243	3,826,753	3,826,578	3,827,057	3,827,057	3,826,296
3,826,245	3,826,754	3,826,614	3,827,076	3,827,076	3,826,384
3,826,254	3,826,757	3,826,618	3,826,039	3,826,039	3,826,451
3,826,255	3,826,775	3,826,627	3,826,042	3,826,042	3,826,483
3,826,258	3,826,803	3,826,629	3,826,045	3,826,045	3,826,492
3,826,263	3,826,804	3,826,673	3,826,046	3,826,046	3,826,494
3,826,266	3,826,807	3,826,694	3,826,092	3,826,092	3,826,544
3,826,273	3,826,817	3,826,740	3,826,149	3,826,149	3,826,575
3,826,293	3,826,823	3,826,751	3,826,154	3,826,154	3,826,580
3,826,317	3,826,830	3,826,756	3,826,182	3,826,182	3,826,651
3,826,324	3,826,846	3,826,787	3,826,203	3,826,203	3,826,662
3,826,331	3,826,851	3,826,885	3,826,230	3,826,230	3,826,667
3,826,339	3,826,852	3,826,942	3,826,242	3,826,242	3,826,690

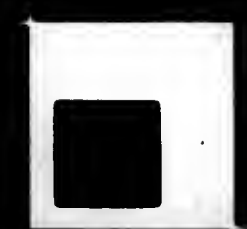
## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,826,758	3,826,844	3,825,995	3,827,070	3,826,770	3,826,028
3,826,786	3,826,958	3,825,996	3,826,110	3,826,795	3,826,064
3,826,875	Re. 28,088	3,826,004	3,826,165	3,827,068	3,826,068
3,826,897	3,825,956	3,826,005	3,826,288	3,825,973	3,826,099
3,826,926	3,825,962	3,826,029	3,826,333	3,825,993	3,826,115
3,826,975	3,825,970	3,826,085	3,826,391	3,826,021	3,826,144
3,827,001	3,826,113	3,826,106	3,826,558	3,826,048	3,826,160
3,827,019	3,826,257	3,826,116	3,826,982	3,826,080	3,826,164
3,827,037	3,826,270	3,826,136		3,826,091	3,826,183
	3,826,300	3,826,152	39 : 3,825,966	3,826,094	3,826,307
25 : 3,825,953	3,826,375	3,826,194	3,825,972	3,826,095	3,826,309
3,826,013	3,826,408	3,826,211	3,825,981	3,826,105	3,826,310
3,826,032	3,826,474	3,826,229	3,825,984	3,826,107	3,826,312
3,826,040	3,826,912	3,826,231	3,826,003	3,826,108	3,826,316
3,826,056	3,826,935	3,826,239	3,826,074	3,826,129	3,826,335
3,826,060	3,827,015	3,826,241	3,826,082	3,826,132	3,826,390
3,826,093	3,827,077	3,826,247	3,826,088	3,826,153	3,826,462
3,826,114		3,826,252	3,826,096	3,826,196	3,826,512
3,826,119	28 : 3,825,958	3,826,265	3,826,109	3,826,198	3,826,581
3,826,282	3,826,170	3,826,322	3,826,120	3,826,199	3,826,612
3,826,313	29 : 3,826,083	3,826,323	3,826,123	3,826,200	3,826,624
3,826,321	3,826,122	3,826,345	3,826,178	3,826,201	3,826,700
3,826,373	3,826,159	3,826,357	3,826,179	3,826,202	3,826,750
3,826,381	3,826,188	3,826,359	3,826,189	3,826,246	3,826,825
3,826,463	3,826,208	3,826,360	3,826,190	3,826,246	3,826,871
3,826,489	3,826,389	3,826,376	3,826,205	3,826,311	3,826,904
3,826,531	3,826,432	3,826,378	3,826,222	3,826,326	3,826,965
3,826,565	3,826,605	3,826,396	3,826,249	3,826,328	3,826,971
3,826,579	3,826,641	3,826,411	3,826,274	3,826,379	3,827,027
3,826,582	3,826,834	3,826,441	3,826,297	3,826,387	3,827,031
3,826,592	31 : 3,826,135	3,826,455	3,826,330	3,826,412	3,827,073
3,826,598	32 : 3,826,909	3,826,496	3,826,334	3,826,414	
3,826,606	33 : 3,826,280	3,826,518	3,826,347	3,826,434	49 : 3,826,087
3,826,625	34 : 3,825,990	3,826,519	3,826,363	3,826,438	3,826,206
3,826,687	3,826,022	3,826,523	3,826,367	3,826,471	3,826,471
3,826,801	3,826,026	3,826,536	3,826,404	3,826,473	3,826,574
3,826,872	3,826,063	3,826,537	3,826,418	3,826,529	3,826,723
3,826,873	3,826,066	3,826,549	3,826,429	3,826,539	3,826,808
3,826,911	3,826,141	3,826,551	3,826,470	3,826,564	3,826,816
3,826,920	3,826,142	3,826,559	3,826,502	3,826,587	
3,826,994	3,826,174	3,826,560	3,826,528	3,826,594	51 : Re. 28,084
3,826,997	3,826,191	3,826,566	3,826,546	3,826,602	Re. 28,086
3,827,008	3,826,223	3,826,568	3,826,547	3,826,620	3,826,067
3,827,021	3,826,264	3,826,603	3,826,554	3,826,631	3,826,172
3,827,032	3,826,278	3,826,615	3,826,570	3,826,647	3,826,177
3,827,038	3,826,285	3,826,626	3,826,576	3,826,668	3,826,184
3,827,054	3,826,365	3,826,645	3,826,586	3,826,691	3,826,226
3,827,056	3,826,368	3,826,652	3,826,635	3,826,691	3,826,250
3,827,059	3,826,370	3,826,654	3,826,669	3,826,693	3,826,405
	3,826,394	3,826,655	3,826,675	3,826,702	3,826,448
26 : 3,825,960	3,826,493	3,826,656	3,826,710	3,826,709	3,826,688
3,825,988	3,826,495	3,826,657	3,826,720	3,826,763	3,826,707
3,826,000	3,826,611	3,826,660	3,826,726	3,826,765	3,826,750
3,826,006	3,826,634	3,826,661	3,826,728	3,826,766	3,826,850
3,826,010	3,826,640	3,826,663	3,826,729	3,826,767	3,826,874
3,826,033	3,826,643	3,826,679	3,826,778	3,826,796	3,826,881
3,826,050	3,826,650	3,826,685	3,826,812	3,826,826	3,826,959
3,826,054	3,826,671	3,826,696	3,826,893	3,826,839	3,827,002
3,826,117	3,826,682	3,826,698	3,826,900	3,826,843	
3,826,151	3,826,701	3,826,721	3,826,902	3,826,860	53 : 3,825,969
3,826,157	3,826,725	3,826,731	3,826,903	3,826,864	3,826,128
3,826,216	3,826,742	3,826,732	3,826,913	3,826,880	3,826,207
3,826,260	3,826,745	3,826,733	3,826,946	3,826,906	3,826,407
3,826,261	3,826,746	3,826,738	3,826,963	3,826,919	3,826,449
3,826,269	3,826,748	3,826,773	3,826,988	3,826,923	3,826,617
3,826,271	3,826,759	3,826,780	3,827,013	3,826,928	3,826,678
3,826,287	3,826,761	3,826,813	3,827,014	3,826,930	3,826,818
3,826,302	3,826,762	3,826,815	3,827,025	3,826,938	3,826,848
3,826,303	3,826,777	3,826,827		3,826,951	3,826,910
3,826,304	3,826,781	3,826,855	40 : Re. 28,094	3,826,976	3,826,954
3,826,319	3,826,790	3,826,867	3,826,053	3,826,991	
3,826,332	3,826,791	3,826,868	3,826,077	3,827,005	54 : 3,826,805
3,826,372	3,826,797	3,826,876	3,826,078	3,827,010	3,826,806
3,826,410	3,826,829	3,826,892	3,826,079	3,825,978	
3,826,422	3,826,832	3,826,896	3,826,072	3,826,583	3,826,253
3,826,433	3,826,835	3,826,899	3,826,525	3,826,583	3,826,256
3,826,453	3,826,840	3,826,932	3,826,724	3,826,993	3,826,284
3,826,466	3,826,877	3,826,944	3,826,776	45 : 3,826,276	3,826,354
3,826,484	3,826,978	3,826,947	3,826,887	3,826,245	3,826,361
3,826,490	3,827,047	3,826,950	3,826,936	46 : 3,826,613	3,826,362
3,826,533	3,827,055	3,826,957	3,827,040	47 : 3,826,163	3,826,530
3,826,540	3,827,063	3,826,969		3,826,186	3,826,589
3,826,550	35 : 3,826,057	3,826,983	41 : 3,826,025	3,826,308	3,826,604
3,826,552	36 : Re. 28,093	3,827,003	3,826,124	3,826,711	3,826,674
3,826,562	Re. 28,095	3,827,007	3,826,275	3,826,717	3,826,743
3,826,599	3,825,965	3,827,026	3,826,437	48 : 3,825,999	3,826,769
3,826,782	3,825,976	3,827,053	3,826,482	3,826,001	3,826,854
3,826,820	3,825,992	3,827,062	3,826,591		3,826,870



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